

# Appendix A. Search Strategies

Database: EBM Reviews - Cochrane Central Register of Controlled Trials <April 2014>

Search Strategy:

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- 1 (cold or colds or flu or influenza or virus\$ or viral\$ or Respiratory Syncytial Vir\$ or rsv or rti or (respiratory tract\$ adj3 infect\$) or rhinit\$ or sinusit\$ or pharyngit\$ or mononucleo\$ or otitis media or (middle ear\$ adj3 infect\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (33490)
  - 2 (cough\$ or bronchit\$).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (6799)
  - 3 1 and 2 (1307)
  - 4 (antibiotic\$ or anti-biotic\$ or antimicrobial\$ or anti-microbial\$ or antiinfective\$ or anti-infective\$ or anti-bacterial\$ or antibacterial\$).ti,ab. (14879)
  - 5 (point of care adj5 (diagnos\$ or test\$ or assay\$ or kit or kits)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (180)
  - 6 (immediat\$ adj5 (test\$ or diagnos\$)).mp. (1278)
  - 7 ((rapid\$ or quick\$ or swift\$ or office\$) adj3 (test\$ or kit or kits or assay\$ or swab\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (1039)
  - 8 (strep\$ adj5 (test\$ or kit or kits or assay\$ or swab\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (232)
  - 9 procalcitonin.mp. (198)
  - 10 (calcitonin adj5 (precursor\$ or biomarker\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (3)
  - 11 c-reactive protein\$.mp. (5836)
  - 12 monospot\$.mp. (1)
  - 13 (direct\$ adj5 antibod\$ adj5 stain\$).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (8)
  - 14 (Fluoresc\$ adj3 Antibod\$).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (411)
  - 15 (reverse transcriptas\$ adj5 (polymerase chain reaction\$ or pcr)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (698)
  - 16 ((singleplex\$ or multiplex\$) adj5 (polymerase chain reaction\$ or pcr)).mp. (50)
  - 17 ((chest\$ or thorac\$) adj5 (radiogra\$ or x-ray\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (1240)
  - 18 ((leukocyt\$ or white blood cell\$ or wbc) adj3 (test\$ or count\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (4024)
  - 19 (blood adj2 (gas or gases) adj5 (analy\$ or test\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (1670)
  - 20 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 (16044)
  - 21 (Decision\$ adj5 (make or makes or making or made)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (3250)
  - 22 ((Health or medical\$) adj5 misus\$).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (88)
  - 23 (Attitud\$ adj5 (Health Personnel or doctor or physician or practitioner\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (1501)
  - 24 ((physician\$ or doctor\$ or practitioner\$) adj5 (practice\$ adj3 pattern\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (862)
  - 25 ((drug\$ or pharmac\$) adj5 utiliz\$).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (820)

## Appendix A. Search Strategies

- 26 (risk\$ adj3 assess\$).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (8961)
- 27 (education or communication or strategy or strategies).ti,ab. (32482)
- 28 ((Professional\$ or doctor\$ or physician\$ or practitioner\$) adj5 patient\$ adj5 (Relation\$ or interaction or request\$ or ask\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (1853)
- 29 (guide\$ adj3 (adheren\$ or comply\$ or complian\$ or obey\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (930)
- 30 ((professional\$ or clinical\$) adj5 (competen\$ or skill\$ or abilit\$ or knowledg\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (3423)
- 31 ((inappropriat\$ or imprudent\$ or unreasonab\$ or unwis\$ or improper\$ or unnecessar\$ or useless\$ or incorrect\$ or worthless\$ or useles\$ or unneeded or gratuitous\$ or ineffect\$ or overus\$ or over-us\$) adj7 (prescri\$ or ((give or gives or giving or issue or issuing or provid\$) adj5 (antibiotic\$ or anti-biotic\$ or drug\$ or pharmac\$))).mp. (191)
- 32 ((appropriat\$ or judicious\$ or judge\$ or judging or wise\$ or prudent\$ or sensible or reasonabl\$ or proper\$ or necessar\$ or useful\$ or correct\$ or worthwhile\$ or needed or effectiv\$ or delay\$ or postpon\$) adj7 (prescri\$ or ((give or gives or giving or issue or issuing or provid\$) adj5 (antibiotic\$ or anti-biotic\$ or drug\$ or pharmac\$))).mp. (1365)
- 33 ((critical\$ or clinical\$) adj3 (path or paths or pathway\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (337)
- 34 ((antibiotic\$ or anti-biotic\$ or anti-microb\$ or antimicrob\$) adj3 steward\$).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (9)
- 35 (audit\$ or feedback or adher\$ or complian\$ or train\$ or educat\$ or instruct\$ or teach\$ or taught\$ or learn\$).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (87401)
- 36 ((system\$ or computer\$ or electronic\$) adj3 (remind\$ or alert\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (719)
- 37 ((econom\$ or financ\$ or dollar\$ or cash or money or physician\$ or provider\$ or doctor\$ or clinician\$ or practitioner\$ or nurse\$) adj3 (incentiv\$ or reimburs\$)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (312)
- 38 ((worker\$ or job or jobs or workplace\$ or employe\$ or student\$ or school\$ or daycare or day care or pupil\$ or child\$ or infant\$ or baby or babies or toddler\$) adj5 ((keep\$ or stay\$ or remain\$) adj3 (home or away))).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (12)
- 39 ((return\$ or (com\$ adj back)) adj5 (work\$ or job or jobs or school\$ or class or daycare or day-care)).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (1035)
- 40 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 (114217)
- 41 3 and 4 and 20 (22)
- 42 3 and 4 and 40 (61)
- 43 3 and 20 and 40 (27)
- 44 41 or 42 or 43 (84)

Database: EBM Reviews - Cochrane Database of Systematic Reviews <2005 to March 2014>  
Search Strategy:

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1 (cold or colds or flu or influenza or virus\$ or viral\$ or Respiratory Syncytial Vir\$ or rsv or rti or (respiratory tract\$ adj3 infect\$) or rhinit\$ or sinusit\$ or pharyngit\$ or mononucleo\$ or otitis media or (middle ear\$ adj3 infect\$)).mp. [mp=title, abstract, full text, keywords, caption text] (1632)

## Appendix A. Search Strategies

- 2 (cough\$ or bronchit\$).mp. [mp=title, abstract, full text, keywords, caption text] (736)
- 3 1 and 2 (376)
- 4 (antibiotic\$ or anti-biotic\$ or antimicrobial\$ or anti-microbial\$ or antiinfective\$ or anti-infective\$ or anti-bacterial\$ or antibacterial\$).ti,ab. (429)
- 5 (point of care adj5 (diagnos\$ or test\$ or assay\$ or kit or kits)).mp. [mp=title, abstract, full text, keywords, caption text] (19)
- 6 (immediat\$ adj5 (test\$ or diagnos\$)).mp. (139)
- 7 ((rapid\$ or quick\$ or swift\$ or office\$) adj3 (test\$ or kit or kits or assay\$ or swab\$)).mp. [mp=title, abstract, full text, keywords, caption text] (112)
- 8 (strep\$ adj5 (test\$ or kit or kits or assay\$ or swab\$)).mp. [mp=title, abstract, full text, keywords, caption text] (17)
- 9 procalcitonin.mp. (12)
- 10 (calcitonin adj5 (precursor\$ or biomarker\$)).mp. [mp=title, abstract, full text, keywords, caption text] (4)
- 11 c-reactive protein\$.mp. (160)
- 12 monospot\$.mp. (1)
- 13 (direct\$ adj5 antibod\$ adj5 stain\$).mp. [mp=title, abstract, full text, keywords, caption text] (0)
- 14 (Fluoresc\$ adj3 Antibod\$).mp. [mp=title, abstract, full text, keywords, caption text] (14)
- 15 (reverse transcriptas\$ adj5 (polymerase chain reaction\$ or pcr)).mp. [mp=title, abstract, full text, keywords, caption text] (7)
- 16 ((singleplex\$ or multiplex\$) adj5 (polymerase chain reaction\$ or pcr)).mp. (3)
- 17 ((chest\$ or thorac\$) adj5 (radiogra\$ or x-ray\$)).mp. [mp=title, abstract, full text, keywords, caption text] (258)
- 18 ((leukocyt\$ or white blood cell\$ or wbc) adj3 (test\$ or count\$)).mp. [mp=title, abstract, full text, keywords, caption text] (174)
- 19 (blood adj2 (gas or gases) adj5 (analy\$ or test\$)).mp. [mp=title, abstract, full text, keywords, caption text] (46)
- 20 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 (825)
- 21 (Decision\$ adj5 (make or makes or making or made)).mp. [mp=title, abstract, full text, keywords, caption text] (1008)
- 22 ((Health or medical\$) adj5 misus\$).mp. [mp=title, abstract, full text, keywords, caption text] (37)
- 23 (Attitud\$ adj5 (Health Personnel or doctor or physician or practitioner\$)).mp. [mp=title, abstract, full text, keywords, caption text] (30)
- 24 ((physician\$ or doctor\$ or practitioner\$) adj5 (practice\$ adj3 pattern\$)).mp. [mp=title, abstract, full text, keywords, caption text] (43)
- 25 ((drug\$ or pharmac\$) adj5 utiliz\$).mp. [mp=title, abstract, full text, keywords, caption text] (43)
- 26 (risk\$ adj3 assess\$).mp. [mp=title, abstract, full text, keywords, caption text] (5975)
- 27 (education or communication or strategy or strategies).ti,ab. (3246)
- 28 ((Professional\$ or doctor\$ or physician\$ or practitioner\$) adj5 patient\$ adj5 (Relation\$ or interaction or request\$ or ask\$)).mp. [mp=title, abstract, full text, keywords, caption text] (113)
- 29 (guide\$ adj3 (adheren\$ or comply\$ or complian\$ or obey\$)).mp. [mp=title, abstract, full text, keywords, caption text] (133)
- 30 ((professional\$ or clinical\$) adj5 (competen\$ or skill\$ or abilit\$ or knowledg\$)).mp. [mp=title, abstract, full text, keywords, caption text] (458)
- 31 ((inappropriat\$ or imprudent\$ or unreasonab\$ or unwis\$ or improper\$ or unnecessar\$ or useless\$ or incorrect\$ or worthless\$ or useless\$ or unneeded or gratuitous\$ or ineffect\$ or overus\$ or

## Appendix A. Search Strategies

- over-us\$) adj7 (prescri\$ or ((give or gives or giving or issue or issuing or provid\$) adj5 (antibiotic\$ or anti-biotic\$ or drug\$ or pharmac\$))).mp. (343)
- 32 ((appropriat\$ or judicious\$ or judge\$ or judging or wise\$ or prudent\$ or sensible or reasonabl\$ or proper\$ or necessar\$ or useful\$ or correct\$ or worthwhile\$ or needed or effectiv\$ or delay\$ or postpon\$) adj7 (prescri\$ or ((give or gives or giving or issue or issuing or provid\$) adj5 (antibiotic\$ or anti-biotic\$ or drug\$ or pharmac\$))).mp. (484)
- 33 ((critical\$ or clinical\$) adj3 (path or paths or pathway\$)).mp. [mp=title, abstract, full text, keywords, caption text] (115)
- 34 ((antibiotic\$ or anti-biotic\$ or anti-microb\$ or antimicrob\$) adj3 steward\$).mp. [mp=title, abstract, full text, keywords, caption text] (3)
- 35 (audit\$ or feedback or adher\$ or complian\$ or train\$ or educat\$ or instruct\$ or teach\$ or taught\$ or learn\$).mp. [mp=title, abstract, full text, keywords, caption text] (5553)
- 36 ((system\$ or computer\$ or electronic\$) adj3 (remind\$ or alert\$)).mp. [mp=title, abstract, full text, keywords, caption text] (81)
- 37 ((econom\$ or financ\$ or dollar\$ or cash or money or physician\$ or provider\$ or doctor\$ or clinician\$ or practitioner\$ or nurse\$) adj3 (incentiv\$ or reimburs\$)).mp. [mp=title, abstract, full text, keywords, caption text] (129)
- 38 ((worker\$ or job or jobs or workplace\$ or employe\$ or student\$ or school\$ or daycare or day care or pupil\$ or child\$ or infant\$ or baby or babies or toddler\$) adj5 ((keep\$ or stay\$ or remain\$) adj3 (home or away))).mp. [mp=title, abstract, full text, keywords, caption text] (19)
- 39 ((return\$ or (com\$ adj back)) adj5 (work\$ or job or jobs or school\$ or class or daycare or day-care)).mp. [mp=title, abstract, full text, keywords, caption text] (332)
- 40 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 (7823)
- 41 3 and 4 and 20 (40)
- 42 3 and 4 and 40 (75)
- 43 3 and 20 and 40 (112)
- 44 41 or 42 or 43 (147)

Database: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations <May 14, 2014><sup>1</sup>  
Search Strategy:

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- 1 (cold or colds or flu or influenza or virus\$ or viral\$ or Respiratory Syncytial Vir\$ or rsv or rti or (respiratory tract\$ adj3 infect\$) or rhinit\$ or sinusit\$ or pharyngit\$ or mononucleo\$ or otitis media or (middle ear\$ adj3 infect\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (45923)
- 2 (cough\$ or bronchit\$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (3274)
- 3 1 and 2 (662)
- 4 (antibiotic\$ or anti-biotic\$ or antimicrobial\$ or anti-microbial\$ or antiinfective\$ or anti-infective\$ or anti-bacterial\$ or antibacterial\$).ti,ab. (21253)
- 5 (point of care adj5 (diagnos\$ or test\$ or assay\$ or kit or kits)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (475)
- 6 (immediat\$ adj5 (test\$ or diagnos\$)).mp. (642)
- 7 ((rapid\$ or quick\$ or swift\$ or office\$) adj3 (test\$ or kit or kits or assay\$ or swab\$)).mp.

## Appendix A. Search Strategies

[mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (1725)

8 (strep\$ adj5 (test\$ or kit or kits or assay\$ or swab\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (206)

9 procalcitonin.mp. (286)

10 (calcitonin adj5 (precursor\$ or biomarker\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (3)

11 c-reactive protein\$.mp. (3523)

12 monospot\$.mp. (7)

13 (direct\$ adj5 antibod\$ adj5 stain\$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (20)

14 (Fluoresc\$ adj3 Antibod\$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (432)

15 (reverse transcriptas\$ adj5 (polymerase chain reaction\$ or pcr)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (1101)

16 ((singleplex\$ or multiplex\$) adj5 (polymerase chain reaction\$ or pcr)).mp. (876)

17 ((chest\$ or thorac\$) adj5 (radiogra\$ or x-ray\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (2126)

18 ((leukocyt\$ or white blood cell\$ or wbc) adj3 (test\$ or count\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (1434)

19 (blood adj2 (gas or gases) adj5 (analy\$ or test\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (336)

20 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 (12448)

21 (Decision\$ adj5 (make or makes or making or made)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (9219)

22 ((Health or medical\$) adj5 misus\$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (56)

23 (Attitud\$ adj5 (Health Personnel or doctor or physician or practitioner\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (186)

24 ((physician\$ or doctor\$ or practitioner\$) adj5 (practice\$ adj3 pattern\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (66)

25 ((drug\$ or pharmac\$) adj5 utiliz\$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (624)

## Appendix A. Search Strategies

- 26 (risk\$ adj3 assess\$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (5764)
- 27 (education or communication or strategy or strategies).ti,ab. (89869)
- 28 ((Professional\$ or doctor\$ or physician\$ or practitioner\$) adj5 patient\$ adj5 (Relation\$ or interaction or request\$ or ask\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (677)
- 29 (guide\$ adj3 (adheren\$ or comply\$ or complian\$ or obey\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (580)
- 30 ((professional\$ or clinical\$) adj5 (competen\$ or skill\$ or abilit\$ or knowledg\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (2808)
- 31 ((inappropriat\$ or imprudent\$ or unreasonab\$ or unwis\$ or improper\$ or unnecessar\$ or useless\$ or incorrect\$ or worthless\$ or useles\$ or unneeded or gratuitous\$ or ineffect\$ or overus\$ or over-us\$) adj7 (prescri\$ or ((give or gives or giving or issue or issuing or provid\$) adj5 (antibiotic\$ or anti-biotic\$ or drug\$ or pharmac\$))).mp. (254)
- 32 ((appropriat\$ or judicious\$ or judge\$ or judging or wise\$ or prudent\$ or sensible or reasonabl\$ or proper\$ or necessar\$ or useful\$ or correct\$ or worthwhile\$ or needed or effectiv\$ or delay\$ or postpon\$) adj7 (prescri\$ or ((give or gives or giving or issue or issuing or provid\$) adj5 (antibiotic\$ or anti-biotic\$ or drug\$ or pharmac\$))).mp. (1132)
- 33 ((critical\$ or clinical\$) adj3 (path or paths or pathway\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (793)
- 34 ((antibiotic\$ or anti-biotic\$ or anti-microb\$ or antimicrob\$) adj3 steward\$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (197)
- 35 (audit\$ or feedback or adher\$ or complian\$ or train\$ or educat\$ or instruct\$ or teach\$ or taught\$ or learn\$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (103446)
- 36 ((system\$ or computer\$ or electronic\$) adj3 (remind\$ or alert\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (228)
- 37 ((econom\$ or financ\$ or dollar\$ or cash or money or physician\$ or provider\$ or doctor\$ or clinician\$ or practitioner\$ or nurse\$) adj3 (incentiv\$ or reimburs\$)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (445)
- 38 ((worker\$ or job or jobs or workplace\$ or employe\$ or student\$ or school\$ or daycare or day care or pupil\$ or child\$ or infant\$ or baby or babies or toddler\$) adj5 ((keep\$ or stay\$ or remain\$) adj3 (home or away))).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (9)
- 39 ((return\$ or (com\$ adj back)) adj5 (work\$ or job or jobs or school\$ or class or daycare or day-care)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword

## Appendix A. Search Strategies

heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (743)

40 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 (177443)

41 3 and 4 and 20 (14)

42 3 and 4 and 40 (22)

43 3 and 20 and 40 (14)

44 41 or 42 or 43 (44)

<sup>1</sup> We also ran the Medline search strategy in Scopus on November 4, 2014 in order to identify relevant studies published in EMBASE

# Appendix B. Included Studies

## Primary and Companion Studies

1. Alder SC, Trunnell EP, White Jr GL, et al. Reducing Parental Demand for Antibiotics by Promoting Communication Skills. *Am J Health Educ.* 2005;36(3):132-9.
2. Altiner A, Brockmann S, Sielk M, et al. Reducing antibiotic prescriptions for acute cough by motivating GPs to change their attitudes to communication and empowering patients: a cluster-randomized intervention study. *J Antimicrob Chemother.* 2007 Sep;60(3):638-44. PMID: 17626023.
3. Anderson JE, Morrell DC, Avery AJ, et al. Evaluation of a patient education manual. *Br Med J.* 1980 Oct 4;281(6245):924-6. PMID: 7000282.
4. Arroll B, Kenealy T, Kerse N. Do delayed prescriptions reduce the use of antibiotics for the common cold? A single-blind controlled trial. *J Fam Pract.* 2002 Apr;51(4):324-8. PMID: 11978254.
5. Ashe D, Patrick PA, Stempel MM, et al. Educational posters to reduce antibiotic use. *J Pediatr Health Care.* 2006 May-Jun;20(3):192-7. PMID: 16675380.
6. Baer G, Baumann P, Buettcher M, et al. Procalcitonin guidance to reduce antibiotic treatment of lower respiratory tract infection in children and adolescents (ProPAED): a randomized controlled trial. *PLoS ONE.* 2013;8(8):e68419. PMID: 23936304.
7. Bauchner H, Marchant CD, Bisbee A, et al. Effectiveness of Centers for Disease Control and Prevention recommendations for outcomes of acute otitis media. *Pediatrics.* 2006 Apr;117(4):1009-17. PMID: 16585294.
8. Bauchner H, Osganian S, Smith K, et al. Improving parent knowledge about antibiotics: a video intervention. *Pediatrics.* 2001 Oct;108(4):845-50. PMID: 11581434.
9. Bennett K, Haggard M, Churchill R, et al. Improving referrals for glue ear from primary care: are multiple interventions better than one alone? *J Health Serv Res Policy.* 2001 Jul;6(3):139-44. PMID: 11467270.
10. Bjerrum L, Cots JM, Llor C, et al. Effect of intervention promoting a reduction in antibiotic prescribing by improvement of diagnostic procedures: a prospective, before and after study in general practice. *Eur J Clin Pharmacol.* 2006 Nov;62(11):913-8. PMID: 16967300.
11. Bjerrum L, Gahrn-Hansen B, Munck AP. C-reactive protein measurement in general practice may lead to lower antibiotic prescribing for sinusitis. *Br J Gen Pract.* 2004 Sep;54(506):659-62. PMID: 15353050.
12. Bjerrum L, Munck A, Gahrn-Hansen B, et al. Health Alliance for prudent antibiotic prescribing in patients with respiratory tract infections (HAPPY AUDIT) -impact of a non-randomised multifaceted intervention programme. *BMC Fam Pract.* 2011;12:52. PMID: 21689406.
13. Blaschke AJ, Shapiro DJ, Pavia AT, et al. A National Study of the Impact of Rapid Influenza Testing on Clinical Care in the Emergency Department. *J Pediatric Infect Dis Soc.* 2014;3(2):112-8. PMID: 24872879.
14. Bonner AB, Monroe KW, Talley LI, et al. Impact of the rapid diagnosis of influenza on physician decision-making and patient management in the pediatric emergency department: results of a randomized, prospective, controlled trial. *Pediatrics.* 2003 Aug;112(2):363-7. PMID: 12897288.
15. Bourgeois FC, Linder J, Johnson SA, et al. Impact of a computerized template on antibiotic prescribing for acute respiratory infections in children and adolescents. *Clin Pediatr (Phila).* 2010 Oct;49(10):976-83. PMID: 20724348.

## Appendix B. Included Studies

16. Briel M, Langewitz W, Tschudi P, et al. Communication training and antibiotic use in acute respiratory tract infections. A cluster randomised controlled trial in general practice. *Swiss Med Wkly*. 2006 Apr 15;136(15-16):241-7. PMID: 16708309.
17. Briel M, Schuetz P, Mueller B, et al. Procalcitonin-guided antibiotic use vs a standard approach for acute respiratory tract infections in primary care. *Arch Intern Med*. 2008 Oct 13;168(18):2000-7; discussion 7-8. PMID: 18852401.
18. Brittain-Long R, Westin J, Olofsson S, et al. Access to a polymerase chain reaction assay method targeting 13 respiratory viruses can reduce antibiotics: a randomised, controlled trial. *BMC Med*. 2011;9:44. PMID: 21521505.
19. Burkhardt O, Ewig S, Haagen U, et al. Procalcitonin guidance and reduction of antibiotic use in acute respiratory tract infection. *Eur Respir J*. 2010 Sep;36(3):601-7. PMID: 20185423.
20. Bush PJ, Rabin DL, Spector KK. Evaluation of a drug therapy protocol in an HMO. *Med Care*. 1979 Jun;17(6):566-77. PMID: 449432.
21. Cals JWL, Ament AJHA, Hood K, et al. C-reactive protein point of care testing and physician communication skills training for lower respiratory tract infections in general practice: economic evaluation of a cluster randomized trial. *J Eval Clin Pract*. 2011 Dec;17(6):1059-69. PMID: 20666881.
22. Cals JWL, Butler CC, Hopstaken RM, et al. Effect of point of care testing for C reactive protein and training in communication skills on antibiotic use in lower respiratory tract infections: cluster randomised trial. *BMJ*. 2009;338:b1374. PMID: 19416992.
23. Cals JWL, de Bock L, Beckers P-JHW, et al. Enhanced communication skills and C-reactive protein point-of-care testing for respiratory tract infection: 3.5-year follow-up of a cluster randomized trial. *Ann Fam Med*. 2013 Mar-Apr;11(2):157-64. PMID: 23508603.
24. Cals JWL, Schot MJC, de Jong SAM, et al. Point-of-care C-reactive protein testing and antibiotic prescribing for respiratory tract infections: a randomized controlled trial. *Ann Fam Med*. 2010 Mar-Apr;8(2):124-33. PMID: 20212299.
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### Protocols for Studies with No Published Results

1. de la Poza Abad M, Mas Dalmau G, Moreno Bakedano M, et al. Rationale, design and organization of the delayed antibiotic prescription (DAP) trial: a randomized controlled trial of the efficacy and safety of delayed antibiotic prescribing strategies in the non-complicated acute respiratory tract infections in general practice. *BMC Fam Pract*. 2013;14:63. PMID: 23682979.

## Appendix C. Excluded Studies

The following full text articles were reviewed for inclusion but failed to meet inclusion criteria for reasons specified below.

1: Ineligible population, 2: Ineligible intervention, 3: Ineligible comparator, 4: Ineligible outcome, 5: Ineligible setting (e.g. inpatient), 6: Ineligible study design (e.g. case report, qualitative methods), 7: Ineligible publication type (e.g. editorial letter, narrative review, etc.), 8: Outdated or ineligible systematic review, 9: Non-English language studies with English abstracts, 10: Observational studies with inadequate control for confounding and/or temporal trends.

Study	Exclusion code
1. Aagaard EM, Gonzales R, Camargo CA, Jr., et al. Physician champions are key to improving antibiotic prescribing quality. <i>Jt Comm J Qual Patient Saf.</i> 2010 Mar;36(3):109-16. PMID: 20235412.	4
2. Ackerman SL, Gonzales R, Stahl MS, et al. One size does not fit all: evaluating an intervention to reduce antibiotic prescribing for acute bronchitis. <i>BMC Health Serv Res.</i> 2013;13:462. PMID: 24188573.	6
3. Afghani B, Ngo T, Leu S-Y, et al. The effect of an interventional program on adherence to the american academy of pediatrics guidelines for palivizumab prophylaxis. <i>Pediatr Infect Dis J.</i> 2006 Nov;25(11):1019-24. PMID: 17072124.	3
4. Agnew J, Taaffe M, Darker C, et al. Delayed prescribing of antibiotics for respiratory tract infections: use of information leaflets. <i>Ir Med J.</i> 2013 Sep;106(8):243-4. PMID: 24282895.	6
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Study	Exclusion code
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PMID: 20416034.	
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55. Diederichsen HZ, Skamling M, Diederichsen A, et al. [A randomized controlled trial of the use of CRP rapid test as a guide to treatment of respiratory infections	9

## Appendix C. Excluded Studies

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62. Edwards M, Dennison J, Sedgwick P. Patients' responses to delayed antibiotic prescription for acute upper respiratory tract infections. <i>Br J Gen Pract.</i> 2003 Nov;53(496):845-50. PMID: 14702903.	10
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64. Eisenhut M. Use of procalcitonin measurement to identify bacterial co-infection in patients with H1N1 influenza. <i>Acta Paediatr.</i> 2010 Apr;99(4):487-8. PMID: 20064131.	5
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70. Fendrick AM, Saint S, Brook I, et al. Diagnosis and treatment of upper respiratory tract infections in the primary care setting. <i>Clin Ther.</i> 2001 Oct;23(10):1683-706. PMID: 11726004.	5
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Study	Exclusion code
intervention on caregiver knowledge of nonurgent pediatric complaints and on child health services utilization. <i>Pediatr Emerg Care</i> . 2013 Mar;29(3):331-6. PMID: 23426249.	
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84. Hersberger KE, Botomino A, Sarkar R, et al. Prescribed medications and pharmacy interventions for acute respiratory tract infections in Swiss primary care. <i>J Clin Pharm Ther</i> . 2009 Aug;34(4):387-95. PMID: 19583671.	4
85. Hickman DE, Stebbins MR, Hanak JR, et al. Pharmacy-based intervention to reduce antibiotic use for acute bronchitis. <i>Ann Pharmacother</i> . 2003 Feb;37(2):187-91. PMID: 12549944.	10

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Study	Exclusion code
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87. Hochreiter M, Kohler T, Schweiger AM, et al. Procalcitonin to guide duration of antibiotic therapy in intensive care patients: a randomized prospective controlled trial. <i>Crit Care</i> . 2009;13(3):R83. PMID: 19493352.	1
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89. Hong SY, Taur Y, Jordan MR, et al. Antimicrobial prescribing in the USA for adult acute pharyngitis in relation to treatment guidelines. <i>J Eval Clin Pract</i> . 2011 Dec;17(6):1176-83. PMID: 20586844.	2
90. Hopstaken RM, Muris JW, Knottnerus JA, et al. Contributions of symptoms, signs, erythrocyte sedimentation rate, and C-reactive protein to a diagnosis of pneumonia in acute lower respiratory tract infection. <i>Br J Gen Pract</i> . 2003 May;53(490):358-64. PMID: 12830562.	2
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92. Hsueh PR, Shyr JM, Wu JJ. Changes in macrolide resistance among respiratory pathogens after decreased erythromycin consumption in Taiwan. <i>Clin Microbiol Infect</i> . 2006 Mar;12(3):296-8. PMID: 16451421.	2
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94. Huang Y, Chen R, Wu T, et al. Association between point-of-care CRP testing and antibiotic prescribing in respiratory tract infections: a systematic review and meta-analysis of primary care studies. <i>Br J Gen Pract</i> . 2013 Nov;63(616):e787-94. PMID: 24267862.	8
95. Hueston WJ, Hopper JE, Dacus EN, et al. Why are antibiotics prescribed for patients with acute bronchitis? A postintervention analysis. <i>J Am Board Fam Pract</i> . 2000 Nov-Dec;13(6):398-402. PMID: 11117335.	6
96. Hutchinson JM, Jelinski S, Hefferton D, et al. Role of diagnostic labeling in antibiotic prescription. <i>Can Fam Physician</i> . 2001 Jun;47:1217-24. PMID: 11421050.	6
97. Ilett KF, Johnson S, Greenhill G, et al. Modification of general practitioner prescribing of antibiotics by use of a therapeutics adviser (academic detailer). <i>Br J Clin Pharmacol</i> . 2000 Feb;49(2):168-73. PMID: 10671912.	1
98. Irurzun C, Gonzalez M, Recondo M, et al. [Effectiveness of the implementation of a clinical program (CP) for the management of acute pharyngitis in adults].	9

## Appendix C. Excluded Studies

Study	Exclusion code
Aten Primaria. 2005 Jan;35(1):22-9. PMID: 15691451.	
99. Jakobsen KA, Melbye H, Kelly MJ, et al. Influence of CRP testing and clinical findings on antibiotic prescribing in adults presenting with acute cough in primary care. <i>Scand J Prim Health Care</i> . 2010 Dec;28(4):229-36. PMID: 20704523.	10
100. Jenkins TC, Irwin A, Coombs L, et al. Effects of clinical pathways for common outpatient infections on antibiotic prescribing. <i>Am J Med</i> . 2013 Apr;126(4):327-35.e12. PMID: 23507206.	1
101. Joshi A, Perin DP, Gehle A, et al. Feasibility of using C-reactive protein for point-of-care testing. <i>Technol Health Care</i> . 2013;21(3):233-40. PMID: 23792796.	6
102. Kavanagh KE, O'Shea E, Halloran R, et al. A pilot study of the use of near-patient C-Reactive Protein testing in the treatment of adult respiratory tract infections in one Irish general practice. <i>BMC Fam Pract</i> . 2011;12:93. PMID: 21880122.	6
103. Kelley M, Massing MW, Young J, et al. Feasibility of a primary care intervention to decrease oral antibiotics for acute upper respiratory tract infections: A pilot study. <i>N C Med J</i> . 2006 Jul-Aug;67(4):249-54. PMID: 17066652.	10
104. Kinney WC. Rhinosinusitis treatment protocol: changing provider habits in primary care. <i>Otolaryngol Head Neck Surg</i> . 2002 Jun;126(6):614-22. PMID: 12087327.	3
105. Kristoffersen KB, Sogaard OS, Wejse C, et al. Antibiotic treatment interruption of suspected lower respiratory tract infections based on a single procalcitonin measurement at hospital admission--a randomized trial. <i>Clin Microbiol Infect</i> . 2009 May;15(5):481-7. PMID: 19416298.	1
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108. Leeman-Castillo BA, Corbett KK, Aagaard EM, et al. Acceptability of a bilingual interactive computerized educational module in a poor, medically underserved patient population. <i>J Health Commun</i> . 2007 Jan-Feb;12(1):77-94. PMID: 17365350.	4
109. Li H, Luo Y-F, Blackwell TS, et al. Meta-analysis and systematic review of procalcitonin-guided therapy in respiratory tract infections. <i>Antimicrob Agents Chemother</i> . 2011 Dec;55(12):5900-6. PMID: 21947386.	1
110. Linder J, Schnipper JL, Volk LA, et al. Clinical decision support to improve antibiotic prescribing for acute respiratory infections: results of a pilot study. <i>AMIA Annu Symp Proc</i> . 2007;Annual Symposium Proceedings/AMIA Symposium.:468-72. PMID: 18693880.	10
111. Little P. Delayed prescribing of antibiotics for upper respiratory tract	5

## Appendix C. Excluded Studies

Study	Exclusion code
infection.[Erratum appears in BMJ. 2005 Sep 17;331(7517):622]. BMJ. 2005 Aug 6;331(7512):301-2. PMID: 16081428.	
112. Liu F-C, Chen P-Y, Huang F-L, et al. Rapid diagnosis of Mycoplasma pneumoniae infection in children by polymerase chain reaction. J Microbiol Immunol Infect. 2007 Dec;40(6):507-12. PMID: 18087631.	4
113. Llor C, Hernandez S, Cots JM, et al. [Physicians with access to point-of-care tests significantly reduce the antibiotic prescription for common cold]. Rev Esp Quimioter. 2013 Mar;26(1):12-20. PMID: 23546457.	9
114. Long W, Deng X, Zhang Y, et al. Procalcitonin guidance for reduction of antibiotic use in low-risk outpatients with community-acquired pneumonia. Zhonghua nei ke za zhi [Chinese journal of internal medicine]. 2009;48(3):216-9.	9
115. Long W, Deng X, Zhang Y, et al. Procalcitonin guidance for reduction of antibiotic use in low-risk outpatients with community-acquired pneumonia. Respirology. 2011 Jul;16(5):819-24. PMID: 21507143.	1
116. Long W, Deng X-Q, Tang J-G, et al. [The value of serum procalcitonin in treatment of community acquired pneumonia in outpatient]. Chung Hua Nei Ko Tsa Chih. 2009 Mar;48(3):216-9. PMID: 19576090.	1
117. Lutters M, Harbarth S, Janssens J-P, et al. Effect of a comprehensive, multidisciplinary, educational program on the use of antibiotics in a geriatric university hospital. J Am Geriatr Soc. 2004 Jan;52(1):112-6. PMID: 14687324.	4
118. Macnamara J, Harrington P, Walsh M, et al. Antibiotics for sore throat: impact of feedback to patients on the probability of bacterial infection. Ir Med J. 2000 Oct;93(7):211-2. PMID: 11142957.	6
119. Madaras-Kelly KJ, Hannah EL, Bateman K, et al. Experience with a clinical decision support system in community pharmacies to recommend narrow-spectrum antimicrobials, nonantimicrobial prescriptions, and OTC products to decrease broad-spectrum antimicrobial use. J Manage Care Pharm. 2006 Jun;12(5):390-7. PMID: 16792446.	10
120. Madle G, Kostkova P, Mani-Saada J, et al. Changing public attitudes to antibiotic prescribing: can the internet help? Inform Prim Care. 2004;12(1):19-26. PMID: 15140349.	6
121. Madridejos-Mora R, Amado-Guirado E, Pérez-Rodríguez MT. Effectiveness of the combination of feedback and educational recommendations for improving drug prescription in general practice. Med Care. 2004 Jul;42(7):643-8. PMID: 15213488.	6
122. Mangione-Smith R, Elliott MN, McDonald L, et al. An observational study of antibiotic prescribing behavior and the Hawthorne effect. Health Serv Res. 2002 Dec;37(6):1603-23. PMID: 12546288.	6
123. Manzano S, Bailey B, Girodias JB, et al. Impact of procalcitonin on the management of children aged 1 to 36 months presenting with fever without source: a randomized controlled trial. Am J Emerg Med. 2010 Jul;28(6):647-53. PMID: 20637377.	4
124. Marchetti F, Ronfani L, Nibali SC, et al. Delayed prescription may reduce the use of antibiotics for acute otitis media: a prospective observational study in	4

## Appendix C. Excluded Studies

Study	Exclusion code
primary care. Arch Pediatr Adolesc Med. 2005 Jul;159(7):679-84. PMID: 15997003.	
125. Marshall D, Gough J, Grootendorst P, et al. Impact of administrative restrictions on antibiotic use and expenditure in Ontario: time series analysis. J Health Serv Res Pol. 2006 Jan;11(1):13-20. PMID: 16378528.	6
126. Martens JD, van der Weijden T, Severens JL, et al. The effect of computer reminders on GPs' prescribing behaviour: a cluster-randomised trial. Int J Med Inform. 2007 Dec;76 Suppl 3:S403-16. PMID: 17569575.	6
127. Martens JD, Werkhoven MJ, Severens JL, et al. Effects of a behaviour independent financial incentive on prescribing behaviour of general practitioners. J Eval Clin Pract. 2007 Jun;13(3):369-73. PMID: 17518801.	6
128. Martens JD, Winkens RA, van der Weijden T, et al. Does a joint development and dissemination of multidisciplinary guidelines improve prescribing behaviour: a pre/post study with concurrent control group and a randomised trial. BMC Health Serv Res. 2006;6:145. PMID: 17081285.	6
129. Martin CL, Njike VY, Katz DL. Back-up antibiotic prescriptions could reduce unnecessary antibiotic use in rhinosinusitis. J Clin Epidemiol. 2004 Apr;57(4):429-34. PMID: 15135847.	6
130. McIsaac WJ, Goel V, To T, et al. The validity of a sore throat score in family practice. CMAJ. 2000 Oct 3;163(7):811-5. PMID: 11033707.	6
131. McIsaac WJ, Kellner JD, Aufricht P, et al. Empirical validation of guidelines for the management of pharyngitis in children and adults. JAMA. 2004 Apr 7;291(13):1587-95. PMID: 15069046.	2
132. Merenstein D, Diener-West M, Krist A, et al. An assessment of the shared-decision model in parents of children with acute otitis media. Pediatrics. 2005 Dec;116(6):1267-75. PMID: 16322146.	6
133. Molstad S, Erntell M, Hanberger H, et al. Sustained reduction of antibiotic use and low bacterial resistance: 10-year follow-up of the Swedish Strama programme. Lancet Infect Dis. 2008 Feb;8(2):125-32. PMID: 18222163.	6
134. Moreno L, Krishnan JA, Duran P, et al. Development and validation of a clinical prediction rule to distinguish bacterial from viral pneumonia in children.[Erratum appears in Pediatr Pulmonol. 2006 May;41(5):494]. Pediatr Pulmonol. 2006 Apr;41(4):331-7. PMID: 16493666.	1
135. Nakhoul GN, Hickner J. Management of adults with acute streptococcal pharyngitis: minimal value for backup strep testing and overuse of antibiotics. J Gen Intern Med. 2013 Jun;28(6):830-4. PMID: 23054930.	6
136. Naughton C, Feely J, Bennett K. A RCT evaluating the effectiveness and cost-effectiveness of academic detailing versus postal prescribing feedback in changing GP antibiotic prescribing. J Eval Clin Pract. 2009 Oct;15(5):807-12. PMID: 19811593.	6
137. Neumark T, Brudin L, Molstad S. Use of rapid diagnostic tests and choice of antibiotics in respiratory tract infections in primary healthcare--a 6-y follow-up study. Scand J Infect Dis. 2010;42(2):90-6. PMID: 19902992.	6
138. Nitsch-Osuch A, Stefanska I, Kuchar E, et al. Influence of rapid influenza test on clinical management of children younger than five with febrile respiratory	10

## Appendix C. Excluded Studies

Study	Exclusion code
tract infections. <i>Adv Exp Med Biol.</i> 2013;755:237-41. PMID: 22826072.	
139. Nobre V, Harbarth S, Graf J-D, et al. Use of Procalcitonin to Shorten Antibiotic Treatment Duration in Septic Patients. <i>Am J Respir Crit Care Med.</i> 2008;177(5):498-505. PMID: 18096708.	1
140. Noyola DE, Demmler GJ. Effect of rapid diagnosis on management of influenza A infections. <i>Pediatr Infect Dis J.</i> 2000 Apr;19(4):303-7. PMID: 10783019.	10
141. Obua C, Ogwal-Okeng JW, Waako P, et al. Impact of an educational intervention to improve prescribing by private physicians in Uganda. <i>East Afr Med J.</i> 2004 Feb;Suppl:S17-24. PMID: 15125112.	3
142. Oppong R, Jit M, Smith RD, et al. Cost-effectiveness of point-of-care C-reactive protein testing to inform antibiotic prescribing decisions. <i>Br J Gen Pract.</i> 2013 Jul;63(612):e465-71. PMID: 23834883.	6
143. Pajot M, Asseray N, Leux C, et al. [Use of rapid diagnostic tests of tonsillitis in medical practice. Survey conducted from November 2006 to January 2007 in Pays de la Loire (France)]. <i>Presse Med.</i> 2010 Apr;39(4):e77-85. PMID: 19781893.	9
144. Palla AH, Khan RA, Gilani AH, et al. Over prescription of antibiotics for adult pharyngitis is prevalent in developing countries but can be reduced using McIsaac modification of Centor scores: a cross-sectional study. <i>BMC polm.</i> 2012;12:70. PMID: 23176084.	2
145. Papaevangelou V, Rousounides A, Hadjipanagis A, et al. Decrease of antibiotic consumption in children with upper respiratory tract infections after implementation of an intervention program in Cyprus. <i>Antimicrob Agents Chemother.</i> 2012 Mar;56(3):1658-61. PMID: 22155839.	10
146. Parsons S, Morrow S, Underwood M. Did local enhancement of a national campaign to reduce high antibiotic prescribing affect public attitudes and prescribing rates? <i>Eur J Gen Pract.</i> 2004 Mar;10(1):18-23. PMID: 15060477.	10
147. Patel SJ, Larson EL, Kubin CJ, et al. A review of antimicrobial control strategies in hospitalized and ambulatory pediatric populations. <i>Pediatr Infect Dis J.</i> 2007 Jun;26(6):531-7. PMID: 17529873.	8
148. Pepper C, Lo S, Toma A. Prospective study of the risk of not using prophylactic antibiotics in nasal packing for epistaxis. <i>J Laryngol Otol.</i> 2012 Mar;126(3):257-9. PMID: 22214602.	1
149. Petrozzino JJ, Smith C, Atkinson MJ. Rapid diagnostic testing for seasonal influenza: an evidence-based review and comparison with unaided clinical diagnosis. <i>J Emerg Med.</i> 2010 Oct;39(4):476-90.e1. PMID: 20227846.	6
150. Phillips TG, Hickner J. Calling acute bronchitis a chest cold may improve patient satisfaction with appropriate antibiotic use. <i>J Am Board Fam Pract.</i> 2005 Nov-Dec;18(6):459-63. PMID: 16322409.	6
151. Pichichero ME, Green JL, Francis AB, et al. Outcomes after judicious antibiotic use for respiratory tract infections seen in a private pediatric practice. <i>Pediatrics.</i> 2000 Apr;105(4 Pt 1):753-9. PMID: 10742316.	6
152. Pierron S, Haas H, Berlioz M, et al. [Impact of rapid influenza test during influenza epidemic in all febrile children less than 6 years old in a pediatric	9

## Appendix C. Excluded Studies

Study	Exclusion code
emergency department]. Arch Pediatr. 2008 Aug;15(8):1283-8. PMID: 18586472.	
153. Pockett CR, Thompson GC. Adherence of families to a group a streptococcal pharyngitis protocol used in a pediatric emergency department. Pediatr Emerg Care. 2011 May;27(5):374-8. PMID: 21494166.	4
154. Price EL, Mackenzie TD, Metlay JP, et al. A computerized education module improves patient knowledge and attitudes about appropriate antibiotic use for acute respiratory tract infections. Patient Educ Couns. 2011 Dec;85(3):493-8. PMID: 21392929.	6
155. Pulcini C, Pauvif L, Paraponaris A, et al. Perceptions and attitudes of French general practitioners towards rapid antigen diagnostic tests in acute pharyngitis using a randomized case vignette study. J Antimicrob Chemother. 2012 Jun;67(6):1540-6. PMID: 22398648.	6
156. Purcell K, Fergie J. Effect of an educational program on the treatment of RSV lower-respiratory-tract infection. Am J Health-Syst Pharm. 2003 Apr 15;60(8):759-67. PMID: 12749162.	1
157. Raebel MA. Interventions to improve treatment of respiratory infections in ambulatory managed-care patients. Ann Pharmacother. 2005 Apr;39(4):699-705. PMID: 15741412.	7
158. Rausch S, Flammang M, Haas N, et al. C-reactive protein to initiate or withhold antibiotics in acute respiratory tract infections in adults, in primary care: review. Bull Soc Sci Med Grand Duche Luxemb. 2009(1):79-87. PMID: 19514177.	4
159. Rautakorpi U-M, Huikko S, Honkanen P, et al. The Antimicrobial Treatment Strategies (MIKSTRA) program: a 5-year follow-up of infection-specific antibiotic use in primary health care and the effect of implementation of treatment guidelines. Clin Infect Dis. 2006 May 1;42(9):1221-30. PMID: 16586379.	6
160. Redmond NM, Davies R, Christensen H, et al. The TARGET cohort study protocol: a prospective primary care cohort study to derive and validate a clinical prediction rule to improve the targeting of antibiotics in children with respiratory tract illnesses. BMC Health Serv Res. 2013;13:322. PMID: 23958109.	6
161. Rollins G. Blood test may lower antibiotic usage in lower respiratory tract infections. Rep Med Guidel Outcomes Res. 2004 Mar 19;15(6):1. PMID: 15040383.	7
162. Roth S, Gonzales R, Harding-Anderer T, et al. Unintended consequences of a quality measure for acute bronchitis. Am J Manag Care. 2012 Jun;18(6):e217-24. PMID: 22775073.	6
163. Rovers MM, Balemans WAF, Sanders EAM, et al. Persistence of upper respiratory tract infections in a cohort followed from childhood to adulthood. Fam Pract. 2006 Jun;23(3):286-90. PMID: 16517546.	4
164. Rubin MA, Bateman K, Donnelly S, et al. Use of a personal digital assistant for managing antibiotic prescribing for outpatient respiratory tract infections in rural communities. J Am Med Inform Assoc. 2006 Nov-Dec;13(6):627-34. PMID:	6

## Appendix C. Excluded Studies

Study	Exclusion code
16929045.	
165. Rudmik L, Hoy M, Schlosser RJ, et al. Topical therapies in the management of chronic rhinosinusitis: an evidence-based review with recommendations. <i>Int Forum Allergy Rhinol</i> . 2013 Apr;3(4):281-98. PMID: 23044832.	3
166. Sabuncu E, David J, Bernede-Bauduin C, et al. Significant reduction of antibiotic use in the community after a nationwide campaign in France, 2002-2007. <i>PLoS Med</i> . 2009 Jun 2;6(6):e1000084. PMID: 19492093.	10
167. Sahini L, Tempczyk-Russell A, Agarwal R. Large-scale sequence analysis of hemagglutinin of influenza A virus identifies conserved regions suitable for targeting an anti-viral response. <i>PLoS ONE</i> . 2010;5(2):e9268. PMID: 20174650.	3
168. Sahlan S, Wollny A, Brockmann S, et al. Reducing unnecessary prescriptions of antibiotics for acute cough: adaptation of a leaflet aimed at Turkish immigrants in Germany. <i>BMC Fam Pract</i> . 2008;9:57. PMID: 18847464.	4
169. Sakkou Z, Stripeli F, Papadopoulos NG, et al. Impact of influenza infection on children's hospital admissions during two seasons in Athens, Greece. <i>Vaccine</i> . 2011 Feb 1;29(6):1167-72. PMID: 21172380.	2
170. Salomon J, Sommet A, Bernede C, et al. Antibiotics for nasopharyngitis are associated with a lower risk of office-based physician visit for acute otitis media within 14 days for 3- to 6-year-old children. <i>J Eval Clin Pract</i> . 2008 Aug;14(4):595-9. PMID: 19126177.	2
171. Santos JC, Zhang L, Zogbi HE, et al. Pneumonia during the first two years of life does not increase risk of respiratory infections in preschool children. <i>J Infect</i> . 2010 Jul;61(1):44-8. PMID: 20394771.	2
172. Schapowal A, Berger D, Klein P, et al. Echinacea/sage or chlorhexidine/lidocaine for treating acute sore throats: a randomized double-blind trial. <i>Eur J Med Res</i> . 2009 Sep 1;14(9):406-12. PMID: 19748859.	2
173. Schmelzle J, Birtwhistle RV, Tan AKW. Acute otitis media in children with tympanostomy tubes. <i>Can Fam Physician</i> . 2008 Aug;54(8):1123-7. PMID: 18697973.	2
174. Schouten JA, Hulscher MEJL, Trap-Liefers J, et al. Tailored interventions to improve antibiotic use for lower respiratory tract infections in hospitals: a cluster-randomized, controlled trial. <i>Clin Infect Dis</i> . 2007 Apr 1;44(7):931-41. PMID: 17342644.	1
175. Schroeder S, Hochreiter M, Koehler T, et al. Procalcitonin (PCT)-guided algorithm reduces length of antibiotic treatment in surgical intensive care patients with severe sepsis: results of a prospective randomized study. <i>Langenbecks Arch Surg</i> . 2009 Mar;394(2):221-6. PMID: 19034493.	1
176. Schuetz P, Batschwaroff M, Dusemund F, et al. Effectiveness of a procalcitonin algorithm to guide antibiotic therapy in respiratory tract infections outside of study conditions: a post-study survey. <i>Eur J Clin Microbiol Infect Dis</i> . 2010 Mar;29(3):269-77. PMID: 20039090.	2
177. Schuetz P, Briel M, Christ-Crain M, et al. Procalcitonin to guide initiation and duration of antibiotic treatment in acute respiratory infections: an individual patient data meta-analysis. <i>Clin Infect Dis</i> . 2012 Sep;55(5):651-62. PMID: 22573847.	1

## Appendix C. Excluded Studies

Study	Exclusion code
178. Schuetz P, Briel M, Mueller B. Clinical outcomes associated with procalcitonin algorithms to guide antibiotic therapy in respiratory tract infections. <i>JAMA</i> . 2013 Feb 20;309(7):717-8. PMID: 23423417.	6
179. Schwartz DB, Adler A, Dasaro AP, et al. Improving adherence with antimicrobial therapy for respiratory tract infections: a discussion of directly observed therapy (DOT) and short-course therapies. <i>Am J Ther</i> . 2004 Jul-Aug;11 Suppl 1:S18-21. PMID: 23570158.	3
180. Scott JG, Cohen D, DiCicco-Bloom B, et al. Antibiotic use in acute respiratory infections and the ways patients pressure physicians for a prescription. <i>J Fam Pract</i> . 2001 Oct;50(10):853-8. PMID: 11674887.	2
181. Segador J, Gil-Guillen VF, Orozco D, et al. The effect of written information on adherence to antibiotic treatment in acute sore throat. <i>Int J Antimicrob Agents</i> . 2005 Jul;26(1):56-61. PMID: 15961289.	3
182. Sharma V, Dowd MD, Slaughter AJ, et al. Effect of rapid diagnosis of influenza virus type a on the emergency department management of febrile infants and toddlers. <i>Arch Pediatr Adolesc Med</i> . 2002 Jan;156(1):41-3. PMID: 11772189.	4
183. Siegel RM, Kiely M, Bien JP, et al. Treatment of otitis media with observation and a safety-net antibiotic prescription. <i>Pediatrics</i> . 2003 Sep;112(3 Pt 1):527-31. PMID: 12949278.	6
184. Siempos II, Michalopoulos A, Falagas ME. Treatment of acute bacterial exacerbations of chronic bronchitis. <i>Expert Opin Pharmacother</i> . 2009 May;10(7):1173-82. PMID: 19405791.	5
185. Sih TM, Bricks LF. Optimizing the management of the main acute infections in pediatric ORL: tonsillitis, sinusitis, otitis media. <i>Rev Bras Otorrinolaringol (Engl Ed)</i> . 2008 Sep-Oct;74(5):755-62. PMID: 19082359.	6
186. Silva B, Ferrada C, Santolaya ME. [Impact of an educational intervention on knowledge about appropriate use of antimicrobials in respiratory tract infections in adolescents]. <i>Rev</i> . 2012 Oct;29(5):499-503. PMID: 23282490.	9
187. Sintchenko V, Gilbert GL, Coiera E, et al. Treat or test first? Decision analysis of empirical antiviral treatment of influenza virus infection versus treatment based on rapid test results. <i>J Clin Virol</i> . 2002 Jul;25(1):15-21. PMID: 12126717.	4
188. Slinger R, Goldfarb D, Rajakumar D, et al. Rapid PCR detection of group A <i>Streptococcus</i> from flocced throat swabs: a retrospective clinical study. <i>Ann Clin Microbiol Antimicrob</i> . 2011;10:33. PMID: 21888649.	4
189. Smith GE, Smith S, Heatlie H, et al. What has happened to antimicrobial usage in primary care in the United Kingdom since the SMAC report? - description of trends in antimicrobial usage using the General Practice Research Database. <i>J Public Health (Oxf)</i> . 2004 Dec;26(4):359-64. PMID: 15598854.	10
190. Smith SM. Antibiotics for acute bronchitis. 2014;3.	3
191. Soler ZM, Oyer SL, Kern RC, et al. Antimicrobials and chronic rhinosinusitis with or without polyposis in adults: an evidenced-based review with recommendations. <i>Int Forum Allergy Rhinol</i> . 2013 Jan;3(1):31-47. PMID: 22736403.	2
192. Soni NJ, Samson DJ, Galaydick JL, et al. Procalcitonin-guided antibiotic	2

## Appendix C. Excluded Studies

Study	Exclusion code
therapy: a systematic review and meta-analysis. <i>J Hosp Med.</i> 2013 Sep;8(9):530-40. PMID: 23955852.	
193. Sonnad SS, Harrison RV, Standiford CJ, et al. Issues in the development, dissemination, and effect of an evidence-based guideline for managing sore throat in adults. <i>Jt Comm J Qual Improv.</i> 1999 Dec;25(12):630-40. PMID: 10605653.	6
194. South M, Royle J, Starr M. A simple intervention to improve hospital antibiotic prescribing. <i>Med J Aust.</i> 2003 Mar 3;178(5):207-9. PMID: 12603182.	4
195. Staykova T, Black PN, Chacko EE, et al. Prophylactic antibiotic therapy for chronic bronchitis. <i>Cochrane Database Syst Rev.</i> 2003(1):CD004105. PMID: 12535510.	2
196. Stebbins S, Cummings DAT, Stark JH, et al. Reduction in the incidence of influenza A but not influenza B associated with use of hand sanitizer and cough hygiene in schools: a randomized controlled trial. <i>Pediatr Infect Dis J.</i> 2011 Nov;30(11):921-6. PMID: 21691245.	2
197. Stein J, Louie J, Flanders S, et al. Performance characteristics of clinical diagnosis, a clinical decision rule, and a rapid influenza test in the detection of influenza infection in a community sample of adults. <i>Ann Emerg Med.</i> 2005 Nov;46(5):412-9. PMID: 16271670.	4
198. Steinhoff MC, Walker CF, Rimoin AW, et al. A clinical decision rule for management of streptococcal pharyngitis in low-resource settings. <i>Acta Paediatr.</i> 2005 Aug;94(8):1038-42. PMID: 16188846.	4
199. Steinman MA, Gonzales R, Linder JA, et al. Changing use of antibiotics in community-based outpatient practice, 1991-1999.[Summary for patients in <i>Ann Intern Med.</i> 2003 Apr 1;138(7):I24; PMID: 12667052]. <i>Ann Intern Med.</i> 2003 Apr 1;138(7):525-33. PMID: 12667022.	5
200. Stewart J, Pilla J, Dunn L. Pilot study for appropriate anti-infective community therapy. Effect of a guideline-based strategy to optimize use of antibiotics. <i>Can Fam Physician.</i> 2000 Apr;46:851-9. PMID: 10790817.	10
201. Stockwell MS, Catalozzi M, Meyer D, et al. Improving care of upper respiratory infections among Latino Early Head Start parents. <i>J Immigr Minor Health.</i> 2010 Dec;12(6):925-31. PMID: 20157849.	10
202. Stolz D, Christ-Crain M, Bingisser R, et al. Antibiotic treatment of exacerbations of COPD: a randomized, controlled trial comparing procalcitonin-guidance with standard therapy. <i>Chest.</i> 2007 Jan;131(1):9-19. PMID: 17218551.	1
203. Stolz D, Christ-Crain M, Gencay MM, et al. Diagnostic value of signs, symptoms and laboratory values in lower respiratory tract infection. <i>Swiss Med Wkly.</i> 2006 Jul 8;136(27-28):434-40. PMID: 16862463.	4
204. Stolz D, Smyrnios N, Eggimann P, et al. Procalcitonin for reduced antibiotic exposure in ventilator-associated pneumonia: a randomised study. <i>Eur Respir J.</i> 2009 Dec;34(6):1364-75. PMID: 19797133.	1
205. Sung L, Arroll J, Arroll B, et al. Antibiotic use for upper respiratory tract infections before and after a education campaign as reported by general practitioners in New Zealand. <i>N Z Med J.</i> 2006;119(1233):U1956. PMID: 16680173.	10

## Appendix C. Excluded Studies

Study	Exclusion code
206. Suntarattiwong P, Sojisirikul K, Sitaposa P, et al. Clinical and epidemiological characteristics of respiratory syncytial virus and influenza virus associated hospitalization in urban Thai infants. <i>J Med Assoc Thai</i> . 2011 Aug;94 Suppl 3:S164-71. PMID: 22043771.	6
207. Svoboda P, Kantorova I, Scheer P, et al. Can procalcitonin help us in timing of re-intervention in septic patients after multiple trauma or major surgery? <i>Hepatogastroenterology</i> . 2007 Mar;54(74):359-63. PMID: 17523274.	1
208. Tan BK, Chandra RK, Conley DB, et al. A randomized trial examining the effect of pretreatment point-of-care computed tomography imaging on the management of patients with chronic rhinosinusitis symptoms. <i>Int Forum Allergy Rhinol</i> . 2011 May-Jun;1(3):229-34. PMID: 22287379.	1
209. Teng CL, Achike FI, Phua KL, et al. Modifying antibiotic prescribing: the effectiveness of academic detailing plus information leaflet in a Malaysian primary care setting. <i>Med J Malaysia</i> . 2006 Aug;61(3):323-31. PMID: 17240584.	10
210. Thamlikitkul V, Apisitwittaya W. Implementation of clinical practice guidelines for upper respiratory infection in Thailand. <i>Int J Infect Dis</i> . 2004 Jan;8(1):47-51. PMID: 14690780.	10
211. Thibeault R, Gilca R, Cote S, et al. Antibiotic use in children is not influenced by the result of rapid antigen detection test for the respiratory syncytial virus. <i>J Clin Virol</i> . 2007 Jul;39(3):169-74. PMID: 17532258.	4
212. Thompson PL, Gilbert RE, Long PF, et al. Has UK guidance affected general practitioner antibiotic prescribing for otitis media in children? <i>J Public Health (Oxf)</i> . 2008 Dec;30(4):479-86. PMID: 18765405.	2
213. Thompson PL, Spyridis N, Sharland M, et al. Changes in clinical indications for community antibiotic prescribing for children in the UK from 1996 to 2006: will the new NICE prescribing guidance on upper respiratory tract infections just be ignored? <i>Arch Dis Child</i> . 2009 May;94(5):337-40. PMID: 19066174.	2
214. Todd J, Bertoch D, Dolan S. Use of a large national database for comparative evaluation of the effect of a bronchiolitis/viral pneumonia clinical care guideline on patient outcome and resource utilization. <i>Arch Pediatr Adolesc Med</i> . 2002 Nov;156(11):1086-90. PMID: 12413334.	1
215. Treebupachatsakul P, Tiengrim S, Thamlikitkul V. Upper respiratory tract infection in Thai adults: prevalence and prediction of bacterial causes, and effectiveness of using clinical practice guidelines. <i>J Med Assoc Thai</i> . 2006 Aug;89(8):1178-86. PMID: 17048427.	3
216. Tumwikirize WA, Ekwaru PJ, Mohammed K, et al. Impact of a face-to-face educational intervention on improving the management of acute respiratory infections in private pharmacies and drug shops in Uganda. <i>East Afr Med J</i> . 2004 Feb;Suppl:S25-32. PMID: 15125113.	3
217. Undeland DK, Kowalski TJ, Berth WL, et al. Appropriately prescribing antibiotics for patients with pharyngitis: a physician-based approach vs a nurse-only triage and treatment algorithm. <i>Mayo Clin Proc</i> . 2010 Nov;85(11):1011-5. PMID: 21037044.	6
218. van der Velden AW, Pijpers EJ, Kuyvenhoven MM, et al. Effectiveness of	6

## Appendix C. Excluded Studies

Study	Exclusion code
physician-targeted interventions to improve antibiotic use for respiratory tract infections. <i>Br J Gen Pract.</i> 2012 Dec;62(605):e801-7. PMID: 23211259.	
219. van Vugt SF, Broekhuizen BDL, Lammens C, et al. Use of serum C reactive protein and procalcitonin concentrations in addition to symptoms and signs to predict pneumonia in patients presenting to primary care with acute cough: diagnostic study. <i>BMJ.</i> 2013;346:f2450. PMID: 23633005.	4
220. Varonen H, Rautakorpi U-M, Nyberg S, et al. Implementing guidelines on acute maxillary sinusitis in general practice--a randomized controlled trial. <i>Fam Pract.</i> 2007 Apr;24(2):201-6. PMID: 17237494.	6
221. Venekamp RP, Rovers MM, Verheij TJM, et al. Treatment of acute rhinosinusitis: discrepancy between guideline recommendations and clinical practice. <i>Fam Pract.</i> 2012 Dec;29(6):706-12. PMID: 22389427.	2
222. Villasenor A, Arriaga MA, Eavey RD, et al. Educational outcomes of an otitis media workshop for primary care providers in Latin America. <i>Otolaryngol Head Neck Surg.</i> 1998 Mar;118(3 Pt 1):394-6. PMID: 9580113.	6
223. Vodicka TA, Thompson M, Lucas P, et al. Reducing antibiotic prescribing for children with respiratory tract infections in primary care: a systematic review. <i>Br J Gen Pract.</i> 2013 Jul;63(612):e445-54. PMID: 23834881.	8
224. Whyte Jt. A community health nursing approach to the problem of antibiotic over-prescribing. <i>J Community Health Nurs.</i> 2008 Jul-Sep;25(3):161-74. PMID: 18709577.	10
225. Wishaupt JO, Russcher A, Smeets LC, et al. Clinical impact of RT-PCR for pediatric acute respiratory infections: a controlled clinical trial. <i>Pediatrics.</i> 2011 Nov;128(5):e1113-20. PMID: 21987698.	3
226. Woolley SL, Bernstein JM, Davidson JA, et al. Sore throat in adults--does the introduction of a clinical scoring system improve the management of these patients in a secondary care setting? <i>J Laryngol Otol.</i> 2005 Jul;119(7):550-5. PMID: 16175981.	10
227. Xu M, Qin X, Astion ML, et al. Implementation of FilmArray Respiratory Viral Panel in a Core Laboratory Improves Testing Turnaround Time and Patient Care. <i>Am J Clin Pathol.</i> 2013 January 1, 2013;139(1):118-23. PMID: 23270907.	6
228. Zhang L, Huang J, Xu T, et al. [Procalcitonin-guided algorithms of antibiotic therapy in community-acquired lower respiratory tract infections: a systematic review and meta-analysis of randomized controlled trials]. <i>Chung Hua Chieh Ho Ho Hu Hsi Tsa Chih.</i> 2012 Apr;35(4):275-82. PMID: 22781200.	9
229. Zwar N, Henderson J, Britt H, et al. Influencing antibiotic prescribing by prescriber feedback and management guidelines: a 5-year follow-up. <i>Fam Pract.</i> 2002 Feb;19(1):12-7. PMID: 11818344.	10

# **Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials**

## **Quality (Risk of Bias) Assessment of Individual Studies**

### **Determination of Ratings**

Studies that had a serious flaw were rated poor in quality, studies that met all criteria were rated good in quality, and the remainder of the studies were rated fair in quality. As the fair quality category is broad, studies with this rating vary in their strengths and weaknesses. The results of some fair quality studies are likely to be valid, while others are only possibly valid. A poor quality study is not valid as the results are at least as likely to reflect flaws in the study design as a true difference between the compared interventions. A serious flaw is reflected by failure to meet combinations of items on the quality assessment checklist; for example, unclear randomization and allocation concealment methods combined with differences between randomized groups at baseline in potentially prognostic characteristics and either high attrition or lack of an intention to treat analysis. Quality assessments of studies included in this review are included in the following evidence tables.

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Alder, 2005 <sup>2</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Altiner, 2007 <sup>4</sup> Germany Patient N = 4,918 (2,215 vs. 2,703) Provider N = 58 (28 vs. 33) Practice N = Unclear	Inclusion: Acute cough; Age ≥ 16 years; Understands German; First clinic visit for a given episode of acute cough; No other episode of cough for previous 8 weeks. Exclusion: Chronic lung disease (e.g., asthma, COPD); Immunodeficiency; "Malignant diseases".	GPs from nine regions in North-Rhine and Westphalia-Lippe, Germany. All 2,036 GPs in these regions were invited to participate.	Type: Multifaceted (Education and Communication) Targets: Clinicians and patients Description (Clinician intervention): Peer-led educational intervention addressing common clinician misunderstandings about what patients expect and want with regard to antibiotics for acute cough. Also intended to improve clinician communication through "peers motivated GPs to explore patients' expectations and demands, elicit anxieties and expectations and to make antibiotic prescribing a subject in the consultation".  Description (Patient intervention): Leaflet and waiting room poster including: (1) evidence-based information about acute cough and antibiotics, (2) information about patients' role in misunderstandings about antibiotic prescriptions, and (3) message to not push for antibiotics and to decide on treatment together with doctor.

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Alder, 2005 <sup>2</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Altiner, 2007 <sup>4</sup> Germany Patient N = 4,918 (2,215 vs. 2,703) Provider N = 58 (28 vs. 33) Practice N = Unclear	Randomized control group physicians and patients seen by those physicians. Study was a cluster RCT, in which the control group physicians and their patients received no intervention.	Intervention group (n = 2215) vs. Control group (n= 2703) (Three subgroups each) Type of RTI (all patients): Acute cough Baseline (n = 1651, 753 vs. 898): Fever: 22.5% vs. 27.9%, p=0.31 Duration of cough before visit (days): 5.2 vs. 5.3, p=0.80 Severity of illness (range: 1 - 4): 2.1 vs. 2.2, p=0.13 When counting started for duration: NR 6 weeks (n = 1560, 675 vs. 885): Fever: 26.3% vs. 29.3%, p = 0.58 Duration of cough before visit (days): 5.4 vs. 4.8, p=0.13 Severity of illness (range: 1 - 4): 2.1 vs. 2.2, p=0.30 When counting started for duration: NR 12 months (n = 1707, 787 vs. 920): Fever: 43.5% vs. 46.6%, p=0.63 Duration of cough before visit (days): 4.1 vs. 4.4, p=0.34 Severity of illness (range: 1 - 4): 2.2 vs. 2.4, p=0.05 When counting started for duration: NR	Intervention group (n = 2215) vs. Control group (n= 2703) (Three subgroups each) Baseline (n= 1651, 753 vs. 898): Age (unclear if mean or median), y: 42.2 vs. 42.0, p=0.81 Female: 60.0% vs. 55.1%, p=0.20 Smoker: 32.6% vs. 34.9%, p=0.55 6 weeks (n = 1560, 675 vs. 885): Age (unclear if mean or median), y: 44.9 vs. 43.9, p=0.60 Female: 60.2% vs. 57.3%, p=0.41 Smoker: 28.8% vs. 33.2%, p=0.17 12 months (n = 1707, 787 vs. 920): Age (unclear if mean or median), y: 41.7 vs. 41.8, p=0.93 Female: 59.7% vs. 54.9%, p=0.22 Smoker: 29.5% vs. 31.2%, p=0.66 Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Alder, 2005 <sup>2</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Altiner, 2007 <sup>4</sup> Germany Patient N = 4,918 (2,215 vs. 2,703) Provider N = 58 (28 vs. 33) Practice N = Unclear	Intervention group (n = 28) vs. Control group (n = 33) Specialty: General practice (both groups) Number of years in practice: NR Type of clinic: General practice (both groups) Geographical region: North-Rhine/Westphalia-Lippe, Germany (both groups) Population served: General; high, medium and low population densities (both groups) Age and % female: Both groups comparable at all three time points	Time of year: Baseline: November 2003 - January 2004; 6-week: February 2004 - April 2004; 12-month: January - March 2005. Patterns of disease activity: NR Locally tailored: Peers use a semi-standardized dialogue script. System-level characteristics: NR Other: New German law (in effect on 1/1/2004) excluded OTC symptomatic meds from reimbursement when prescribed by physician. Prior to that, cost of OTC meds was reimbursed to patient if prescribed by physician.	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Alder, 2005 <sup>2</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Altiner, 2007 <sup>4</sup> Germany Patient N = 4,918 (2,215 vs. 2,703) Provider N = 58 (28 vs. 33) Practice N = Unclear	Percentage of patients prescribed antibiotic (Intervention group vs. control group): Baseline: 36.4% vs. 54.7% 6-week: 29.4% vs. 59.4% 12-month: 36.7% vs. 64.8% Unadjusted OR; 95% CI of antibiotic prescription at followup compared with baseline: Intervention Group: 6-week: OR=0.73; 95% CI, 0.59 to 0.88; p=0.002 12-month: OR=1.01; 95% CI, 0.84 to 1.22; p=0.931 Control group: 6-week: OR=1.22; 95% CI, 1.03 to 1.44; p=0.025 12-month: OR=1.53; 95% CI, 1.29 to 1.82, p < 0.001 Adjusted* OR; 95% CI of antibiotic prescription at followup compared with baseline: Intervention Group: 6-week: OR=0.58; 95% CI, 0.43 to 0.78; p< 0.001 12-month: OR=0.72; 95% CI, 0.54 to 0.97; p=0.028 Control group: 6-week: OR=1.52; 95% CI, 1.19 to 1.95; p=0.001 12-month: OR=1.31; 95% CI, 1.01 to 1.71 p=0.044  *Adjustment for patients' disease severity, average disease severity at practice, patients having fever, and frequency of fever in practice.	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Alder, 2005 <sup>2</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Altiner, 2007 <sup>4</sup> Germany Patient N = 4,918 (2,215 vs. 2,703) Provider N = 58 (28 vs. 33) Practice N = Unclear	NR	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Alder, 2005 <sup>2</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Altiner, 2007 <sup>4</sup> Germany Patient N = 4,918 (2,215 vs. 2,703) Provider N = 58 (28 vs. 33) Practice N = Unclear	NR	NR	The principal outcome was the rate of antibiotic prescription per acute cough at 6 weeks and at 12 months compared with baseline. While the same groups of clinicians were used for these analyses, the patients were different at each time period. Hence, it would be useful to have a statistical comparison of the patients seen by each group of clinicians between the time periods that were compared (i.e., comparison of intervention patients from each period; comparison of control patients from each period). The study only provided statistical comparisons between the intervention and control groups.

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Anderson, 1980 <sup>5</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Arroll, 2002 <sup>6</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Baer, 2013 <sup>8</sup> Switzerland Patient N = 337 Provider N = NR Practice N = 2 pediatric hospitals	All children and adolescents, 1 month to 18 years of age, presenting with LRTI to the emergency departments of two pediatric hospitals in Switzerland (Basel, Aarau) between 01/2009 and 02/2010 regardless of antibiotic treatment history	NR	Type: Clinical - POC: Procalcitonin Target: Clinicians Description: Intervention was procalcitonin (PCT) guided antibiotic treatment. Serum PCT measured by B.R.A.H.M.S. PCT sensitive Kryptor® rapid sensitive assay with functional sensitivity of 0.06 µg/L and a lower detection limit of 0.02 µg/L with an assay time of < 30 minutes. In the PCT intervention group, initiation, continuation, or termination of antibiotic treatment was strictly guided by PCT cut-off levels with the following decision categories: "definitely" (> 0.5 µg/L), "probably" (0.26-0.5 µg/L), "probably not" (0.1-0.25 µg/L), and "definitely not" (< 0.1 µg/L). Children 14 years of age or older, or care takers of children < 14 years of age, completed diary from day 1-14 on antibiotic intake, consumption or other medication, hospitalization, and symptoms. Questionnaire and visual analogue scale for self-assessment of impairment of overall daily activity thought attributable to LRTI was also distributed.

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Anderson, 1980 <sup>5</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Arroll, 2002 <sup>6</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Baer, 2013 <sup>8</sup> Switzerland Patient N = 337 Provider N = NR Practice N = 2 pediatric hospitals	Clinically guided standard care (control)	Type of RTI: non-CAP LRTI (36.2%) Types of Signs and Symptoms: Fever (100%), cough (99.7%), sputum production (41.8%), poor feeding (45.4%), pleuritic pain (28.2%), tachypnea (72.1%), dyspnea (64.4%), wheezing (30.0%), late inspiratory crackles (41.5%), reduced breathing sounds (32.3%) Duration of Signs and Symptoms: NR When counting started for duration: NR	Median Age: 2.8 years % female: 41.8% Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: 12.5% antibiotic pre-treatment

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Anderson, 1980 <sup>5</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Arroll, 2002 <sup>6</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Baer, 2013 <sup>8</sup> Switzerland Patient N = 337 Provider N = NR Practice N = 2 pediatric hospitals	Specialty: Pediatrics Number of years in practice: NR Type of clinic: Emergency department Geographical region: Basel and Aarau, Switzerland Population served: Children and adolescents	Time of year: January 2009 - February 2010 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: Study conducted at two pediatric hospitals	Appropriate use of antibiotics was determined using the following decision categories based on PCT cut-offs: "definitely" (> 0.5 µg/L), "probably" (0.26-0.5 µg/L), "probably not" (0.1-0.25 µg/L), and "definitely not" (< 0.1 µg/L)

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Anderson, 1980 <sup>5</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Arroll, 2002 <sup>6</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		
Baer, 2013 <sup>8</sup> Switzerland Patient N = 337 Provider N = NR Practice N = 2 pediatric hospitals	PCT Group (N=60) vs. Control (N=62) (Sub-group analyses)  Antibiotic prescription within 14 days of randomization (reported as N (%), rate difference; (95% CI, odds ratio; 95% CI): 27 (45) vs. 10 (17), 28; 95% CI, 12 to 43, OR=4.09; 95% CI, 1.80 to 9.93  Duration of antibiotic prescription (reported as mean days (medium (IQR)), mean difference; 95% CI): 2.4 (0 (0-5)) vs. 1.6 (0 (0-0)), 0.8 (-0.5, 2.0)  Patients with antibiotic treatment - Other LRTI (%): D 1: 30.0 vs. 8.3 D 3: 41.7 vs. 13.3 D 5: 33.3 vs. 15.0 D 7: 15.0 vs. 13.3 D 9: 6.7 vs. 11.7 D 11: 3.3 vs. 11.7 D 13: 1.7 vs. 6.7 > D 15: 0.0 vs. 1.7	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Anderson, 1980 <sup>5</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Arroll, 2002 <sup>6</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		
Baer, 2013 <sup>8</sup> Switzerland Patient N = 337 Provider N = NR Practice N = 2 pediatric hospitals	PCT Group (N=60) vs. Control (N=62) (Sub-group analyses)  Antibiotic side effects (reported as N (%), rate difference; 95% CI, odds ratio; 95% CI): 14 (26) vs. 6 (10), 16; 95% CI, 1 to 30, OR=3.03; 95% CI, 1.11 to 9.22  Duration of antibiotic side effects (reported as mean days (medium (IQR)), mean difference (95% CI)): 1.0 (0 (0-0.8)) vs. 0.5 (0 (0-0)), 0.5 (-0.2, 1.2)  Hospitalization (reported as N (%), rate difference; 95% CI, odds ratio; 95% CI): 37 (62) vs. 32 (53), 8; 95% CI, -9 to 25), OR=1.41; 95% CI, 0.68 to 2.93  Duration of hospitalization (reported as mean days (medium (IQR)), mean difference (95% CI)): 2.5 (2 (0-4)) vs. 2.3 (1 (0-5)), 0.3 (-0.8, 1.2)  Safety* (reported as N (%), rate difference; 95% CI, odds ratio; 95% CI): 15 (25) vs. 13 (22), 3; 95% CI, -12 to 18, OR=1.21; 95% CI, 0.52 to 2.85	NR

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Anderson, 1980 <sup>5</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Arroll, 2002 <sup>6</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Baer, 2013 <sup>8</sup> Switzerland Patient N = 337 Provider N = NR Practice N = 2 pediatric hospitals	NR	NR	* Safety includes any of the following entities: complications of LRTI, SAEs, or disease-specific failure

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> (1) Educational/Behavioral (2) Communication (3) Clinical (4) System-Level (5) Multifaceted <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Bauchner, 2001 <sup>9</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Bauchner, 2006 <sup>10</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Bennett, 2001 <sup>11</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Bonner, 2003 <sup>13</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Bourgeois, 2010 <sup>15</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Bauchner, 2001 <sup>9</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Bauchner, 2006 <sup>10</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Bennett, 2001 <sup>11</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Bonner, 2003 <sup>13</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Bourgeois, 2010 <sup>15</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Bauchner, 2001 <sup>9</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Bauchner, 2006 <sup>10</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Bennett, 2001 <sup>11</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Bonner, 2003 <sup>13</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Bourgeois, 2010 <sup>15</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Bauchner, 2001 <sup>9</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Bauchner, 2006 <sup>10</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Bennett, 2001 <sup>11</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)		
Bonner, 2003 <sup>13</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)		
Bourgeois, 2010 <sup>15</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Bauchner, 2001 <sup>9</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Bauchner, 2006 <sup>10</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Bennett, 2001 <sup>11</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)		
Bonner, 2003 <sup>13</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)		
Bourgeois, 2010 <sup>15</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Bauchner, 2001 <sup>9</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Bauchner, 2006 <sup>10</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Bennett, 2001 <sup>11</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Bonner, 2003 <sup>13</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Bourgeois, 2010 <sup>15</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Briel, 2006 <sup>17</sup> Switzerland Patient N = 837 (259 vs. 293 vs. 285) Provider N = 45 (15 vs. 15. vs. 15) Practice N = 45 (15 vs. 15. vs. 15)	Inclusion: New-onset (within previous 28 days) acute RTI ; Age ≥ 18 years; First consultation for common cold, rhinosinusitis, pharyngitis, exudative tonsillitis, laryngitis, otitis media, bronchitis, exacerbated COPD, or influenza. Exclusion: Pneumonia; Not fluent in German; IVDA; Psychiatric disorders; Not available for phone interviews; Not able to give written informed consent.	General practitioners in two cantons, Basel-Stadt and Aargau (where self-dispensation of drugs is not allowed). All 345 GPs in these regions were invited to participate. Only one physician per participating practice.	Type: Multifaceted (Education and Communication) Target: Physicians Description: One group (n = 15) received the "Limited intervention" and one group (n = 15) received the "Full intervention". Limited intervention (Education only): The investigators developed guidelines for treatment of acute RTIs, derived from evidence-based US-guidelines and adapted to local conditions. Guidelines training included distribution of guidelines as a booklet and presentation of guidelines to physicians in an interactive 2-hour seminar. Full intervention (Education and Communication training): In addition to the Guideline training described for the Limited intervention, physicians participated in a six-hour patient-centered communication seminar in small groups and received two hours of personal feedback by phone prior to the start of the trial. Training focused on teaching physicians "how to understand and modify patients' concepts and beliefs about the use of antibiotics for acute RTIs". Physicians were taught to practice elements of active listening, to respond to emotional cues, and to tailor information given to patients. They were also introduced to a model by Prochaska and DiClemente for identifying patients' attitudes and readiness for behavior change.
Briel, 2008 <sup>18</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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Briel, 2006 <sup>17</sup> Switzerland Patient N = 837 (259 vs. 293 vs. 285) Provider N = 45 (15 vs. 15. vs. 15) Practice N = 45 (15 vs. 15. vs. 15)	Non-randomized control group physicians and patients seen by those physicians. Study was a cluster RCT, in which the control group physicians and their patients received no intervention.	Full (n = 259) vs. Limited (n = 293) vs. Control (n = 285) Type of RTI (%): Common cold (40.9 vs. 37.5 vs. 31.9), Acute rhinosinusitis (12.7 vs. 22.5 vs. 18.6), Acute pharyngitis (7.3 vs. 8.9 vs. 15.1), Exudative tonsillitis (6.6 vs. 3.1 vs. 5.3), Acute laryngitis (2.7 vs. 1.7 vs. 3.2), Acute otitis media (2.3 vs. 2.4 vs. 1.4), Acute bronchitis (14.7 vs. 13.7 vs. 17.9), Influenza (11.2 vs. 7.9 vs. 6.0) Types of Signs and Symptoms: "Degree of discomfort" (1 - 10), median [IQR]: 5 [3] vs. 6 [3] vs. 6 [3] Duration of Signs and Symptoms (baseline): "Days with restricted activities", median [IQR]: 3 [4] vs. 4 [3] vs. 4 [3] When counting started for duration: NR	Full (n = 259) vs. Limited (n = 293) vs. Control (n = 285) Age, median [IQR]: 41.4 [22.9] vs. 43.6 [30.7] vs. 40.5 [22.8] % female: 51.4 vs. 56.7 vs. 63.9 Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR
Briel, 2008 <sup>18</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Briel, 2006 <sup>17</sup> Switzerland Patient N = 837 (259 vs. 293 vs. 285) Provider N = 45 (15 vs. 15 vs. 15) Practice N = 45 (15 vs. 15 vs. 15)	Full (n = 15) vs. Limited (n = 15) vs. Control (n = 15) Specialty (%): General Medicine (66.7 vs. 60.0 vs. 46.7), Internal Medicine (20.0 vs. 33.3 vs. 46.7), Other (13.3 vs. 6.7 vs. 6.7) Number of years in practice, median [IQR]: 15.0 [16.8] vs. 17.2 [11.7] vs. 10.3 [17.2] Type of clinic: General practice Geographical region: Basel-Stadt and Aargau, Switzerland Population served: NR Age, median [IQR]: 50.4 [13.5] vs. 52.6 [11.9] vs. 47.8 [13.1] % women: 6.7 vs. 6.7 vs. 40.0 Previous communication training (%): 6.7 vs. 6.7 vs. 26.7	Time of year: January 2004 - May 2004 Patterns of disease activity: NR Locally tailored: No System-level characteristics: NR	Adherence to guidelines for treatment of acute RTIs developed by the investigators, derived from evidence-based US-guidelines and adapted to local conditions. The US guidelines were developed by an expert panel using a literature review and endorsed in 2001 by CDC, AAFP, ACP, and IDSA.
Briel, 2008 <sup>18</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Briel, 2006 <sup>17</sup> Switzerland Patient N = 837 (259 vs. 293 vs. 285) Provider N = 45 (15 vs. 15 vs. 15) Practice N = 45 (15 vs. 15 vs. 15)	<p>Full Intervention vs. Limited Intervention vs. Control                      Antibiotics prescribed (reported by pharmacists): 13.5% vs. 15.7% vs. 21.4%                      Percent difference (Full vs. Limited): -2.2; 95% CI, -12.2 to 7.8                      Adjusted* OR (Full vs. Limited): OR=0.86; 95% CI, 0.40 to 1.93</p> <p>Antibiotics prescribed (reported by physicians): 15.1% vs. 16.7% vs. 25.6%                      Adjusted* OR (Full vs. Limited): OR=0.90; 95% CI, 0.44 to 1.98</p> <p>Antibiotics prescribed according to guidelines (as % of prescribed antibiotics): 53.8% vs. 53.1% vs. 41.1%                      Adjusted* OR (Full vs. Limited): OR=1.03; 95% CI, 0.30 to 3.09</p> <p>Antibiotics prescribed per diagnosis, (1) % with diagnosis prescribed antibiotic; (2) % of prescriptions according to guidelines:                      Common cold: (1) 3.8 vs. 0.0 vs. 1.1; (2) 25.0 vs. NA vs. 0.0                      Acute rhinosinusitis: (1) 21.2 vs. 37.9 vs. 49.1; (2) 57.1 vs. 64.0 vs. 65.4                      Acute pharyngitis: (1) 10.5 vs. 3.8 vs. 14.0; (2) 0.0 vs. 100.0 vs. 33.3                      Acute exudative tonsillitis: (1) 64.7 vs. 66.7 vs. 86.7; (2) 81.8 vs. 66.7 vs. 53.8                      Acute laryngitis: (1) 0.0 vs. 20.0 vs. 11.1; (2) NA vs. 0.0 vs. 0.0                      Acute otitis media:(1) 50.0 vs. 28.6 vs. 75.0; (2) 66.7 vs. 0.0 vs. 0.0                      Acute bronchitis: (1) 23.7 vs. 20.0 vs. 39.2; (2) 22.2 vs. 25.0 vs. 10.0                      Influenza: (1) 0.0 vs. 4.3 vs. 5.9; (2) NA vs. 0.0 vs. 0.0</p> <p>* Adjustment for patient age, sex, education (not otherwise reported), and days with restrictions at baseline.</p>	NR
Briel, 2008 <sup>18</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)		

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Briel, 2006 <sup>17</sup> Switzerland Patient N = 837 (259 vs. 293 vs. 285) Provider N = 45 (15 vs. 15. vs. 15) Practice N = 45 (15 vs. 15. vs. 15)	NR	Full Intervention vs. Limited Intervention vs. Control Days with restricted activities, mean [SD]: 6.18 [3.94] vs. 6.81 [3.94] vs. 7.28 [4.09]; Adjusted* difference in mean days restricted (Full vs. Limited): -0.40; 95% CI, -1.07 to 0.27 Re-consultation within 14 days (%): 44.7 vs. 49.3 vs. 41.9; Adjusted* rate ratio (Full vs. Limited): 0.97; 95% CI, 0.78 to 1.21 Patients off work within 14 days (%): 53.4 vs. 47.2 vs. 58.1; Adjusted* OR (Full vs. Limited): OR=1.00; 95% CI, 0.63 to 1.57 Patients with satisfaction score of 70 out of 70 (%): 47.8 vs. 49.0 vs. 45.2 Adjusted* OR (Full vs. Limited): OR=1.00; 95% CI, 0.64 to 1.31  * Adjustment for patient age, sex, education (not otherwise reported), and days with restrictions at baseline.
Briel, 2008 <sup>18</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)		

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Briel, 2006 <sup>17</sup> Switzerland Patient N = 837 (259 vs. 293 vs. 285) Provider N = 45 (15 vs. 15. vs. 15) Practice N = 45 (15 vs. 15. vs. 15)	Full Intervention vs. Limited Intervention vs. Control Patient enablement score (0-12), mean [SD]: 8.49 [1.98] vs. 8.15 [2.03] vs. 8.19 [1.90] Adjusted* difference in mean scores (Full vs. Limited): 0.35; 95% CI, -0.05 to 0.75  * Adjustment for patient age, sex, education (not otherwise reported), and days with restrictions at baseline.	NR	
Briel, 2008 <sup>18</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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Brittain-Long, 2011 <sup>21</sup> Sweden Patient N = 447 randomized; 406 available for analysis; 335 for secondary outcome Provider N = NR Practice N = NR	Age ≥ 18 years and a diagnosis of community acquired ARTI, defined as having a history of at least two of the following symptoms: coryza/nasal congestion/sneezing, sore throat/odynophagia, cough, pleuritic chest pain, shortness of breath or fever for which the physician found no other explanation, with a duration of less than 14 days	NR	Type: Clinical - POC: Multiviral Target: Provider Description: Patients were randomized to one of the following groups: (1) rapid result cohort or (2) delayed result cohort. Physicians treating patients in the rapid result cohort received results from the multiplex PCR analysis on the day following inclusion. Nasopharyngeal and throat swabs were collected on the day of inclusion (initial visit) and after 10 days (followup visit). Physicians treating patients in the delayed result cohort received results 8 to 12 days later. Multiplex PCR method targeted 13 viruses and 2 bacteria: parainfluenza virus types 1-3, influenza A and B, human metapneumovirus, respiratory syncytial virus, human rhinovirus, enterovirus, adenovirus, and human coronavirus types 229E, OC43, and NL63, along with bacterial Mycoplasma pneumoniae and Chlamydia pneumoniae.
Burkhardt, 2010 <sup>22</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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Brittain-Long, 2011 <sup>21</sup> Sweden Patient N = 447 randomized; 406 available for analysis; 335 for secondary outcome Provider N = NR Practice N = NR	Rapid result vs. delayed result (control)	Type of RTI: ARTI Types of Signs and Symptoms: Coryza (83.3%), sore throat (76.4%), headache (73.4%), dry cough (64.5%), productive cough (56.2%), shortness of breath (55.2%), fever (53.0%), myalgia (51.0%), red eyes (40.4%), joint pain (39.9%), chest pain (22.9%), diarrhea (9.4%), vomiting (6.4%), rash (5.7%)	Mean age: 39 % female: 58.4% Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: Asthma (10.9%), COPD (1.7%), Allergies (7.0%), Diabetes (1.3%), Neoplastic disease (1.3%), Autoimmune disease (3.1%), Ischemic heart disease/angina (1.3%)
Burkhardt, 2010 <sup>22</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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Brittain-Long, 2011 <sup>21</sup> Sweden Patient N = 447 randomized; 406 available for analysis; 335 for secondary outcome Provider N = NR Practice N = NR	Specialty: Mix Number of years in practice: NR Type of clinic: 12 outpatient clinics (eight primary health care centers and four departments of infectious disease) Geographical region: Sweden Population served: NR	Time of year: October 2006 to April 2009 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: NR	NR
Burkhardt, 2010 <sup>22</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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Brittain-Long, 2011 <sup>21</sup> Sweden Patient N = 447 randomized; 406 available for analysis; 335 for secondary outcome Provider N = NR Practice N = NR	Rapid result vs. Delayed result  Initial antibiotic treatment (n, %): 9 (4.5) vs. 25 (12.3), p=0.005 At initial visit: 7 (3.5) vs. 21 (10.3) After 24 to 48 hours: 2 (1.0) vs. 4 (2.0) Antibiotics prescribed at followup: 13.9 % vs. 17.2%, p=0.359  Antibiotics prescribed by detected pathogen (n, %) Patients with virus detected: 3 (3.3) vs. 11 (12.1), p=0.03 Patients with Mycoplasma pneumoniae detected: 2 (NR) vs. 2 (NR) Patients with Chlamydomphila pneumoniae detected: 1 (NR) vs. NR	NR
Burkhardt, 2010 <sup>22</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)		

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Brittain-Long, 2011 <sup>21</sup> Sweden Patient N = 447 randomized; 406 available for analysis; 335 for secondary outcome Provider N = NR Practice N = NR	NR	NR	
Burkhardt, 2010 <sup>22</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands Patient N = 431 (Cals, 2009, 2011), 379 (Cals, 2013) Provider N = 40 Practice N = 20	<b>Cals 2009</b> Patients eligible if they had a suspected lower LRTI with a cough lasting less than 4 weeks together with one focal and one systemic symptom  <b>Cals 2011</b> Patients aged 18 years or older with new episode of acute cough of up to 28 days and caused by LRTI as determined by GP	General practitioners (N=40) from 20 general practices	<b>Type: Multifaceted - POC: C-reactive Protein Testing and Enhanced Communication Training</b> <b>Target: Providers</b> <b>Description:</b> Three intervention groups: (1) CRP testing, (2) training in enhanced communication skills, and (3) interventions combined. Groups were combined for analysis in the following factors: Factor A (CRP compared with no test) and Factor B (training in enhanced communication skills compared with no training). CRP assessed with NycoCard II Reader with results available within 3 minutes. General practitioners underwent 30 minutes of training on how to use CRP results within the consultation. Communication skills intervention was built around 11 key tasks (e.g. exploring patients fears and expectations, asking patients' opinion on antibiotics, and outlining the natural of cough in lower respiratory tract infection.

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Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands Patient N = 431 (Cals, 2009, 2011), 379 (Cals, 2013) Provider N = 40 Practice N = 20	Usual care (control)	Type of RTI: LRTI (nonspecific) Types of signs and symptoms: Shortness of breath (63.1%), wheezing (36.7%), chest pain (58.7%), abnormalities in auscultation (53.1%), fever (40.6%), perspiration (45.0%), headache (48.0%), myalgia (46.6%), generally feeling unwell (78.7%) Duration of signs and symptoms: 10.2 days (mean duration of cough)	Cals 2009 Mean age: 49.9 % female: 61.5 Ethnicity: NR SES: NR Education level: Lower education (36.2%); Secondary education (36.5%); Higher education (27.3%) Frailty: NR Comorbidities: COPD (7.1%); Asthma (9.0%); Diabetes mellitus (4.2%); Heart disease (4.6%) Prior RTIs: NR Prior use of antibiotics: NR  Cals 2011 Mean Age: 50.0 % female: 61.5 Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: COPD (7.2%); Asthma (9.0%); Diabetes Mellitus (4.2%)

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Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands Patient N = 431 (Cals, 2009, 2011), 379 (Cals, 2013) Provider N = 40 Practice N = 20	Specialty: General practice Number of years in practice (mean): 15.0 years Type of clinic: General practice Geographical region: the Netherlands Population served: NR	Cals 2009 Time of year: Patients recruited in the winter periods from September 2005 until March 2007 and were observed until July 2010 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: NR	Dutch College of General Practitioners guidelines on acute cough

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<p>Cals, 2009<sup>23</sup>                      Cals, 2011<sup>24</sup> Cals, 2013<sup>25</sup>                      The Netherlands                      Patient N = 431 (Cals, 2009, 2011),                      379 (Cals, 2013)                      Provider N = 40                      Practice N = 20</p>	<p>Cals 2009                      Antibiotic prescribing, % intervention vs. % control; crude 95% CI; p:                      CRP test:                      Index consultation: 30.8; 95% CI, 21.8 to 39.8 vs. 52.9; 95% CI, 43.0 to 62.8; p=0.02, ICC = 0.12                      At days 1 to 28: 44.9; 95% CI, 35.2 to 54.6 vs. 58.3; 95% CI, 48.5 to 68.1, p &lt;0.01, ICC = 0.12</p> <p>Communication skills training:                      Index consultation: 27.4; 95%CI, 25.6 to 36.6 vs. 53.5; 95%CI, 43.8 to 63.2; p=0.01, ICC =0.12                      At days 1 to 28: 37.8; 95%CI, 28.1 to 47.5 vs. 63.0 95%CI, 53.6 to 72.4; p&lt;0.001, ICC = 0.12</p> <p>Sensitivity Analysis:                      CRP test vs. Communication skills training vs. CRP test and communication skills training vs. usual care: 39                      Antibiotic Prescribing at Index Consultation (% (crude 95% CI)): 39; 95%CI, 25.6 to 52.6 vs. 33; 95%CI, 19.5 to 47.1 vs. 23; 95%CI,11.6 to 34.6 vs. 67; 95%CI, 53.9 to 79.5</p> <p>Cals 2011                      Antibiotics at index consultation (no. (%)):                      CRP vs. Communication skills training vs. CRP and communication skills training vs. usual care: 43 (39.1) vs. 28 (33.3) vs. 27 (23.1) vs. 80 (66.7)</p>	<p>NR</p>

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands Patient N = 431 (Cals, 2009, 2011), 379 (Cals, 2013) Provider N = 40 Practice N = 20	NR	<p>Cals 2009            CRP test, % intervention vs. % control (crude 95% CI):            Reconsultation within 28 days: 34.8; 95%CI, 28.3 to 41.3 vs. 30.4; 95%CI, 23.8 to 37.0; p=0.50, ICC = 0.01</p> <p>Communications skills training, % intervention vs. % control (crude 95% CI):            Reconsultation within 28 days: 27.9; 95%CI, 21.4 to 34.4 vs. 37.0; 95%CI, 30.4 to 43.6; p=0.14, ICC = 0.01</p> <p>Patient Satisfaction, % at least very satisfied (crude 95% CI):            CRP vs. no CRP: 76.8; 95%CI, 70.8 vs. 82.8 vs. 76.0; 95%CI, 69.6 to 82.4, p=0.53            Communication skill training vs. no communication skills training: 78.7; 95%CI, 72.5 to 84.9 vs. 74.4; 95%CI, 68.2 to 80.6, p=0.88</p> <p>Cals 2011            CRP vs. communication skills training vs. CRP and communication skills training vs. usual care            Days off of work, days (SD): 3.35 (4.54) vs. 3.37 (4.02) vs. 3.39 (4.08) vs. 3.37 (3.77)</p> <p>Average resource use per intervention group (physician visits):            GP reconsultation: 0.40 vs. 0.18 vs. 0.27 vs. 0.37            GP out of hours office: 0.01 vs. 0.05 vs. 0.02 vs. 0.08            Hospital (outpatient or ED): 0.02 vs. 0.00 vs. 0.02 vs. 0.00</p>

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Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands Patient N = 431 (Cals, 2009, 2011), 379 (Cals, 2013) Provider N = 40 Practice N = 20	NR	Cals 2011 CRP vs. communication skills training vs. CRP and communication skills training vs. usual care Average resource use per intervention group (diagnostic testing): Chest x-ray: 0.05 vs. 0.05 vs. 0.09 vs. 0.07 Blood: 0.01 vs. 0.01 vs. 0.05 vs. 0.00 Other (spirometry, sputum): 0.02 vs. 0.00 vs. 0.02 vs. 0.02	Cals 2011 Primary outcome measures: health care cost. Cost-effectiveness of antibiotic prescribing at index consultation assessed by incremental cost-effectiveness ratios

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Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands  Continued.			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands  Continued.			Cals 2013 Mean age (SD): 49.9 (15.0) years % Female: 62.0 Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: COPD (6.3%); Asthma (8.2%) Prior use of antibiotics: at index visit of trial (42.2%); during 28-day followup period (52.0%)

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Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands  Continued.			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands  Continued.	Cals 2013 % RTI episodes treated with antibiotics, Control vs. Intervention; 95% CI CRP test: 35.7; 95%CI, 29.5 to 42.0 vs. 30.7; 95%CI, 25.0 to 36.4; uncorrected difference -5.0, corrected difference -4.1; p=0.36 Communication Skills Training: 39.1; 95%CI, 33.1 to 45.1 vs. 26.3; 95%CI, 20.6 to 32.0; uncorrected difference -12.8, corrected difference -10.4; p=0.02	

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Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands  Continued.		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Cals, 2009 <sup>23</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup> The Netherlands  Continued.			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
<p>Cals, 2010<sup>26</sup>                      The Netherlands                      Patient N = 258                      Provider N = 32                      Practice N = 11</p>	<p>Patients 18 years and older who consulted for the first time for current episode of LRTI or rhinosinusitis.</p> <p>For LRTI, had to be less than 4 weeks and have at least 1 symptom/focal point: shortness of breath; wheezing; chest pain; auscultation abnormalities. At least 1 systemic sign had to be present: fever; perspiring; headache; myalgia; general feeling unwell.</p> <p>For rhinosinusitis, patients made a first consultation for the current episode of rhinosinusitis (duration of less than 4 weeks) with at least 1 of the following symptoms: history of rhinorrhea; blocked nose. At least 1 of the following symptoms or signs had to be present: purulent rhinorrhea, unilateral facial pain, headache, teeth pain, pain when chewing, maxillary/frontal pain when bending over, or worsening of symptoms after initial improvement.</p>	<p>Family physicians working in 11 family practice center in the southeastern part of the Netherlands</p>	<p>Type: Clinical - POC: C-reactive Protein                      Target: Providers                      Description: For the intervention group (CRP assistance), CRP was measured by the practice nurse within the consultation and patient returned to the physician with the test result. The physician could use the CRP test result in addition to clinical assessment to decide on management (immediate, delayed, or no antibiotics).</p>

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Cals, 2010 <sup>26</sup> The Netherlands Patient N = 258 Provider N = 32 Practice N = 11	No CRP assistance (control). Physician had to decide on a management strategy (immediate, delayed, or no antibiotics) based on clinical assessment and finish the consultation (usual care). CRP was measured and recorded by practice nurse after the consultation. Practice nurses did not communicate the test result to either physician or patient until after the study.	Type of RTI: LRTI (41.5%) or rhinosinusitis (58.5%) Types of Symptoms: LRTI: shortness of breath (62.6%), wheezing (34.6%), chest pain (54.2%), auscultation abnormalities (43.0%), fever (48.6%), perspiring (46.7%), headache (37.4%), myalgia (47.7%), generally feeling unwell (76.6%); Rhinosinusitis: purulent rhinorrhea (54.3%), blocked nose (76.8%), unilateral facial pain (55.0%), headache (73.5%), dental pain (31.1%), pain chewing (14.6%), pain at bending over (63.6%) Duration of Signs and Symptoms: LRTI mean: 8.4 days Rhinosinusitis mean: 9.7 days When counting started for duration: NR	Mean Age: 44.3 % Female: 69.4 Ethnicity: NR SES: NR Educational level: lower education (24.5%); secondary education (43.0%); higher education (32.5%) Frailty: NR Comorbidities: COPD (3.1%); Asthma (7.4%); Allergic rhinitis (9.7%); diabetes mellitus (5.0%); heart disease (5.4%)

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Cals, 2010 <sup>26</sup> The Netherlands Patient N = 258 Provider N = 32 Practice N = 11	Specialty: General/family practice Type of clinic: Family practice Geographical region: Southeastern Netherlands Population served: NR	Time of year: November 2007 to April 2008 Patterns of disease activity: NR Locally tailored: NR System level characteristics: NR	Antibiotic treatment required for only community-acquired pneumonia and small subgroups of the LRTIs and URTIs

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
<p>Cals, 2010<sup>26</sup>                      The Netherlands                      Patient N = 258                      Provider N = 32                      Practice N = 11</p>	<p>CRP assisted vs. Control</p> <p>Antibiotic use after index consultation                      Overall: 43.4% vs. 56.6%, RR=0.77; 95% CI, 0.56 to 0.98                      Rhinosinusitis: 45.2% vs. 60.3%                      LRTI: 41.1% vs. 51.0%</p> <p>Antibiotic use after 28-day followup                      Overall: 52.7% vs. 65.1%, RR=0.81; 95% CI, 0.62 to 0.99                      Rhinosinusitis: 57.5% vs. 69.2%                      LRTI: 46.4% vs. 58.8%</p> <p>By CRP category                      0-20 mg/L (n=140): 26.0% vs. 49.3%                      21-50 mg/L (n=62): 56.5% vs. 59.0%                      51-100 mg/L (n=37): 68.2% vs. 66.7%                      &gt; 100 mg/L (n=19): 81.8% vs. 87.5%</p> <p>Antibiotics received at index consultation                      Immediate antibiotics: 39.5% vs. 40.3%                      No antibiotics: 43.4% vs. 37.2%                      Delayed antibiotics: 17.1% vs. 22.5%</p>	<p>NR</p>

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Cals, 2010 <sup>26</sup> The Netherlands Patient N = 258 Provider N = 32 Practice N = 11	NR	CRP assisted vs. Control  Reconsult: 25.6% vs. 17.8, p=0.13  Patient satisfaction (patient at least very satisfied): 76.3% vs. 63.2%, p=0.03  Clinical recovery in 7 days: 22.9% vs. 24.8%, p=0.73

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Cals, 2010 <sup>26</sup> The Netherlands Patient N = 258 Provider N = 32 Practice N = 11	NR	NR	

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Carling, 2009 <sup>27</sup> Norway Patient N = 1760 Provider N = NR Practice N = NR	At least 18 years of age and filling in questionnaire for first time; not required to have an RTI at time of participation	NR	Type: Educational Target: Patients Description: Internet-based graphical displays of information about the effects of antibiotics on the symptoms of sore throat. Participants were randomized to one of four graphical displays for intervention: (1) face icons (happy/sad) displaying proportion of people who still have sore throat on day three with and without antibiotics (2) a bar graph displaying the same information, (3) a bar graph displaying the difference in average duration of symptoms, and (4) a bar graph displaying the proportion of people with sore throat symptoms at onset and on days three and seven. Patients randomized to graphic display were given the same textual information on the pros and cons of antibiotic use. Participants were asked to indicate whether or not they would go to the doctor for antibiotics (first decision). Next, all participants were shown all displays in block-randomized sequence and asked to decide if they would go to the doctor for antibiotics (second decision)
Chao, 2008 <sup>28</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			

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Carling, 2009 <sup>27</sup> Norway Patient N = 1760 Provider N = NR Practice N = NR	No information (control)	NR	Age: 31.7% ages 30-39 y % female: 69.4 Ethnicity: NR SES: NR Educational level: 72.6% university educated, 24.0% high school educated, 3.5% elementary educated Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR
Chao, 2008 <sup>28</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			

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Carling, 2009 <sup>27</sup> Norway Patient N = 1760 Provider N = NR Practice N = NR	NR	Time of year: September - October 2004 Patterns of disease activity: NR Locally tailored: Yes, displays in Norwegian; study publicized on popular nationally televised Norwegian weekly health program System-level characteristics: Internet-based intervention	NR
Chao, 2008 <sup>28</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			

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Carling, 2009 <sup>27</sup> Norway Patient N = 1760 Provider N = NR Practice N = NR	NR	NR
Chao, 2008 <sup>28</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)		

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Carling, 2009 <sup>27</sup> Norway Patient N = 1760 Provider N = NR Practice N = NR	NR	NR
Chao, 2008 <sup>28</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)		

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Carling, 2009 <sup>27</sup> Norway Patient N = 1760 Provider N = NR Practice N = NR	<p>Odds of Visiting the Doctor by Display Type: OR; 95% CI; p-value            Face icons % symptoms at day 3 vs. bar graph % symptoms at day 3: OR=1.08; 95 % CI, 0.78 to 1.50; p=0.65            Bar graph duration of symptoms vs. bar graph % symptoms at day 3: OR=0.39; 95% CI, 0.27 to 0.57; p&lt;0.001            Bar graph % symptoms at days 3 and 7 vs. bar graph % symptoms at day 3: OR=0.74; 95% CI, 0.52 to 1.05; p=0.10</p> <p>Odds ratios for deciding to go to the doctor on first decision for each group compared with fully informed second decision for other four groups: OR; 95% CI            Face icons, % symptoms at day 3: OR=2.20; 95% CI, 1.68 to 2.88            Bar graph, % symptoms at day 3: OR=2.08; 95% CI, 1.59 to 2.73            Bar graph, duration of symptoms: OR=0.72; 95% CI, 0.53 to 0.98            Bar graph, % symptoms at days 3 and 7: OR=1.50; 95% CI, 1.11 to 2.01            No information: OR=0.93; 95% CI, 0.70 to 1.24</p>	NR	
Chao, 2008 <sup>28</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			

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Chazan, 2007 <sup>29</sup> Israel Patient N = 168,644 Provider N = 200 Practice N = NR	NR	Doctors (general practitioners, pediatricians, and family physicians), nurses, and pharmacists working in clinics and pharmacies belonging to Clalit Health Services	Type: Educational Target: Providers Description: Continuous intervention consisting of monthly interactive teaching sessions consisting of a 'group education meeting' focusing on practical diagnostic tools directed at the decision 'to treat or not treat' with antibiotics, providers were given therapeutic recommendations for common infectious diseases distinguishing between viral and bacterial infections
Christakis, 2001 <sup>30</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)			
Christ-Crain, 2004 <sup>31</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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Chazan, 2007 <sup>29</sup> Israel Patient N = 168,644 Provider N = 200 Practice N = NR	Seasonal intervention consisting of a massive educational campaign prior to two consecutive winters promoting judicious use of antibiotics to treat RTIs, consisted of a 2 hour interactive meeting, informative reminders given to providers, educational leaflets given to providers for their patients	NR	Mean Age: 32 y % female: 49.9 Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR
Christakis, 2001 <sup>30</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)			
Christ-Crain, 2004 <sup>31</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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Chazan, 2007 <sup>29</sup> Israel Patient N = 168,644 Provider N = 200 Practice N = NR	Specialty: Mix Number of years in practice: NR Type of clinic: 16 largest community clinics in Clalit Health Services HMO Geographical region: Israel Population served: provides services to 70% of population in north of the country, including 442,758 Jews, Christian Arabs, and Moslems living in urban and rural areas	Time of year: October 2000 - April 2003 Patterns of disease activity: NR Locally tailored: Yes System level characteristics: Clinics were part of Clalit Health Services HMO	NR
Christakis, 2001 <sup>30</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)			
Christ-Crain, 2004 <sup>31</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Chazan, 2007 <sup>29</sup> Israel Patient N = 168,644 Provider N = 200 Practice N = NR	Total Antibiotic Use November 2002-2003 vs. Baseline (November 1999-2000) (reported in defined daily dose/1000 patients/day) Seasonal intervention group: 23.2 vs. 27.8 Continuous Intervention group: 22.9 vs. 28.7 (p for difference between groups <0.0001) % decrease in antibiotic use, continuous vs. seasonal intervention: 20.0% vs. 16.5% (p<0.0001)	NR
Christakis, 2001 <sup>30</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)		
Christ-Crain, 2004 <sup>31</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Chazan, 2007 <sup>29</sup> Israel Patient N = 168,644 Provider N = 200 Practice N = NR	NR	NR
Christakis, 2001 <sup>30</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)		
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Chazan, 2007 <sup>29</sup> Israel Patient N = 168,644 Provider N = 200 Practice N = NR	NR	NR	
Christakis, 2001 <sup>30</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)			
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Coenen, 2004 <sup>32</sup> Belgium Patient N = 1,503 Provider N = 85 Practice N = NR	Adult patients with acute cough, ages 18-65, immunocompetent, with new or worsening cough, present for <30 days as one of the most important complaints and as the reason for the first encounter with the practice	Flemish GPs	Type: Educational Target: Providers Clinical practice guideline for management of acute cough in general practice, educational outreach visit and postal message on key messages
Cohen, 2000 <sup>33</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Croft, 2007 <sup>34</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Davis, 2007 <sup>35</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Coenen, 2004 <sup>32</sup> Belgium Patient N = 1,503 Provider N = 85 Practice N = NR	Leaflets from a public campaign	Patient characteristics: Type of RTI: acute cough Types of Signs and Symptoms: cough, sputum, fever, runny nose, headache, muscle ache, sore throat, wheezing, shortness of breath, chest pain, loss of appetite, limited activity Duration of Signs and Symptoms: predicted mean duration of cough When counting started for duration: NR	Patient characteristics: table 2 Mean Age: 40.2-41.9 % female: 57-60% Ethnicity: NA SES: NR Educational level: NR Frailty :NR Comorbidities: asthma (7-14%), COPD (7-9%), Heart failure (0-2%), CVD (0-2%) Prior RTIs: NR Prior use of antibiotics: NR
Cohen, 2000 <sup>33</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Croft, 2007 <sup>34</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Coenen, 2004 <sup>32</sup> Belgium Patient N = 1,503 Provider N = 85 Practice N = NR	Specialty: GP Number of years in practice: NR Type of clinic: NR Geographical region: Belgium Population served: general adult population	Time of year: December 2000- January 2001 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: NR	Recommended antibiotic (narrow spectrum i.e., Amoxicillin or doxycycline) used if antibiotics are prescribed; no definition for when appropriate to not use antibiotics
Cohen, 2000 <sup>33</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Croft, 2007 <sup>34</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Davis, 2007 <sup>35</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			

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Coenen, 2004 <sup>32</sup> Belgium Patient N = 1,503 Provider N = 85 Practice N = NR	Intervention vs. controls, # (%) Prescriptions Pre-intervention: 318 (87) vs. 388 (87) Post-intervention: 285 (98) vs. 377 (94)  Rate of use and % difference in change of use of antibiotics Use of antibiotics Pre-intervention 43 vs. 37.8 Post-intervention 27.4 vs. 28.7 % change -15.6 vs. -9.1 % difference -6.5 OR/ICC: OR=0.74; 95% CI, 0.51 to 1.08/0.18 OR, adjusted/ICC: OR=0.56; 95% CI, 0.36 to 0.87/0.22	NR
Cohen, 2000 <sup>33</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Croft, 2007 <sup>34</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Davis, 2007 <sup>35</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)		

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Coenen, 2004 <sup>32</sup> Belgium Patient N = 1,503 Provider N = 85 Practice N = NR	Interventions vs. controls (%) Hospitalization: Pre-intervention: 0 vs. 1	Interventions vs. controls (%) Time to symptom resolution: Reported to be similar with no significant differences. Post-intervention: 2 vs. 0 Reconsultation: Pre-intervention: 57 (23%) vs. 55 (20%) Post-intervention: 40 (19%) vs. 61 (22%)
Cohen, 2000 <sup>33</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Croft, 2007 <sup>34</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
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Coenen, 2004 <sup>32</sup> Belgium Patient N = 1,503 Provider N = 85 Practice N = NR	NR	Diagnostic resource use: Intervention vs controls, # (%) Radiograph Pre-intervention: 7 (2) vs. 23 (5) Post-intervention: 3 (1) vs. 11 (3) Sputum analysis Pre-intervention: 0 vs. 12 (3) Post-intervention: 1 (0) vs. 4 (1) serology Pre-intervention: 1 (0) vs. 7 (2) Post-intervention: 2 (1) vs. 9 (2)  Sustainability: No difference in change in 1st month and last 2 months post-intervention.	
Cohen, 2000 <sup>33</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Croft, 2007 <sup>34</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
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Diederichsen, 2000 <sup>36</sup> Denmark Patient N = 812 Provider N = NR Practice N = 35	Patients of all ages who consulted their GP during normal working hours because of RTIs, and who belonged to the National Health Insurance Group 1	NR	Type: Clinical - POC: C-reactive Protein Target: Provider and Patients Description: Intervention group used CRP rapid test and clinical assessment. CRP analysis carried out during consultation by means of NycoCard::CRP (sensitivity and specificity NR). GPs were informed that normal CRP values are < 10 mg/L and CRP values < 50 mg/L were seldom the result of infection. No strict guidelines for the use of antibiotics in relation to the CRP value were given. Patient questionnaire administered at consultation.
Doan, 2009 <sup>37</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Dowell, 2001 <sup>38</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Doyne, 2004 <sup>39</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
El-Daher, 1991 <sup>40</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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Diederichsen, 2000 <sup>36</sup> Denmark Patient N = 812 Provider N = NR Practice N = 35	Clinical assessment only (control)	Type of RTI: Respiratory infections (nonspecific) Types of Symptoms: Fever (51%), cough (81%), pain (49), well-being affected (32%) Duration of Signs and Symptoms: < 1 day (3%), 1-3 days (26%), 4-7 days (37%), >7 days (38%) When counting started for duration: NR	Mean Age: 37 years % Female: 57 Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR
Doan, 2009 <sup>37</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Dowell, 2001 <sup>38</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Doyne, 2004 <sup>39</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
El-Daher, 1991 <sup>40</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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Diederichsen, 2000 <sup>36</sup> Denmark Patient N = 812 Provider N = NR Practice N = 35	Specialty: General practice Number of years in practice: NR Type of clinic: General practice Geographical region: County of Funen, Denmark Population served: NR	Time of year: January 2, 1997 to April 30, 1997 Patterns of disease activity: NR Locally tailored: NR System level characteristics: Patients in National health Insurance Group 1	NR
Doan, 2009 <sup>37</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Dowell, 2001 <sup>38</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Doyne, 2004 <sup>39</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
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Diederichsen, 2000 <sup>36</sup> Denmark Patient N = 812 Provider N = NR Practice N = 35	CRP Group vs. Control  % Antibiotic Prescription %; 95% CI; OR; 95% CI: 43%; 95%CI, 40% to 47% vs. 46%; 95%CI, 43% to 50%; OR=0.9; 95% CI, 0.70 to 1.20  Factors influencing GP's decision to prescribe antibiotics: CRP value (per unit increase (mg/L)): 1.09 (1.06 to 1.12) vs. NR	NR
Doan, 2009 <sup>37</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)		
Dowell, 2001 <sup>38</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		
Doyne, 2004 <sup>39</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
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Diederichsen, 2000 <sup>36</sup> Denmark Patient N = 812 Provider N = NR Practice N = 35	NR	CRP Group vs. Control  Increased or unchanged morbidity after 1 week %; 95% CI; OR; 95% CI; p: 12%; 95%CI, 10% to 15% vs. 8%; 95%CI, 6% to 10%; OR=1.6; 95% CI, 1.0 to 2.6; p=0.05
Doan, 2009 <sup>37</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)		
Dowell, 2001 <sup>38</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		
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Diederichsen, 2000 <sup>36</sup> Denmark Patient N = 812 Provider N = NR Practice N = 35	NR	NR	
Doan, 2009 <sup>37</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Dowell, 2001 <sup>38</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Doyne, 2004 <sup>39</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
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Finkelstein, 2001 <sup>41</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Finkelstein, 2008 <sup>42</sup> United States Patient N = 233,135 person-years of observation Provider N = NR Practice N = NR	Children aged 3 to < 72 months, who resided in study communities (16 non-overlapping Massachusetts communities), and were insured by a participating commercial health plan or Medicaid	Pediatricians and family physicians in intervention communities	Type: Educational Target: Providers and Parents Description: Three year intervention involving the implementation of a physician behavior-change strategy that included guideline dissemination, small-group education, frequent updates and educational materials, and prescribing feedback. Educational materials for parents included trifold brochure entitled "Kids and Antibiotics" and an information sheet on appropriate antibiotic use to be used during well-child visits. Prescription pads adapted from CDC-sponsored campaigns were provided to physicians. A variety of stickers, lapel pins, otoscope insufflators, and additional materials with REACH Mass logo were also distributed. Newsletters, interactive website, posters, and counter-top displays were targeted at parents.

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Finkelstein, 2001 <sup>41</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Finkelstein, 2008 <sup>42</sup> United States Patient N = 233,135 person-years of observation Provider N = NR Practice N = NR	Control communities (those not receiving intervention)	Type of RTI: NR Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR	Mean Age % female: NR Ethnicity: Nonwhite (10%) SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR

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Finkelstein, 2001 <sup>41</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Finkelstein, 2008 <sup>42</sup> United States Patient N = 233,135 person-years of observation Provider N = NR Practice N = NR	Specialty: Pediatrics and family practice Number of years in practice: NR Type of clinic: NR Geographical region: Massachusetts Population served: Children	Time of year: October to March from 2000 to 2003 Patterns of disease activity: Intervention conducted during 3 consecutive cold and flu seasons Locally tailored: Yes System-level characteristics: 16 Massachusetts communities in collaboration with Massachusetts Department of Public Health and four large health insurers (including Medicaid)	CDC guidelines for judicious antibiotic prescribing for use in Massachusetts adapted by panel of local content experts and representatives of Massachusetts Department of Public Health

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Finkelstein, 2001 <sup>41</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Finkelstein, 2008 <sup>42</sup> United States Patient N = 233,135 person-years of observation Provider N = NR Practice N = NR	Control vs. Intervention  Overall Antibiotic Use Rates in Year 1 of Study by Age Group (unadjusted rate, adjusted % change): 3 to <24 months: 2.8, -20.7 vs. 2.9, -21.2; intervention effect -0.5 ; p=0.69 24 to <48 months: 1.7, -10.3 vs. 1.7, -14.5; intervention impact -4.2; p<0.01 48 to <72 months: 1.4, -2.5 vs. 1.4, -9.3; intervention impact -6.7; p<0.0001	NR

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Finkelstein, 2001 <sup>41</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
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Finkelstein, 2001 <sup>41</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Finkelstein, 2008 <sup>42</sup> United States Patient N = 233,135 person-years of observation Provider N = NR Practice N = NR	NR	NR	*unadjusted rates were calculated as the sum of all antibiotic dispensing divided by the sum of the person-years observed. Adjusted percentage change over all 3 intervention years (study years 3-5, September 1, 2000, to August 31, 2003) from generalized linear mixed models, accounting for clustering by community, baseline prescribing rate, differences in baseline trend (year 1 to 2), secular trend during the intervention period, and gender. Insurance type (Medicaid versus commercial) was included as a covariate in the model of overall effect

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Forrest, 2013 <sup>43</sup> United States Patient N = 139,305 patient visits for otitis media Provider N = 24 practices	Children with otitis media	PCP practices.	Type: System-level Target: Providers Description: Randomization at level of clinical practice within pediatric research Consortium (a practice based research network). Used a locally adapted electronic record-based patient-specific clinical decision support tool with or without monthly feedback on performance to clinicians
Francis, 2009 <sup>44</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			
Gerber, 1990 <sup>45</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Forrest, 2013 <sup>43</sup> United States Patient N = 139,305 patient visits for otitis media Provider N = 24 practices	Usual care (n=4 practices) versus CDS with feedback (n=8) versus CDS only (n=4)	Children with acute OM included (includes both AOM and OME---otitis media with effusion). Excluded visits for Otitis externa and resolved OM	NR
Francis, 2009 <sup>44</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			
Gerber, 1990 <sup>45</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Forrest, 2013 <sup>43</sup> United States Patient N = 139,305 patient visits for otitis media Provider N = 24 practices	Specialty: Pediatrician/primary care Number of years in practice: Variable Type of clinic: Primary care Geographical region: Pennsylvania Population served: Pediatrics	NR	Defined as per AOM guidelines that were provided to clinicians for each patient OM visit
Francis, 2009 <sup>44</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			
Gerber, 1990 <sup>45</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Forrest, 2013 <sup>43</sup> United States Patient N = 139,305 patient visits for otitis media Provider N = 24 practices	One of several metrics measured in study with regard to adherence to AOM guidelines. For our purposes: "watchful waiting" is primary outcome---i.e. not using antibiotics according to guidelines. Major problem with study is that for only 17% of eligible visits was the CDS tool even used by PCPs. For results---there was no difference between any group with regard to comparison to baseline period or each other for adherence to watchful waiting guidelines. For AOM---percent difference in those adhering after intervention (by visit) CDS (0.1%) versus -0.7% (non-CDS), and for OME -3.2% CDS versus -1.3% ( non-CDS). Very unclear if they measured this difference only among visits where the CDR was used? assume they used ITT and disregarded this and this likely explains why there was no difference, because no one used the CDR! at baseline, clinicians only used watchful waiting for 6% of visits, and this did not change after study start	NR
Francis, 2009 <sup>44</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)		
Gerber, 1990 <sup>45</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Forrest, 2013 <sup>43</sup> United States Patient N = 139,305 patient visits for otitis media Provider N = 24 practices	NR	NR
Francis, 2009 <sup>44</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)		
Gerber, 1990 <sup>45</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Forrest, 2013 <sup>43</sup> United States Patient N = 139,305 patient visits for otitis media Provider N = 24 practices	NR	NR	
Francis, 2009 <sup>44</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			
Gerber, 1990 <sup>45</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Gerber, 2013 <sup>46</sup> United States Patient N = 185,212 unique patients (1,291,824 office visits) Provider N = 162 Practice N = 18	Children with chronic medical conditions, antibiotic allergies, and prior antibiotic use were excluded	Primary care pediatricians working in a hospital-affiliated network of 29 pediatric primary care sites	Type: Educational Target: Providers Description: One 1-hour on-site clinician education session (June 2010) followed by 1 year of personalized, quarterly audit and feedback of prescribing for bacterial and viral ARTIs
Gjelstad, 2013 <sup>47</sup> Norway Patient N = NR Provider N = 79,382 GPs Practice N = NR	Patients with acute respiratory tract infections diagnoses	Norwegian GPs attending a continuing medical education group	Type: Multifaceted Target: Providers Description: Educational (aimed at providers): national clinical practice guidelines for appropriate use of antibiotics for acute RTI, supplemented with research evidence; encouraged to use delayed prescribing; and System level: individual reports based on captured data to each GP showing RX rates and distribution of different antibiotics for various acute RI diagnoses

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Gerber, 2013 <sup>46</sup> United States Patient N = 185,212 unique patients (1,291,824 office visits) Provider N = 162 Practice N = 18	No education or prescribing feedback (usual practice)	Type of RTI: bacterial ARTI (acute sinusitis (2.9%), streptococcal pharyngitis (2.6%), and pneumonia(0.7%)) and viral ARTI Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR	Mean Age: 5 years % female: 49% Ethnicity: Black (11%) SES: Medicaid (15%) Educational level: NR Frailty: NR Comorbidities: Allergy (13.3%) Prior RTIs: NR Prior use of antibiotics: 26.8%
Gjelstad, 2013 <sup>47</sup> Norway Patient N = NR Provider N = 79,382 GPs Practice N = NR	Antibiotic intervention, group visits, peer academic detailer, individual prescription reports and CME about appropriate antibiotic prescribing vs. above intervention about <i>general prescribing in patients &gt;70</i> (excluding antibiotics)	Type of RTI: upper respiratory tract infections and respiratory symptoms, ear infections, acute tonsillitis, acute sinusitis, acute bronchitis, pneumonia Types of Signs and Symptoms: upper respiratory symptoms Duration of Signs and Symptoms: NR When counting started for duration: NR	Mean Age: 19-44 % female: 57% Ethnicity: NA SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Gerber, 2013 <sup>46</sup> United States Patient N = 185,212 unique patients (1,291,824 office visits) Provider N = 162 Practice N = 18	Specialty: Pediatrics Number of years in practice: NR Type of clinic: Pediatric primary care Geographical region: Pennsylvania and New Jersey Population served: Children from diverse racial and socioeconomic backgrounds in urban, suburban, and rural settings	Time of year: October 2008 to June 2011 (total study period); June 2010 to June 2011 (intervention period) Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: Hospital-affiliated network	American Academy of Pediatrics (AAP) recommendations of penicillin or amoxicillin as first-line agents for acute sinusitis, streptococcal pharyngitis, and pneumonia
Gjelstad, 2013 <sup>47</sup> Norway Patient N = NR Provider N = 79,382 GPs Practice N = NR	Specialty: General practice Number of years in practice: NR Type of clinic: city practice, group practice, specialist practice Geographical region: Netherlands Population served: general population	Time of year: December 2005 to March 2006; April and May 2006 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: National Health Service	Based on Norwegian guidelines of appropriate antibiotic use

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Gerber, 2013 <sup>46</sup> United States Patient N = 185,212 unique patients (1,291,824 office visits) Provider N = 162 Practice N = 18	<p>Rate of broad spectrum antibiotic prescribing during 1 year intervention, intervention vs. control:            26.8% to 14.3%, absolute difference 12.5% vs. 28.4% to 22.6%, absolute difference 5.8%;            Difference of differences (DOD), 6.7%; p=0.01</p> <p>Rate of antibiotic prescribing for bacterial ARTI during 1 year intervention, intervention vs. control:            Acute sinusitis: 38.9% to 18.8% vs. 40.0% to 33.9%, Difference of differences (DOD) 14.0%;            p=0.12            Streptococcal pharyngitis: 4.4% to 3.4% vs. 5.6 to 3.5%, Difference of differences (DOD) -            1.1%; p=0.82</p> <p>Rate of antibiotic prescribing for viral ARTI during 1 year intervention, intervention vs. control:            7.9% to 7.7% vs. 6.4% to 4.5%; Difference of differences (DOD) -1.7%; p=0.93</p>	NR
Gjelstad, 2013 <sup>47</sup> Norway Patient N = NR Provider N = 79,382 GPs Practice N = NR	<p>Changes in rates of antibiotic prescriptions: mean; 95% CI proportion of ARTI episodes with antibiotic prescription            Before intervention: 31.7; 95%CI, 29.4-34 vs. 32.7; 95%CI, 30.2 to 35.2            After intervention: 30.4; 95%CI, 27.9 to 32.8 vs. 34.2; 95%CI, 31.5 to 37            Change: -1.29; 95%CI, -2.43 to -0.16; -4.1% (relative) vs. 1.49; 95%CI, 0.58 to 2.4; 4.6% (relative)</p>	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Gerber, 2013 <sup>46</sup> United States Patient N = 185,212 unique patients (1,291,824 office visits) Provider N = 162 Practice N = 18	NR	NR
Gjelstad, 2013 <sup>47</sup> Norway Patient N = NR Provider N = 79,382 GPs Practice N = NR	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Gerber, 2013 <sup>46</sup> United States Patient N = 185,212 unique patients (1,291,824 office visits) Provider N = 162 Practice N = 18	NR	NR	
Gjelstad, 2013 <sup>47</sup> Norway Patient N = NR Provider N = 79,382 GPs Practice N = NR	NR	NR	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Gonzales, 2011 <sup>48</sup> United States Patient N = 139 enrolled (131 completed ED visit) Provider N = NR Practice N = NR	Patients ≥ 18 years; new cough present ≤ 21 days; at least one other ARI symptom (fever, sore throat, night sweats, body aches, nasal or chest congestion, shortness of breath); and availability for telephone followup interview in 2-4 weeks	NR	Type: Clinical - POC: C-reactive Protein Target: Provider Description: All participants had a management algorithm with recommendations on chest X-ray study ordering and antibiotic treatment of adults with acute cough illness placed in their medical chart. Intervention group included use of bedside fingerstick, whole blood specimen CRP test performed by study nurse with results placed in chart before being seen by clinician. Recommendation for further diagnostic testing or antibiotic treatment based on clinical algorithm provided to the control group plus CRP level categorized as normal (<10 mg/L), indeterminate (10-99 mg/L), or high (>100 mg/L)
Gonzales, 2013 <sup>49</sup> United States Patient N = NA Provider N = NR Practice N = 33 PCP sites	Uncomplicated acute bronchitis age>12 years old to 64 years old, October 1-March 31st of each year	Geisinger Health System	Type: System-level Target: Providers and patients Description: System-level printed decision support (PDS) versus computer-assisted decision-support (CDS) versus control (no support) for ACI along with clinical education and feedback.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Gonzales, 2011 <sup>48</sup> United States Patient N = 139 enrolled (131 completed ED visit) Provider N = NR Practice N = NR	No CRP testing (control); recommendations for chest X-ray study or antibiotic treatment based on clinical algorithm for predicting pneumonia in adults with acute cough illness	Type of RTI: Bronchitis (37.4%), otitis media (2.3%), pharyngitis (3.1%), sinusitis (6.1%), URI (32.8%) Types of Symptoms: NR Duration of Signs and Symptoms (mean): 5.15 days When counting started for duration: NR	Mean Age: NR; 18-44 (61%), 45-64 (35.8%), ≥ 65 (3%) % Female: 65.6% Ethnicity: Black (45.8%), White (25.2%), Hispanic (0%), Other (3.8%), unable to determine (25.2%) SES: NR Educational level: NR Frailty: NR Comorbidities: COPD (5.3%), Asthma (22.9%), Diabetes (11.5%) Prior RTIs: 2.3% (in previous 6 weeks)
Gonzales, 2013 <sup>49</sup> United States Patient N = NA Provider N = NR Practice N = 33 PCP sites	Time-period before intervention (3 winter periods before)	Type of RTI: acute bronchitis (uncomplicated and without comorbidities) Types of Signs and Symptoms: ICD-9 code based. Patient with 466.0 and 490 without prior visit for these codes in prior 30 days. Of these patients, record reviewed to see which were "uncomplicated". Duration of Signs and Symptoms: NR When counting started for duration: NR	Age: 13-64 y % female: 56-63% female Ethnicity: 96-96% white, SES: NR Educational level: NR Frailty: NR Comorbidities Prior RTIs: NR Prior use of antibiotics: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Gonzales, 2011 <sup>48</sup> United States Patient N = 139 enrolled (131 completed ED visit) Provider N = NR Practice N = NR	Specialty: NR Number of years in practice: NR Type of clinic: ED Geographical region: Urban setting, Midwest US Population served: NR	Time of year: November 2005 to March 2006 Patterns of disease activity: NR Locally tailored: NR System level characteristics: 1 of 8 control sites in previous 2 years as part of IMPAACT study	Recommendations for antibiotic treatment guided by CRP level categories
Gonzales, 2013 <sup>49</sup> United States Patient N = NA Provider N = NR Practice N = 33 PCP sites	Provider characteristics: practices stratified by size and then randomized. Specialty: primary care Number of years in practice: NR Type of clinic: primary care Geographical region: Penn Population served: Geisinger	Used winter months only. Three year baseline prior to study compared with intervention year (same winter months).	Bronchitis in age group 13-64 years without presence of comorbidities and without antibiotic "responsive" secondary conditions including pharyngitis, sinusitis, otitis media, and pneumonia

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Gonzales, 2011 <sup>48</sup> United States Patient N = 139 enrolled (131 completed ED visit) Provider N = NR Practice N = NR	CRP Group vs. Control  Antibiotic treatment %; 95% CI; p: 37%; 95%CI, 26% to 48% vs. 31%; 95%CI, 19% to 43%; p=0.46	NR
Gonzales, 2013 <sup>49</sup> United States Patient N = NA Provider N = NR Practice N = 33 PCP sites	Control: antibiotic use pre-intervention 72.5% to 74.3% post-intervention PDS: antibiotic use pre-intervention 80% to 68.3% post-intervention CDS: antibiotic use pre-intervention 74% to 60.7% post-intervention	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Gonzales, 2011 <sup>48</sup> United States Patient N = 139 enrolled (131 completed ED visit) Provider N = NR Practice N = NR	CRP Group vs. Control  Hospitalizations %; 95% CI; p: 6%; 95% CI, 2% to 16%) vs. 3%; 95% CI, 0.4%-12%, p=0.68	CRP Group vs. Control  Return visits %; 95% CI; p: 40%; 95% CI, 28% to 52% vs. 33%; 95% CI, 21% to 45%), p=0.46
Gonzales, 2013 <sup>49</sup> United States Patient N = NA Provider N = NR Practice N = 33 PCP sites	Measured patients who returned for second visit within 30 days later and diagnosed with pneumonia 0.5%-1.5% across the three groups during the intervention period.	"emergency dept. visits and hospital admission [within 30 days] were rare across all sites and periods" raw data reported in Table 1 and 0-0.1% between groups and periods.

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Gonzales, 2011 <sup>48</sup> United States Patient N = 139 enrolled (131 completed ED visit) Provider N = NR Practice N = NR	NR	NR	
Gonzales, 2013 <sup>49</sup> United States Patient N = NA Provider N = NR Practice N = 33 PCP sites	NR	see KQ3	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Huang, 2007 <sup>50</sup> United States Patient N = 1071 (2000 survey), 2071 (2003 survey) Provider N = NR Practice N = NR	Children < 6 years of age insured by 4 collaborating health plans: Harvard Pilgrim Health Care, Blue Cross Blue Shield of Massachusetts, Tufts Health Plan, and Mass Health (Massachusetts Medicaid program)	Local pediatric providers, pharmacies, and child care centers	Type: Educational Target: Parents of patients Description: Community intervention on parental misconceptions likely contributing to pediatric antibiotic overprescribing. Parents were mailed educational newsletters and were exposed to educational materials (e.g. stickers, posters, pamphlets, and fact sheets) during visits to local pediatric providers, pharmacies, and child care centers
Iyer, 2006 <sup>51</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Huang, 2007 <sup>50</sup> United States Patient N = 1071 (2000 survey), 2071 (2003 survey) Provider N = NR Practice N = NR	No educational materials/no intervention (control)	NR	2000 Survey Population: Age: 55.5% 31-40 y % female: 90.5 (mother) Ethnicity: 88% White, 1% Black, 3% Hispanic, 7.5% Other SES: 69% employed Educational level: 3.5% less than high school, 43% college graduate, 53.5% high school graduate, some college Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR  2003 Survey Population: Age: 63% ages 31 - 40 y % female: 91.5 (mother) Ethnicity: 85% white, 3% black, 3% Hispanic, 9% other SES: 63% employed Educational level: 3% less than high school, 37% college graduate, 59.5% high school graduate, some college Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR
Iyer, 2006 <sup>51</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Huang, 2007 <sup>50</sup> United States Patient N = 1071 (2000 survey), 2071 (2003 survey) Provider N = NR Practice N = NR	Specialty: Mix Number of years in practice: NR Type of clinic: local pediatric providers, pharmacies, and child care centers Geographical region: Massachusetts Population served: NR	Time of year: September 2000 - March 2003 Patterns of disease activity: Intervention occurred through 3 successive cold and flu seasons Locally tailored: Yes System level characteristics: Insured by 4 collaborating health plans, Harvard Pilgrim Health Care, Blue Cross Blue Shield of Massachusetts, Tufts Health Plan, and Mass Health (the Massachusetts Medicaid program).	NR
Iyer, 2006 <sup>51</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Huang, 2007 <sup>50</sup> United States Patient N = 1071 (2000 survey), 2071 (2003 survey) Provider N = NR Practice N = NR	NR	NR
Iyer, 2006 <sup>51</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)		

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Huang, 2007 <sup>50</sup> United States Patient N = 1071 (2000 survey), 2071 (2003 survey) Provider N = NR Practice N = NR	NR	NR
Iyer, 2006 <sup>51</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Huang, 2007 <sup>50</sup> United States Patient N = 1071 (2000 survey), 2071 (2003 survey) Provider N = NR Practice N = NR	Proportion of Total Cohort with $\geq 7$ of 10 Knowledge Questions Correct, % change from 2000 to 2003 surveys, p-value Intervention group: 12, $p < 0.05$ Control group: 7, $p < 0.05$ Crude OR*: OR=1.2; 95% CI, 0.9 to 1.6  *Controlling only for survey year and community intervention/control status  Intervention Effect** on Parental Knowledge of Antibiotics in Total Cohort, OR: OR=1.2; 95% CI, 0.8 to 1.7  **Intervention effect was measured as an interaction term between intervention and control status and time	NR	
Iyer, 2006 <sup>51</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> (1) Educational/Behavioral (2) Communication (3) Clinical (4) System-Level (5) Multifaceted <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Juzych, 2005 <sup>52</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Juzych, 2005 <sup>52</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Juzych, 2005 <sup>52</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Juzych, 2005 <sup>52</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Juzych, 2005 <sup>52</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Juzych, 2005 <sup>52</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Légaré, 2010 <sup>53</sup> Quebec, Canada Patient N = 459 (15 per clinician) Provider N = 33 Practice N = 4 (2 vs. 2)	Inclusion: Seen by family physician (FP) for ARI during walk-in clinic hours; No age restriction; Able to read, understand and write in French. Exclusion: Condition requiring emergency care	Include: Family Medicine Group (FMG) in Quebec City area; Family practitioner; Plan to remain in practice for duration of the trial. Exclude: Previously participated in an implementation trial of shared decision making (SDM)	Type: (1) Educational/Behavioral and (2) Communication Target: Providers Description: Professional development program with 3 components: (1) Interactive workshops (n = 3) and related material to address: (a) probability of bacterial vs. viral URI, (b) scientific evidence of benefit/risk of various treatment options, (c) risk communication techniques, and (d) strategies for fostering patient participation in decision-making. Workshops included videos of simulated patient-FP consultations, facilitated exercises, decision support tools for clinical use, and educational materials. (2) Two types of reminders mailed to participants between workshops to: emphasize use of decision support tools in clinic, SDM behaviors, and new studies relevant to use of antibiotics for ARIs. (3) Research team informed FPs of level of agreement between their scores on the decisional conflict scale (DCS) and the DCS scores of their patients

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Légaré, 2010 <sup>53</sup> Quebec, Canada Patient N = 459 (15 per clinician) Provider N = 33 Practice N = 4 (2 vs. 2)	Randomized (at FMG level) control group clinicians and patients. Study was a parallel clustered RCT, in which the control group received delayed intervention, and both groups were also compared with themselves at two time points	Experimental group (n = 245) vs. Control group (n = 214) (Three subgroups each) Type of RTI: NR Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR Time T0 (n = 169, 92 vs. 77): Preferred role in decision-making, % (n/N): Patient decides: 4% (4/92) vs. 4% (3/73); Patient decides, considering physician's opinion: 32% (29/92) vs. 33% (24/73); Both parties decide: 34% (31/92) vs. 19% (14/73); Physician decides, considering patient's opinion: 17% (16/92) vs. 33% (24/73); Physician decides: 13% (12/92) vs. 11% (8/73) Time T1 (n = 151, 81 vs. 70): Preferred role in decision-making, % (n/N): Patient decides: 5% (4/81) vs. 7% (5/70); Patient decides, considering physician's opinion: 43% (35/81) vs. 36% (25/70); Both parties decide: 20% (16/81) vs. 23% (16/70); Physician decides, considering patient's opinion: 23% (19/81) vs. 19% (13/70); Physician decides: 9% (7/81) vs. 16% (11/70) Time T2 (n = 139, 72 vs. 67): Preferred role in decision-making, % (n/N): Patient decides: 7% (5/72) vs. 3% (2/65); Patient decides, considering physician's opinion: 32% (23/72) vs. 26% (17/65); Both parties decide: 29% (21/72) vs. 18% (12/65); Physician decides, considering patient's opinion: 19% (14/72) vs. 32% (21/65); Physician decides: 13% (9/72) vs. 20% (13/65)	Experimental group (n = 245) vs. Control group (n = 214) (Three subgroups each) Time T0 (n = 169, 92 vs. 77): Adults: 60% (55/92) vs. 79% (61/77) Age, years (adults), mean ± SD: 37 ± 12 vs. 41 ± 13 Age, years (children), mean ± SD: 4 ± 3 vs. 7 ± 5 Female: 67% (62/92) vs. 75% (57/77) SES (income ≥ Canadian \$ 45,000/yr): 55% (51/92) vs. 54% (38/77) SES (currently working): 68% (63/92) vs. 79% (61/77) SES (with public drug insurance): 29% (27/92) vs. 22% (17/77) Educational level (college degree): 55% (51/92) vs. 58% (44/77) Time T1 (n = 151, 81 vs. 70): Adults: 67% (54/81) vs. 66% (46/70) Age, years (adults), mean ± SD: 36 ± 13 vs. 38 ± 12 Age, years (children), mean ± SD: 5 ± 4 vs. 5 ± 4 Female: 70% (57/81) vs. 68% (47/70) SES (income ≥ Canadian \$ 45,000/yr): 56% (43/81) vs. 63% (42/70) SES (currently working): 72% (58/81) vs. 83% (57/70) SES (with public drug insurance): 40% (32/81) vs. 30% (21/70)

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
<p>Légaré, 2010<sup>53</sup>                      Quebec, Canada                      Patient N = 459                      (15 per clinician)                      Provider N = 33                      Practice N = 4                      (2 vs. 2)</p>	<p>Intervention vs. Control                      Specialty: All Family Practice                      Number of years in practice, mean ± SD: 22 ± 9 vs. 21 ± 10                      Type of clinic: All FMGs affiliated with the Ministère de la Santé et des Services sociaux of Quebec                      Geographical region: All Quebec City                      Population served: All General population registered for services                      Preferred role in decision-making, % (n/N): Patient decides: 22% (4/18) vs. 0% (0/15); Patient decides, considering physician's opinion: 22% (4/18) vs. 53% (8/15); Both parties decide: 17% (3/18) vs. 7% (1/15); Physician decides, considering patient's opinion: 33% (6/18) vs. 40% (6/15); Physician decides: 6% (1/18) vs. 0% (0/15)</p>	<p>Time of year: November 2007-March 2008                      Patterns of disease activity: NR                      Locally tailored: No (although intervention was iteratively refined during this pilot study)                      System-level characteristics: FMGs are organized through the Ministère de la Santé et des Services sociaux of Quebec and provide family medicine services to registered individuals</p>	<p>"Clinical practice guidelines (CPGs)"                      [Used for outcome of FPs' "Intention to comply with CPGs"; Not part of definition of antibiotic use or prescription outcomes]</p>

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Légaré, 2010 <sup>53</sup> Quebec, Canada Patient N = 459 (15 per clinician) Provider N = 33 Practice N = 4 (2 vs. 2)	Experimental group (EG) vs. Control group (CG) Patients who decided to use antibiotics immediately: Time T0: 56% vs. 54% Time T1: 33% vs. 49% Time T2: 35% vs. 46% Difference at T1; 95% CI: -16; 95% CI, -31 to 1; p=0.08 Difference in Experimental group between T1 and T2 (indicating sustainability): 2 (-14 to 16) Difference between change in Experimental group (T0 to T2) and change in Control Group (T0 to T2): -13 (-39 to 6) Mean proportion of patients who filled prescription: Time T0: 79% vs. 70% Time T1: 45% vs. 51% Difference at T1; 95% CI: -6; 95% CI, -17 to 6; p=0.35	NR

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Légaré, 2010 <sup>53</sup> Quebec, Canada Patient N = 459 (15 per clinician) Provider N = 33 Practice N = 4 (2 vs. 2)	NR	Experimental group vs. Control group Patients who felt they had stable, a little better or much better health at 2 weeks (vs. not much worse or much worse): Time T0: 87% vs. 91% Time T1: 94% vs. 85% Time T2: 94% vs. 91% Difference at T1; 95% CI: 9; 95% CI, -2 to 18; p=0.08 Difference in Experimental group between T1 and T2 (indicating sustainability): 0 (-8 to 8) Difference between change in Experimental group (T0 to T2) and change in Control group (T0 to T2): 7 (-6 to 21)

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<p>Légaré, 2010<sup>53</sup>                      Quebec, Canada                      Patient N = 459                      (15 per clinician)                      Provider N = 33                      Practice N = 4                      (2 vs. 2)</p>	<p>Experimental group vs. Control group                      Correlation of FP's and patients' decisional conflict scale (DCS) scores (Pearson's <i>r</i>):                      Time T0: 0.14 vs. -0.05; Time T1: 0.24 vs. 0.02; Time T2: 0.17 vs. 0.18                      Difference at T1; 95% CI: 0.26; 95% CI, -0.06 to 0.53; p=0.06                      Difference in Experimental group between T1 and T2 (indicating sustainability): -0.1, -0.4 to 0.2                      Difference between change Experimental group (T0 to T2) and change Control group (T0 to T2): -0.1 (CI not calculable)                      Quality of the decision (FPs), mean score (±SD):                      Time T0: 8.8 ± 1.1 vs. 8.3 ± 1.4; Time T1: 8.7 ± 1.2 vs. 8.5 ± 1.3; Time T2: 8.7 ± 1.1 vs. 8.5 ± 1.0                      Difference at T1; 95% CI: 0.2; 95% CI, -0.34 to 0.89; p=0.29                      Difference in Experimental group between T1 and T2 (indicating sustainability): 0, -0.4 to 0.2                      Difference between change in Experimental group (T0 to T2) and change in Control group (T0 to T2): -0.3, -0.8 to 0.1                      Quality of the decision (Patients), mean score (±SD):                      Time T0: 8.2 ± 2.1 vs. 8.4 ± 1.9; Time T1: 8.7 ± 1.9 vs. 8.6 ± 1.9; Time T2: 9.1 ± 2.1 vs. 8.1 ± 1.8                      Difference at T1; 95% CI: 0.1; 95% CI, -0.88 to 0.94; p=0.57                      Difference in Experimental group between T1 and T2 (indicating sustainability): 0.4, -0.2 to 1.1                      Difference between change in Experimental group (T0 to T2) and change in Control group (T0 to T2): 1.2, 0.3 to 2.3                      Patients with decisional regret:                      Time T0: 1% vs. 1%; Time T1: 7% vs. 9%; Time T2: 3% vs. 9%                      Difference at T1; 95% CI: -2; 95% CI, -12 to 5; p=0.91                      Difference in Experimental group between T1 and T2 (indicating sustainability): -4, -22 to 7                      Difference between change in Experimental group (T0 to T2) and change in Control group (T0 to T2): -6, -30 to 22</p>	<p>NR</p>	

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Légaré, 2010 <sup>53</sup>  Continued.			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Légaré, 2010 <sup>53</sup>  Continued.			Educational level (college degree): 72% (57/81) vs. 57% (39/70) Time T2 (n = 139, 72 vs. 67): Adults: 79% (57/72) vs. 72% (48/67) Age, years (adults), mean ± SD: 40 ± 13 vs. 37 ± 11 Age, years (children), mean ± SD: 3 ± 3 vs. 5 ± 4 Female: 69% (50/72) vs. 76% (51/67) SES (income ≥ Canadian \$ 45,000/yr): 62% (41/72) vs. 72% (44/67) SES (currently working): 70% (57/72) vs. 87% (58/67) SES (with public drug insurance): 25% (18/72) vs. 12% (8/67) Educational level (college degree): 61% (44/72) vs. 63% (41/67) Ethnicity: NR    Frailty: NR    Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Légaré, 2010 <sup>53</sup>  Continued.			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Légaré, 2010 <sup>53</sup>  Continued.		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Légaré, 2010 <sup>53</sup>  Continued.		

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Légaré, 2010 <sup>53</sup>  Continued.	<p>Intention to engage in SDM (FPs), mean score (<math>\pm</math>SD):                      Time T0: <math>0.8 \pm 0.8</math> vs. <math>0.3 \pm 1.6</math>; Time T1: <math>1.3 \pm 1.2</math> vs. <math>0.8 \pm 1.3</math>; Time T2: <math>1.4 \pm 0.7</math> vs. <math>0.7 \pm 1.0</math>                      Difference at T1; 95% CI: 0.5; 95% CI, -0.2 to 1.3; p=0.77                      Difference in Experimental group between T1 and T2 (indicating sustainability): 0.1, -0.5 to 0.7                      Difference between change in Experimental group (T0 to T2) and change in Control group (T0 to T2): 0.05, -0.9 to 1</p> <p>Intention to engage in SDM (Patients), mean score (<math>\pm</math>SD):                      Time T0: <math>1.1 \pm 1.4</math> vs. <math>0.8 \pm 1.6</math>; Time T1: <math>0.7 \pm 1.2</math> vs. <math>0.8 \pm 1.4</math>; Time T2: <math>1.1 \pm 1.5</math> vs. <math>0.7 \pm 1.3</math>                      Difference at T1; 95% CI: -0.1; 95% CI, -0.6 to 0.4; p=0.16                      Difference in Experimental group between T1 and T2 (indicating sustainability): 0.4, -0.1 to 0.8                      Difference between change in Experimental group (T0 to T2) and change in Control group (T0 to T2): 0.1, -0.5 to 0.7</p> <p>Intention of FPs to comply with clinical practice guidelines, mean score (<math>\pm</math>SD):                      Time T0: <math>1.9 \pm 0.8</math> vs. <math>1.8 \pm 0.8</math>; Time T1: <math>2.1 \pm 0.9</math> vs. <math>2.2 \pm 0.5</math>; Time T2: <math>2.1 \pm 0.7</math> vs. <math>2.0 \pm 0.9</math>                      Difference at T1; 95% CI: -0.1; 95% CI, -0.7 to 0.5; p=0.58                      Difference in Experimental group between T1 and T2 (indicating sustainability): 0, -0.5 to 0.5                      Difference between change in Experimental group (T0 to T2) and change in Control group (T0 to T2): 0, -0.6 to 0.7</p>		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
<p>Légaré, 2012<sup>54</sup>                      Quebec, Canada                      Patient N = 359                      (181 vs. 178)                      Provider N = 149                      (77 vs. 72)                      Practice N = 9                      (5 vs. 4)</p> <p>Légaré, 2013<sup>55</sup> Quebec, Canada                      Patient N = NR                      Provider N = 270 (250 completed entry questionnaire)                      Practice N = 12 (9 completed entry questionnaire)</p>	<p>Inclusion: Adult or child; Diagnosis of acute respiratory infection (e.g., bronchitis, OM, pharyngitis or rhinosinusitis) for which the use of antibiotics was subsequently considered either by patient or physician during the visit. Able to read, understand and write in French</p>	<p>Include: Family practice teaching units (unit of randomization) affiliated with the Department of Family Medicine and Emergency Medicine at Université Laval in 6 regions of Quebec; Family physician (teacher or resident) and nurse practitioner; Providing care in department's walk-in clinics.</p> <p>Exclude: Participated in previous pilot trial of intervention; Not expecting to practice in teaching unit during the trial.</p>	<p>Type: (1) Educational/Behavioral and (2) Communication                      Target: Providers                      Description: Two-hour on-line tutorial followed by a 2-hour on-site interactive workshop. On-line tutorial addressed key components of clinical decision-making process about antibiotic treatment for ARI in primary care. On-site workshop to help physicians review and integrate concepts from on-line training. Both tutorial and workshop included videos, exercises and decision aids to help physicians communicate to patients the probability of bacterial vs. viral URI and the benefits/harms associated with use of antibiotics.</p>

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
<p>Légaré, 2012<sup>54</sup>                      Quebec, Canada                      Patient N = 359                      (181 vs. 178)                      Provider N = 149                      (77 vs. 72)                      Practice N = 9                      (5 vs. 4)</p> <p>Légaré, 2013<sup>55</sup> Quebec, Canada                      Patient N = NR                      Provider N = 270 (250 completed entry questionnaire)                      Practice N = 12 (9 completed entry questionnaire)</p>	<p>Randomized (at teaching unit level) control group physicians and patients seen by those physicians. Study was a parallel cluster RCT, in which the control group physicians were asked to provide usual care. Access to on-line tutorial denied to control group during trial</p>	<p>Intervention vs. Control                      Type of RTI: NR                      Types of Signs and Symptoms: NR                      Duration of Signs and Symptoms: NR                      When counting started for duration: NR</p> <p>Before Intervention:                      Preferred role in decision-making, % (n/N): Patient decides: 1.2% (2/171) vs. 5.4% (9/166); Patient decides, considering physician's opinion: 29.8% (51/171) vs. 22.9% (38/166); Both parties decide: 21.1% (36/171) vs. 29.5% (49/166); Physician decides, considering patient's opinion: 38.0% (65/171) vs. 36.1% (60/166); Physician decides: 9.9% (17/171) vs. 6.0% (10/166)</p> <p>After Intervention:                      Preferred role in decision-making, % (n/N): Patient decides: 3.7% (6/163) vs. 1.2% (2/165); Patient decides, considering physician's opinion: 28.2% (46/163) vs. 33.3% (55/165); Both parties decide: 32.5% (53/163) vs. 26.1% (43/165); Physician decides, considering patient's opinion: 30.1% (49/163) vs. 32.1% (53/165); Physician decides: 5.5% (9/163) vs. 7.3% (12/165)</p>	<p>Intervention vs. Control</p> <p>Before Intervention:                      Adults (≥ 18 y): 64.3% vs. 77.8%                      Age, years (adults), mean ± SD: 39.3 ± 12.4 vs. 43.3 ± 16.2                      Age, years (children), mean ± SD: 4.6 ± 3.8 vs. 5.0 ± 3.9                      Female: 65.6% vs. 59.8%                      SES (with private drug insurance): 68.1% vs. 71.8%                      Educational level (college degree): 59.0% vs. 60.2%                      Comorbidities (≥ 1 chronic disease): 14.8% vs. 17.5%</p> <p>After Intervention:                      Adults (≥ 18 y): 60.9% vs. 83.6%                      Age, years (adults), mean ± SD: 40.8 ± 15.1 vs. 43.3 ± 14.8                      Age, years (children), mean ± SD: 4.9 ± 3.7 vs. 4.9 ± 4.1                      Female: 64.6% vs. 68.0%                      SES (with private drug insurance): 75.9% vs. 67.8%                      Educational level (college degree): 58.0% vs. 63.1%                      Comorbidities (≥ 1 chronic disease): 8.8% vs. 15.7%</p> <p>Ethnicity: NR                      Frailty: NR                      Prior RTIs: NR                      Prior use of antibiotics: NR</p>

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
<p>Légaré, 2012<sup>54</sup>                      Quebec, Canada                      Patient N = 359                      (181 vs. 178)                      Provider N = 149                      (77 vs. 72)                      Practice N = 9                      (5 vs. 4)</p> <p>Légaré, 2013<sup>55</sup> Quebec, Canada                      Patient N = NR                      Provider N = 270 (250 completed entry questionnaire)                      Practice N = 12 (9 completed entry questionnaire)</p>	<p>Légaré, 2012:                      Intervention vs. Control                      Specialty: Family Practice (both groups)                      Type of clinic: Academic Family Medicine (both groups)                      Geographical region: 6 regions of Quebec (both groups)                      Population served: General population (both groups)</p> <p>Before Intervention:                      Number of years in practice:                      Teachers (years) mean ± SD: 13.7 ± 10.1 vs. 15.6 ± 10.7                      Resident year 1: 52.7% vs. 58.3%                      Resident year 2: 47.3% vs. 41.7%                      Preferred role in decision-making, % (n/N): Patient decides: 10.1% (15/149) vs. 8.1% (8/99); Patient decides, considering physician's opinion: 19.5% (29/149) vs. 14.1% (14/99); Both parties decide: 50.3% (75/149) vs. 47.5% (47/99); Physician decides, considering patient's opinion: 20.1% (30/149) vs. 30.3% (30/99); Physician decides: 0% (0/149) vs. 0% (0/99)</p> <p>After Intervention:                      Number of years in practice:                      Teachers (years) mean ± SD: 13.9 ± 10.3 vs. 15.2 ± 10.7                      Resident year 1: 55.4% vs. 52.7%                      Resident year 2: 44.6% vs. 47.3%                      Preferred role in decision-making, % (n/N): Patient decides: 10.0% (16/160) vs. 8.3% (9/108); Patient decides, considering physician's opinion: 21.9% (35/160) vs. 14.8% (16/108); Both parties decide: 48.8% (78/160) vs. 46.3% (50/108); Physician decides, considering patient's opinion: 19.4% (31/160) vs. 30.6% (33/108); Physician decides: 0% (0/160) vs. 0% (0/108)</p>	<p>Time of year: July 2010 - April 2011;                      Intervention: November, 2010.                      Patterns of disease activity: NR                      Locally tailored: No                      System-level characteristics: NR</p>	<p>"Clinical practice guidelines (CPGs)"</p> <p>[Used for outcome of FPs' "Intention to comply with CPGs"; Not part of definition of antibiotic use or prescription outcomes]</p>

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
<p>Légaré, 2012<sup>54</sup>                      Quebec, Canada                      Patient N = 359                      (181 vs. 178)                      Provider N = 149                      (77 vs. 72)                      Practice N = 9                      (5 vs. 4)</p> <p>Légaré, 2013<sup>55</sup> Quebec, Canada                      Patient N = NR                      Provider N = 270 (250 completed entry questionnaire)                      Practice N = 12 (9 completed entry questionnaire)</p>	<p>Légaré, 2012:                      Intervention vs. Control                      Proportion of patients who decided to use antibiotics immediately after consultation (All patients):                      Baseline: 41.2% vs. 39.2%                      After intervention: 27.2% vs. 52.2%                      Absolute difference: 25.0%                      Adjusted relative risk (adjusted for cluster design, baseline values, and patient age group):                      RR=0.5; 95% CI, 0.3 to 0.7</p> <p>Proportion of patients who decided to use antibiotics immediately after consultation (Adults):                      Baseline: 41.9% vs. 39.8%                      After intervention: 26.6% vs. 50.7%                      Absolute difference: 24.1%                      Adjusted relative risk: RR=0.5; 95% CI, 0.4 to 0.8</p> <p>Proportion of patients who decided to use antibiotics immediately after consultation (Children):                      Baseline: 40.0% vs. 36.8%                      After intervention: 27.1% vs. 65.5%                      Absolute difference: 38.4%                      Adjusted relative risk: RR=0.4; 95% CI, 0.3 to 0.7</p>	<p>NR</p>

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
<p>Légaré, 2012<sup>54</sup>                      Quebec, Canada                      Patient N = 359                      (181 vs. 178)                      Provider N = 149                      (77 vs. 72)                      Practice N = 9                      (5 vs. 4)</p> <p>Légaré, 2013<sup>55</sup> Quebec, Canada                      Patient N = NR                      Provider N = 270 (250 completed entry questionnaire)                      Practice N = 12 (9 completed entry questionnaire)</p>	<p>NR</p>	<p>Légaré, 2012:                      Intervention vs. Control                      Patient QOL (physical scale):                      Before intervention: 49.3 ± 8.8 vs. 47.7 ± 8.9                      After intervention: 49.4 ± 7.5 vs. 48.2 ± 7.8                      Mean difference: 0.4 (95% CI: -2.6 - 3.3)                      Patient QOL (mental scale):                      Before intervention: 51.2 ± 8.0 vs. 48.5 ± 11.0                      After intervention: 50.8 ± 9.3 vs. 51.2 ± 8.4                      Mean difference: -1.9 (95% CI: -4.9 - 1.1)                      Patient repeat consultation for same reason:                      Before intervention: 21.6% vs. 13.4%                      After intervention: 22.7% vs. 15.2%                      Adjusted RR (adjusted for cluster design and baseline values): RR=1.3; 95% CI, 0.7 to 2.3</p>

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
<p>Légaré, 2012<sup>54</sup>                      Quebec, Canada                      Patient N = 359                      (181 vs. 178)                      Provider N = 149                      (77 vs. 72)                      Practice N = 9                      (5 vs. 4)</p> <p>Légaré, 2013<sup>55</sup> Quebec, Canada                      Patient N = NR                      Provider N = 270 (250 completed entry questionnaire)                      Practice N = 12 (9 completed entry questionnaire)</p>	<p>Légaré, 2012:                      Intervention vs. Control                      Patient Decisional Conflict Scale (% with score <math>\geq</math> 2.5):                      Before intervention: 5.1% vs. 4.2%; After intervention: 4.6% vs. 6.3%;                      Adjusted RR (adjusted for cluster design and baseline values):                      RR=0.8; 95% CI, 0.2 to 2.4                      Patient quality of decision:                      Before intervention: <math>8.7 \pm 1.5</math> vs. <math>8.7 \pm 1.5</math>; After intervention: <math>8.5 \pm 1.6</math> vs. <math>8.5 \pm 1.5</math>; Mean difference: 0.0; 95% CI, -0.4 to 0.4                      Patient intention to engage in SDM:                      Before intervention: <math>1.9 \pm 1.2</math> vs. <math>2.0 \pm 1.2</math>; After intervention: <math>2.1 \pm 1.1</math> vs. <math>1.9 \pm 1.2</math>; Mean difference: 0.2; 95% CI, -0.1 to 0.4                      Patient adherence to decision:                      Before intervention: 91.6% vs. 88.4%; After intervention: 87.7% vs. 91.5%; Adjusted RR: RR=1.0; 95% CI, 0.9 to 1.0                      Patient regret over decision:                      Before intervention: <math>10.5 \pm 15.4</math> vs. <math>10.8 \pm 20.8</math>; After intervention: <math>12.4 \pm 19.1</math> vs. <math>7.6 \pm 13.7</math>; Mean difference: 4.8; 95% CI, 0.9 to 8.7                      Physician Decisional Conflict Scale (% with score <math>\geq</math> 2.5):                      Before intervention: 4.5% vs. 3.0%; After intervention: 4.6% vs. 1.1%;                      Adjusted RR: RR=3.4; 95% CI, 0.3 to 38.0                      Physician quality of decision:                      Before intervention: <math>8.2 \pm 1.1</math> vs. <math>8.2 \pm 1.4</math>; After intervention: <math>8.2 \pm 1.3</math> vs. <math>8.4 \pm 1.0</math>; Mean difference: -0.2; 95% CI, -0.6 to 0.2                      Physician intention to engage in SDM:                      Before intervention: <math>1.6 \pm 0.8</math> vs. <math>1.6 \pm 0.9</math>; After intervention: <math>1.7 \pm 0.9</math> vs. <math>1.8 \pm 0.7</math>; Mean difference: 0.0; 95% CI, -0.3 to 0.2                      Physician intention to follow clinical practice guidelines:                      Before intervention: <math>2.2 \pm 0.6</math> vs. <math>2.2 \pm 0.7</math>; After intervention: <math>2.0 \pm 0.7</math> vs. <math>2.2 \pm 0.7</math>; Mean difference: -0.2; 95% CI, -0.5 to 0.1</p>	<p>NR</p>	

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Légaré, 2012 <sup>54</sup> Légaré, 2013 <sup>55</sup> Quebec, Canada  Continued.			
Linder, 2009 <sup>56</sup> United States Patient N = 111,820 Provider N = 443 Practice N = NR	Acute respiratory infections	Randomly assigned 27 PCP clinics that use their EHR, matched for size, to intervention (ARI smart form) vs. control	Type: System-level Target: Providers Description: 27 primary care clinics were randomized to receive an EHR-integrated, documentation-based clinical decision support system for the care of patients with ARIs ("ARI Smart Form") or to offer usual care.

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Légaré, 2012 <sup>54</sup> Légaré, 2013 <sup>55</sup> Quebec, Canada  Continued.			
Linder, 2009 <sup>56</sup> United States Patient N = 111,820 Provider N = 443 Practice N = NR	No decision tool	Type of RTI: any URI (called ARI---acute) Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR	Control vs. Intervention Mean Age: 48 years vs. 49 years % female 69% vs. 61% Ethnicity: 59% white vs. 48% All other characteristics: NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
<p>Légaré, 2012<sup>54</sup>                      Légaré, 2013<sup>55</sup> Quebec, Canada</p> <p>Continued.</p>	<p>Légaré, 2012:                      Preferred role in decision-making, % (n/N): Patient decides: 4% (4/92) vs. 4% (3/73); Patient decides, considering physician's opinion: 32% (29/92) vs. 33% (24/73); Both parties decide: 34% (31/92) vs. 19% (14/73); Physician decides, considering patient's opinion: 17% (16/92) vs. 33% (24/73); Physician decides: 13% (12/92) vs. 11% (8/73)</p> <p>Légaré, 2013:                      Teachers (years) mean ± SD: 13.9 ± 10.3 vs. 15.2 ± 10.7</p>		
<p>Linder, 2009<sup>56</sup>                      United States                      Patient N = 111,820                      Provider N = 443                      Practice N = NR</p>	<p>Control vs. Intervention Physicians                      Specialty: 54% vs. 44% staff physicians                      All other characteristics: NR</p>	<p>Time of year: November 2005- May 2006                      Patterns of disease activity: NR                      Locally tailored: Tailored to electronic health record users                      System-level characteristics: NR</p>	<p>Used appropriateness in secondary outcome measures---appropriate conditions for antibiotics use included strep pharyngitis, pneumonia, sinusitis, and otitis media. Others were not appropriate</p>

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Légaré, 2012 <sup>54</sup> Légaré, 2013 <sup>55</sup> Quebec, Canada  Continued.		
Linder, 2009 <sup>56</sup> United States Patient N = 111,820 Provider N = 443 Practice N = NR	Primary outcome measure was antibiotic prescription for ARIs Control vs intervention: 43% vs 39%, OR=0.8; 0.6 to 1.2; p=0.30 in per-protocol analysis (as used) 59% versus 88% [OR calculated the other direction 5.0 and statistically significant] overall antibiotic use for acute bronchitis (no designation of appropriateness) was 61% versus 45% [OR calculated the other direction 0.5; 0.3 to 0.9. Only in 6% of ARI visits was the intervention tool "ARI smart form" used within the intervention clinics.	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Légaré, 2012 <sup>54</sup> Légaré, 2013 <sup>55</sup> Quebec, Canada  Continued.		
Linder, 2009 <sup>56</sup> United States Patient N = 111,820 Provider N = 443 Practice N = NR	NR	30 day revisit rate control 26% vs. intervention 23% 30 day revisit rate attributable to ARI control 9% vs. intervention 8%

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Légaré, 2012 <sup>54</sup> Légaré, 2013 <sup>55</sup> Quebec, Canada  Continued.	Légaré, 2013: Shared decision making behaviors Entry vs. Exit: mean ± SD D-Option (patient) Intervention vs. Control: 79.3 ± 1.4 vs. 80.0 ± 1.5; 80.1 ± 1.1 vs. 74.9 ± 1.1, p-value = 0.001 D-Option (physician) Intervention vs. Control: 74.4 ± 2.1 vs. 75.5 ± 1.7; 79.7 ± 1.8 vs. 76.3 ± 1.9, p-value = 0.20 Assumed role (patient): p-value = 0.04 Active/collaborative role n (%): 101 (55.5) vs. 99 (57.9); 118 (67.1) vs. 87 (49.2) Passive role n (%): 81 (44.5) vs. 72 (42.1); 58 (32.9) vs. 90 (50.8)  Intention to engage in shared decision making and its related determinants at study entry and exit: Theory of Planned Behavior (TPB) constructs Entry vs. Exit: Intention Intervention vs. control mean ± SD: 1.6 ± 0.1 vs. 1.5 ± 0.1; 1.7 ± 0.1 vs. 1.8 ± 0.1, Mean Difference = 0.1, p-value = 0.74 Instrumental attitude Intervention vs. control: 1.9 ± 0.1 vs. 1.9 ± 0.1; 2.2 ± 0.1 vs. 2.2 ± 0.1, Mean Difference = 0, p-value = 0.97 Affective attitude Intervention vs. control: 1.3 ± 0.1 vs. 1.1 ± 0.2; 1.6 ± 0.1 vs. 1.4 ± 0.1, Mean Difference = 0.2, p-value = 0.19 Subjective norm Intervention vs. control: 1.5 ± 0.1 vs. 1.4 ± 0.1; 1.6 ± 0.1 vs. 1.7 ± 0.1, Mean Difference = 0.1, p-value = 0.55 Perceived behavioral control Intervention vs. control: 1.2 ± 0.1 vs. 1.1 ± 0.1; 1.3 ± 0.1 vs. 1.3 ± 0.1, Mean Difference = 0, p-value = 0.99		
Linder, 2009 <sup>56</sup> United States Patient N = 111,820 Provider N = 443 Practice N = NR	NR	NR	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Linder, 2010 <sup>57</sup> United States Patient N = 136,633 Provider N = 573 Practice N = NR	Acute respiratory infections	Randomly assigned 27 PCP clinics that use their EHR, matched for size, to intervention (ARI quality dashboard) vs. control	Type: System-level Target: Providers Description: 27 primary care clinics were randomized to receive an EHR-based feedback system ("ARI Quality Dashboard") or usual care.
Little, 1997 <sup>58</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Little, 2001 <sup>59</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)  Little, 2006 <sup>60</sup> (companion) (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Linder, 2010 <sup>57</sup> United States Patient N = 136,633 Provider N = 573 Practice N = NR	No decision tool	Types of RTI: pneumonia, strep pharyngitis, sinusitis, OM, nonstrep pharyngitis, influenza, acute bronchitis, and nonspecific URI All other characteristics: NR	NR
Little, 1997 <sup>58</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Little, 2001 <sup>59</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)  Little, 2006 <sup>60</sup> (companion) (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Linder, 2010 <sup>57</sup> United States Patient N = 136,633 Provider N = 573 Practice N = NR	Specialty: 60% staff physicians All other characteristics: NR	Time of year: November 2006- August 2007 Patterns of disease activity: NR Locally tailored: Tailored to electronic health record users System-level characteristics: NR	Used appropriateness in secondary outcome measures---appropriate conditions (based on ICD-9 code) for antibiotic use included strep pharyngitis, pneumonia, sinusitis, and otitis media. Others were not appropriate
Little, 1997 <sup>58</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Little, 2001 <sup>59</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)  Little, 2006 <sup>60</sup> (companion) (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Linder, 2010 <sup>57</sup> United States Patient N = 136,633 Provider N = 573 Practice N = NR	Primary outcome measure was antibiotic prescription for ARIs Control vs intervention: 47% versus 47%, and for antibiotic appropriate conditions 64% versus 65%. In per protocol analysis (among users of the ARI tool) this was 42% overall and 63% for antibiotic appropriate conditions. When limiting analysis to intervention practices in comparing users and non-users of the tool, there was slight decrease in antibiotic use overall 42% versus 50%, p=0.02, but no difference in antibiotic use in antibiotic appropriate conditions (so this small difference was driven by decrease in inappropriate antibiotic use)	NR
Little, 1997 <sup>58</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		
Little, 2001 <sup>59</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)  Little, 2006 <sup>60</sup> (companion) (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Linder, 2010 <sup>57</sup> United States Patient N = 136,633 Provider N = 573 Practice N = NR	NR	NR
Little, 1997 <sup>58</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		
Little, 2001 <sup>59</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)  Little, 2006 <sup>60</sup> (companion) (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Linder, 2010 <sup>57</sup> United States Patient N = 136,633 Provider N = 573 Practice N = NR	NR	NR	
Little, 1997 <sup>58</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			
Little, 2001 <sup>59</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)  Little, 2006 <sup>60</sup> (companion) (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Little, 2013 <sup>61</sup> United Kingdom Patient N = 1,129 (Score 1), 631 (FeverPAIN, Score 2) Provider N = NR Practice N = 48	Patients were people aged $\geq 3$ presenting with acute sore throat (two weeks or less of sore throat) and an abnormal looking throat (e.g. erythema and/or pus)	General practitioners and triage practice nurses in general practices in south and central England	Type: Clinical - POC: Rapid Strep Target: Provider Description: Intervention groups included (1) Clinical score and (2) Rapid antigen detection testing. FeverPAIN score was applied to clinical score group and antibiotics were not offered to those with low scores (0/1). Immediate antibiotics offered for those with high scores ( $\geq 4$ , an estimated 63% streptococci based on diagnostic studies). Delayed antibiotics were given to those with intermediate scores (2 or 3, 39% streptococci). The clinical score was used in all patients in the rapid antigen test group. Those with low clinical scores (0/1) were not offered antibiotics or a rapid antigen test (< 20% streptococci). Those with a score of 2 (33% streptococci) were offered a delayed prescription. Those with higher scores ( $\geq 3$ , 55% streptococci) underwent rapid antigen test in clinic. Patients with negative results were not offered antibiotics. IMI test pack RADT was used based on in vitro performance and ease of use

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Little, 2013 <sup>61</sup> United Kingdom Patient N = 1,129 (Score 1), 631 (FeverPAIN, Score 2) Provider N = NR Practice N = 48	Delayed antibiotics (control). Patient was advised to collect prescription after 3 to 5 days if symptoms did not improve or became considerably worse	Type of RTI: Streptococcal sore throat Types of Signs and Symptoms: fever in the past 24 hours (56.7%), pus on tonsils (25.8%) Duration of Signs and Symptoms: 4.8 days When counting started for duration: NR	Mean Age: 29.7 years % female: 64.2% Ethnicity: NR SES: NR Educational: NR Frailty: NR Comorbidities: NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Little, 2013 <sup>61</sup> United Kingdom Patient N = 1,129 (Score 1), 631 (FeverPAIN, Score 2) Provider N = NR Practice N = 48	Specialty: General practice Numbers of years in practice: NR Type of clinic: General practice Geographical area: South and central England	Time of year: October 2008 to April 2011 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: NR	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Little, 2013 <sup>61</sup> United Kingdom Patient N = 1,129 (Score 1), 631 (FeverPAIN, Score 2) Provider N = NR Practice N = 48	<p>Delayed prescribing (control) vs. Clinical score (FeverPAIN) only vs. Clinical score (FeverPAIN) + rapid antigen test                      Antibiotic Use, crude %, risk ratio; 95% CI; p: 46%; RR=1.00 vs. 37%; RR=0.71; 95% CI, 0.50 to 0.95; p=0.02 vs. 35%; RR=0.73; 95% CI, 0.52 to 0.98; p=0.03</p> <p>Delayed prescribing (control) vs. Clinical score (Score 1) only vs. Clinical score (Score 1) + rapid antigen test                      Antibiotic Use, crude %, risk ratio (95% CI), P: 39%; RR=1.00 vs. 47 %; RR=1.20; 95% CI, 0.99 to 1.42; p=0.059 vs. 35%; RR=0.88; 95% CI, 0.69 to 1.09; p=0.265</p>	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Little, 2013 <sup>61</sup> United Kingdom Patient N = 1,129 (Score 1), 631 (FeverPAIN, Score 2) Provider N = NR Practice N = 48	NR	Delayed prescribing (control) vs. Clinical score (FeverPAIN) only vs. Clinical score (FeverPAIN) + rapid antigen test Return visits within 1 month with sore throat: 8%; RR=1.00 vs. 8%; RR=0.91; 95% CI, 0.47 to 1.72; p=0.78 vs. 6%; RR=0.74; 95% CI, 0.36 to 1.47; p=0.40 Return visits after 1 month with sore throat (mean followup 0.73 years): 15%, RR=1.00 vs. 12%; RR=0.79; 95% CI, 0.47 to 1.29; p=0.35 vs. 16%; RR=1.06; 95% CI, 0.66 to 1.63; p=0.81 Mean severity of sore throat and difficulty swallowing days on days 2-4*, crude mean (SD), adjusted mean difference: 3.11 (1.49) vs. 2.88 (1.52), -0.33, -0.64 to -0.02; p=0.04 vs. 2.83 (1.62), -0.30, -0.61 to 0.004; p=0.05 Duration of symptoms rated moderately bad or worse (days), mean duration (IQR), HR; 95% CI: 5 (3-7), HR=1.00 vs. 4 (2-6), HR=1.30; 95% CI, 1.03 to 1.63; p=0.03 vs. 4 (2-7), HR=1.11; 95% CI, 0.88 to 1.40; p=0.37 Delayed prescribing (control) vs. Clinical score (Score 1) only vs. Clinical score (Score 1) + rapid antigen test Return visits within 1 month with sore throat: 11%, RR=1.00 vs. 9%, RR=0.76; 95% CI, 0.49 to 1.16, p=0.205 vs. 13%, RR=1.11; 95% CI, 0.74 to 1.62, p=0.618 Return visits after 1 month with sore throat (mean followup 0.73 years): 20%, RR=1.00 vs. 22%, RR=1.10; 95% CI, 0.83 to 1.44; p=0.488 vs. 19%, RR=0.95; 95% CI, 0.70 to 1.27; p=0.728 Mean severity of sore throat and difficulty swallowing days on days 2-4*, crude mean (SD), adjusted mean difference: 2.95 (1.44) vs. 3.05 (1.49), 0.06, -0.15 to

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Little, 2013 <sup>61</sup> United Kingdom Patient N = 1,129 (Score 1), 631 (FeverPAIN, Score 2) Provider N = NR Practice N = 48	NR	NR	*7 point scale: 0 = no problem, 6 = as bad as it could be

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
<p>Little, 2013<sup>62</sup>                      Multinational                      Patient N = 6,771 (baseline), 4,264 (followup period)                      Provider N = 372;                      Practice N= 246 randomized (228 contributing data during followup period)</p> <p>Yardley, 2013<sup>63</sup> Multinational                      Patient N = 4,264 recruited (2,886 completed the self-report measures)                      Provider N = 424 (346 completed the self-report measures at baseline, followup, or both time points)                      Practice N = 229</p>	<p>Age older than 18 years; first consultation for acute cough of up to 28 days' duration or what the clinician believed to be an acute LRTI as the main diagnosis, despite cough not being the most prominent symptom; and diagnosis judged by physician to be an acute URTI (e.g. sore throat, otitis media, sinusitis, influenza, and coryzal illness). Up to first 30 LRTI and up to first five URTI to present at each practice were recruited</p>	<p>Providers in eligible practices that had not previously used any interventions to reduce antibiotic prescribing rates and could include more than ten patients in baseline audit</p>	<p>Type: Multifaceted - POC: CRP and Enhanced Communication Skills Training                      Target: Providers                      Description: Three intervention groups: (1) CRP group, (2) communication training, and (3) CRP + communication training. CRP group received internet training on how to target testing and how to negotiate with patient about management decisions. CRP tests done with QuikRead CRP kits after on-site training by manufacturer. Training in enhanced communication skills focused on gathering information on patients' concerns and expectations, exchange of information on symptoms, natural disease course, and treatments, agreement of a management plan, summing up and providing guidance about when to reconsult. Physicians also provided with interactive booklet to use during consultations</p>

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
<p>Little, 2013<sup>62</sup>                      Multinational                      Patient N = 6,771 (baseline), 4,264 (followup period)                      Provider N = 372;                      Practice N= 246 randomized (228 contributing data during followup period)</p> <p>Yardley, 2013<sup>63</sup> Multinational                      Patient N = 4,264 recruited (2,886 completed the self-report measures)                      Provider N = 424 (346 completed the self-report measures at baseline, followup, or both time points)                      Practice N = 229</p>	<p>Usual care (control)</p>	<p>Type of RTI: LRTI (79.7%), other RTI (20.3%)                      Types of Symptoms: Sputum production (81.2%)                      Duration of Signs and Symptoms: 7.73 days (mean duration of illness before index consultation)                      When counting started for duration: NR</p>	<p>Mean Age: 51 years                      % Female: 64.1%                      Ethnicity: NR                      SES: NR                      Educational level: NR                      Frailty: NR                      Comorbidities: Lung disease including COPD or asthma (18.2%)                      Prior RTIs: NR</p>

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
<p>Little, 2013<sup>62</sup>                      Multinational                      Patient N = 6,771 (baseline), 4,264 (followup period)                      Provider N = 372;                      Practice N= 246 randomized (228 contributing data during followup period)</p> <p>Yardley, 2013<sup>63</sup> Multinational                      Patient N = 4,264 recruited (2,886 completed the self-report measures)                      Provider N = 424 (346 completed the self-report measures at baseline, followup, or both time points)                      Practice N = 229</p>	<p>Specialty: Primary care                      Type of clinic: Primary care practices                      Geographical region: Multinational (Europe)                      Population served: NR</p> <p>Yardley, 2013:                      Number of years in practice: 19.22 y (<math>\pm</math> 9.63)</p>	<p>Time of year: October to December 2010 (baseline audit); internet training intervention followed by repeat audit (February to May 2011)                      Patterns of disease activity: Randomization, internet training, and repeat audit of antibiotic prescribing occurred at the end of the season for RTIs                      Locally tailored: NR                      System level characteristics: NR</p>	<p>NR</p>

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
<p>Little, 2013<sup>62</sup>                      Multinational                      Patient N = 6,771 (baseline), 4,264 (followup period)                      Provider N = 372;                      Practice N= 246 randomized (228 contributing data during followup period)</p> <p>Yardley, 2013<sup>63</sup> Multinational                      Patient N = 4,264 recruited (2,886 completed the self-report measures)                      Provider N = 424 (346 completed the self-report measures at baseline, followup, or both time points)                      Practice N = 229</p>	<p>Antibiotic Prescribing Rate, RR; 95% CI; p:                      No CRP training vs. CRP training                      Crude %: 48 vs. 33                      Adjusted risk ratio: RR=1.00 vs. RR=0.54; 95% CI, 0.42 to 0.69); p&lt;0.0001</p> <p>Antibiotic Prescribing Rate, RR; 95% CI; p:                      No communication training vs. Communication training                      Crude %: 45 vs. 36                      Adjusted+ risk ratio: RR=1.00 vs. R=0.69; 95% CI, 0.54 to 0.87; p&lt;0.0001</p> <p>Antibiotic Prescribing, RR; 95% CI; p:                      CRP Group vs. Usual Care: RR=0.53; 95% CI, 0.36 to 0.74; p&lt;0.0001                      Communication Group vs. Usual Care: RR=0.68; 95% CI, 0.50 to 0.89; p=0.003                      CRP + Communication Group vs. Usual Care: RR=0.38; 95% CI, 0.25 to 0.55; p&lt;0.0001</p>	<p>NR</p>

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
<p>Little, 2013<sup>62</sup>                      Multinational                      Patient N = 6,771 (baseline), 4,264 (followup period)                      Provider N = 372;                      Practice N= 246 randomized (228 contributing data during followup period)</p> <p>Yardley, 2013<sup>63</sup> Multinational                      Patient N = 4,264 recruited (2,886 completed the self-report measures)                      Provider N = 424 (346 completed the self-report measures at baseline, followup, or both time points)                      Practice N = 229</p>	<p>Usual Care vs. CRP Group vs. Communication Group vs. CRP + Communication Group                      Hospital admissions (total n=30): 2 vs. 10 vs. 6 vs. 12</p> <p>CRP Group vs. Non-CRP Group, OR; 95% CI; p:                      Controlling for clustering: OR=2.61; 95% CI, 1.07 to 6.35; p=0.034                      Controlling for all potential confounders: OR=2.91; 95% CI, 0.96 to 8.85; p=0.060</p>	<p>Little, 2013:                      No CRP Training vs. CRP Training                      New or worse symptoms:                      Crude %: 18 vs. 19                      Adjusted RR; 95% CI; p: RR=1.00 vs. RR=1.05; 95% CI, 0.78 to 1.39; p=0.76                      Symptom severity score days 2-4 after index consultation:                      Crude mean (SD): 1.79 (0.99) vs. 1.79 (1.01)                      Adjusted mean difference, 95% CI; p: 0; 95% CI, -0.09 to 0.09; p=0.99                      Resolution of symptoms rated moderately bad or worse:                      Crude median (IQR) time (days): 5 (3 to 9) vs. 5 (3 to 9)                      Adjusted hazard ratio; 95% CI; p: HR=1.00 vs. HR=0.93; 95% CI, 0.83 to 1.04, p=0.21</p> <p>Yardley, 2013:                      England vs. Wales vs. Belgium vs. Netherlands vs. Spain vs. Poland [mean (SD)]                      Satisfaction with consultation: 5.93 (0.85) vs. 5.99 (0.76) vs. 6.07 (1.01) vs. 5.56 (1.04) vs. 5.96 (0.71) vs. 5.80 (0.99)</p> <p>Usual care vs. CRP group vs. Communication group vs. Combined group                      Satisfaction with consultation: 5.85 (0.90) vs. 5.76 (1.00) vs. 5.95 (0.84) vs. 5.89 (0.88)</p>

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
<p>Little, 2013<sup>62</sup>                      Multinational                      Patient N = 6,771 (baseline), 4,264 (followup period)                      Provider N = 372;                      Practice N= 246 randomized (228 contributing data during followup period)</p> <p>Yardley, 2013<sup>63</sup> Multinational                      Patient N = 4,264 recruited (2,886 completed the self-report measures)                      Provider N = 424 (346 completed the self-report measures at baseline, followup, or both time points)                      Practice N = 229</p>	<p>Yardley, 2013:                      England vs. Wales vs. Belgium vs. Netherlands vs. Spain vs. Poland [mean (SD)]                      Taking part in the study has helped me reduce my prescribing: 4.90 (1.50) vs. 5.02 (1.64) vs. 4.39 (1.58) vs. 4.55 (1.25) vs. 5.43 (1.33) vs. 5.37 (1.82)                      Using a point-of-care test has helped me reduce my prescribing: 4.04 (1.75) vs. 4.88 (1.48) vs. 4.50 (1.57) vs. 4.94 (1.63) vs. 5.70 (1.41) vs. 6.33 (4.88)                      Using the GRACE/INTRO booklet has helped me reduce my prescribing: 5.09 (1.43) vs. 5.30 (1.40) vs. 4.81 (1.44) vs. 4.75 (1.29) vs. 5.17 (1.58) vs. 5.87 (1.41)                      Taking antibiotics is usually necessary: 4.04 (1.61) vs. 4.47 (1.73) vs. 2.63 (1.76) vs. 4.00 (1.57) vs. 3.88 (1.76) vs. 4.07 (1.72)                      Taking antibiotics can do more harm than good: 3.91 (1.35) vs. 3.85 (1.46) vs. 3.93 (1.32) vs. 3.87 (1.31) vs. 4.26 (1.55) vs. 4.11 (1.49)</p> <p>CRP group vs. Communication group vs. Combined group (mean (SD) in baseline vs. followup)                      Importance of reducing prescribing: 6.03 (1.27) vs. 6.22 (1.00); 5.85 (1.43) vs. 6.34 (0.98); 5.90 (1.08) vs. 6.25 (1.05)                      Risks of reducing prescribing: 4.37 (1.56) vs. 4.88 (1.37); 4.81 (1.61) vs. 5.16 (1.45); 4.33 (1.47) vs. 4.76 (1.50)                      Risk to relationship with patients: 4.49 (1.62) vs. 4.63 (1.58); 4.74 (1.80) vs. 4.89 (1.61); 4.76 (1.41) vs. 5.12 (1.33)                      Confidence to reduce prescribing: 4.89 (1.49) vs. 4.64 (1.49); 4.71 (1.79) vs. 5.12 (1.70); 4.86 (1.50) vs. 5.28 (1.35)</p> <p>*Scores are on a scale from 1 (disagree strongly) to 7 (agree strongly)</p>	<p>NR</p>	<p>†Adjusted risk ratio controlled for age, smoking, sex, major cardiovascular or respiratory comorbidity, baseline symptoms, crepitation, wheeze, pulse higher than 100 beats per minute, temperature higher than 37.8° C, respiratory rate, blood pressure, physician's rating of severity, and duration of cough</p>

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> (1) Educational/Behavioral (2) Communication (3) Clinical (4) System-Level (5) Multifaceted <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Little, 2013 <sup>62</sup> Yardley, 2013 <sup>63</sup> Multinational  Continued.			

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Little, 2013 <sup>62</sup> Yardley, 2013 <sup>63</sup> Multinational  Continued.			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Little, 2013 <sup>62</sup> Yardley, 2013 <sup>63</sup> Multinational  Continued.			

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Little, 2013 <sup>62</sup> Yardley, 2013 <sup>63</sup> Multinational  Continued.		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Little, 2013 <sup>62</sup> Yardley, 2013 <sup>63</sup> Multinational  Continued.		Little, 2013: No communication training vs. Communication training New or worse symptoms: Crude %: 16 vs. 20 Adjusted RR; 95% CI; p: RR=1.00 vs. RR=1.33; 95% CI, 0.99 to 1.74; p=0.055 Symptom severity score days 2-4 after index consultation: Crude mean (SD): 1.73 (0.98) vs. 1.84 (1.02) Adjusted mean difference; 95% CI; p: 0.07; 95% CI, -0.03 to 0.16; p=0.16 Resolution of symptoms rated moderately bad or worse: Crude median (IQR) time (days): 5 (3 to 7) vs. 6 (3 to 10) Adjusted hazard ratio; 95% CI; p: HR=1.00 vs. HR=0.83; 95% CI, 0.74 to 0.93; p=0.002  Yardley, 2013: Group allocation: CRP group vs. Not CRP group Consultation satisfaction: 5.84 (0.92) vs. 5.91 (0.97) Receipt of CRP test: CRP test vs. No CRP test Consultation satisfaction: 5.82 (0.94) vs. 5.91 (0.87) Group allocation: Booklet group vs. No booklet Consultation satisfaction: 5.93 (0.85) vs. 5.81 (0.95) Receipt of booklet: Booklet vs. No booklet Consultation satisfaction: 5.92 (0.87) vs. 5.79 (0.94)

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Little, 2013 <sup>62</sup> Yardley, 2013 <sup>63</sup> Multinational  Continued.	Yardley, 2013: Usual care vs. CRP group vs. Communication group vs. Combined group Taking antibiotics is usually necessary: 4.13 (1.74) vs. 3.75 (1.71) vs. 4.02 (1.80) vs. 3.83 (1.72) Taking antibiotics can do more harm than good: 3.93 (1.43) vs. 4.12 (1.46) vs. 4.10 (1.51) vs. 4.13 (1.45)  *Scores are on a scale from 1 (disagree strongly) to 7 (agree strongly)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Little, 2014 <sup>64</sup> United Kingdom Patient N = 889 (556 in randomized trial) Provider N = 53 Practice N = 25	Aged 3 years and over with acute respiratory tract infection in a general practice setting.	Doctors and practice nurses	Type: Clinical Target: Providers Description: Non-randomized group received immediate antibiotics. If antibiotics were not needed, patients were randomized to one of four delayed prescribing groups (recontact for a prescription, post-dated prescription, collection of the prescription, or patient led). Each group was randomized further into 12 subgroups according to three factors (antipyretic regimens (ibuprofen, paracetamol, or both combined), regular antipyretic versus "as required" dosing, and steam inhalation advice versus no advice to inhale with steam.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Little, 2014 <sup>64</sup> United Kingdom Patient N = 889 (556 in randomized trial) Provider N = 53 Practice N = 25	No antibiotic prescription (randomized comparison)	Type of RTI: Lower respiratory infection (15.4%), pharyngitis or sore throat (26.3%), upper respiratory infection (37.0%) Types of signs and symptoms: acute cold, influenza, sore throat, otitis media, sinusitis, croup, or LRTI Duration of signs and symptoms: 7.2 days (previous duration) When counting started for duration: NR	Mean age: 32.2 % female: 61.4% Ethnicity: NR SES: NR Educational status: NR Frailty: NR Comorbidities: NR Prior RTIs: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Little, 2014 <sup>64</sup> United Kingdom Patient N = 889 (556 in randomized trial) Provider N = 53 Practice N = 25	Specialty: General practice Number of years in practice: NR Type of clinic: Primary care Population served: NR	Time of year: March 3, 2010 to March 28, 2012 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: NR	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Little, 2014 <sup>64</sup> United Kingdom Patient N = 889 (556 in randomized trial) Provider N = 53 Practice N = 25	No Antibiotics vs. Recontact vs. Post-date vs. Collection vs. Patient led  Antibiotic use, % of patients, adjusted* RR; 95% CI; p: 26 vs. 37, RR=1.45; 95% CI, 0.95 to 2.03; p=0.083 vs. 37, RR=1.41; 95% CI, 0.92 to 1.98; p=0.108 vs. 33, RR=1.28; 95% CI, 0.80 to 1.87; p=0.275 vs. 39, RR=1.52; 95% CI, 1.00 to 2.10; p=0.050 Likelihood ratio test $\chi^2$ : 4.96, p=0.292	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Little, 2014 <sup>64</sup> United Kingdom Patient N = 889 (556 in randomized trial) Provider N = 53 Practice N = 25	No Antibiotics vs. Recontact vs. Post-date vs. Collection vs. Patient led  Side effects and complications (%) Diarrhea: 13 vs. 7 vs. 15 vs. 16 vs. 21 Rash: 8 vs. 5 vs. 8 vs. 2 vs. 9 Vomiting: 15 vs. 9 vs. 13 vs.. 4 vs.. 18 Abdominal pain: 25 vs. 10 vs. 18 vs. 29 vs. 31 Complications: 2.5 vs. 3.7 vs. 0.9 vs. 1 vs. 0	No Antibiotics vs. Recontact vs. Post-date vs. Collection vs. Patient led  Reconsultation within 1 month, % of patients, adjusted* RR; 95% CI; : 16 vs. 18, RR=1.06; 95% CI, 0.56 to 1.84; p=0.853 vs. 10, RR=0.59; 95% CI, 0.27 to 1.21, p=0.159 vs. 14, RR=0.84; 95% CI, 0.43 to 1.57; p=0.618 vs. 14, RR=0.91; 95% CI, 0.47 to 1.65; p=0.772 Likelihood ratio test $\chi^2$ : 2.97, p=0.563  Reconsultation after 1 month, % of patients, adjusted* RR; 95% CI; p: 32 vs. 39, RR=1.20; 95% CI, 0.80 to 1.66; p=0.354 vs. 39, RR=1.28; 95% CI, 0.87 to 1.74); p=0.189 vs. 32, RR=0.91; 95% CI, 0.55 to 1.35; p=0.652 vs. 37, RR=1.20; 95% CI, 0.80 to 1.65; p=0.358 Likelihood ratio test $\chi^2$ : 4.11, p=0.391  Patient very satisfied with consultation, % of patients, adjusted* RR; 95% CI; p: 79 vs. 74, RR=0.93; 95% CI, 0.59 to 1.14; p=0.615 vs. 80, RR=0.99; 95% CI, 0.68 to 1.16; p=0.930 vs. 88, RR=1.09; 95% CI, 0.77 to 1.22; p=0.476 vs. 89, RR=1.12; 95% CI, 0.83 to 1.22; p=0.319 Likelihood ratio test $\chi^2$ : 2.38; p=0.667  Symptom Improvement: Mean symptom severity, days 2-4, crude mean, adjusted* mean difference; 95% CI: 1.62 (0.88) vs. 1.60 (0.91), -0.01; -0.24 to 0.23; p=0.964 vs. 1.82 (0.94), 0.14; -0.10 to 0.37; p=0.249 vs. 1.68 (0.88), -0.02, -0.27 to 0.22; p=0.850 vs. 1.75 (0.88), 0.08; -0.16 to 0.33; p=0.499 Likelihood ratio test $\chi^2$ : 2.61, p=0.625 Symptoms rated as moderately bad, mean duration (IQR), adjusted* hazard ratio, 95% CI: 3 (2-6.5) vs. 4 (3-7), 0.91; 0.66 to 1.25; p=0.561 vs. 4 (3-7), 0.86; 0.63 to 1.17; p=0.338 vs. 4 (3-7), 0.86; 0.62 to 1.20; p=0.380 vs. 4 (3-7), 0.71; 0.50 to 0.99; p=0.045 Likelihood ratio test $\chi^2$ : 4.29, p=0.368

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Little, 2014 <sup>64</sup> United Kingdom Patient N = 889 (556 in randomized trial) Provider N = 53 Practice N = 25	NR	NR	* all models controlled for baseline symptom severity, dosing, steam, and smoking.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Llor, 2011 <sup>65</sup> Spain Patient N= 543 Provider N= 61 Practice N= 20	Patients with acute pharyngitis aged 14-60 years with at least 1 Centor criterion (fever, tonsillar exudate, tender enlarged anterior cervical lymph nodes, or absence of cough)	Primary care physicians	Type: Clinical - POC: Rapid Strep Target: Providers Description: Physicians allocated to intervention group were provided with RADT. RADTs were undertaken with the OSOM(R) Strep A test (Genzyme). All study physicians sent a pharyngeal swab for culture. A culture was considered positive for GABHS with a growth of any number of beta-hemolytic colonies, Gram staining with streptococcal morphology, and a catalase-negative test with posterior identification with an automated panel for WIDER Gram-positive cocci. Validity of rapid antigen test depending on Centor criteria (total, n=276): % group A beta-hemolytic streptococcus: 17.8; sensitivity 89.8%; specificity 93.8%; positive predictive value 75.9%; negative predictive value 97.7%.
MacFarlane, 2002 <sup>66</sup> United Kingdom Patient N = 259 Provider N = NR Practice N = 3	Previously well adults (aged ≥ 16 years) not under supervision or management for an underlying disease, presenting with acute bronchitis, defined as a new acute lower respiratory tract illness in a previously well adult using the following previously reported definitions: lower respiratory tract illness required all of (1) acute illness present for 21 days or less, (2) cough as the main symptom, (3) at least one other lower respiratory tract symptom (sputum production, dyspnea, wheeze, chest discomfort or pain), (4) no alternative explanation	General practitioners working in three suburban general practices in Nottingham	Type: Multifaceted Target: Patients Description: General practitioners managed patients according to their usual clinical practice and judgment and divided patients into the following two groups: (1) Group A, in which antibiotics were not definitely indicated that day, and (2) Group B, in which antibiotics were definitely indicated that day. All patients were given a prescription for an antibiotic of the general practitioner's choice. Patients in Group B were advised to take the antibiotics. Patients in Group A received verbal information based on prompt card, then randomized using permuted blocks of four to receive or not receive patient information leaflet about natural course of lower respiratory tract symptoms and advantages/disadvantages of antibiotic use

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Llor, 2011 <sup>65</sup> Spain Patient N= 543 Provider N= 61 Practice N= 20	Control (managed streptococcal pharyngitis with only clinical criteria)	Type of RTI: Acute pharyngitis Types of Signs and Symptoms: Fever (71.6%), tonsillar exudate (51.7%), tender cervical lymph nodes (40.5%), absence of cough (74.8%) Duration of Signs and Symptoms: NR When counting starting duration: NR	Mean Age: 31.7 years % female: 62.8 Ethnicity: NR SES: NR Educational level: NR Frailty: NR
MacFarlane, 2002 <sup>66</sup> United Kingdom Patient N = 259 Provider N = NR Practice N = 3	No information leaflet (control)	Type of RTI: Acute bronchitis Types of Signs and Symptoms: Sputum (23.6% clear, 61.3 colored), findings of chest examination (17.5% general signs, 2.8% focal signs) Duration of Signs and Symptoms: 7 days (mean duration of cough) When counting started for duration: NR	Mean Age: 44.5 years % female: 62 Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Llor, 2011 <sup>65</sup> Spain Patient N= 543 Provider N= 61 Practice N= 20	Specialty: Primary care Number of years in practice: NR Type of clinic: Primary care centers Geographical region: Catalonia, Spain Population served: NR	Time of Year: January to May 2008 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: NR	Inappropriateness based on Centor score (1-4)
MacFarlane, 2002 <sup>66</sup> United Kingdom Patient N = 259 Provider N = NR Practice N = 3	Specialty: General practice Number of years in practice: NR Type of clinic: General practice Geographical region: Nottingham, UK Population served: NR	Time of year: September 1999 to August 2000 Patterns of disease activity: NR Locally tailored: Yes System level characteristics: NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Llor, 2011 <sup>65</sup> Spain Patient N= 543 Provider N= 61 Practice N= 20	Intervention group (RADT) vs. Control  Prescription of antibiotics according to Centor criteria (total): 43.8 % vs. 64.1%; p<0.001  Inappropriateness of antibiotic prescription according to Centor criteria (total): 26.9% vs. 60.0%; p<0.001	NR
MacFarlane, 2002 <sup>66</sup> United Kingdom Patient N = 259 Provider N = NR Practice N = 3	Intervention (Leaflet) vs. Control (No Leaflet) % of patients taking antibiotics one or two weeks after consultation: 47.1 vs. 62.4	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Llor, 2011 <sup>65</sup> Spain Patient N= 543 Provider N= 61 Practice N= 20	NR	NR
MacFarlane, 2002 <sup>66</sup> United Kingdom Patient N = 259 Provider N = NR Practice N = 3	NR	Intervention (Leaflet) vs. Control (No Leaflet) % of patients reconsulted within four weeks of initial consultation: 10.6 vs. 13.3

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Llor, 2011 <sup>65</sup> Spain Patient N= 543 Provider N= 61 Practice N= 20	NR	NR	
MacFarlane, 2002 <sup>66</sup> United Kingdom Patient N = 259 Provider N = NR Practice N = 3	NR	NR	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Maiman, 1988 <sup>67</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Mainous, 2000 <sup>68</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Maltezou, 2008 <sup>69</sup> Greece Patient N = 820 Provider N = 24 Practice N = NR	Children aged 2-14 with clinical evidence of pharyngitis including one of the following four criteria: fever (>38.0 C), tonsillar exudate, tender enlarged cervical lymph nodes, and absence of cough	Pediatricians	Type: Clinical - POC: Rapid Strep Target: Providers Description: Two intervention groups: (1) Group B, includes diagnosis by RADT + culture, conducted by private practice pediatricians, and (A) Group C, includes diagnosis by RADT + culture, conducted by hospital affiliated pediatricians. Two throat swabs were taken; 1 swab tested by RADT by pediatrician at office or outpatient clinic, 1 swab sent to Infectious Disease Research Laboratory of the 4th Department of Internal Medicine (University General Hospital ATTIKON). Pediatricians informed patients of culture results and gave instructions regarding antibiotic, if required. Becton-Dickinson Link 2 Strep A Rapid test for streptococcal pharyngitis with culture was used. Sensitivity, specificity, and positive and negative predictive values of the rapid antigen detection test were 83.1%, 93.3%, 82.4%, and 93.6%, respectively

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Maiman, 1988 <sup>67</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Mainous, 2000 <sup>68</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Maltezou, 2008 <sup>69</sup> Greece Patient N = 820 Provider N = 24 Practice N = NR	Group A (clinical diagnosis ± empirical antibiotics, conducted by private practice pediatricians)	Type of RTI: streptococcal acute pharyngitis Types of symptoms: Fever (89.0%), tonsillar exudate (37.7%), tender cervical lymph nodes (41.8%), absence of cough (65.9%), conjunctivitis (4.5%), rash (5.1%), enanthema (39.5%), pharyngeal pain (86.7%), rhinorrhea (26.7%) Duration of Signs and symptoms: NR When counting started for duration: NR	Mean Age: 7.2 % Female: 52.1 Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Maiman, 1988 <sup>67</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Mainous, 2000 <sup>68</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Maltezou, 2008 <sup>69</sup> Greece Patient N = 820 Provider N = 24 Practice N = NR	Specialty: Pediatrics Number of years in practice: NR Type of clinic: Private practices and hospital-based outpatient clinic Geographical region: Southwest Attica (Athens, Greece) Population served: Children	Time of year: December 1, 2005 to June 15, 2006 and September 15, 2006 to June 15, 2007 Patterns of disease activity: NR Locally tailored: NR System level characteristics: NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Maiman, 1988 <sup>67</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)		
Mainous, 2000 <sup>68</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Maltezou, 2008 <sup>69</sup> Greece Patient N = 820 Provider N = 24 Practice N = NR	Group A (control) vs. Group B vs. Group C Total Prescription of Antibiotics (% of total patients): 72.2 vs. 33.7 vs. 19.8, p=0.004  Stepwise increase of antibiotic prescriptions in patients with one, two, three, or four clinical criteria: 16.1%, 45.4%, 63.5%, 68.7%, respectively (p<0.001)	Antibiotic resistance: 36.5% of throat swab cultures were resistant to macrolides

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Maiman, 1988 <sup>67</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)		
Mainous, 2000 <sup>68</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Maltezou, 2008 <sup>69</sup> Greece Patient N = 820 Provider N = 24 Practice N = NR	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Maiman, 1988 <sup>67</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Mainous, 2000 <sup>68</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Maltezou, 2008 <sup>69</sup> Greece Patient N = 820 Provider N = 24 Practice N = NR	NR	NR	

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Margolis, 1992 <sup>70</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)			
McCormick, 2005 <sup>71</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
McGinn, 2013 <sup>72</sup> United States Patient N = 1,172 Provider N = 168 Practice N = NR	Complaints and diagnoses associated with pharyngitis (sore throat, throat discomfort, streptococcal pharyngitis) or pneumonia (possible pneumonia, "chest hurts when breathing")	Attendings, residents, fellows, and nurse practitioners working in the outpatient primary care clinic	Type: Clinical and System-level Target: Providers Description: Clinical prediction rules: Walsh and Heckerling; EHR integrated. Risk score calculator that produced management recommendations; 1-hr, in-person training on CPRs, the evidence supporting the CPRs, tool demonstration, patient encounter simulation video; CPR tool triggered by complaints and diagnoses associated with pharyngitis or pneumonia or a diagnosis and test order combination; score of 0-1 indicated intermediate likelihood of streptococcal pharyngitis and recommendation was to obtain a throat swab or symptom resolution; score of 2 or higher was to start antibiotics. Validity/reliability not reported.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Margolis, 1992 <sup>70</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)			
McCormick, 2005 <sup>71</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
McGinn, 2013 <sup>72</sup> United States Patient N = 1,172 Provider N = 168 Practice N = NR	Usual care plus background information on Walsh and Heckerling CPRs	NR	Mean Age: 46 % female: 23.4 Ethnicity: 30% white, 19% black, 12% Hispanic, 39% other SES: NR Educational level: NR Frailty: NA Comorbidities: 17% asthma, 2% COPD, 14% diabetes, 3% CHF Prior RTIs: NR Prior use of antibiotics: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Margolis, 1992 <sup>70</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)			
McCormick, 2005 <sup>71</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
McGinn, 2013 <sup>72</sup> United States Patient N = 1,172 Provider N = 168 Practice N = NR	Specialty: Mix Number of years in practice: Mix Type of clinic: 2 large urban ambulatory primary care practices at Mount Sinai Medical Center Geographical region: New York Population served: racially/ethnically diverse; almost 56% of patients self-identifying as Hispanic, 35% as African American, 7% as white, and 2% as other races/ethnicities	Time of year: 11/2010-10/2011 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: Academic medical center	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Margolis, 1992 <sup>70</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)		
McCormick, 2005 <sup>71</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
McGinn, 2013 <sup>72</sup> United States Patient N = 1,172 Provider N = 168 Practice N = NR	Antibiotic orders at POC (N=1172): 29.2% vs. 38.4%; age-adjusted RR=0.74; 95% CI, 0.6 to 0.92 Antibiotic orders at 2 weeks after CPR visit (N=984): 12.5% vs. 40%; p=0.45	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Margolis, 1992 <sup>70</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)		
McCormick, 2005 <sup>71</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
McGinn, 2013 <sup>72</sup> United States Patient N = 1,172 Provider N = 168 Practice N = NR	NR	ED visits: 0.7% vs. 0.5%; p=0.99 Outpatient clinic visits: 7.7% vs. 11.3%; p=0.10

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Margolis, 1992 <sup>70</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)			
McCormick, 2005 <sup>71</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
McGinn, 2013 <sup>72</sup> United States Patient N = 1,172 Provider N = 168 Practice N = NR	NR	Chest radiograph order: 21.2% vs. 20.7%; age-adjusted RR=0.98; 95% CI, 0.60 to 1.62	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
McIsaac, 2002 <sup>73</sup> Canada Patient N = 621 children and adults with sore throat Provider N = 97 family practice MDs Practice N = NR	Acute sore throat age 3 years or older. Patients with prior antibiotics in last week or immunocompromised were excluded. Physicians asked to enroll 8 patients meeting these criteria. No other systematic enrollment advice/rules used	A sample of Ontario family physicians invited to participate who had prior participation in practice-based research projects as well as random sample from family physician of Canada general membership. Among these, MDs were randomized to intervention versus control	Type: System-level Target: Providers Description: Clinical decision tool/educational material sent to providers (pharyngitis symptom check list that is used to guide use of antibiotics). Unclear if this tool is validated and even correlates with need for antibiotics.
Meeker, 2014 <sup>74</sup> United States Patient N= 954 Provider N = 14 Practice N = 5	18 years old or older who experienced a visit encounter with a study clinician involving an ARI diagnosis for which antibiotics might or might not have been appropriate	Medical professionals licensed to prescribe medications (including antibiotics) and who treated adults patients (≥ 18 years)	Type: Educational Target: Providers Description: Study tested "nudges" influence on decision making with regard to judicious use of antibiotics. Intervention consisted of displaying large poster-sized commitment letters in examination rooms for 12 weeks. The letters, featuring clinician photographs and signatures, stated their commitment to avoid inappropriate antibiotics prescribing for ARIs.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
McIsaac, 2002 <sup>73</sup> Canada Patient N = 621 children and adults with sore throat Provider N = 97 family practice MDs Practice N = NR	Participating physicians who did not receive tool/education	Patient characteristics: sore throat Type of RTI: pharyngitis Types of Signs and Symptoms: sore throat Duration of Signs and Symptoms: not defined When counting started for duration: not defined	Patient characteristics Mean Age: 28 years % female: 65-69% Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: excluded in last week. Otherwise NR
Meeker, 2014 <sup>74</sup> United States Patient N= 954 Provider N = 14 Practice N = 5	No poster intervention group (control)	Type of RTI: ARI Types of signs and symptoms: NR Duration of signs and symptoms: NR When counting started for duration: NR	Mean Age: 48.4 years % female: 77.4% Ethnicity: NR SES: 43.1% insured Educational status: NR Frailty: NR Comorbidities: NR Prior RTIs: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
McIsaac, 2002 <sup>73</sup> Canada Patient N = 621 children and adults with sore throat Provider N = 97 family practice MDs Practice N = NR	Provider characteristics: N=164 randomized, but only 97 (59%) completed study. Used MV logistic to adjust for differences between control and intervention groups Specialty: family practice Number of years in practice: 22.8% of control >20 years, and 30% of intervention > 20 years practice Type of clinic: Family practice outpatient. Solo practice 20% versus 34% control versus intervention Geographical region: Ontario Population served: general	NR	"unnecessary antibiotics" defined as when antibiotics given and subsequent throat culture was negative.
Meeker, 2014 <sup>74</sup> United States Patient N= 954 Provider N = 14 Practice N = 5	Specialty: NR (11 physicians and 3 nurse practitioners) Number of years in practice: 17.64 (mean years since licensure) Type of clinic: Community clinics Population served: NR	Time of year: Randomization in February 2012, intervention lasted 12 weeks Patterns of disease activity: Study conducted during a complete 1-year flu cycle Locally tailored: NR System-level characteristics: NR	Appropriateness of antibiotics based on ICD-9 ARI diagnosis codes

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
McIsaac, 2002 <sup>73</sup> Canada Patient N = 621 children and adults with sore throat Provider N = 97 family practice MDs Practice N = NR	Unnecessary antibiotic rate compared between groups 16% of patients in control group versus 20.4% in intervention. After adjusting for differences between groups, intervention group was less likely to give unnecessary antibiotics OR=0.76; 95% CI, 0.42 to 1.4 and overall antibiotic use OR=0.57; 95% CI, 0.27 to 1.17. Note neither OR reached statistical significance	NR
Meeker, 2014 <sup>74</sup> United States Patient N= 954 Provider N = 14 Practice N = 5	Poster Condition vs. Control Condition  Adjusted* rates of Inappropriate Antibiotic Prescribing, %: Baseline: 43.5; 95% CI, 38.5 to 49.0 vs. 42.8; 95% CI, 38.1 to 48.1 Final Measurement: 33.7; 95% CI, 25.1 to 43.1 vs. 52.7; 95% CI, 44.2 to 61.9 Absolute % change: -9.8; 95% CI, 0.0 to -19.3 vs. 9.9; 95% CI, 0.0 to 20.2 Difference in differences between poster and control conditions: -19.7; 95% CI, -5.8 to -33.04; p=0.02  Inappropriate prescribing rates by group during intervention period, Poster condition vs. Control condition: 36.0% vs. 48.8%; Difference: 12.8%	NR

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McIsaac, 2002 <sup>73</sup> Canada Patient N = 621 children and adults with sore throat Provider N = 97 family practice MDs Practice N = NR	NR	NR
Meeker, 2014 <sup>74</sup> United States Patient N= 954 Provider N = 14 Practice N = 5	NR	NR

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McIsaac, 2002 <sup>73</sup> Canada Patient N = 621 children and adults with sore throat Provider N = 97 family practice MDs Practice N = NR	NR	NR	
Meeker, 2014 <sup>74</sup> United States Patient N= 954 Provider N = 14 Practice N = 5	NR	NR	*Adjusted for demographic characteristics and insurance status.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Metlay, 2007 <sup>75</sup> United States Patient N = 5,500 Provider N = NR Practice N = 16 VA and non-VA hospital Emergency Departments	Adults (> 18 years) with ICD-9 codes for acute RTIs	Emergency department physicians	Type: Education Target: Patients and Providers Description: Clinical leaders at each ED site were identified and trained on the principles of judicious antibiotic use, using slide sets and published manuscripts. These leaders then conducted one-on-one, and small or large group education sessions at their own sites during the month prior to data collection. Clinicians were also given site-specific data on their use of antibiotics for Acute RTIs with benchmarking to other sites and evidence-based guidelines. Materials targeted at patients included waiting room posters and brochures from the CDC Get Smart program displayed in waiting rooms, and an interaction video kiosk with information specific to acute RTI in waiting rooms, and posters in exam rooms supporting evidence.
Milos, 2013 <sup>76</sup> Sweden Patient N = 181,329 responses (60,365 [PCI], 51,077 [GTI] and 69,887 [control]) Provider N = 162 Practice N = 19	URTIs of the following types: common cold, pharyngitis, tonsillitis, acute otitis media, sinusitis, and laryngitis. Patients aged 0 to 6 y.	Primary care physicians	Type: Communication Target: Providers Description: Two interventions based on behavioral theories - persuasive communication intervention (PCI) and graded task intervention (GTI). All participants (including control) received questionnaire assessing attitudes, beliefs, subjective norms, behavioral intention, perceived behavioral control, risk perception, self-efficacy, anticipated consequences, evidence of habits, and prior planning. GTI intervention included a set of questions and second part asking GP to describe a difficult situation of managing a patient with URTI without prescribing antibiotics and how to handle it. Also used graded task behavior change techniques: rehearsal and action planning (social cognitive theory). PCI intervention aimed at influencing the GP's belief about the positive consequences of managing URTIs without prescribing an antibiotic. The skill acquisition approach as a training method and therefore an intervention was based on the questionnaires.

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Metlay, 2007 <sup>75</sup> United States Patient N = 5,500 Provider N = NR Practice N = 16 VA and non-VA hospital Emergency Departments	No intervention	Types of RTI: Nonspecific RTI 34%, Acute bronchitis 23%, Pharyngitis 13%, Other Acute RTI 13% Other characteristics: NR	Age: 18-44 (43%), 45-64 (38%), >65 (19%) % female: 32% Comorbidities: Chronic lung disease (9%), Diabetes (15%), Asthma (11%) Prior RTI: 9% Other characteristics: NR
Milos, 2013 <sup>76</sup> Sweden Patient N = 181,329 responses (60,365 [PCI], 51,077 [GTI] and 69,887 [control]) Provider N = 162 Practice N = 19	PCI (8 centers) and GTI (7 centers) vs. control (7 centers)	Type of RTI: common cold, pharyngitis, tonsillitis, acute otitis media, sinusitis, and laryngitis Types of Signs and Symptoms: NR Duration of symptoms: NR When counting started for duration: NR	Age (%): Control group: <35 y: 34.5, 36 to 45 y: 27.6, 46 to 55 y: 17.2, >56 y: 20.7, GTI: <35 y: 33.3, 36 to 45 y: 23.8, 46 to 55 y: 9.5, >56 y: 33.3, PCI: <35 y: 20.6, 36 to 45 y: 23.5, 46 to 55 y: 20.6, >56 y: 35.3 % female: 58 Ethnicity: NR SES: NR Educational level: NR Frailty: NA Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Metlay, 2007 <sup>75</sup> United States Patient N = 5,500 Provider N = NR Practice N = 16 VA and non-VA hospital Emergency Departments	Attending alone or with house staff: 89% RN/PA/NP: 11% 50% VA/50% non-VA EDs in metropolitan areas Geographical region: 2 sites from each of 4 US regions	Time of Year: November - February	Non-appropriate: acute upper respiratory tract infection and acute bronchitis. Appropriate: community-acquired pneumonia, sinusitis, acute exacerbations of chronic bronchitis, otitis media and pharyngitis
Milos, 2013 <sup>76</sup> Sweden Patient N = 181,329 responses (60,365 [PCI], 51,077 [GTI] and 69,887 [control]) Provider N = 162 Practice N = 19	Specialty: General practice Number of years in practice: <10 y: 41.4% (control), 52.4% (GTI), 35.3% (PCI); 10 to 20 y: 34.5% (control), 23.8% (GTI), 35.3% (PCI); >20 y: 24.1% (control), 23.8% (GTI), 41.2% (PCI) Type of clinic: Public primary health care centers in southern Sweden Population served: NR	Time of year: December 1, 2011 to February 15, 2012 Patterns of disease activity: NR Locally-tailored: Yes System-level characteristics: Public primary care centers	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Metlay, 2007 <sup>75</sup> United States Patient N = 5,500 Provider N = NR Practice N = 16 VA and non-VA hospital Emergency Departments	Intervention vs. Control Combined Acute RTI or acute bronchitis: Intervention groups: -10%; 95% CI, -18% to -2% Control groups: -0.5%; 95% CI, -3% to +5% Acute RTI: -9.5% vs -0.3% (no variance reported) Acute bronchitis -5.0% vs -5.7% (no variance reported) No interaction between VA and non-VA sites.	NR
Milos, 2013 <sup>76</sup> Sweden Patient N = 181,329 responses (60,365 [PCI], 51,077 [GTI] and 69,887 [control]) Provider N = 162 Practice N = 19	Control vs. GTI vs. PCI Antibiotic prescription rate for all ages (% before/after intervention): 74%/82% vs. 79%/80% vs. 79%/78% Antibiotic prescription rate for ages 0 to 6 y (% before/after intervention): 23/25% vs. 14%/16% vs. 14%/12% ANOVA test showed significance in 0 to 6 y PCI group compared with control (P=0.037).	NR

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Metlay, 2007 <sup>75</sup> United States Patient N = 5,500 Provider N = NR Practice N = 16 VA and non-VA hospital Emergency Departments	Intervention vs. Control Subsequent hospitalization -1.8 vs. -1.5; p=0.51	Intervention vs. Control Returns to ED for followup care: +1% vs. +5%; p=0.48 Patient satisfaction +0.2 in both groups; p=0.71
Milos, 2013 <sup>76</sup> Sweden Patient N = 181,329 responses (60,365 [PCI], 51,077 [GTI] and 69,887 [control]) Provider N = 162 Practice N = 19	NR	NR

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Metlay, 2007 <sup>75</sup> United States Patient N = 5,500 Provider N = NR Practice N = 16 VA and non-VA hospital Emergency Departments	NR	NR	
Milos, 2013 <sup>76</sup> Sweden Patient N = 181,329 responses (60,365 [PCI], 51,077 [GTI] and 69,887 [control]) Provider N = 162 Practice N = 19	NR	NR	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Moore, 2009 <sup>77</sup> Little, 2005 <sup>78</sup> United Kingdom Patient N = 807 (562 analyzed) children N= 136 (<16 y) older N= 133 (>60 y) Provider N = 37 Practice N = NR	>3 y, previous well patients with uncomplicated acute illness ( $\leq 21$ days) presenting in primary care with cough as the main symptom and at least 1 symptom or sign localizing to lower tract (sputum, chest pain, dyspnea, wheeze) = LRTI	37 family physicians in the Wessex region of the UK	Type: Multifaceted - Educational Target: Patients Description: A 1 page leaflet about natural history of LRTI, patients' major worries, advice about when to seek further help - Clinical Target: Patients Description: Advice to delay antibiotics-- antibiotics available on request if symptoms not resolved after 14 days
Ozkaya, 2009 <sup>79</sup> Turkey Patient N = 97 Provider N = NR Practice N = NR	Patients aged 3-14 years presenting with influenza like illness admitted to the pediatric emergency department of an urban children's teaching hospital	NR	Type: Clinical - POC: Rapid Influenza Target: Providers Description: Intervention group included patients who were considered to have an influenza-like illness (ILI) but were asked for rapid diagnostic testing for influenza before prescription and further laboratory procedures. Diagnosis of ILI made by the following criteria: fever > 37.8 C for last 48 hours, presence of at least one systemic finding (e.g. myalgia, headache, tiredness), presence of one or more respiratory tract symptoms (e.g. cough, rhinorrhea). Nasopharyngeal specimens were collected using swab and were tested using Influenza A/B rapid test kits.
Pichichero, 1987 <sup>80</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Moore, 2009 <sup>77</sup> Little, 2005 <sup>78</sup> United Kingdom Patient N = 807 (562 analyzed) children N= 136 (<16 y) older N= 133 (>60 y) Provider N = 37 Practice N = NR	1) Leaflet vs. no leaflet 2) Antibiotic groups: a) immediate; b) no offer; c) delayed antibiotics - on request if symptoms not resolved after 10 days	Type of RTI: Lower RTI Types of Signs and Symptoms: Cough, sputum, chest pain, dyspnea, wheeze Duration of Signs and Symptoms: < 21 days When counting started for duration: Cough at presentation	Mean Age: 38-39 % female: NR Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: cough in past 2 years Prior use of antibiotics: prior use in past 2 years (Moore)
Ozkaya, 2009 <sup>79</sup> Turkey Patient N = 97 Provider N = NR Practice N = NR	Control (patients who were prescribed antibiotics without further laboratory investigation in terms of etiology of the fever)	Type of RTI: Influenza A/B Types of symptoms: Myalgia (47.4%), cough (64.9%), rhinorrhea (84.5%), tiredness (59.8%), headache (62.9%) Duration of Signs and Symptoms: 18 (beginning of the symptoms, mean (h)) When counting started for duration: NR	Mean Age: 5.0 % Female: 44.3% Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR
Pichichero, 1987 <sup>80</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Moore, 2009 <sup>77</sup> Little, 2005 <sup>78</sup> United Kingdom Patient N = 807 (562 analyzed) children N= 136 (<16 y) older N= 133 (>60 y) Provider N = 37 Practice N = NR	Specialty: Family physicians Number of years in practice: NR Type of clinic: Primary care practice Geographical region: UK Population served: General population	Time of year: August 1998 to July 2003 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: National Health Service	Use of antibiotics 14 days after the onset of cough if symptoms continue
Ozkaya, 2009 <sup>79</sup> Turkey Patient N = 97 Provider N = NR Practice N = NR	Specialty: NR Type of clinic: Urban children's hospital emergency department Geographical region: NR Population served: NR	Time of year: November 2006 to March 2007 Patterns of disease activity: NR Locally tailored: NR System level characteristics: NR	NR
Pichichero, 1987 <sup>80</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Moore, 2009 <sup>77</sup> Little, 2005 <sup>78</sup> United Kingdom Patient N = 807 (562 analyzed) children N= 136 (<16 y) older N= 133 (>60 y) Provider N = 37 Practice N = NR	(Little) Use of antibiotics by intervention: No/Total # of patients (%), p No leaflet: 160/281 (57) v Leaflet : 159/291 (55). p=0.58 No antibiotics: 28-182 (16), Delayed antibiotics: 39/197 (20), Immediate antibiotics 185-193 (96), p <0.001	NR
Ozkaya, 2009 <sup>79</sup> Turkey Patient N = 97 Provider N = NR Practice N = NR	Group 1 (control) vs. Group 2 (rapid influenza testing) Antibiotic Prescription: 100% vs. 68%; $\chi^2 = 15.367$ ; $p < 0.0001$  Use of unnecessary antibiotics and further need for additional laboratory tests seemed to be prevented in 32% (16/50) of Group 2 patients.	NR
Pichichero, 1987 <sup>80</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Moore, 2009 <sup>77</sup> Little, 2005 <sup>78</sup> United Kingdom Patient N = 807 (562 analyzed) children N= 136 (<16 y) older N= 133 (>60 y) Provider N = 37 Practice N = NR	NR	(Little) Return clinic visits (reattendance in 1 month) fewer reattendances with delayed and immediate: No antibiotics 0.19, delayed 0.12, immediate 0.11; LR test P=0.04 Increased attendance for Leaflet 0.17 vs no leaflet 0.11; LR P=0.02 (Moore) Table 4: Rate of reconsultation with cough based on current and past prescribing, adjust IRR; 95% CI; p leaflet vs no leaflet IRR=1.27; 95% CI, 0.86 to 1.87; p=0.229 Prior antibiotic vs no prior antibiotic IRR=2.55; 95% CI, 1.62 to 4.01; p<0.001
Ozkaya, 2009 <sup>79</sup> Turkey Patient N = 97 Provider N = NR Practice N = NR	NR	NR
Pichichero, 1987 <sup>80</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Moore, 2009 <sup>77</sup> Little, 2005 <sup>78</sup> United Kingdom Patient N = 807 (562 analyzed) children N= 136 (<16 y) older N= 133 (>60 y) Provider N = 37 Practice N = NR	NR	NR	
Ozkaya, 2009 <sup>79</sup> Turkey Patient N = 97 Provider N = NR Practice N = NR	NR	NR	% Positive rapid test result, no rapid testing (Group 1) vs. rapid testing (Group 2): 36 vs. 32; p=NS
Pichichero, 1987 <sup>80</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Poehling, 2006 <sup>81</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Pontes, 2005 <sup>82</sup> United States Patient N = 105 Provider N = NR Practice N = NR	Young adults (upper-division undergraduate students) attending a university in the Mid-Atlantic region of the US	NR	Type: Educational Target: Patients Description: Participants in the intervention group were given the CDC brochure "A New Threat to Your Health: Antibiotic Resistance" and were also presented with a booklet that contained five sections: (1) context of the study and instructions for participants, (2) a medical case of a patient who had acute, uncomplicated URI and visited a physician on Day 3 for an antibiotic prescription and three physician's opinions about how they would treat the patient (Physician 1 - immediate antibiotic prescription on Day 3, Physician 2 - delayed prescription on Day 3, fill prescription by Day 10, Physician 3 - no prescription written on Day 3, would consider writing prescription by Day 10), (3) information from the CDC brochure in the CDC brochure condition, (4) questionnaire with a series of Likert-scale items anchored by the endpoints 1 and 7, (5) questions about whether information about a physician's antibiotic prescription behavior (a) is helpful for the choice of a primary care physician and (b) should be available to all students.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Poehling, 2006 <sup>81</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Pontes, 2005 <sup>82</sup> United States Patient N = 105 Provider N = NR Practice N = NR	No antibiotic education (control)	Type of RTI: Simple acute respiratory infections Types of Signs and Symptoms: NR Duration of signs and symptoms: NR When counting started for duration: NR	Mean Age: NR % female: NR Ethnicity: NR SES: NR Educational level: Current upper-division undergraduate students at time of study Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Poehling, 2006 <sup>81</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Pontes, 2005 <sup>82</sup> United States Patient N = 105 Provider N = NR Practice N = NR	Specialty: NR Number of years in practice: NR Type of clinic: NR Geographical region: Mid-Atlantic region of US Population served: University students	Time of Year: NR Patterns of disease activity: NR Locally tailored: Yes System level characteristics: NR	Appropriate antibiotic use outlined in CDC brochure "A New Threat to Your Health: Antibiotic Resistance"

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Poehling, 2006 <sup>81</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)		
Pontes, 2005 <sup>82</sup> United States Patient N = 105 Provider N = NR Practice N = NR	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Poehling, 2006 <sup>81</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)		
Pontes, 2005 <sup>82</sup> United States Patient N = 105 Provider N = NR Practice N = NR	NR	NR

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Poehling, 2006 <sup>81</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)			
Pontes, 2005 <sup>82</sup> United States Patient N = 105 Provider N = NR Practice N = NR	CDC Brochure Group vs. No Education Group  Respondents' choice of day after URI onset to commence antibiotic treatment, mean (SD); p: 3.9 (2.5) vs. 2.4 (2.0); p<0.01  % of respondents who wished to start a course of antibiotics by: Day 3: 57 vs. 82 Day 5: 72 vs. 91  Effect of patient education on respondents' preference of the physicians, mean score (SD); p: Physician 3 (no prescription on Day 3): 4.84 (2.04) vs. 2.84 (1.85); p<0.01 Physician 2 (deferred prescription on Day 3): 3.99 (1.79) vs. 4.38 (1.77); NS Physician 1 (prescription on Day 3): 2.96 (1.73) vs. 5.21 (1.71); p<0.01  Effect of patient education on differences in respondents' ratings of physicians (intervention mean score (SD); p vs. control mean score (SD); p: Physician 3 - Physician 1 Preference: 1.88 (3.35); p<0.05 vs. -2.37 (2.77); p<0.01 Physician 3 - Physician 2 Preference: 0.85 (3.27); NS vs. -1.54 (2.88); p<0.01	NR	

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<b>Author, Year Country Patient Sample Size Provider Sample Size Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type: (1) Educational/Behavioral (2) Communication (3) Clinical (4) System-Level (5) Multifaceted Target of Intervention (patient, provider, etc.) Intervention Description</b>
Pshetizky, 2003 <sup>83</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Regev-Yochay, 2011 <sup>84</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Robbins, 2003 <sup>85</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Roberts, 1983 <sup>86</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Pshetizky, 2003 <sup>83</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Regev-Yochay, 2011 <sup>84</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Robbins, 2003 <sup>85</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Roberts, 1983 <sup>86</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Pshetizky, 2003 <sup>83</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Regev-Yochay, 2011 <sup>84</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Robbins, 2003 <sup>85</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Roberts, 1983 <sup>86</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Pshetizky, 2003 <sup>83</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Regev-Yochay, 2011 <sup>84</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Robbins, 2003 <sup>85</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
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Pshetizky, 2003 <sup>83</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Regev-Yochay, 2011 <sup>84</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Robbins, 2003 <sup>85</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
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Pshetizky, 2003 <sup>83</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Regev-Yochay, 2011 <sup>84</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Robbins, 2003 <sup>85</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Samore, 2005 <sup>87</sup> United States Patient N = 407,460 community inhabitants (12 rural communities) Provider N = 334 primary care clinicians Practice N = NR	Communities in Utah and Idaho containing at least 1 primary care clinic and inpatient facility; population <100 thousand, cities <50 thousand.	Primary care clinicians: emergency department clinicians, family practice, internists, pediatricians, nurse practitioners and PAs	Type: Multifaceted - Educational Target: Community intervention Description: Meetings with community leaders, news releases in print media, distribution of educational materials at pharmacies and MD offices, and mailing to parents of children <6 y. Message: "do not treat viral infections with antibiotics" - System level Target: Providers Description: CDSS = clinical decision support system, a direct intervention with primary care providers, using a PDA-based CDSS generated diagnostic and therapeutic recommendation on the basis of patient specific information that was input about the suspected diagnosis. Therapeutic recommendations included OTC medications for symptom control and prescription antimicrobials. Feedback given about prescribing data from the first year at the community level.
Schnellinger, 2010 <sup>88</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Samore, 2005 <sup>87</sup> United States Patient N = 407,460 community inhabitants (12 rural communities) Provider N = 334 primary care clinicians Practice N = NR	Community intervention alone vs. intervention plus CDSS targeted toward primary care providers	Type of RTI: Pharyngitis, OM, bronchitis, upper respiratory tract infection, sinusitis, pneumonia, croup, influenza Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: Visit documented in chart for acute RTI	Mean Age: NR % female: 49-51% (69-72% adults) Ethnicity: Non-Hispanic white 85-93% SES: median household income 33,3 thousand-36,3 thousand Educational level: 50-58% college educated Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: 72-84 prescriptions/100 person-years
Schnellinger, 2010 <sup>88</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Samore, 2005 <sup>87</sup> United States Patient N = 407,460 community inhabitants (12 rural communities) Provider N = 334 primary care clinicians Practice N = NR	Specialty: General practice Number of years in practice: NR Type of clinic: city practice, group practice, specialist practice Geographical region: The Netherlands Population served: General population	Time of year: January 2002 to September 2003 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: Rural communities, community clinics	Based on diagnostic categories of RTI 1) never indicated (acute bronchitis, colds, upper RTI); 2) sometimes indicated (sinusitis and uncharacterized otitis media or pharyngitis); 3) always indicated (strep pharyngitis, acute otitis media, pneumonia)
Schnellinger, 2010 <sup>88</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Samore, 2005 <sup>87</sup> United States Patient N = 407,460 community inhabitants (12 rural communities) Provider N = 334 primary care clinicians Practice N = NR	Observed antimicrobial prescribing rates by study arm and year Total prescriptions: mean difference in prescribing rate; 95% CI; p CDSS: first intervention year vs. baseline: -1.1; 95% CI, -4.3 to 2.2; NS second year vs. baseline: -8.8; 95% CI, -13.2 to -4.2 Community intervention alone first intervention year vs. baseline: 2.5; 95% CI, -2.0 to 7.2; NS second year vs. baseline: 0.9; 95% CI, -6.2 to 8.5 Nonstudy communities first intervention year vs. baseline: -2.5; 95% CI, -6.7 to 2.0 second year vs. baseline: 2.6; 95% CI, -3.7 to 9.4 Relative change in prescribing rates: CDSS: first intervention year vs. baseline: -1%, NS second year vs. baseline: -10%; p=.03 Community intervention alone first intervention year vs. baseline: +3%, NS second year vs. baseline: +1% Nonstudy communities first intervention year vs. baseline:-3%, NS second year vs. baseline: +6% Analysis (Figure 2) Relative change in prescribing for "never indicated" aka appropriateness/ relative risk reduction CDSS vs. CI only: 32% vs. 5%; p=0.03	NR
Schnellinger, 2010 <sup>88</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Samore, 2005 <sup>87</sup> United States Patient N = 407,460 community inhabitants (12 rural communities) Provider N = 334 primary care clinicians Practice N = NR	NR	NR
Schnellinger, 2010 <sup>88</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Samore, 2005 <sup>87</sup> United States Patient N = 407,460 community inhabitants (12 rural communities) Provider N = 334 primary care clinicians Practice N = NR	NR	NR	
Schnellinger, 2010 <sup>88</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Schuetz, 2009 <sup>89</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			
Sondergaard, 2003 <sup>90</sup> Denmark Patient N = 455,843 Provider N = 299 Practice N = NR	Patients with respiratory tract infections	GPs in primary care practices (solo and partnership)	Type: Multifaceted: Educational and System-level Target: Providers Description: Intervention group received mailed information about their own prescriptions for antibiotics together with the clinical guideline on the diagnosis and treatment of respiratory tract infections; Feedback included prescription rates for 4 classes of antibiotics (# prescriptions issued/year/100 patients) Key message: to restrict overall consumption of antibiotics used for RTI to the lowest justifiable level, and narrow spectrum penicillins should be preferred to broad spectrum antibiotics.
Spiro, 2004 <sup>91</sup> United States Patient N = 698 (681 with data) Provider N = NR Practice N = 1 pediatric hospital	Children 6 to 35 months of age who presented to a pediatric emergency department with either fever or upper respiratory infection symptoms (e.g. rhinorrhea, cough, or any combination of those findings)	Minimum of 3 years of pediatric residency training	Type: Clinical - POC: Tympanometry Target: Clinicians Description: Tympanometry was performed for all subjects using a single frequency (266-Hz) tympanometer. In Tymp Aware group, printed tympanometry results and tympanometry interpretive guide were provided to the attending physician for analysis and used in patient care. All tympanometry curves were graded by an investigator who was blinded to the final diagnosis.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Schuetz, 2009 <sup>89</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			
Sondergaard, 2003 <sup>90</sup> Denmark Patient N = 455,843 Provider N = 299 Practice N = NR	Clinical guidelines (45 page booklet) plus postal feedback versus guidelines alone	Patient characteristics: Type of RTI: acute tonsillitis, acute otitis media, acute sinusitis, asthmatic bronchitis in children, acute exacerbation of COPD and pneumonia Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR	Mean Age: NR % female: 50.8% Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR
Spiro, 2004 <sup>91</sup> United States Patient N = 698 (681 with data) Provider N = NR Practice N = 1 pediatric hospital	Tymp Unaware (control), in which attending physician was blinded to the tympanometry results	Type of RTI: Acute OM (26.3%), serous OM (4.6%) Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR	Mean Age: 17.25 months % female: 43.0% Ethnicity: Black (76.2%), White (17.6%), Hispanic (5.0%), Other (1.2%) SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Schuetz, 2009 <sup>89</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			
Sondergaard, 2003 <sup>90</sup> Denmark Patient N = 455,843 Provider N = 299 Practice N = NR	Specialty: GPs Number of years in practice: NR Type of clinic: solo and partnership practices, primary care/ family practice Geographical region: Denmark Population served: general population (National health service)	Time of year: 7/1997-7/1998 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: National health service	NR
Spiro, 2004 <sup>91</sup> United States Patient N = 698 (681 with data) Provider N = NR Practice N = 1 pediatric hospital	Specialty: Pediatrics (> 3 years of pediatric residency training) Number of years in practice: NR Type of clinic: Pediatric emergency room Geographical region: Alabama Population served: Children	Time of year: May 2001 - August 2002 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: Study conducted at one pediatric hospital in Alabama (Children's Hospital of Alabama)	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Schuetz, 2009 <sup>89</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)		
Sondergaard, 2003 <sup>90</sup> Denmark Patient N = 455,843 Provider N = 299 Practice N = NR	Intervention (I) vs. Control (C) Antibiotic prescription rate before intervention: All antibiotics: 23.5 (16.7; 30.9) vs. 22.3 (17.1; 26.8) Antibiotic prescription rate after intervention: All antibiotics: 34.6 (23.4; 44.8) vs. 34.0 (24.2; 40.8)  Fraction of prescriptions for narrow spectrum PCN Before intervention: 0.52 (0.44; 0.62) vs. 0.52 (0.43; 0.62) After: 0.45 (0.39; 0.53) vs. 0.43 (0.34; 0.54) Mean Change: -0.07 (-0.09; -0.05) vs. -0.09 (-0.11; -0.07) Difference in change: 0.02 (-0.01;-0.05)	NR
Spiro, 2004 <sup>91</sup> United States Patient N = 698 (681 with data) Provider N = NR Practice N = 1 pediatric hospital	Tymp Aware vs. Tymp Unaware  Antibiotics prescribed for OM (No. (%)) Yes: 98 (28.8) vs. 91 (26.8) No: 243 (71.2) vs. 249 (73.2) p=0.62	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Schuetz, 2009 <sup>89</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)		
Sondergaard, 2003 <sup>90</sup> Denmark Patient N = 455,843 Provider N = 299 Practice N = NR	NR	NR
Spiro, 2004 <sup>91</sup> United States Patient N = 698 (681 with data) Provider N = NR Practice N = 1 pediatric hospital	NR	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Schuetz, 2009 <sup>89</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)			
Sondergaard, 2003 <sup>90</sup> Denmark Patient N = 455,843 Provider N = 299 Practice N = NR	NR	NR	
Spiro, 2004 <sup>91</sup> United States Patient N = 698 (681 with data) Provider N = NR Practice N = 1 pediatric hospital	NR	NR	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Spiro, 2006 <sup>92</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			
Takemura, 2005 <sup>93</sup> Japan Patient N = 305 (301 with data) Provider N = 11 Practice N = NR	New outpatients at Nishi-Ohmiya Hospital presenting with an acutely febrile condition (clinically relevant fever $\geq 37.5$ °C) and symptom(s) suspected of infection at the time of (or during the week before) the initial consultation	NR	Type: Clinical - POC: C-Reactive Protein + White Blood Cell Count Target: Clinicians Description: Patients were randomized to advance testing group or non-advance testing group. Patients in the advance testing group underwent CRP and white blood cell (WBC) count testing prior to initial consultation and patient consultation was concurrent with testing process (initial clinical diagnosis and prescribing decisions made after test results were reported). CRP results available in 40-50 minutes and WBC results available in 10 minutes. Between run imprecision ranged from 3.3% to 6.3% at 5-22 mg/L for CRP and from 5.3% to 5.9% at $2.5-6.8 \times 10^9/L$ for WBC. Reference intervals were $\leq 5$ mg/L for CRP and $3.5-9.0 \times 10^9/L$ for WBC.
Taylor, 2003 <sup>94</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Taylor, 2005 <sup>95</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Spiro, 2006 <sup>92</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			
Takemura, 2005 <sup>93</sup> Japan Patient N = 305 (301 with data) Provider N = 11 Practice N = NR	Non-advance testing group (did not receive tests before the initial consultation [diagnosis and decisionmaking for patient treatment and management made based on patient history and physical examination])	Type of RTI: Acute URI (79.7%), pneumonia/pleuritis (2.3%), influenza (12.6%) Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR	NR
Taylor, 2003 <sup>94</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Taylor, 2005 <sup>95</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Spiro, 2006 <sup>92</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			
Takemura, 2005 <sup>93</sup> Japan Patient N = 305 (301 with data) Provider N = 11 Practice N = NR	Specialty: General/internal medicine Number of years in practice: 5-29 years of experience in clinical practice Type of clinic: General/internal medicine clinic of Nishi-Ohmiya Hospital (large regional/community hospital) Geographical region: Japan Population served: NR	Time of year: December 2000 - January 2003 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: NR	NR
Taylor, 2003 <sup>94</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Taylor, 2005 <sup>95</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Spiro, 2006 <sup>92</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)		
Takemura, 2005 <sup>93</sup> Japan Patient N = 305 (301 with data) Provider N = 11 Practice N = NR	Advanced Testing vs. No Advanced Testing  % Receiving Antibiotics (Number of Patients Receiving Antibiotics/Number Diagnosed) Acute upper or lower respiratory tract infections: 57.5% (61/106) vs. 91.0% (122/134) Pneumonia/pleuritis: 100% (6/6) vs. 100% (1/1) Influenza: 18.5% (5/27) vs. 36.4% (4/11) Total (including non-ARI diagnoses): 46.6% (76*/163) vs. 78.5% (135*/172)  Patients prescribed oral and/or parental antibiotics at reconsultation: 5 vs. 9 (p=0.11)	NR
Taylor, 2003 <sup>94</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Taylor, 2005 <sup>95</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Spiro, 2006 <sup>92</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)		
Takemura, 2005 <sup>93</sup> Japan Patient N = 305 (301 with data) Provider N = 11 Practice N = NR	Advanced Testing vs. No Advanced Testing  Hospital admission at reconsultation: 1 vs. 0 (p=NR)	NR
Taylor, 2003 <sup>94</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Taylor, 2005 <sup>95</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Spiro, 2006 <sup>92</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)			
Takemura, 2005 <sup>93</sup> Japan Patient N = 305 (301 with data) Provider N = 11 Practice N = NR	NR	NR	*p<0.001 for difference between the two patient groups
Taylor, 2003 <sup>94</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Taylor, 2005 <sup>95</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Thomson, 1999 <sup>96</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Usherwood, 1991 <sup>97</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
van Driel, 2007 <sup>98</sup> Belgium Patient N = 408 Provider N = 75 Practice N = NR	Patients with rhinosinusitis according to definition in a newly published guideline.	Providers participating in Quality Circles (part of national accreditation since 1996; consists of 8-25 members practicing in local area who meet at least four times a year). Groups that participated in the development and validation of	Type: Education Target: Providers Description: Quality circles dedicated one meeting to discussion of the new guideline on rational use of antibiotics to treat rhinosinusitis. The guideline had been mailed to all GPs prior to the intervention. During the meeting a researcher trained in academic detailing led the discussion, using a review of the evidence, flowcharts, patient expectations, patient pamphlets and case vignettes.
Welschen, 2004 <sup>99</sup> The Netherlands Patient N = 3,620 Provider N = 89 GPs Practice N = 12 groups	Patients with respiratory tract infections	12 peer review groups of GPs and their collaborating pharmacies in the Netherlands	Type: Multifaceted Target: Providers and patients Description: Educational component aimed at providers (group education), assistants of GPs and pharmacists (group education), and patients (educational material). Monitoring/feedback on prescribing behavior.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Thomson, 1999 <sup>96</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Usherwood, 1991 <sup>97</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
van Driel, 2007 <sup>98</sup> Belgium Patient N = 408 Provider N = 75 Practice N = NR	Control group quality circles were asked to schedule a meeting about the guideline but without academic detailing	Type of RTI: Rhinosinusitis Types of Signs and Symptoms: Purulent nasal secretions (41%), 2-phased illness (52%), fever (22%) Duration of Signs and Symptoms: Mean duration 5 days When counting started for duration: Unclear	Mean Age: 38 y % female: 61% Comorbidities: 30% with recurrent acute rhinosinusitis All other characteristics: NR
Welschen, 2004 <sup>99</sup> The Netherlands Patient N = 3,620 Provider N = 89 GPs Practice N = 12 groups	Group education, monitoring of prescribing behavior, education of assistants/pharmacists, educational materials for patients vs. None	Patient characteristics: Type of RTI: any acute symptoms of the respiratory tract Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR	Intervention versus Control Mean Age: 29-31 vs. 29-30 % female: 52-54% vs. 54-55% Ethnicity: NA SES: NR Educational level: NR Frailty: NR Comorbidities: Asthma (6.7-8.2% vs. 5.4-7.2%), Prior RTIs: NR Prior use of antibiotics: NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Thomson, 1999 <sup>96</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Usherwood, 1991 <sup>97</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
van Driel, 2007 <sup>98</sup> Belgium Patient N = 408 Provider N = 75 Practice N = NR	Specialty: 66% general practitioners Number of years in practice: 20 y (mean) All other characteristics: NR	NR	NR (per guideline) "antibiotics are generally not needed to treat this condition"
Welschen, 2004 <sup>99</sup> The Netherlands Patient N = 3,620 Provider N = 89 GPs Practice N = 12 groups	Specialty: GPs Number of years in practice: 12 vs. 15 Type of clinic: single 19 vs. 28; group 81 vs. 72 Geographical region: Netherlands Population served: general population (national health service)	Time of year: 3 weeks in autumn and winter Patterns of disease activity: NR Locally tailored: yes System-level characteristics: single vs. group; national health service	Prescribed if indicated by evidence based guidelines

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Thomson, 1999 <sup>96</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Usherwood, 1991 <sup>97</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
van Driel, 2007 <sup>98</sup> Belgium Patient N = 408 Provider N = 75 Practice N = NR	Antibiotics prescribed: Adjusted OR=0.63; 95% CI, 0.29 to 1.37 Intervention 56.9% vs. control 58.3%	NR
Welschen, 2004 <sup>99</sup> The Netherlands Patient N = 3,620 Provider N = 89 GPs Practice N = 12 groups	Intervention( n=42) vs. controls (n=47), # (%) antibiotics prescription rates in 2000 (pre) and 2001 (post), % change (SD) 27 (16.9), 23 (15.6); -4 (15.6) vs. 29 (16.6), 37 (18.1); +8 (19.2); Mean difference of changes: -12; 95% CI, -18.9 to -4.0 -10.7; 95% CI, -20.3 to -1.0  Changes in mean number of antibiotic prescriptions per 1000 patients in March-April-May 2000 vs. 2001 (Intervention versus Control) 76.4 (28.1), 66.7 (25.9); -9.7 (19.8) vs. 85.4 (31.7), 87.4 (24.0); +1.9 (19.3) Mean difference: -12; 95% CI, -23.3 to -0.03  Intervention group had decrease by 9.7 RX/ 1000 patients (p=0.05) vs. increase of 1.9/1000 (p=0.6)	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission,                      medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient                      satisfaction, quality of life, symptom improvement, use of nonantibiotic                      treatments, utilization of vaccinations, quality metrics</b>
Thomson, 1999 <sup>96</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Usherwood, 1991 <sup>97</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
van Driel, 2007 <sup>98</sup> Belgium Patient N = 408 Provider N = 75 Practice N = NR	NR	NR
Welschen, 2004 <sup>99</sup> The Netherlands Patient N = 3,620 Provider N = 89 GPs Practice N = 12 groups	NR	Patient satisfaction reported as % change (Table 3) 2000 (pre) and 2001 (post), % change (SD) 4.3 (0.3), 4.3 (0.3); 0 (0.4) vs 4.2 (0.4), 4.2 (0.3); 0 (0.4): No difference

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Thomson, 1999 <sup>96</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Usherwood, 1991 <sup>97</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
van Driel, 2007 <sup>98</sup> Belgium Patient N = 408 Provider N = 75 Practice N = NR	NR	NR	
Welschen, 2004 <sup>99</sup> The Netherlands Patient N = 3,620 Provider N = 89 GPs Practice N = 12 groups	NR	NR	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-Level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Wilson, 2002 <sup>100</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Wilson, 2003 <sup>101</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Worrall, 2007 <sup>102</sup> Newfoundland Patient N = 533 Provider N = 40 urban and suburban family practitioners (37 entered patients in the trial) Practice N = NR	Adult patients aged 19 years or older who presented with acute sore throat as their primary symptom	Urban and suburban family practitioners	Type: System and Clinical - POC: Rapid Strep Target: Clinicians Description: (1) Sore throat decision rules only (STDR), (2) rapid antigen detection test (RADT), or (3) STDR and RADT. Modified version of STDR based on those developed by Centor et al. at the University of Virginia. Score ≤ 1 suggested no need for antibiotics. Score of 2 suggested antibiotics might or might not be beneficial. Score of 3 or 4 suggested antibiotics were required. In combined STDR/RADT intervention, RADT was used only when score of STDR was 2. RADT used was Clearview(R) Exact Strep A dipstick from Wampole Laboratories (sensitivity ≈ 90%, specificity ≈ 95%).
Worrall, 2010 <sup>103</sup> Newfoundland/Labrador Patient N = 149 Provider N = 8 Practice N = NR	Consecutive adult patients (aged 18 years or older) with acute upper respiratory tract infections for whom the clinicians thought antibiotic treatment might not be necessary	NR	Type: Clinical Target: Patient Description: Postdated prescription

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>Socioeconomic Status</b> <b>Educational level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior Use of Antibiotics</b>
Wilson, 2002 <sup>100</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Wilson, 2003 <sup>101</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Worrall, 2007 <sup>102</sup> Newfoundland Patient N = 533 Provider N = 40 urban and suburban family practitioners (37 entered patients in the trial) Practice N = NR	Control (usual clinical practice)	Type of RTI: Streptococcal sore throat Types of Signs and Symptoms: Sore throat Duration of Signs and Symptoms: NR When counting started for duration: NR	NR
Worrall, 2010 <sup>103</sup> Newfoundland/Labrador Patient N = 149 Provider N = 8 Practice N = NR	Usual prescription	Type of RTI: URTI=30%, sinusitis=20%, bronchitis=17%, pharyngitis=17%, acute otitis media=13%, soft tissue infection=1%, laryngitis=1%, community acquired pneumonia=1% Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>
Wilson, 2002 <sup>100</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Wilson, 2003 <sup>101</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Worrall, 2007 <sup>102</sup> Newfoundland Patient N = 533 Provider N = 40 urban and suburban family practitioners (37 entered patients in the trial) Practice N = NR	Specialty: Family practice Number of years in practice: 17.4 years (mean no. of years since graduation) Type of clinic: Urban and suburban family practices Geographical region: Eastern Newfoundland Population served: Urban and suburban populations	Time of year: February, March, and April 2005 Patterns of disease activity: NR Locally tailored: NR System-level characteristics: NR	Score ≤ 1 on Centor et al. modified STDR suggested no need for antibiotics. Score of 2 suggested antibiotics might or might not be beneficial. Score of 3 or 4 suggested antibiotics were required.
Worrall, 2010 <sup>103</sup> Newfoundland/Labrador Patient N = 149 Provider N = 8 Practice N = NR	Specialty: Family practice Number of years in practice: NR Type of clinic: NR Geographical region: Small community Population served: NR	Time of year: NR Patterns of disease activity: NR Locally tailored: NA System-level characteristics: Small community	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Wilson, 2002 <sup>100</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)		
Wilson, 2003 <sup>101</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Worrall, 2007 <sup>102</sup> Newfoundland Patient N = 533 Provider N = 40 urban and suburban family practitioners (37 entered patients in the trial) Practice N = NR	% of Visits Where Antibiotics Were Prescribed Usual Care vs. STDR only vs. RADT only vs. STDR + RADT vs. Total: 58.2 vs. 55.3 vs. 26.7* vs. 38.2* vs. 46.7	NR
Worrall, 2010 <sup>103</sup> Newfoundland/Labrador Patient N = 149 Provider N = 8 Practice N = NR	Filled prescriptions: Postdated=44% vs. usual=43.2%; NS	NR

# Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Wilson, 2002 <sup>100</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)		
Wilson, 2003 <sup>101</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Worrall, 2007 <sup>102</sup> Newfoundland Patient N = 533 Provider N = 40 urban and suburban family practitioners (37 entered patients in the trial) Practice N = NR	NR	NR
Worrall, 2010 <sup>103</sup> Newfoundland/Labrador Patient N = 149 Provider N = 8 Practice N = NR	NR	NR

## Appendix D. Evidence Table 1: Data Abstraction of Randomized Controlled Trials

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Wilson, 2002 <sup>100</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			
Wilson, 2003 <sup>101</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Worrall, 2007 <sup>102</sup> Newfoundland Patient N = 533 Provider N = 40 urban and suburban family practitioners (37 entered patients in the trial) Practice N = NR	NR	NR	* p < 0.001 for reduction in antibiotic prescribing in RADT only vs. usual care and STDR + RADT vs. usual care groups
Worrall, 2010 <sup>103</sup> Newfoundland/Labrador Patient N = 149 Provider N = 8 Practice N = NR	NR	NR	

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Alder, 2005 <sup>2</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Altiner, 2007 <sup>4</sup>	Unclear	Unclear	No	NR	No
Anderson, 1980 <sup>5</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Arroll, 2002 <sup>6</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Baer, 2013 <sup>8</sup>	Yes	Yes	Yes	Yes	No
Bauchner, 2001 <sup>9</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Bauchner, 2006 <sup>10</sup> (Please refer to Andrews, 2012 <sup>3</sup> , Boonacker, 2010 <sup>12</sup> , and Vodicka, 2013 <sup>16</sup> systematic reviews)					
Bennett, 2001 <sup>11</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Alder, 2005 <sup>2</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Altiner, 2007 <sup>4</sup>	NR	Yes	No	No	Poor
Anderson, 1980 <sup>5</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Arroll, 2002 <sup>6</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Baer, 2013 <sup>8</sup>	Yes	Yes	Yes	Yes	Good
Bauchner, 2001 <sup>9</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Bauchner, 2006 <sup>10</sup> (Please refer to Andrews, 2012 <sup>3</sup> , Boonacker, 2010 <sup>12</sup> , and Vodicka, 2013 <sup>16</sup> systematic reviews)					
Bennett, 2001 <sup>11</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Bonner, 2003 <sup>13</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)					
Bourgeois, 2010 <sup>15</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Briel, 2006 <sup>17</sup>	Yes	Yes	Yes	Yes	No
Briel, 2008 <sup>18</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)					
Brittain-Long, 2011 <sup>21</sup>	No	Yes	Yes	No	No
Burkhardt, 2010 <sup>22</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)					
Cals, 2009 <sup>23</sup> Cals, 2010 <sup>26</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup>	Unclear	Unclear	Unclear, some differences in current smoking and shortness of breath	Unclear	No
Carling, 2009 <sup>27</sup>	Yes, used computerized block-randomization	Yes, the system randomized participants upon log-on to study website	Yes	Unclear	NA, no clinicians involved in study

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Bonner, 2003 <sup>13</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)					
Bourgeois, 2010 <sup>15</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Briel, 2006 <sup>17</sup>	NR	Yes	Yes	Yes	Fair
Briel, 2008 <sup>18</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)					
Brittain-Long, 2011 <sup>21</sup>	No	Yes	Yes	Yes	Fair
Burkhardt, 2010 <sup>22</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)					
Cals, 2009 <sup>23</sup> Cals, 2010 <sup>26</sup> Cals, 2011 <sup>24</sup> Cals, 2013 <sup>25</sup>	Unclear	No ITT for diary outcomes (e.g. symptoms), 90% completed and returned diaries	Yes	Yes	Fair
Carling, 2009 <sup>27</sup>	Unclear, not mentioned	Yes	No, ~56% were randomized but did not complete study	Yes, % that did not complete study was $< 10\%$ different for each group	Fair

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Chao, 2008 <sup>28</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)					
Chazan, 2007 <sup>29</sup>	Unclear	Unclear	Yes	Unclear	No
Christakis, 2001 <sup>30</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)					
Christ-Crain, 2004 <sup>31</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)					
Coenen, 2004 <sup>32</sup>	Yes	Yes	Unclear, stated no significant differences in all randomized GPs (N=85), but characteristics not shown; characteristics only shown for subset of GPs who responded both pre- and post-interventions and twice as many GP's had professional training in intervention group; also some between-group differences in patient characteristics	Unclear	No

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Chao, 2008 <sup>28</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)					
Chazan, 2007 <sup>29</sup>	No	Yes	Yes	Yes	Fair
Christakis, 2001 <sup>30</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)					
Christ-Crain, 2004 <sup>31</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)					
Coenen, 2004 <sup>32</sup>	Unclear	No, only 693 of 824 included patients were eligible for analysis post-test (84%)	No, only 66% of GP's responded	Yes	Fair (KQ 1) Poor (KQs 2-6)

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Cohen, 2000 <sup>33</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Croft, 2007 <sup>34</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Davis, 2007 <sup>35</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)					
Diederichsen, 2000 <sup>36</sup>	Yes	No (sealed envelopes)	Clinicians: NA Patients: Yes	Unclear	No (NA)
Doan, 2009 <sup>37</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)					
Dowell, 2001 <sup>38</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Doyne, 2004 <sup>39</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Cohen, 2000 <sup>33</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Croft, 2007 <sup>34</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Davis, 2007 <sup>35</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)					
Diederichsen, 2000 <sup>36</sup>	Unclear	Yes	Yes	Yes	Fair
Doan, 2009 <sup>37</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)					
Dowell, 2001 <sup>38</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Doyne, 2004 <sup>39</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
El-Daher, 1991 <sup>40</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Finkelstein, 2001 <sup>41</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Finkelstein, 2008 <sup>42</sup>	Yes	Unclear	Yes	Unclear	No
Forrest, 2013 <sup>43</sup>	Yes	Unclear.	No. Multiple variations at baseline that are discussed in the text and in Tables 2 and 3.	Unclear	Unclear
Francis, 2009 <sup>44</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)					
Gerber, 1990 <sup>45</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Gerber, 2013 <sup>46</sup>	Yes	Unclear	Mostly - Control sites had higher proportion of Black and Medicaid patients	Unclear	No
Gjelstad, 2013 <sup>47</sup>	Unclear	Yes	Unclear, no information on patients	Unclear	Unclear

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
El-Daher, 1991 <sup>40</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Finkelstein, 2001 <sup>41</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Finkelstein, 2008 <sup>42</sup>	No	Yes	Yes	Yes	Fair
Forrest, 2013 <sup>43</sup>	Unclear	Unclear. Mention of ITT, but unclear how missing data from two practices that withdrew from study were handled.	No. In addition, two practices lost to followup (8%).	Unclear	Poor
Francis, 2009 <sup>44</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Andrews, 2012 <sup>3</sup> systematic reviews)					
Gerber, 1990 <sup>45</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Gerber, 2013 <sup>46</sup>	No	Yes	Yes	Yes (none)	Fair
Gjelstad, 2013 <sup>47</sup>	Unclear	No, no followup data from dropouts	Yes	Yes	Fair

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Gonzales, 2011 <sup>48</sup>	Yes	Unclear	Clinicians: NA Patients: Yes	Unclear	No (NA)
Gonzales, 2013 <sup>49</sup>	Unclear.	Unclear	Unclear. Some variations at baseline, prognostic influence unclear.	Unclear.	Unclear.
Huang, 2007 <sup>50</sup>	Yes, used a computer randomization routine	Unclear, no mention of allocation methods	Yes	Unclear, not mentioned	Unclear, not mentioned
Iyer, 2006 <sup>51</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)					
Juzych, 2005 <sup>52</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)					
Légaré, 2010 <sup>53</sup>	Yes	Unclear	No	Unclear	No
Légaré, 2012 <sup>54</sup> Légaré, 2013 <sup>55</sup>	Yes	Unclear	Yes	Unclear	No
Linder, 2009 <sup>56</sup>	Unclear	Unclear	Yes but limited data given	Unclear	No
Linder, 2010 <sup>57</sup>	Unclear	Unclear	Yes but limited data given	Unclear	No
Little, 1997 <sup>58</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Gonzales, 2011 <sup>48</sup>	Unclear	Yes	Yes	Yes	Fair
Gonzales, 2013 <sup>49</sup>	Unclear.	Unclear. Excluded clinicians who saw $< 10$ patients.	Unclear	Unclear	Fair
Huang, 2007 <sup>50</sup>	Unclear, not mentioned	Unclear	Unclear, no data or mention of attrition	Unclear, no data or mention of attrition	Poor
Iyer, 2006 <sup>51</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)					
Juzych, 2005 <sup>52</sup> (Please refer to Vodicka, 2013 <sup>16</sup> and Boonacker, 2010 <sup>12</sup> systematic reviews)					
Légaré, 2010 <sup>53</sup>	NR	Yes	Yes	Yes	Fair
Légaré, 2012 <sup>54</sup> Légaré, 2013 <sup>55</sup>	NR	Yes	Unclear	Unclear	Fair
Linder, 2009 <sup>56</sup>	Unclear	Yes	Yes	Yes	Fair
Linder, 2010 <sup>57</sup>	Unclear	Yes	Yes	Yes	Fair
Little, 1997 <sup>58</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Little, 2001 <sup>59</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic review)  Little, 2006 <sup>60</sup> (companion) (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Little, 2013 <sup>61</sup>	Yes	Yes	Yes	No	No
Little, 2013 <sup>62</sup> Yardley, 2013 <sup>63</sup>	Yes	Unclear	Clinicians: Unclear Patients: Yes	Unclear	No
Little 2014 <sup>64</sup>	Yes	Yes	Clinicians: Unclear Patients: Yes	Unclear	No
Llor, 2011 <sup>65</sup>	Yes	Yes	Yes	No	No
MacFarlane, 2002 <sup>66</sup>	Unclear, randomized by permuted blocks of four but no mention of specific randomization technique/method (e.g. computer)	No, sealed envelope	Yes	Yes	Yes
Maiman, 1988 <sup>67</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Little, 2001 <sup>59</sup> (Please refer to Spurling, 2013 <sup>7</sup> and Andrews, 2012 <sup>3</sup> systematic review)  Little, 2006 <sup>60</sup> (companion) (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Little, 2013 <sup>61</sup>	No	Yes	Yes	Yes	Fair
Little, 2013 <sup>62</sup> Yardley, 2013 <sup>63</sup>	Unclear	Yes	Yes	Yes	Fair
Little 2014 <sup>64</sup>	No	Yes for reconsultation, no for others (85% for antibiotic use, 24% for satisfaction)	No for satisfaction, yes for others	Yes	Fair
Llor, 2011 <sup>65</sup>	No	Yes	Yes	Yes	Fair
MacFarlane, 2002 <sup>66</sup>	Unclear, not mentioned	Yes, they provide data to calculate this	Yes	Yes	Fair
Maiman, 1988 <sup>67</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Mainous, 2000 <sup>68</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Maltezou, 2008 <sup>69</sup>	No	Yes	No	No	No
Margolis, 1992 <sup>70</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic review)					
McCormick, 2005 <sup>71</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
McGinn, 2013 <sup>72</sup>	Yes	Unclear	Yes, however age was statistically different (p=0.001)	Unclear	Unclear
Mclsaac, 2002 <sup>73</sup>	Unclear	Unclear	No	Unclear	No
Meeker, 2014 <sup>74</sup>	Yes	Unclear	Unclear, some differences in % male patients (25 vs 20), patient age (mean 46 vs 51), insured (48% vs 38%), male MDs (29% vs 14%)	Unclear	No

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Mainous, 2000 <sup>68</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Maltezou, 2008 <sup>69</sup>	No	Yes	Yes	Yes	Fair
Margolis, 1992 <sup>70</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic review)					
McCormick, 2005 <sup>71</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
McGinn, 2013 <sup>72</sup>	Unclear	Unclear	Unclear	Unclear	Fair
Mclsaac, 2002 <sup>73</sup>	Unclear	No	No (41% physician drop-out)	Unclear	Poor
Meeker, 2014 <sup>74</sup>	No	Yes	Yes	Yes (none)	Fair

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Metlay, 2007 <sup>75</sup>	Yes	Yes	No, some important imbalances: more control sites were VAs (62% vs 50%); slightly more older patients, more smokers, more with previous ARI. Provider types also differed as VAs were teaching hospitals.	Unclear and No, depending on specific outcome	No
Milos, 2013 <sup>76</sup>					
Moore, 2009 <sup>77</sup>  Little, 2005 <sup>78</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)	Yes	Unclear	Unclear	Unclear	No
Ozkaya, 2009 <sup>79</sup>	Unclear	Unclear	Yes	No	No
Pichichero, 1987 <sup>80</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Poehling, 2006 <sup>81</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)					
Pontes, 2005 <sup>82</sup>	Unclear, no mention of randomization of patients to intervention or control arms	Unclear, no mention of allocation methods	Unclear, no mention in text or table with data	Unclear	Unclear

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Metlay, 2007 <sup>75</sup>	No	No	1 study site discontinued the study (6%)	Yes	Fair
Milos, 2013 <sup>76</sup>					
Moore, 2009 <sup>77</sup>  Little, 2005 <sup>78</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)	Unclear	No	Yes	No	Fair
Ozkaya, 2009 <sup>79</sup>	No	Yes	Yes	Yes	Poor
Pichichero, 1987 <sup>80</sup> (Please refer to Spurling, 2013 <sup>7</sup> systematic review)					
Poehling, 2006 <sup>81</sup> (Please refer to Doan, 2014 <sup>14</sup> systematic review)					
Pontes, 2005 <sup>82</sup>	Unclear	Unclear, they do not mention ITT and do not provide the data to calculate this	Unclear, no data or mention of attrition	Unclear, no data or mention of attrition	Poor

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Pshetizky, 2003 <sup>83</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Regev-Yochay, 2011 <sup>84</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Robbins, 2003 <sup>85</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Roberts, 1983 <sup>86</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Samore, 2005 <sup>87</sup>	Unclear	Unclear	Yes	Unclear	No
Schnellinger, 2010 <sup>88</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Pshetizky, 2003 <sup>83</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Regev-Yochay, 2011 <sup>84</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Robbins, 2003 <sup>85</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Roberts, 1983 <sup>86</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Samore, 2005 <sup>87</sup>	Unclear	Unclear	NR	NR	Fair
Schnellinger, 2010 <sup>88</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Schuetz, 2009 <sup>89</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)					
Sondergaard, 2003 <sup>90</sup>	Unclear	Unclear	Unclear, few characteristics reported	No	Unclear
Spiro, 2004 <sup>91</sup>	Yes	Unclear	No, there were more males in the unaware group (61.5% vs. 52.5%, p=0.02)	No	No
Spiro, 2006 <sup>92</sup> (Please refer to Andrews, 2012 <sup>3</sup> and Spurling, 2013 <sup>7</sup> systematic reviews)					
Takemura, 2005 <sup>93</sup>	Unclear	Unclear	Clinicians: NA Patients: Yes	Unclear	No (NA)
Taylor, 2003 <sup>94</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Taylor, 2005 <sup>95</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Schuetz, 2009 <sup>89</sup> (Please refer to Schuetz, 2011 <sup>19</sup> and Schuetz, 2012 <sup>20</sup> systematic reviews)					
Sondergaard, 2003 <sup>90</sup>	Unclear	Unclear	Yes	Unclear	Poor
Spiro, 2004 <sup>91</sup>	No	Yes	Yes	Yes	Fair
Spiro, 2006 <sup>92</sup> (Please refer to Andrews, 2012 <sup>3</sup> and Spurling, 2013 <sup>7</sup> systematic reviews)					
Takemura, 2005 <sup>93</sup>	Unclear	Yes	Yes	Yes	Fair
Taylor, 2003 <sup>94</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Taylor, 2005 <sup>95</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Outcome assessors blinded?	Clinician blinded?
Thomson, 1999 <sup>96</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Usherwood, 1991 <sup>97</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
van Driel, 2007 <sup>98</sup>	Unclear, stratification by geographic location but methods not reported	Unclear	Some small differences: more control group clinicians female, solo practice, involved in training program, using HER, and more patients with fever (17.2% vs 26.5%)	Yes	No
Welschen, 2004 <sup>99</sup>	Yes	Yes	Yes	Yes	Unclear
Wilson, 2002 <sup>100</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)					
Wilson, 2003 <sup>101</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Worrall, 2007 <sup>102</sup>	Unclear	Unclear	Yes for physicians, unclear for patients	Unclear	No
Worrall, 2010 <sup>103</sup>	Unclear (NR)	No, blank envelopes, also all clinicians given equal number of usual and postdated and may have guessed remaining as reached end of allotment	Unclear, only reported that range of illnesses were similar, no demographic information	NA	No

## Appendix E. Evidence Table 2: Quality Assessment of Randomized Controlled Trials

Author, Year	Patient or caregiver blinded?	Intention to treat?	Acceptable level of overall attrition ( $\leq 20\%$ )?	Acceptable level of differential attrition ( $< 10\%$ )?	Overall quality (Good, Fair, Poor)
Thomson, 1999 <sup>96</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Usherwood, 1991 <sup>97</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
van Driel, 2007 <sup>98</sup>	No but due to cluster randomization, patients may not have known they were even in a study	Yes	Yes	Yes	Fair
Welschen, 2004 <sup>99</sup>	Unclear	No, excluded 11%	Yes, 11%	Yes, 9% vs 13%	Fair
Wilson, 2002 <sup>100</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)					
Wilson, 2003 <sup>101</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Worrall, 2007 <sup>102</sup>	Unclear	Yes	Yes	Yes	Fair
Worrall, 2010 <sup>103</sup>	No	Yes	Yes	Yes	Fair

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Ashe, 2006 <sup>104</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)				
Bjerrum, 2004 <sup>105</sup> Denmark Patient N = 1,444 Provider N = 367 Practice N = NR	Cross-sectional Patients registered "during a 3 week period (15 working days between 1 November 2001 and 31 January 2002."	Acute sinusitis: provider recorded "suspected focus of infection," and for included patients this was "the paranasal sinuses." No further diagnostic criteria given.	Danish general practitioners (GPs) who used CRP rapid tests. Access to CRP testing was a practice characteristic, suggesting it was availability of test rather than provider choice that defined this group, but selection criteria were not clearly reported. Participating GPs (10% of all Danish GPs) "participated on a voluntary basis" in audit registration.	Type: Clinical - POC: CRP Target: Practice/Provider Description: C-reactive protein (CRP) rapid test. No intervention to promote its use. One GP per practice participated, and access to/use of CRP tests varied by provider/practice.
Bjerrum, 2006 <sup>106</sup> Spain Patient N = 5,250 consultations before and after intervention Provider N = 52 Practice N = NR	Pre/post, with control group for second time period only Patients registered "in a 3-week period during 3 winter months (December to February)" before (2002/2003) and after (2004/2005) intervention.	patients with RTI, no further diagnostic criteria given.	17 general practitioners (GPs) registering patients before (2002/2003) and after (2004/2005) receiving intervention.	Type: Clinical - POC: Multifaceted Target: providers Description: Courses in RTI management following local guidelines, use of two rapid diagnostic tests (rapid strep and CRP).

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Ashe, 2006 <sup>104</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)				
Bjerrum, 2004 <sup>105</sup> Denmark Patient N = 1,444 Provider N = 367 Practice N = NR	Danish GPs who did not use CRP rapid tests (see provider population criteria).	Type of RTI: of 17,792 total patients with URIs, 1,444 (8%) had sinusitis and were the focus of the analysis of prescribing outcomes. Signs and symptoms, duration: NR	Patients with sinusitis: Median age: 40 years in CRP practices, 41 years in others % female: 69 overall Other characteristics: NR	All were general practitioners Other characteristics: NR
Bjerrum, 2006 <sup>106</sup> Spain Patient N = 5,250 consultations before and after intervention Provider N = 52 Practice N = NR	35 GPs not exposed to intervention registered patients in 2004/2005	Type of RTI (focus of infection as judged by provider): ears (5.7%), tonsils (5.6%), pharynx/larynx/ trachea (23%), sinuses (2.8%), Bronchi/lungs (31%), diffuse/ multiple foci (28%), unknown/ missing (3.8%) Signs, symptoms and duration: NR	NR	Specialty/type of clinic: general practice Years in practice, population served: NR Geographical region: rural and urban areas of Catalonia, Spain

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Ashe, 2006 <sup>104</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Bjerrum, 2004 <sup>105</sup> Denmark Patient N = 1,444 Provider N = 367 Practice N = NR	Time of year: November 1 through January 31 Other factors NR	Not explicitly defined, but background discussion states that symptoms of bacterial and viral sinusitis overlap and that raised CRP can identify bacterial sinusitis, for which antibiotics presumably appropriate. Outcome measured is overall antibiotic prescribing rate for sinusitis.	Logistic regression analysis with antibiotic prescribing rate as a function of access to CRP testing, "adjusted for patient sex, age, number of listed patients and workload in practice" as well as solo vs. group practice.
Bjerrum, 2006 <sup>106</sup> Spain Patient N = 5,250 consultations before and after intervention Provider N = 52 Practice N = NR	Time of year: December to February of two consecutive years Pattern of disease activity, local tailoring, system-level characteristics: NR	Antibiotics for bacterial infections only. "Particularly relevant for reducing antibiotic prescribing are colds, upper RTIs, and bronchitis, because the vast majority of these illnesses have a viral cause and do not benefit from antibiotic treatment." Outcomes reported: overall antibiotic prescribing, prescribing by narrow- vs. broad-spectrum classes.	"we used 95% confidence intervals (CI) adjusted for clustering of data according to practices." Methods not further described. Antibiotic prescribing outcomes also reported stratified by site of infection.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Ashe, 2006 <sup>104</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Bjerrum, 2004 <sup>105</sup> Denmark Patient N = 1,444 Provider N = 367 Practice N = NR	Adjusted odds ratio for prescription of antibiotics as a function of access to CRP testing:  OR=0.43; 95% CI, 0.33 to 0.58	NR
Bjerrum, 2006 <sup>106</sup> Spain Patient N = 5,250 consultations before and after intervention Provider N = 52 Practice N = NR	Percent (95% CI) of all consultations with antibiotic prescribed: After intervention: 24% (20%-29%) Before intervention: 36% (29%-44%) Control: 32% (27%-38%) Also reported by infection site, with difference most pronounced for sinusitis and lower RTI.  Antibiotic type: use of narrow-spectrum penicillin increased after intervention, and use of macrolides and cephalosporins decreased.	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Ashe, 2006 <sup>104</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		
Bjerrum, 2004 <sup>105</sup> Denmark Patient N = 1,444 Provider N = 367 Practice N = NR	NR	NR
Bjerrum, 2006 <sup>106</sup> Spain Patient N = 5,250 consultations before and after intervention Provider N = 52 Practice N = NR	NR	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Ashe, 2006 <sup>104</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			
Bjerrum, 2004 <sup>105</sup> Denmark Patient N = 1,444 Provider N = 367 Practice N = NR	NR	NR	
Bjerrum, 2006 <sup>106</sup> Spain Patient N = 5,250 consultations before and after intervention Provider N = 52 Practice N = NR	NR	NR	

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Bjerrum, 2011 <sup>107</sup> Denmark, Sweden, Lithuania, Russia, Spain, and Argentina Patient N = 47,011 before and after intervention Provider N = 440 Practice N = NR	Pre/post Time frame: patients registered during 3 weeks in the winter months of 2008 and 2009, with intervention "shortly after" first registration.	All patients with RTI, no further diagnostic criteria given.	General practitioners (GPs) registering patients after intervention (2009).	Type: Clinical - POC: Multifaceted Target: providers and patients Description: prescriber feedback; training on antibiotic use; clinical guidelines on RTI management; patient posters, brochures and handouts on antibiotic use; access to and training in Strep A and CRP POC tests.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Bjerrum, 2011 <sup>107</sup> Denmark, Sweden, Lithuania, Russia, Spain, and Argentina Patient N = 47,011 before and after intervention Provider N = 440 Practice N = NR	GPs registering patients before intervention (2008)	Type of RTI: Upper vs. lower reported only in Figure 1 Types of signs and symptoms: NR Duration of signs and symptoms: 3 days (median) When counting started: days before first consultation with GP	Median age: 32 in 2008, 31 in 2009 % female: 57 Other characteristics: NR	Specialty/type of clinic: general practice Years in practice as GP: 15 (median) Population served: NR Geographical region: Denmark, Sweden, Lithuania, Russia, Spain, and Argentina

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Bjerrum, 2011 <sup>107</sup> Denmark, Sweden, Lithuania, Russia, Spain, and Argentina Patient N = 47,011 before and after intervention Provider N = 440 Practice N = NR	Time of year: two consecutive winter seasons Other factors: NR	"The majority of RTIs (90%) are caused by virus and in these cases antibiotics are unlikely to have any clinical benefit...Even if the aetiology is bacterial, antibiotics only slightly modify RTIs, particular in patients with upper RTIs." Outcomes reported: antibiotic use for upper and lower RTIs, choice of antibiotic (Penicillin-V, amoxicillin, amoxicillin-clavulanic acid, macrolides, quinolones, tetracycline, cephalosporins).	"we used 95% confidence intervals (CI) adjusted for clustering to GPs." Methods not further described. Antibiotic prescribing outcomes also reported stratified by country.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Bjerrum, 2011 <sup>107</sup> Denmark, Sweden, Lithuania, Russia, Spain, and Argentina Patient N = 47,011 before and after intervention Provider N = 440 Practice N = NR	Change in antibiotic prescribing rate: Lower RTIs: decrease ranged from about 2% (Denmark; estimated from figure) to 42% (95% CI, 36% to 47%; Lithuania) Upper RTIs: decrease ranged from <1% (Denmark; estimated from figure) to 20% (95% CI, 17% to 23%; Lithuania)  Change in use of Penicillin-V*: Lower RTIs: ranged from a decrease of 0.9% (Argentina) to an increase of 31.2% (Lithuania) Upper RTIs: ranged from a decrease of 2.2% (Sweden) to an increase of 44.3% (Lithuania) *Use of multiple broad-spectrum antibiotics also reported	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Bjerrum, 2011 <sup>107</sup> Denmark, Sweden, Lithuania, Russia, Spain, and Argentina Patient N = 47,011 before and after intervention Provider N = 440 Practice N = NR	NR	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Bjerrum, 2011 <sup>107</sup> Denmark, Sweden, Lithuania, Russia, Spain, and Argentina Patient N = 47,011 before and after intervention Provider N = 440 Practice N = NR	NR	NR	Happy Audit study

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Blaschke, 2014 <sup>108</sup> United States Patient N = 1,166 sampled visits, extrapolated to 4.9 million estimated ED visits Provider N = NR Practice N = NR	Study design: cross-sectional; no intervention, data pooled rather than compared across time, comparison groups defined based on testing and diagnosis with outcomes from concurrent encounter Time frame: three flu seasons (2007-2009).	"We only included visits at which influenza was diagnosed by ICD-9-CM code and/or Rapid influenza diagnostic test (RIDT) was performed." (RIDT test results were not available, only whether test performed.) Adults and children included. 3 groups defined based on "certainty for the diagnosis of influenza," with two groups less likely to have flu: those where RIDT was not performed but flu was diagnosed ("intermediate certainty," RIDT-/INF+); and those where RIDT was performed and flu was not diagnosed ("lowest certainty," RIDT+/INF-).	NR	Type: Clinical - POC: Rapid Influenza Target: provider orders rapid flu test, though no intervention to promote its use Description: Rapid influenza diagnostic test (RIDT). No intervention to promote its use.
Bush, 1979 <sup>109</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)				

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Blaschke, 2014 <sup>108</sup> United States Patient N = 1,166 sampled visits, extrapolated to 4.9 million estimated ED visits Provider N = NR Practice N = NR	Group most likely to have flu was patients with RIDT performed and flu diagnosed ("highest certainty," RIDT+/INF+), and this was used as the reference group.	Type of RTI (primary diagnosis, weighted %): Influenza (20%), acute RTI (43%), unspecified viral infection (9%), fever (9%; listed under diagnoses), other respiratory diagnosis (4%), other diagnosis (15%) Signs and symptoms: temperature ≥ 100.4F (39%, weighted) Duration: NR	Age group: 0-5 (33%), 6-17 (20%), 18+ (47%) % female: 54 Other characteristics: NR	Type of clinic: hospital emergency departments Geographical region/population served: sampling from all 50 US states and DC, but Federal (VA, military) hospitals excluded. Other provider characteristics: NR
Bush, 1979 <sup>109</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)				

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Blaschke, 2014 <sup>108</sup> United States Patient N = 1,166 sampled visits, extrapolated to 4.9 million estimated ED visits Provider N = NR Practice N = NR	Time of year/patterns of disease activity: flu seasons defined as October through April (inclusive), with patient visits from May through September excluded. Local tailoring: NR System-level characteristics: National Hospital Ambulatory Medical Care Survey (NHAMCS) samples visits to hospital EDs throughout the US, excluding Federal hospitals.	Reduced antibiotic prescribing for influenza (viral etiology, versus other respiratory illnesses like bacterial pneumonia), especially when diagnosis supported by RIDT.	NHAMCS uses "4-stage probability based sampling process" with sampling units based on geographic region, hospital, ED, and patient visits, and assigns weight accounting for sampling. Paper reports "differences in the percentage usage of each of the 3 clinical measures" across the 3 groups defined by RIDT use and flu diagnosis; it does not report any adjustment of these percent differences for factors likely affecting outcomes, though weights based on sampling design appear to be used in calculating CIs.
Bush, 1979 <sup>109</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Blaschke, 2014 <sup>108</sup> United States Patient N = 1,166 sampled visits, extrapolated to 4.9 million estimated ED visits Provider N = NR Practice N = NR	Rate difference (95% CI) for weighted proportion of visits in which antibiotics were prescribed, compared with RIDT+/INF+:  RIDT-/INF+: 12% (0% to 23%) RIDT+/INF-: 36% (25% to 46%)  (RIDT + or - refers to whether test was conducted, not its result)	NR
Bush, 1979 <sup>109</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)		

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Blaschke, 2014 <sup>108</sup> United States Patient N = 1,166 sampled visits, extrapolated to 4.9 million estimated ED visits Provider N = NR Practice N = NR	NR	Rate difference (95% CI) for weighted proportion of visits in which ancillary testing was performed (chest radiography, blood culture, urinalysis, and complete blood count), compared with RIDT+/INF+:  RIDT-/INF+: 8% (-8% to 24%) RIDT+/INF-: 15% (0% to 30%)  Rate difference (95% CI) for weighted proportion of visits in which antivirals were prescribed, compared with RIDT+/INF+:  RIDT-/INF+: -37% (-52% to -22%) RIDT+/INF-: -54% (-68% to -40%)  (RIDT + or - refers to whether test was conducted, not its result)
Bush, 1979 <sup>109</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Blaschke, 2014 <sup>108</sup> United States Patient N = 1,166 sampled visits, extrapolated to 4.9 million estimated ED visits Provider N = NR Practice N = NR	NR	NR	
Bush, 1979 <sup>109</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)			

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Chowdhury, 2007 <sup>10</sup> Bangladesh Patient N = NR for study population Provider N = NR Practice N = 24	Pre/post Retrospective baseline survey, with followup 3-4 months after intervention (dates NR).	Acute respiratory infections, no further criteria specified but WHO guidelines discussed which differentiate "pneumonia from cough and cold and malaria." Antibiotic prescribing outcome reported for "under five children" only.	"THCs doctors who were involved in prescribing at the out patient departments."	Types: Multifaceted (Educational/Behavioral, Clinical and System-level) Target: providers Group I (STG + audit): WHO standard treatment guidelines (STG), describing signs and symptoms of pneumonia and how to differentiate from other diagnoses, "explained to the doctors in the THCs once" by a visiting pediatrician/clinician; auditing performed by providers and their colleagues, using WHO form to score prescriptions vs. STG (i.e. whether antibiotic prescribed in nonpneumonia patient.) Group II: STG only Group III: control
Francis, 2006 <sup>11</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)				

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Chowdhury, 2007 <sup>10</sup> Bangladesh Patient N = NR for study population Provider N = NR Practice N = 24	Control THCs received no intervention.	NR	Age: antibiotic prescribing reported for under five children only (mean age NR) Other characteristics: NR	Specialty and years in practice: NR Type of clinic: outpatient departments of THCs Geographic region: Dhaka division, a large, central division, one of seven in Bangladesh.
Francis, 2006 <sup>11</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)				

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Chowdhury, 2007 <sup>10</sup> Bangladesh Patient N = NR for study population Provider N = NR Practice N = 24	Time of year: NR Patterns of disease activity: NR Locally tailored: NR System-level characteristics: "government Thana health complexes (THCs), the primary health care centres of Bangladesh." A Thana is a subdistrict of one of the seven administrative divisions of Bangladesh.	Followed WHO guidelines (WHO/ARI/94, 31 January) for treatment of pneumonia vs. cough, cold, and other infections, where appropriateness defined by "whether antibiotic prescribed in non pneumonia patient." Unclear whether ARI definition includes pneumonia, and whether antibiotic prescribing outcome represents all antibiotic prescriptions or only inappropriate prescriptions.	Baseline antibiotic use only: study restricted to clinics with high ( $\geq 72\%$ ) baseline use, with further matching of intervention and control groups by baseline use, though methods for matching clinics and allocating to study group not described.
Francis, 2006 <sup>11</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Chowdhury, 2007 <sup>10</sup> Bangladesh Patient N = NR for study population Provider N = NR Practice N = 24	"Antibiotic prescribing for ARI in under five children:" (post- vs. pre-intervention): STG + Audit: 67% vs. 90%, p<0.05 for 6/8 sites, p=NR overall STG only: 71% vs. 86%, p<0.05 for 3/8 sites, p=NR overall Control: 81% vs. 89%, p<0.05 for 4/8 sites, p=NR overall	NR
Francis, 2006 <sup>11</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Chowdhury, 2007 <sup>10</sup> Bangladesh Patient N = NR for study population Provider N = NR Practice N = 24	NR	NR
Francis, 2006 <sup>11</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Chowdhury, 2007 <sup>10</sup> Bangladesh Patient N = NR for study population Provider N = NR Practice N = 24	NR	NR	
Francis, 2006 <sup>11</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Gonzales, 1999 <sup>112</sup> United States Patient N = 4,489 (2,462 at baseline, 2,027 in study period) Provider N = 93 Practice N = 4	Prospective nonrandomized controlled trial November 1996 - February 1997 (baseline) and November 1997 - February 1998 (study period).	Adults 18 years of age and older with an office visit for acute bronchitis, sinusitis, or URI during the baseline and study periods.	All clinicians caring for patients diagnosed as having the aforementioned conditions. Clinicians included board-certified internal medicine and family practice physicians, nurse practitioners, physician assistants, and registered nurses.	Type: Multifaceted Target: Providers and Patients Description: The full intervention site received household and office-based patient educational materials, as well as a clinician intervention consisting of education, practice-profiling, and academic detailing. Household educational materials included refrigerator magnets, CDC pamphlet "Your Child and Antibiotics - Sometimes Antibiotics Can Be Harmful", "Operation Clean Hands" pamphlet by Bayer Pharmaceutical Division, and letter describing study. Office-based educational materials included posters and information sheets. A limited intervention site received only office-based educational materials, and control sites provided usual care.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Gonzales, 1999 <sup>112</sup> United States Patient N = 4,489 (2,462 at baseline, 2,027 in study period) Provider N = 93 Practice N = 4	Full intervention vs. Limited intervention vs. Control	Type of RTI: Uncomplicated acute bronchitis, sinusitis or URI Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR	Age Range: 49% 18 - 44 y % female: 54.3 Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR	Specialty: Family medicine and internal medicine Number of years in practice: NR Type of Clinic: Primary care Geographical region: Denver-Boulder, Colorado Population served: 350,000

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Gonzales, 1999 <sup>112</sup> United States Patient N = 4,489 (2,462 at baseline, 2,027 in study period) Provider N = 93 Practice N = 4	Time of year: November 1996 - February 1997 and November 1997 - February 1998 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: Practices belonged to Kaiser Permanente, a nonprofit, group-model health maintenance organization	NR	Mixed-effects model, using PROC MIXED macro in SAS statistical application program, to control for potential clustering (random effects) of clinicians by site. Within-site analyses included month, patient age and sex, and clinician type and specialty as fixed effects. Between site analyses also included site as a fixed effect.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Gonzales, 1999 <sup>112</sup> United States Patient N = 4,489 (2,462 at baseline, 2,027 in study period) Provider N = 93 Practice N = 4	<p><b>Antibiotic Prescribing Rates</b>                      Uncomplicated Acute Bronchitis                      Control vs. Limited Intervention vs. Full Intervention                      Study Period (rate<sup>1</sup>, p for change)                      Full intervention: 74 vs. 48, 0.003                      Limited intervention: 82 vs. 77, 0.68                      Control: 78 vs. 76, 0.81</p> <p>Between-site analysis confirms rate of change in monthly antibiotic prescription rates for uncomplicated acute bronchitis was greater at intervention site than at control and limited intervention sites (p=0.02)</p> <p><b>Uncomplicated URIs</b>                      Antibiotic prescribing for uncomplicated URIs declined at all sites, between baseline and study periods, but to a similar extent at all sites (p&gt;0.05 for all comparisons)</p> <p><b>Uncomplicated sinusitis</b>                      Baseline vs. Study Period (rate<sup>1</sup>)                      Control: 88 vs. 88                      Limited Intervention: 85 vs. 91                      Full Intervention: 87 vs. 89</p>	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Gonzales, 1999 <sup>112</sup> United States Patient N = 4,489 (2,462 at baseline, 2,027 in study period) Provider N = 93 Practice N = 4	NR	<p>Incident Office Visit Rates<sup>2*</sup>                      Control vs. Limited Intervention vs. Full Intervention                      Uncomplicated Acute Bronchitis                      Baseline Period: 17 vs. 28 vs. 18                      Study Period: 15 vs. 18 vs. 15</p> <p>Uncomplicated URIs                      Baseline Period: 50 vs. 46 vs. 60                      Study Period: 49 vs. 40 vs. 58</p> <p>Uncomplicated Sinusitis                      Baseline Period: 32 vs. 50 vs. 50                      Study Period: 28 vs. 40 vs. 40</p> <p>Nonantibiotic Medication Prescriptions for Patients with Acute Bronchitis                      (Absolute Change from Baseline to Study Period, %)                      Control vs. Limited Intervention vs. Full Intervention                      Bronchodilators: 11.0 vs. 9.8 vs. 15.3                      Cough suppressants: 8.8 vs. 0.7 vs. 8.3                      Analgesics: -0.2 vs. -1.6 vs. 0.2</p> <p>Patients Returning for Care within 30 Days by Diagnosis                      (Absolute Change from Baseline to Study Period, %)                      Control vs. Limited Intervention vs. Full Intervention                      Acute bronchitis: -0.2 vs. 0.1 vs. -0.7                      Pneumonia: 1.0 vs. 0.4 vs. -0.2 (p=0.08 compared with control)</p>

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Gonzales, 1999 <sup>1,2</sup> United States Patient N = 4,489 (2,462 at baseline, 2,027 in study period) Provider N = 93 Practice N = 4	NR	NR	<sup>1</sup> Antibiotic prescription rate was defined as the proportion (%) of incident office visits where the patient received an antibiotic prescription. <sup>2</sup> Incident office visit rate was per 1000 members per period and was defined as the first visit per patient per period for a given condition divided by the average total adult health plan membership during each period. *Data obtained from graphs only and are approximate values.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Gonzales, 2001 <sup>113</sup> United States Patient N = 266 Provider N = NR Practice N = 2 (1 full-intervention clinic, 1 limited-intervention clinic [control])	Cross-sectional January 1 to April 30, 1999.	Consecutive adult patients in whom acute bronchitis was diagnosed at family practice or internal medicine departments.	Clinicians practicing in the Denver, Colorado metropolitan area in practices belonging to Kaiser Permanente of Colorado.	Type: Multifaceted Target: Patients and Providers Description: Full-intervention practice households were mailed educational packets (refrigerator magnets outlining prevention, self-care, when-to-see-care strategies for ARI, CDC-developed educational brochures on careful antibiotic use, proper hand-washing techniques developed by Bayer Pharmaceuticals, Inc., and a letter from practice director announcing campaign). Office-level patient education included examination room posters and fact sheets on appropriate management of acute bronchitis. Clinician education consisted of 1-hour presentation covering management of acute bronchitis, current rates of antibiotic treatment of acute bronchitis, description of patient educational efforts, and practice tips on "how to say no" when patients request antibiotics. Limited-intervention group received only office-based educational materials.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Gonzales, 2001 <sup>113</sup> United States Patient N = 266 Provider N = NR Practice N = 2 (1 full-intervention clinic, 1 limited-intervention clinic [control])	Full- vs. limited-intervention practices	Type of RTI: Acute bronchitis Types of Signs and Symptoms: NR Duration of Signs and Symptoms: < 4 days (33.7%), 4 to 7 days (34.6%), > 7 days (31.7%) When counting started for duration: NR	Age Range: Intervention clinic 41% 18 to 44 y, control clinic 37% 45 to 64 y % female: 59.6 Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: 57.0% Prior use of antibiotics: NR	Specialty: Mixed Number of years in practice: NR Type of clinic: Family practice or internal medicine departments Geographical region: Denver, Colorado metropolitan area Population served: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Gonzales, 2001 <sup>113</sup> United States Patient N = 266 Provider N = NR Practice N = 2 (1 full-intervention clinic, 1 limited-intervention clinic [control])	Time of year: January 1 to April 30, 1999 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: Medical office practices belonging to Kaiser Permanente of Colorado (a group-model managed care organization)	NR	Adjusted for patient-reported duration of illness before the office visit, previous illness experience, most important reason for visits (illness severity vs. to get an antibiotic vs. other), age, sex, and clinician specialty in multivariate logistic regression analyses.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Gonzales, 2001 <sup>113</sup> United States Patient N = 266 Provider N = NR Practice N = 2 (1 full-intervention clinic, 1 limited-intervention clinic [control])	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Gonzales, 2001 <sup>113</sup> United States Patient N = 266 Provider N = NR Practice N = 2 (1 full-intervention clinic, 1 limited-intervention clinic [control])	NR	<p>Overall Patient Satisfaction with Visit*</p> <p>Control Clinic vs. Intervention Clinic (% of respondents)</p> <p>Poor: 3 vs. 3                      Fair: 5 vs. 3                      Good: 29 vs. 25                      Very Good: 42 vs. 40                      Excellent: 19 vs. 26</p> <p>Participants Reporting High Satisfaction: "My overall satisfaction with my visit was 'very good' or 'excellent'"</p> <p>Control Clinic vs. Intervention Clinic: 63% vs. 69%</p> <p>Predictors of High Patient Satisfaction** with an Office Visit for Acute Bronchitis</p> <p>Treatment at intervention clinic: Adjusted<sup>1</sup> RR=1.1; 95% CI, 0.81 to 1.3</p>

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Gonzales, 2001 <sup>113</sup> United States Patient N = 266 Provider N = NR Practice N = 2 (1 full-intervention clinic, 1 limited-intervention clinic [control])	NR	NR	*Proportions were obtained from bar graphs only and are approximate values **Defined as patients reporting "very good" or "excellent" satisfaction <sup>1</sup> Adjusted for patient-reported duration of illness before the office visit, previous illness experience, reason for seeking care, age, sex, and clinician specialty

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Gonzales, 2004 <sup>114</sup> United States Patient N = 4,270 patient visits (341 patient visits in intervention practices) Provider N = NR Practice N = 55 (4 intervention, 51 control)	Prospective, nonrandomized controlled trial Winter 2000/2001 and 2001/2002.	Consecutive patients enrolled in a Medicare managed care program who were diagnosed with ARIs.	Primary care providers working in ambulatory office practices in Denver metropolitan area.	Type: Multifaceted Target: Patients and Physicians Description: Appropriate antibiotic use and antibiotic resistance educational materials were mailed to intervention practice households. Waiting and examination room posters were provided to intervention office practices. Patient educational intervention was added to an ongoing physician-centered quality improvement project -- the Colorado Medical Society Joint Data Project on Careful Antibiotic Use.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Gonzales, 2004 <sup>114</sup> United States Patient N = 4,270 patient visits (341 patient visits in intervention practices) Provider N = NR Practice N = 55 (4 intervention, 51 control)	Control practices	Type: Bronchitis, sinusitis, upper respiratory tract infection, pneumonia, pharyngitis Types of Signs and Symptoms: NR Duration of Signs and Symptoms: NR When counting started for duration: NR	Age Range: 56% aged 65 - 74 y % female: 62 Ethnicity: NR SES: NR Frailty: NR Comorbidities: 4.1% had chronic lung disease Prior RTIs: NR Prior use of antibiotics: NR	Specialty: Primary care Years in practice: NR Clinic: Ambulatory office practices Geographical region: Denver metropolitan area Population served: Participants of a Medicare managed care program

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Gonzales, 2004 <sup>114</sup> United States Patient N = 4,270 patient visits (341 patient visits in intervention practices) Provider N = NR Practice N = 55 (4 intervention, 51 control)	Time of year: November 2001 to February 2002 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: Medicare managed care program	NR	Chi-square and multivariate logistic regression analyses were performed to examine unadjusted and adjusted associations between patient characteristics and antibiotic prescription rates. Clustering adjustment was only performed at the practice level. Controlled for secular changes measured among control practices.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Gonzales, 2004 <sup>114</sup> United States Patient N = 4,270 patient visits (341 patient visits in intervention practices) Provider N = NR Practice N = 55 (4 intervention, 51 control)	Antibiotic Prescription Rates (%) Before and After Intervention Control Practices: Baseline Period vs. Study Period Bronchitis: 59 vs. 56 Pharyngitis: 51 vs. 39 Pneumonia: 35 vs. 37 Sinusitis: 69 vs. 67 Upper respiratory tract infection: 26 vs. 27  Intervention Practices: Baseline Period vs. Study Period Bronchitis: 52 vs. 44 Pharyngitis: NR* vs. NR* Pneumonia: NR* vs. 30 Sinusitis: 76 vs. 67 Upper respiratory tract infection: 26 vs. 27	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Gonzales, 2004 <sup>114</sup> United States Patient N = 4,270 patient visits (341 patient visits in intervention practices) Provider N = NR Practice N = 55 (4 intervention, 51 control)	NR	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Gonzales, 2004 <sup>114</sup> United States Patient N = 4,270 patient visits (341 patient visits in intervention practices) Provider N = NR Practice N = 55 (4 intervention, 51 control)	NR	NR	*NR due to fewer than 20 visits

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Gonzales, 2005 <sup>115</sup> United States Patient N <sup>†</sup> = 16,686 patient visits at baseline, 14,648 patient visits during study period Provider N <sup>†</sup> = 1,629 at baseline, 1,193 during study period Practice N <sup>†</sup> = 709 at baseline, 592 during study period	Nonrandomized controlled trial November 1, 2000 to February 28, 2001.	Children with pharyngitis and adults with acute bronchitis.	Primary care physicians including those providing care to children.	Type: Multifaceted Target: Patients and Providers Description: Campaign packets were mailed to households identified by participating practices. Household packets included bilingual introductory letter for Colorado Department of Public Health and Environment explaining Be S.M.A.R.T. campaign, CDC brochures on antibiotic resistance, refrigerator magnet, and reference card providing easy-to-read facts about symptoms and treatments for ARIs. Office-based materials, produced in English and Spanish, consisted of waiting room materials (CDC posters and patient reference cards) and examination room posters (containing "talking points" for providers to use in discussing appropriate antibiotic use for pharyngitis in children and bronchitis in adults). Intervention practices (prespecified geographical area in Denver metropolitan area) were compared with local and distant control practices.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Gonzales, 2005 <sup>115</sup> United States Patient N <sup>†</sup> = 16,686 patient visits at baseline, 14,648 patient visits during study period Provider N <sup>†</sup> = 1,629 at baseline, 1,193 during study period Practice N <sup>†</sup> = 709 at baseline, 592 during study period	Local and distant control practices (outside prespecified geographical area in Denver metropolitan area)	Type of RTI: Pharyngitis (in children) and acute bronchitis (in adults) Signs and Symptoms: NR Duration: NR	Age Range: 51-55% (baseline) and 50-51% (study period) aged 6-12 y in pediatric population, 57-60% (baseline) and 51-56% (study period) aged 18-44 y in adult population % female: 51-54% (baseline) and 53-55% (study period) in pediatric population, 54-62% (baseline) and 60-62% (study period) in adult population Ethnicity: NR SES: NR Frailty: NR Comorbidities: 0 - 1% chronic lung disease in adult population Prior RTIs: NR Prior use of antibiotics: NR	Specialty: Family practice, pediatrics, other Years in practice: NR Clinic: Private office practices Geographical region: Colorado Population served: NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Gonzales, 2005 <sup>115</sup> United States Patient N <sup>†</sup> = 16,686 patient visits at baseline, 14,648 patient visits during study period Provider N <sup>†</sup> = 1,629 at baseline, 1,193 during study period Practice N <sup>†</sup> = 709 at baseline, 592 during study period	Time of year: Winter 2000-2002 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: Managed care organizations	NR	Adjusted for time period, practice site, patient age, and physician specialty. Also included variable indicating whether the physician had received an individual antibiotic prescribing profile as part of Colorado's ongoing quality improvement program. Controlled for secular changes measured among control practices.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Gonzales, 2005 <sup>115</sup> United States Patient N <sup>†</sup> = 16,686 patient visits at baseline, 14,648 patient visits during study period Provider N <sup>†</sup> = 1,629 at baseline, 1,193 during study period Practice N <sup>†</sup> = 709 at baseline, 592 during study period	<p>Adjusted* Antibiotic Prescription Rates for Children with Acute Pharyngitis Compared between Sites**                      (Baseline vs. Intervention Period Antibiotic Prescription Rates)                      Distant Control: 40 vs. 41                      Local Control: 41 vs. 39                      Intervention: 38 vs. 30                      p (intervention vs. distant control)=0.18                      p (intervention vs. local control)=0.48                      p (local control vs. distant control)=0.18</p> <p>Adjusted* Antibiotic Prescription Rates for Adults with Acute Bronchitis Compared between Sites**                      (Baseline vs. Intervention Period Antibiotic Prescription Rates)                      Distant Control: 51 vs. 45                      Local Control: 55 vs. 49                      Intervention: 60 vs. 35                      p (intervention vs. distant control)=0.002                      p (intervention vs. local control)=0.006                      p (local control vs. distant control)=0.22</p>	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Gonzales, 2005 <sup>115</sup> United States Patient N <sup>†</sup> = 16,686 patient visits at baseline, 14,648 patient visits during study period Provider N <sup>†</sup> = 1,629 at baseline, 1,193 during study period Practice N <sup>†</sup> = 709 at baseline, 592 during study period	NR	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Gonzales, 2005 <sup>115</sup> United States Patient N <sup>†</sup> = 16,686 patient visits at baseline, 14,648 patient visits during study period Provider N <sup>†</sup> = 1,629 at baseline, 1,193 during study period Practice N <sup>†</sup> = 709 at baseline, 592 during study period	NR	NR	<sup>†</sup> Pediatric and adult population N's combined (separated by baseline and study period) *Adjusted for patient age, gender, physician specialty, and clustering by office practice, physician, and managed care organization **Antibiotic prescription rates are from bar graphs only and are approximately values

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Gonzales, 2008 <sup>1</sup> United States Patient N = 2,158,288 (in 2002) and 2,176,687 (in 2003) estimated population of campaign community; 528,383 (in 2002) and 535,117 (in 2003) estimated population of comparison community Provider N = 1,167 Practice N = NR	Nonrandomized controlled trial November 2002 to February 2003.	General public and managed care enrollees residing in the mass media (2.2 million people) and comparison (0.53 million people) communities.	Physicians residing in the mass media (2.2 million people) and comparison (0.53 million people) communities.	Type: Educational Target: Mothers of patients (young children) and providers (primary care physicians) Description: Mass media campaign included purchased advertising (billboards, bus tails, bus stop posters, interior bus signs, and national Public Radio spots) and earned media. Spanish language public service announcement aired on local Spanish network. Physician advocacy activities enhanced advertising campaign by getting logos, messages, and materials into providers' offices. Office materials mailed to requesting physicians included waiting and examination room posters on appropriate antibiotic use for pharyngitis and bronchitis, patient brochures relating to appropriate antibiotic use and antibiotic resistance, and stethoscope clips with Get Smart logo.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Gonzales, 2008 <sup>1</sup> United States Patient N = 2,158,288 (in 2002) and 2,176,687 (in 2003) estimated population of campaign community; 528,383 (in 2002) and 535,117 (in 2003) estimated population of comparison community Provider N = 1,167 Practice N = NR	Colorado Springs (comparison) community	NR	NR	Specialty: Mix (primary care physicians were targeted) Years in practice: NR Clinic: Ambulatory physician offices Geographical region: Colorado Population served: 2.2 million people in mass media communities and 0.53 million people in comparison communities

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Gonzales, 2008 <sup>1</sup> United States Patient N = 2,158,288 (in 2002) and 2,176,687 (in 2003) estimated population of campaign community; 528,383 (in 2002) and 535,117 (in 2003) estimated population of comparison community Provider N = 1,167 Practice N = NR	Time of year: Winter 2002 to 2003 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: Managed care organization	NR	Multivariable logistic regression analysis was used to analyze results from the telephone surveys adjusting for Spanish language, age, race, comorbidities, education, income, internet access at home, and children ≤ 5 at home.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Gonzales, 2008 <sup>1</sup> United States Patient N = 2,158,288 (in 2002) and 2,176,687 (in 2003) estimated population of campaign community; 528,383 (in 2002) and 535,117 (in 2003) estimated population of comparison community Provider N = 1,167 Practice N = NR	<b>Antibiotic Prescriptions Dispensed by Retail Pharmacies</b> Mass media vs. comparison community in 2002: 1.08 million vs. 0.28 million P for decline in antibiotic prescribing in general population vs. MCO population after mass media campaign: p=0.30 vs. p=0.03  <b>Net Differences and Statistical Significance of Differences in Antibiotic Prescribing Rates Before vs. After Mass Media Campaign</b> General population: no difference <sup>1</sup> , 0.30 MCO population: net decline <sup>2</sup> , 0.02 Pediatric MCO members: net decline <sup>3</sup> , 0.01 Adult MCO members: no difference <sup>4</sup> , 0.09	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
<p>Gonzales, 2008<sup>1</sup>  United States  Patient N = 2,158,288 (in 2002) and 2,176,687 (in 2003) estimated population of campaign community; 528,383 (in 2002) and 535,117 (in 2003) estimated population of comparison community  Provider N = 1,167  Practice N = NR</p>	<p>Office and ED Visits for Potential Complications of Acute RTIs Among Pediatric MCO Members  (Rate per 1000)  Comparison Community: Baseline Period (November 2001 to October 2002) vs. Intervention Period (November 2002 to October 2003)  Pneumonia: 16.2 vs. 17.2  Orbital abscess: 0.1 vs. 0.5  Meningitis: 0.2 vs. 0  Peritonsillar abscess: 0.1 vs. 0.1  Brain abscess: 0 vs. 0  Sepsis: 0 vs. 0  Retropharyngeal abscess: 0 vs. 0  Epiglottitis: 0 vs. 0</p> <p>Mass Media Community: Baseline Period (November 2001 to October 2002) vs. Intervention Period (November 2002 to October 2003)  Pneumonia: 17.3 vs. 16.2  Orbital abscess: 0.5 vs. 0.6  Meningitis: 0.1 vs. 0.3  Peritonsillar abscess: 0.3 vs. 0.2  Brain abscess: 0 vs. 0.2  Sepsis: &lt; 0.1 vs. &lt; 0.1  Retropharyngeal abscess: &lt; 0.1 vs. &lt; 0.1  Epiglottitis: &lt; 0.1 vs. 0</p> <p>Δ Mass Media - Δ Comparison (95% CI) Per 1000  Pneumonia: -2.1 (-6.1 to 1.9) Orbital abscess: -0.3 (-0.8 to 0.3) Meningitis: 0.4 (-0.2 to 0.6) Peritonsillar abscess: -0.1 (-0.5 to 0.2) Brain abscess: 0.2 (-0.2 to 0.4)  Sepsis: 0 (-0.4 to 0.3)  Retropharyngeal abscess: 0 (-0.3 to 0.3)  Epiglottitis: &lt; 0.1 ( 0.3 to 0.3)</p>	<p>Net Differences and Statistical Significance of Differences in Monthly Pediatric Office Visit Rates between Mass Media and Comparison Communities  Pediatric MCO Members: net decline<sup>5</sup>, 0.01</p> <p>Emergency Department Utilization  Comparison Community: Baseline Period (November 2001 to October 2002) vs. Intervention Period (November 2002 to October 2003)  ARI visits: 23.9 vs. 32.1  nonARI visits: 309 vs. 355</p> <p>Mass Media Community: Baseline Period (November 2001 to October 2002) vs. Intervention Period (November 2002 to October 2003)  ARI visits: 37.7 vs. 32.8  nonARI visits: 477 vs. 472</p> <p>Δ Mass Media - Δ Comparison (95% CI) Per 1000  ARI visits: -13.1 (-18.4 to -7.9) -16% net decrease  nonARI visits: -51.0 (-65.4 to 35.7) -15.9% net decrease</p>

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Gonzales, 2008 <sup>1</sup> United States Patient N = 2,158,288 (in 2002) and 2,176,687 (in 2003) estimated population of campaign community; 528,383 (in 2002) and 535,117 (in 2003) estimated population of comparison community Provider N = 1,167 Practice N = NR	NR	NR	<sup>1</sup> No difference, mass media community received fewer antibiotic prescriptions before and after the campaign compared with comparison community <sup>2</sup> Net decline, mass media community received fewer antibiotic prescriptions after the campaign compared with comparison community <sup>3</sup> Net decline, mass media community received fewer antibiotic prescriptions after the campaign compared with comparison community <sup>4</sup> No difference, mass media community received more antibiotic prescriptions before and after the campaign compared with comparison community <sup>5</sup> Net decline, mass media community received fewer office visits after the campaign compared with comparison community

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Harris, 2003 <sup>16</sup> United States Patient N = 1,518 (554 at baseline and 964 in study period) Provider N = 42 (17 nurse practitioners and 25 physicians) Practice N = NR	Prospective nonrandomized controlled trial October 2000 to April 2001.	All English- or Spanish-speaking adults 18 y of age and older who presented to the Walk-in Clinic with symptoms of an ARI (cough, sore throat, nasal congestion, ear ache).	All physicians and nurse practitioners who cared for patients diagnosed with ARIs in the baseline and study periods were included in the analysis.	Type: Educational Target: Patients and Providers Description: Intervention was composed of three components: (1) provider educational session based on recommendations for appropriate antibiotic use published by the Center for Disease Control and Prevention, (2) examination room posters were directed at providers, (3) computer-based, audio-visual, bilingual (English and Spanish) ICE module that communicated a likely illness diagnosis, self-care strategies, and the role of antibiotics (or lack thereof) in the management of their illness. Study period patients who completed the ICE module were classified as being exposed to the full intervention. Study period patients who did not complete the ICE module were classified as being exposed to the limited intervention.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Harris, 2003 <sup>16</sup> United States Patient N = 1,518 (554 at baseline and 964 in study period) Provider N = 42 (17 nurse practitioners and 25 physicians) Practice N = NR	Baseline vs. Limited Intervention vs. Full Intervention	Type of RTI: URI/viral illness (50.1%), pharyngitis (23.4%), sinusitis < 7 days of illness (4.4%), sinusitis ≥ 7 days of illness (8.4%), bronchitis/cough (13.6%) Types of Signs and Symptoms: Cough, sore throat, nasal congestion, ear ache Duration of Signs and Symptoms: < 7 days (58.8%) When counting started for duration: NR	Age: 18-30 y (43.1%) % female: 59.7 Ethnicity: White (37.4%), Hispanic (44.5%), African American (12.5%), Other (5.6%) SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR	Specialty: Internist (59.5%), nurse practitioner (40.5%) Number of years in practice: NR Type of clinic: Walk-in Clinic (WIC) at Denver Health Medical Center (DHMC) Geographical region: Denver, Colorado Population served: 50% Hispanic, 25% Caucasian, 15% African American, 1% Native American. 71 % of patient charges at DHMC are for Medicaid, medically indigent, or self-paying patients who lack health insurance. Approximately 21% of all visits to the WIC are by patients who are monolingual Spanish.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Harris, 2003 <sup>16</sup> United States Patient N = 1,518 (554 at baseline and 964 in study period) Provider N = 42 (17 nurse practitioners and 25 physicians) Practice N = NR	Time of year: October 2000 to April 2001 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: Walk-in Clinic at Denver Health Medical Center	Based on Centers for Disease Control and Prevention recommendations/guidelines	Multivariable analyses were adjusted for race/ethnicity, tobacco use, provider type, and specific ARI diagnosis

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Harris, 2003 <sup>16</sup> United States Patient N = 1,518 (554 at baseline and 964 in study period) Provider N = 42 (17 nurse practitioners and 25 physicians) Practice N = NR	Proportion of patients receiving antibiotics (%; p for intervention groups vs. baseline, p for intervention vs. intervention) Baseline vs. Limited Intervention vs. Full Intervention Bronchitis: 58 vs. 30 vs. 24, p< 0.001, NS Nonspecific URI: 14 vs. 3 vs. 1, p< 0.001, NS Pharyngitis*: 76 vs. 71 vs. 78, p=NS, NS Sinusitis < 7 days*: 85 vs. 62 vs. 82, 0.06 (limited intervention vs. baseline), p=NS Sinusitis ≥ 7 days*: 89 vs. 89 s. 97, p=NS, NS All ARI*: 45 vs. 31 vs. 35, p< 0.001, < 0.001	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Harris, 2003 <sup>16</sup> United States Patient N = 1,518 (554 at baseline and 964 in study period) Provider N = 42 (17 nurse practitioners and 25 physicians) Practice N = NR	NR	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Harris, 2003 <sup>16</sup> United States Patient N = 1,518 (554 at baseline and 964 in study period) Provider N = 42 (17 nurse practitioners and 25 physicians) Practice N = NR	NR	NR	*Proportions were obtained from bar graph only and are approximate values

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Hemo, 2009 <sup>17</sup> Israel Patient N = 186,380 (101,401 in baseline winter, 84,979 in study winter) Provider N = NR Practice N = NR	Prospective observational study November 2004 - February 2006.	Pediatric population (< 18 y) of an HMO (Maccabi Healthcare Services).	NR	Type: Educational Target: Parents of patients (children) Description: The HMO conducted a comprehensive mass media campaign to increase public awareness of the misuse of antibiotics among the general public, focusing mainly on the inappropriate use of antibiotics in the treatment of influenza and upper respiratory infection (URI). The campaign consisted of radio and television advertisements in conjunction with a concurrent 4-part television series. The advertisements projected the general message that antibiotics are not an appropriate treatment for colds and other viral URIs. The television series presented the serious implications of misusing antibiotics.
Herman, 2009 <sup>18</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Hemo, 2009 <sup>17</sup> Israel Patient N = 186,380 (101,401 in baseline winter, 84,979 in study winter) Provider N = NR Practice N = NR	Precampaign (baseline) vs. Postcampaign (study period)	Type of RTI: URI (57.1% baseline winter, 53.2% study winter), otitis media (6.7% baseline winter, 7.6% study winter), pharyngitis (36.1% baseline winter, 39.2% study winter) Signs and Symptoms: NR Duration: NR	NR	Specialty: NR Years in practice: NR Clinic: NR Geographical region: Israel Population served: 1.7 million (approximately 25% of the Israeli population)
Herman, 2009 <sup>18</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Hemo, 2009 <sup>17</sup> Israel Patient N = 186,380 (101,401 in baseline winter, 84,979 in study winter) Provider N = NR Practice N = NR	Time of year: Winter Patterns of disease activity: Peak antibiotic use during January and February of every year Locally tailored: Yes System-level characteristics: Maccabi Healthcare Services (Israel's second largest HMO)	Antibiotics are not appropriate treatment for colds and other viral URIs	Used a binary logistic regression models adjusted for demographic factors (age, sex, religion, and immigration status) to compare rates of antibiotic purchase in the preintervention and postintervention periods of the study winter with the parallel periods in the preceding winter.
Herman, 2009 <sup>18</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Hemo, 2009 <sup>17</sup> Israel Patient N = 186,380 (101,401 in baseline winter, 84,979 in study winter) Provider N = NR Practice N = NR	Antibiotic Purchasing Rates, OR; 95% CI URI Precampaign vs. Baseline Winter: OR=0.962; 95% CI, 0.891 to 1.039 Postcampaign vs. Baseline Winter: OR=0.749; 95% CI, 0.694 to 0.808  Otitis Media Precampaign vs. Baseline Winter: OR=0.970; 95% CI, 0.874 to 1.076 Postcampaign vs. Baseline Winter: OR=0.652; 95% CI, 0.591 to 0.718  Pharyngitis Precampaign vs. Baseline Winter: OR=0.968; 95% CI, 0.929 to 1.009 Postcampaign vs. Baseline Winter: OR=0.931; 95% CI, 0.890 to 0.973	NR
Herman, 2009 <sup>18</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Hemo, 2009 <sup>17</sup> Israel Patient N = 186,380 (101,401 in baseline winter, 84,979 in study winter) Provider N = NR Practice N = NR	NR	NR
Herman, 2009 <sup>18</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Hemo, 2009 <sup>17</sup> Israel Patient N = 186,380 (101,401 in baseline winter, 84,979 in study winter) Provider N = NR Practice N = NR	Parental Awareness of Appropriate Antibiotic Use (reported as mean score* (SD), F, p) Exposed vs. Unexposed to Media Campaign: 6.65 (1.6) vs. 6.29 (1.6), 4.18, 0.04	NR	*Mean of composite score reflecting agreement with standards of appropriate antibiotic use (scale of 1-9 with 9 being high level of agreement)
Herman, 2009 <sup>18</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Holloway, 2009 <sup>19</sup> Nepal Patient N = 2,883 (pre+post) Provider N = NR Practice N = NR	Pre/post Intervention in mid-2003; indicators measured November/December 2002 and December 2003/January 2004 (winters).	Children under five with ARI in previous 2 weeks. Questions to caregivers on symptoms validated in baseline study against health workers' diagnoses of mild ARI ("common cold, runny nose, cough and cold" with no or mild fever) and severe ARI ("pneumonia, bronchopneumonia, severe chest infection, severe bronchitis and bronchiolitis").	No criteria specified. Districts remote with limited access to health workers. Study recruited local female community health volunteers (FCHVs) as educators, and interventions targeted private drug retailers among others.	Type: Educational Targets: Patients/children, mothers/families, drug retailers, other community members Description: "Training the trainers:" ten study team staff trained 419 others (district health staff, teachers, community members, students); child to child education administered by teachers in schools; street theater performances by children to mothers/community followed by group discussions with mothers led by local FCHVs; posters communicating ARI messages.
Isaacman, 1992 <sup>120</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Holloway, 2009 <sup>119</sup> Nepal Patient N = 2,883 (pre+post) Provider N = NR Practice N = NR	Control districts did not receive intervention	Type of RTI: Baseline 196 severe ARI, 1317 mild ARI (all 4 districts) Signs and symptoms: NR in study population Duration: NR	NR	Provider characteristics: drug retailers (selling drugs mostly without prescriptions) and traditional healers are the main providers in study area. Health posts staffed by paramedical personnel with ≤ 1 year's training; "a doctor should be present at a district hospital," but if not, paramedical personnel prescribe. Geographical region: four remote, mostly roadless hill districts of Eastern Nepal Population served: rural, agricultural, "most households have no electricity or ventilation and use kerosene lamps and pine wood for lighting."
Isaacman, 1992 <sup>120</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Holloway, 2009 <sup>119</sup> Nepal Patient N = 2,883 (pre+post) Provider N = NR Practice N = NR	Time of year, patterns of disease activity: winter Locally tailored: local community leaders, drug retailers and others developed action plans; local FCHVs recruited as educators; local teachers helped conduct surveys; local terms used for ARI and treatment in surveys; locally available safe home remedies recommended for mild ARI. System-level characteristics: districts are remote with government health facilities several hours' walk away; each district has a hospital and 9-10 health posts, but less than a third of the population visits health facilities.	Antibiotics for severe ARI/pneumonia, not for mild ARI (see Patient Population Criteria)	Yes: analyses using stratification or logistic regression models included ARI severity, time (pre/post), and intervention status
Isaacman, 1992 <sup>120</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Holloway, 2009 <sup>119</sup> Nepal Patient N = 2,883 (pre+post) Provider N = NR Practice N = NR	Intervention impact, percent of each treatment indicator, intervention - control: $(\text{Post-Pre})_I - (\text{Post-Pre})_C$  Antibiotic Rx (any class): Severe ARI: +21.4% Mild ARI +1.1%	NR
Isaacman, 1992 <sup>120</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Holloway, 2009 <sup>119</sup> Nepal Patient N = 2,883 (pre+post) Provider N = NR Practice N = NR	NR	Intervention impact: (Post-Pre) <sub>I</sub> - (Post-Pre) <sub>C</sub>  Consultation at a health post: Severe ARI: +12.6% Mild ARI: -9.5%
Isaacman, 1992 <sup>120</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Holloway, 2009 <sup>119</sup> Nepal Patient N = 2,883 (pre+post) Provider N = NR Practice N = NR	NR	NR	Excluded several outcomes specific to setting: antibiotics from drug retailers without a prescription, consultation with FCHVs, treatment with locally-available home remedies
Isaacman, 1992 <sup>120</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Little, 2014 <sup>121</sup> United Kingdom Patient N = 12,829 Provider N = 616 Practice N = NR	Prospective cohort	Sore throat as main symptom or pharynx abnormal on exam; duration ≤ 14 days; age ≥ 16.	General practitioners who prescribed immediate antibiotics to ≤ 50% for tonsillitis.	Type: Clinical Target: Patient Description: Prescribing strategies (immediate, delayed, no prescription)

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Little, 2014 <sup>121</sup> United Kingdom Patient N = 12,829 Provider N = 616 Practice N = NR	Immediate, delayed, or no prescription	Mean severity of sore throat and difficulty in swallowing on a 4-point Likert scale=3 Previous duration in days=4.7 (when counting started NR) 60% fever in past 24 hours Mean temperature (°C): 36.8 35.2% pus on tonsils 12.6% severely inflamed tonsils	Mean Age: 33.6 % female: 68% Ethnicity: NR SES: NR Educational level: NR Frailty: NR Comorbidities: NR Prior RTIs: NR Prior use of antibiotics: NR	Specialty and years in practice: NR Type of clinic: General practice Geographic region: Dhaka division, a large, central division, one of seven in Bangladesh

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Little, 2014 <sup>121</sup> United Kingdom Patient N = 12,829 Provider N = 616 Practice N = NR	Time of year: 11/10/06-6/1/09 Patterns of disease activity: NR Locally tailored: NA System-level characteristics: General practitioners in England and Wales	NR	Compared 3 models: (1) Multivariate analysis controlling for clustering and all covariates: number of medical problems, previous duration of illness (<3 days), very inflamed tonsils, the absence of cough or coryza, age, cervical glands, severity of sore throat, pus, fever in the past 24 h, muscle aches, headache, sex, smoker, feeling generally unwell, diarrhea, and disturbed sleep; (2) multivariate analysis controlling for clustering and only significant variables: inflamed tonsils, fever in the past 24 h, generally unwell, and disturbed sleep; (3) Multivariate analysis by stratified propensity score.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Little, 2014 <sup>121</sup> United Kingdom Patient N = 12,829 Provider N = 616 Practice N = NR	NR	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Little, 2014 <sup>121</sup> United Kingdom Patient N = 12,829 Provider N = 616 Practice N = NR	Developed complications: No antibiotic=45% vs immediate=46% vs delayed=14%  Risk ratios (95% CI) for models 1-3: Immediate vs no: (1) RR=0.64; 95% CI, 0.43 to 0.97; (2) RR=0.62; 95% CI, 0.43 to 0.91; (3) RR=0.66; 95% CI, 0.43 to 1.03  Delayed vs no: (1) RR=0.58; 95% CI, 0.33 to 1.00; (2) RR=0.58; 95% CI, 0.34 to 0.98; (3) RR=0.61; 95% CI, 0.34 to 1.10	Reconsultation with new or nonresolving symptoms in month after the index consultation for models 1-3  Immediate vs no: (1) RR=0.76; 95% CI, 0.66 to 0.87; (2) RR=0.83; 95% CI, 0.73 to 0.94; (3) RR=0.76; 95% CI, 0.67 to 0.86  Delayed vs no: (1) RR=0.58; 95% CI, 0.47 to 0.70; (2) RR=0.61; 95%, 0.50 to 0.74; (3) RR=0.57; 95%, 0.47 to 0.68

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Little, 2014 <sup>121</sup> United Kingdom Patient N = 12,829 Provider N = 616 Practice N = NR	NR	NR	

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Litvin, 2013 <sup>122</sup> United States Patient N = 38,592 encounters over 27 months Provider N = 39 Practice N = 9	Time series Phase 1: 1/1/2010 to 3/31/11, Phase 2: 7/1/2011 to 3/31/2012.	Patients presenting with ARI symptoms and given one of the following respiratory diagnoses: allergic rhinitis, asthma, bronchitis or bronchiolitis, COPD exacerbation, influenza, laryngitis or tracheitis, otitis media, pharyngitis or tonsillitis, pneumonia, sinusitis, and URI.  ARI encounter defined as encounter at which CDSS used and at least one respiratory diagnosis made.	Physicians, nurse practitioners, and physicians' assistants working in primary care practices in the Practice Partner Research Network (PPRNet).	Type: Multifaceted (Educational, Clinical, System-level) Target: Providers were primary target, with some patient education materials also made available Description: CDSS was an EHR-integrated progress note template available at point of care. Reflected CDC "Get Smart" guidelines with recommendations based on patient symptoms/duration, age, and exam findings. ARI diagnostic criteria (e.g. Centor criteria for streptococcal pharyngitis) and treatment recommendations provided including antibiotics when appropriate. Links to patient education materials. Multi-method intervention to encourage CDSS adoption included introductory meetings, site visits for education and CDSS training, EHR-based audit and feedback, and study-practice liaison personnel. Delayed prescribing strategy presented. Second phase included final site visit or webinar with practice performance review and evidence reviews.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Litvin, 2013 <sup>122</sup> United States Patient N = 38,592 encounters over 27 months Provider N = 39 Practice N = 9	None (longitudinal)	Type of RTI: all those listed in Patient Population Criteria. Most common for adults: URI (27% of all respiratory diagnoses), acute sinusitis (25%), acute bronchitis or bronchiolitis (15%) Most common for children: URI (40%), suppurative otitis media (19%), streptococcal pharyngitis (11%) Signs/symptoms and duration: NR for study population	Characteristics: NR Adults (≥18y): 64% of encounters Children: 36%	Specialty: Internal medicine and pediatrics: 1/9 (11%) of practices, 3/39 (7.7%) of providers, 14% of ARI encounters Remainder family practice Years in practice: NR Type of clinic: primary care Geographical region: one practice each in states of NC, KY, WA, AK, AZ, MS, UT, GA, IL Population: NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Litvin, 2013 <sup>122</sup> United States Patient N = 38,592 encounters over 27 months Provider N = 39 Practice N = 9	Time of year: January to March and July through March Patterns of disease activity: CDSS use peaked in winter (highest in February of each year) Locally tailored: NR System-level characteristics: primary care practice research network	Following CDC guidelines, inappropriate use includes (1) use for "diagnoses for which antibiotics are rarely appropriate (URI, acute bronchitis or bronchiolitis, acute nonstrep pharyngitis, laryngitis or tracheitis, influenza, nonsuppurative otitis media, asthma or allergic rhinitis)," and (2) use of any or broad-spectrum antibiotics for acute adult sinusitis or bronchitis	Yes: General linear mixed models for longitudinal analyses included time and "random practice effects". Practice-level observations weighted by "practices' numbers of ARI encounters during the quarter."

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Litvin, 2013 <sup>122</sup> United States Patient N = 38,592 encounters over 27 months Provider N = 39 Practice N = 9	Percent change; 95% CI over entire study period:  Inappropriate antibiotic use: Adults: +1.6%; 95% CI, -5.4 to 8.5 Children: -1.9%; 95% CI, -9.0 to 5.3  Delayed prescription: Adults: -1.1%; 95% CI, -3.9 to 1.6 Children: -2.9%; 95% CI, -4.6 to -1.1  Acute sinusitis in adults: Any antibiotic: +0.52% (-4.3 to 5.3) Broad spectrum: -20% (-31 to -8.6)  Acute bronchitis in adults: Any antibiotic: +9.2% (-2.2 to 21) Broad spectrum: -12% (-26 to 2.7)	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Litvin, 2013 <sup>122</sup> United States Patient N = 38,592 encounters over 27 months Provider N = 39 Practice N = 9	NR	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Litvin, 2013 <sup>122</sup> United States Patient N = 38,592 encounters over 27 months Provider N = 39 Practice N = 9	NR	NR	"For all of these measures, use of antibiotics was calculated as the percentage of encounters at which any antibiotic was prescribed out of all encounters. Use of broad spectrum antibiotic was calculated as the percentage of encounters at which a broad spectrum antibiotic was prescribed out of all encounters at which any antibiotic was prescribed. Use of delayed prescriptions was calculated as the percentage of encounters at which a delayed prescription was prescribed out of all encounters at which any antibiotic was prescribed."

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Llor, 2011 <sup>123</sup> "Effect of two interventions..." Spain Patient N = 6,849 Provider N = 339 Practice N = NR	Pre/post (FIG and PIG groups) with post-intervention control group Time frame: first registry January/February 2008, second January/February 2009, each 3 weeks/15 working days.	Patients with pharyngitis, no further diagnostic criteria given.	General practitioners (GPs) from 8 autonomous communities participated in full intervention. Another group of GP's from Catalonia, another autonomous community, assigned to partial intervention. Selection criteria NR.	Type: Multifaceted Target: Providers and patients Description: Full intervention group (FIG): prescriber feedback; training on antibiotic use; clinical guidelines on RTI management; patient handouts on antibiotic use; access to and training in Strep A and CRP POC tests. Partial intervention group (PIG): FIG interventions other than workshop on diagnosis and use of RADTs; no access to RADT tests.
Llor, 2012 <sup>124</sup> "C-reactive protein..." Spain Patient N = 836 Provider N = 267 Practice N = NR	Pre/post (FIG and PIG groups) with post-intervention control group Time frame: first registry January/February 2008, second January/February 2009.	Rhinosinusitis, no further diagnostic criteria given.	Not reported in this publication, but same groups and numbers of providers recruited as in earlier Happy Audit publications (see above). Those who registered patients with sinusitis included here.	Type: Multifaceted Target: Providers and patients Description: Full intervention group (FIG): prescriber feedback; training on antibiotic use; clinical guidelines on RTI management; patient handouts on antibiotic use; access to and training in CRP POC test. Partial intervention group (PIG): FIG interventions other than workshop on diagnosis and use of RADTs; no access to CRP.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Llor, 2011 <sup>123</sup> "Effect of two interventions..." Spain Patient N = 6,849 Provider N = 339 Practice N = NR	"Another group of professionals (control group) from another two Autonomous Communities only did the registry in 2009 with no previous intervention."	NR (all with pharyngitis)	NR	Specialty: general practice Years in practice, population: NR Type of clinic: primary care Geographical region: Spain
Llor, 2012 <sup>124</sup> "C-reactive protein..." Spain Patient N = 836 Provider N = 267 Practice N = NR	Not reported in this publication, but same groups and numbers of providers recruited as in earlier Happy Audit publications (see above). Those who registered patients with sinusitis included here.	Type of RTI: all with rhinosinusitis Signs and symptoms: Fever (33%), cough (76%), odynophagia (20%), purulent rhinorrhea (18%) Duration of signs and symptoms: 7.4 days average When counting started: before first consultation	Age: 40 years % female: 65 Other characteristics NR	Specialty: general practice Years in practice, population: NR Type of clinic: primary care Geographical region: Spain

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Llor, 2011 <sup>123</sup> "Effect of two interventions..." Spain Patient N = 6,849 Provider N = 339 Practice N = NR	Time of year: two consecutive winter seasons Other factors NR	Antibiotics for bacterial but not viral pharyngitis. Outcome reported: antibiotic prescription for an episode of pharyngitis.	Yes: multilevel logistic regression model adjusted for use of RADTs, age, gender, presenting signs, diagnosis, and patient demand for antibiotics.
Llor, 2012 <sup>124</sup> "C-reactive protein..." Spain Patient N = 836 Provider N = 267 Practice N = NR	Time of year: two consecutive winter seasons Other factors NR	No antibiotics for viral rhinosinusitis, and less use for bacterial ("despite the fact that bacteria are present in 60% of acute rhinosinusitis, most cases resolve spontaneously") Outcome: antibiotic prescription for rhinosinusitis	Yes: multilevel logistic regression model adjusted for use/results of CRP, age, gender, presenting symptoms/ signs, diagnosis, radiography, and patient demand for antibiotics.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Llor, 2011 <sup>123</sup> "Effect of two interventions..." Spain Patient N = 6,849 Provider N = 339 Practice N = NR	Adjusted odds ratio; 95% CI for prescription of antibiotics in intervention versus control groups:  PIG before intervention: OR=0.62; 95% CI, 0.28 to 1.4 PIG after: OR=0.53; 95% CI, 0.23 to 1.2 FIG before: OR=0.54; 95% CI, 0.27 to 1.1 FIG after: OR=0.23; 95% CI, 0.11 to 0.47	NR
Llor, 2012 <sup>124</sup> "C-reactive protein..." Spain Patient N = 836 Provider N = 267 Practice N = NR	Adjusted odds ratio; 95% CI for prescription of antibiotics in intervention versus control groups:  PIG before intervention: OR=0.91; 95% CI, 0.61 to 1.4 PIG after: OR=0.65; 95% CI, 0.21 to 1.1 FIG before: OR=1.0; 95% CI, 0.66 to 1.6 FIG after: OR=0.12; 95% CI, 0.01 to 0.32	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Llor, 2011 <sup>123</sup> "Effect of two interventions..." Spain Patient N = 6,849 Provider N = 339 Practice N = NR	NR	NR
Llor, 2012 <sup>124</sup> "C-reactive protein..." Spain Patient N = 836 Provider N = 267 Practice N = NR	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Llor, 2011 <sup>123</sup> "Effect of two interventions..." Spain Patient N = 6,849 Provider N = 339 Practice N = NR	NR	NR	Happy Audit study
Llor, 2012 <sup>124</sup> "C-reactive protein..." Spain Patient N = 836 Provider N = 267 Practice N = NR	NR	NR	Happy Audit study

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Llor, 2012 <sup>125</sup> "Interventions to reduce.." Spain Patient N = 5,385 Provider N = 338 Practice N = NR	Pre/post (FIG and PIG groups) with post-intervention control group Time frame: first registry winter of 2008, second winter of 2009, each 3 weeks/15 working days.	LRTI patients, no further diagnostic criteria given.	General practitioners (GPs) from 8 autonomous communities participated in full intervention. Another group of GP's from Catalonia, another autonomous community, assigned to partial intervention. Selection criteria NR.	Type: Multifaceted Target: Providers and patients Description: Full intervention group (FIG): prescriber feedback; training on antibiotic use; clinical guidelines on RTI management; patient handouts on antibiotic use; access to and training in CRP POC test. Partial intervention group (PIG): FIG interventions other than workshop on diagnosis and use of CRP; no access to CRP.
Mainous, 2013 <sup>126</sup> United States Patient N = 35,417 at baseline (calc) <sup>a</sup> Provider N = 280 (calc) <sup>b</sup> Practice N = 70 (9 intervention, 61 control)	Time series 3 months before to 15 months after intervention (October 2009 through March 2011).	Acute respiratory infections, including diagnoses for which antibiotics are inappropriate and those for which antibiotics are indicated (see appropriateness definition).	Physicians, nurse practitioners, and physicians' assistants working in primary care practices in the Practice Partner Research Network (PPRNet).	Type: Multifaceted (Educational, Clinical, System-level) Target: Providers Description: CDSS was an EHR-integrated progress note template available at point of care. (Provider could choose to use CDSS or bypass it). Reflected CDC "Get Smart" guidelines with recommendations based on patient symptoms/duration, age, and exam findings. ARI diagnostic criteria, scoring strategies (e.g. Centor criteria for streptococcal pharyngitis) and treatment recommendations provided including antibiotics when appropriate. Multi-method intervention to encourage CDSS adoption included EHR-based audit and feedback, site visits for academic detailing (education), performance review, and training, and liaison personnel communicating between study and practices.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Llor, 2012 <sup>125</sup> "Interventions to reduce.." Spain Patient N = 5,385 Provider N = 338 Practice N = NR	As above: providers from two other autonomous communities registering patients in 2009 with no previous intervention.	Type of RTI: acute bronchitis (67%), acute exacerbations of CB/COPD (24%), pneumonia (8.5%)	NR	Specialty: general practice Years in practice, population: NR Type of clinic: primary care Geographical region: Spain
Mainous, 2013 <sup>126</sup> United States Patient N = 35,417 at baseline (calc) <sup>a</sup> Provider N = 280 (calc) <sup>b</sup> Practice N = 70 (9 intervention, 61 control)	Control practices were unaware of the intervention; they received no information on the intervention or the CDSS and no educational materials.	NR	NR	Practice characteristics: Specialty: 89% family medicine Years in practice: NR Type of clinic: primary care Geographical region: 30% South, 30% Northeast, 24% Midwest, 16% West (overall; varies for intervention vs. control) Population served: NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Llor, 2012 <sup>125</sup> "Interventions to reduce.." Spain Patient N = 5,385 Provider N = 338 Practice N = NR	Time of year: two consecutive winter seasons Other factors NR	Antibiotics for bacterial but not viral lower respiratory tract infections (LRTI). Outcome: antibiotic prescription for LRTI.	Yes: multilevel logistic regression model adjusted for use/results of CRP, age, gender, comorbidity, presenting signs, duration of symptoms, diagnosis, radiography, and patient demand for antibiotics.
Mainous, 2013 <sup>126</sup> United States Patient N = 35,417 at baseline (calc) <sup>a</sup> Provider N = 280 (calc) <sup>b</sup> Practice N = 70 (9 intervention, 61 control)	Time of year: 4th quarter 2009 through 1st quarter 2011 Patterns of disease activity: seasonal; months 9 through 11 September-November 2010) were "immediately before the second ARI season." Locally tailored: NR System-level characteristics: primary care practice research network	Following CDC guidelines, diagnoses for which antibiotics are inappropriate comprise nonspecific upper respiratory infections, acute bronchitis, acute nonstreptococcal pharyngitis, and otitis media with effusion. Diagnoses for which antibiotics are indicated comprise acute sinusitis, streptococcal pharyngitis, pneumonia, acute otitis media, and chronic obstructive pulmonary exacerbations (in adults only).	Control practices matched to intervention practices by number of providers and baseline ARIs. Practice-level outcome observations weighted for number of ARI episodes in the quarter observed. Linear mixed models for longitudinal analyses adjusted for time, practice specialty, number of providers, region, and baseline ARIs, with an interaction term for time and intervention/control status.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Llor, 2012 <sup>125</sup> "Interventions to reduce.." Spain Patient N = 5,385 Provider N = 338 Practice N = NR	Adjusted odds ratio; 95% CI for prescription of antibiotics in intervention versus control groups:  PIG before intervention: OR=0.57; 95% CI, 0.30 to 1.1 PIG after: OR=0.42; 95% CI, 0.22 to 0.82 FIG before: OR=0.81; 95% CI, 0.46 to 1.4 FIG after: OR=0.22; 95% CI, 0.12 to 0.38	NR
Mainous, 2013 <sup>126</sup> United States Patient N = 35,417 at baseline (calc) <sup>a</sup> Provider N = 280 (calc) <sup>b</sup> Practice N = 70 (9 intervention, 61 control)	Intervention vs. control practices (See Comments for definitions): Change in inappropriate prescribing: Adults: -0.6% vs. +4.2% (p=0.03) Children: +1.4% vs. +4.2% (p=0.34) Use of broad-spectrum antibiotics: Adults: -17% vs. +1.2% (p<0.0001) Children: -20% vs. +0.9% (p<0.0001)	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Llor, 2012 <sup>125</sup> "Interventions to reduce.." Spain Patient N = 5,385 Provider N = 338 Practice N = NR	NR	NR
Mainous, 2013 <sup>126</sup> United States Patient N = 35,417 at baseline (calc) <sup>a</sup> Provider N = 280 (calc) <sup>b</sup> Practice N = 70 (9 intervention, 61 control)	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Llor, 2012 <sup>125</sup> "Interventions to reduce.." Spain Patient N = 5,385 Provider N = 338 Practice N = NR	NR	NR	Happy Audit study
Mainous, 2013 <sup>126</sup> United States Patient N = 35,417 at baseline (calc) <sup>a</sup> Provider N = 280 (calc) <sup>b</sup> Practice N = 70 (9 intervention, 61 control)	NR	NR	Inappropriate prescribing "calculated by dividing the number of ARI episodes with diagnoses in the 'inappropriate' category that included an antibiotic prescription by the total number of ARI episodes with diagnoses for which antibiotics are 'inappropriate'." Broad-spectrum antibiotic use "calculated by dividing the number of all ARI episodes (episodes considered either inappropriate or appropriate for antibiotics) with a broad-spectrum antibiotic prescription by the total number of ARI episodes with an antibiotic prescription." Adjusted weighted mean change across practices between 12/2009 and 3/2011 reported.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Maor, 2011 <sup>127</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				
McKay, 2011 <sup>128</sup> Canada Patient N = 43,559 Provider N = 7,808 Practice N = NR	Ecological study September 1, 2005 to August 30, 2009.	Children in daycare (2 to 5 y) and their parents, grade 2 students (7 y) and their parents, older adults in assisted-living facilities and the general public of British Columbia.	Physicians and pharmacists in British Columbia.	Type: Educational Target: General public and health care professionals Description: Public education component included annual media campaigns, print material distribution, and audience-specific education curricula. Print material included signs, posters, stickers, activity placemats and a parent's guide to managing common infections. Media campaigns were aired on television and radio, and advertising appeared on transit routes and vehicles. Health care professional education arm offered accredited courses to physicians and pharmacists, with a focus on antibiotic use, resistance and strategies to prescribe appropriately.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Maor, 2011 <sup>127</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				
McKay, 2011 <sup>128</sup> Canada Patient N = 43,559 Provider N = 7,808 Practice N = NR	Preparticipation vs. postparticipation	NR	NR	Specialty: Physicians and pharmacists Number of years in practice: NR Type of clinic: NR Geographical region: British Columbia, Canada Population served: General public

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Maor, 2011 <sup>127</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
McKay, 2011 <sup>128</sup> Canada Patient N = 43,559 Provider N = 7,808 Practice N = NR	Time of year: September 2005 to August 2009 Patterns of disease activity: NR Locally tailored: Yes, local adaptation of 'Do Bugs Need Drugs?' intervention originally implemented in Alberta, Canada System-level characteristics: NR	Outlined in the 'Bugs & Drugs' book, a 'Do Bugs Need Drugs?'-endorsed antimicrobial reference guide	Descriptive statistical results are Presented

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Maor, 2011 <sup>127</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
McKay, 2011 <sup>128</sup> Canada Patient N = 43,559 Provider N = 7,808 Practice N = NR	Mean Proportion of Antibiotic Use by RTI Preparticipation vs. Postparticipation (%), p) Acute Bronchitis: 34.6 vs. 21.4, p=0.023 All Indications: 45.6 vs. 39.2, p=0.019	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Maor, 2011 <sup>127</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
McKay, 2011 <sup>128</sup> Canada Patient N = 43,559 Provider N = 7,808 Practice N = NR	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Maor, 2011 <sup>127</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
McKay, 2011 <sup>128</sup> Canada Patient N = 43,559 Provider N = 7,808 Practice N = NR	Mean percentage of correct responses to quizzes by physicians before and after participating in the 2008 'Do Bugs Need Drugs?' Mainpro-C course Preparticipation (%) vs. Postparticipation (%) by Quiz Topic Bronchitis: 70.35 vs. 81.43 Otitis Media: 66.84 vs. 85.15 Sinusitis: 67.46 vs. 70.85 Pharyngitis: 73.33 vs. 90.16  Assessment of General Knowledge about Antibiotics and Resistance Percent improvement in correct responses after course, p: 11.2, p=0.013  Proportion of pharmacists who felt comfortable contacting a prescriber to suggest a change to an antibiotic prescription* Preparticipation vs. Postparticipation, p: 25.8 vs. 53.2, p< 0.001	NR	*Indication of improved shared decisionmaking between pharmacists and physicians or dissemination of improved knowledge?

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
McNulty, 2010 <sup>129</sup> United Kingdom Patient N = 3,718 (1,888 precampaign and 1,830 postcampaign) Provider N = NR Practice N = NR	Before and after study January 2008 - January 2009.	Adults (aged ≥ 15 y) in either England or Scotland.	NR	Type: Educational Target: Adult patients Description: The English public antibiotics media campaign featured three posters displayed in magazines and newspapers. The key message of the posters was: 'The best way to treat most colds, coughs, and sore throats is plenty of fluids and rest. For advice talk to your pharmacist or doctor.' Copies of an A5 patient advice leaflet were given to patients instead of an antibiotic prescription upon visiting participating general practice surgeries and independent pharmacies. Extra copies were offered free of charge via phone, fax, or from the order line web site. A copy of the letter was also sent electronically to acute hospital trusts and health promotion units.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for</b> <b>Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
McNulty, 2010 <sup>129</sup> United Kingdom Patient N = 3,718 (1,888 precampaign and 1,830 postcampaign) Provider N = NR Practice N = NR	Scottish survey respondents (control)	NR	NR	Specialty: Mix (general practice and pharmacy) Years in practice: NR Clinic: General practice surgeries and independent pharmacies Geographical region: UK Population served: General public

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
McNulty, 2010 <sup>129</sup> United Kingdom Patient N = 3,718 (1,888 precampaign and 1,830 postcampaign) Provider N = NR Practice N = NR	Time of year: January 2008 to January 2009 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: National Health Service (NHS)-endorsed campaign	NR	Sampling weights provided by Ipsos MORI and based on the National Readership Survey to correct for known selection biases. Weights were defined by sex, household tenure, and white ethnicity and, within sex, by age, social grade, region and working status.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
McNulty, 2010 <sup>129</sup> United Kingdom Patient N = 3,718 (1,888 precampaign and 1,830 postcampaign) Provider N = NR Practice N = NR	<b>Reported Antibiotic Use by Respondents and Behavior of GPs</b> (% Respondents, p) England 2008 vs. 2009; Scotland 2008 vs. 2009; England vs. Scotland 2009 Prescribed an antibiotic: 34 vs. 35, p=0.7; 29 vs. 35, p=0.4; p=1.0 Kept any leftover antibiotic: 2.2 vs. 7.0, p< 0.001; 0 vs. 4, p=0.04; p=0.4 Taken antibiotics without being told to do so: 8.3 vs. 7.8, p=0.8; 3 vs. 3, p=0.8; p=0.04 Asked GP or nurse for antibiotics in the past year: 28 vs. 29, p=0.7; 26 vs. 34, p=0.2; p=0.3 If respondent asked, prescribed antibiotic after some discussion: 82 vs. 73, p=0.07; 93 vs. 80, p=0.11; p=0.5 If respondent asked, prescribed antibiotic without discussion: 14 vs. 21, p=0.09; 7 vs. 12, p=0.47; p=0.3 If respondent asked, GP/nurse refused to prescribe antibiotic: 4 vs. 5, p=0.3; 0 vs. 8, p=0.2; p=0.7 Offered an antibiotic prescription to be cashed in at the pharmacy only if you felt no better, or felt worse, after several days: 11 vs. 13, p=0.4; 6 vs. 5, p=0.8; p=0.02 Offered the opportunity to return to surgery to pick up an antibiotic prescription only if you felt no better, or felt worse, after several days: 6 vs. 7, p=0.3; 6 vs. 3, p=0.3; p=0.1 Offered any type of delayed antibiotic prescription: 16 vs. 19, p=0.3; 12 vs. 8, p=0.4; p=0.01	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
McNulty, 2010 <sup>129</sup> United Kingdom Patient N = 3,718 (1,888 precampaign and 1,830 postcampaign) Provider N = NR Practice N = NR	NR	Reported Antibiotic Use by Respondents and Behavior of GPs (% Respondents, p) England 2008 vs. 2009; Scotland 2008 vs. 2009; England vs. Scotland 2009 Advised about other remedies for cough and cold symptoms instead of being given an antibiotic prescription: 7.4 vs. 12.7, < 0.001; 7 vs. 8, 0.7; 0.3

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
McNulty, 2010 <sup>129</sup> United Kingdom Patient N = 3,718 (1,888 precampaign and 1,830 postcampaign) Provider N = NR Practice N = NR	Reported Knowledge and Attitudes of Respondents to Antibiotics and Their Use (correct response in parentheses) (% Respondents incorrect/don't know, p) England 2008 vs. 2009; Scotland 2008 vs. 2009; England vs. Scotland 2009 Antibiotics work on most coughs and colds (disagree): 40 vs. 37, 0.3; 40 vs. 44, 0.6; 0.3 Antibiotics can kill bacteria (agree): 28 vs. 28, 0.8; 39 vs. 21, 0.004; 0.1 Antibiotics can kill viruses (disagree): 53 vs. 52, 0.7; 54 vs. 47, 0.5; 0.4 A course of antibiotics should be stopped when a person feels better (disagree): 30 vs. 26, 0.2; 29 vs. 18, 0.2; 0.2 If taken too often antibiotics are less likely to work in the future (agree): 15 vs. 16, 0.8; 10 vs. 10, 1.0; 0.1 It is OK to keep leftover antibiotics and use them later without advice from a doctor, nurse or pharmacist (disagree): 16 vs. 14, 0.4; 9 vs. 4, 0.3; 0.01 Antibiotics can kill the bacteria that normally live on the skin and in the gut (agree): 42 vs. 41, 0.8; 53 vs. 46, 0.3; 0.3 Bacteria that normally live on the skin and in the gut are good for your health (agree): 35 vs. 36, 0.6; 39 vs. 31, 0.4; 0.5 Resistance to antibiotics is a problem in British hospitals (agree): 30 vs. 37, 0.03; 32 vs. 29, 0.6; 0.2 Antibiotic-resistant bacteria could infect me and my family (agree): 32 vs. 33, 0.6; 27 vs. 29, 0.8; 0.5	NR	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Perz, 2002 <sup>130</sup> United States Patient N = 464,200 person-years over 3-year study Provider N = NR overall; 250 "key providers" and 1,500 physicians overall in intervention county Practice N = NR	Time series, though antibiotic use reported pre-post only 12-month periods before (May 1996 through April 1997), during (1997/98) and after (1998/99) the intervention.	Children younger than 15 years who were residents of four Tennessee counties and enrolled in the TennCare expanded Medicaid program. Children "not designated as either white or black" (4%) were excluded, as was person-time as a hospital inpatient. Respiratory illnesses included: outpatient diagnoses of otitis media, common cold, sinusitis, pharyngitis, tonsillitis, laryngitis/tracheitis, bronchitis, pneumonia and influenza, and unspecified ARI.	"250 key health care providers (e.g., pediatricians and family physicians) who provided most routine health care services to Knox County children." Not clear how these were identified. Newsletter sent to all county physicians.	Type: Educational Target: Providers, parents of young children, and the general public Description: Lectures by CDC physician to key providers; presentations at hospital events and clinics; prescribing guidelines distributed to key providers; newsletter articles to all county physicians; pamphlets to parents of newborns and children in daycare and grades Kindergarten through 3rd grade, to hospitals, clinics, dental offices and pharmacies, and to families receiving flu vaccines; patient education materials to key providers; media coverage and public service announcements.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Perz, 2002 <sup>130</sup> United States Patient N = 464,200 person-years over 3-year study Provider N = NR overall; 250 "key providers" and 1,500 physicians overall in intervention county Practice N = NR	"Tennessee's 3 other urbanized counties" acted as controls; geographically distant from intervention county, with no similar community-wide intervention.	NR	Mean age NR; 8-9% <1 y, 30% 1 to <5y, 61-62% 5 to <15y % female: NR ("study populations similar with regard to age and sex") Ethnicity: 27% black in intervention county, 54 to 90% in 3 control counties SES: NR, but Medicaid an inclusion criterion Other patient characteristics: NR	Provider characteristics: NR overall (specialty included family practice and pediatrics for "key providers" in Knox county) Geographical region: four urban Tennessee counties Population: children on Medicaid

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Perz, 2002 <sup>130</sup> United States Patient N = 464,200 person-years over 3-year study Provider N = NR overall; 250 "key providers" and 1,500 physicians overall in intervention county Practice N = NR	Time of year: May through April, three successive years Patterns of disease activity: NR Locally tailored: NR System-level characteristics: TennCare managed care system extended health insurance coverage to more people than were eligible for Medicaid and shifted care to physicians in private practice	Not defined in outcomes measured, as individual antibiotic prescriptions not linked to diagnosis/indication. Messages of educational campaigns were that antibiotics should be used for bacterial infections only, that colds and most coughs and sore throats are caused by viruses and should not be treated with antibiotics, and that when used antibiotics should be narrow spectrum.	Yes: regression models for prescription rates adjusted for county, age, race, study year; antibiotic resistance stratified by study year and antibiotic category.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Perz, 2002 <sup>130</sup> United States Patient N = 464,200 person-years over 3-year study Provider N = NR overall; 250 "key providers" and 1,500 physicians overall in intervention county Practice N = NR	<p>Intervention-attributable change in antibiotic prescription rates (excess % reduction in prescription rates in Knox vs. control counties, by age and race; 95% CI):</p> <p>&lt;1y, White: +2%; 95% CI, -5 to 8                      &lt;1y, Black: -16%; 95% CI, -20 to -12                      1 to &lt;5y, White: -8%; 95% CI, -13 to -4                      1 to &lt;5y, Black: -18%; 95% CI, -23 to -14                      5 to &lt;15y, White: -3%; 95% CI, -9 to 3                      5 to &lt;15y, Black: -20%; 95% CI, -25 to -15                      All: -11%; 95% CI, -14 to -8</p> <p>Intervention-attributable declines seen for all antibiotic categories except cephalosporins in white children (+11%; 95% CI, 5 to 16%; declines greater in control counties); declines statistically significant for penicillins and cephalosporins in black children and TMP-SMX in all children</p> <p>Ratio of antibiotic prescriptions to respiratory illness visits:                      White: -8% (-16 to 0)                      Black: -13% (-19 to 8)</p>	<p>Antibiotic resistance (proportion resistant among cases of invasive <i>Streptococcus pneumoniae</i> identified by ongoing surveillance in Knox county):</p> <p>Year 1 (n=20):                      Penicillin: 60%                      Cefotaxime: 55%                      TMP-SMX: 60%                      Erythromycin: 55%</p> <p>Year 3 (n=34):                      Penicillin: 71%                      Cefotaxime: 59%                      TMP-SMX: 65%                      Erythromycin: 50%</p>

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Perz, 2002 <sup>130</sup> United States Patient N = 464,200 person-years over 3-year study Provider N = NR overall; 250 "key providers" and 1,500 physicians overall in intervention county Practice N = NR	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Perz, 2002 <sup>130</sup> United States Patient N = 464,200 person-years over 3-year study Provider N = NR overall; 250 "key providers" and 1,500 physicians overall in intervention county Practice N = NR	NR	NR	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Rattinger, 2012 <sup>131</sup> United States Patient N = 3,831 Provider N = NR for study population (intervention was "part of a larger quality improvement initiative...used by at least 1379 unique providers during the study period.") Practice N = NR	Pre/post January 2002 to December 2006; intervention began January 2003 and continued through end of study period.	"Outpatients visits flagged by an ARI case-finding algorithm...if providers either assigned an ARI-related diagnostic code or prescribed a cough suppressant, and if the clinical note documented at least two ARI symptoms, as assessed by automated text analysis."	NR	Type: System-level Target: Providers Description: Intervention site: Veterans Affairs (VA) Maryland Health Care System. Clinical decision support system (CDSS) targeting gatifloxacin (fluoroquinolone) and azithromycin at the time of electronic prescription, with "drug-specific guideline recommendations as clickable choices during order entry". Cite 2001 publication describing guidelines developed by CDC. CDSS included treatment paths for pneumonia, bronchitis, sinusitis and nonspecific URI with diagnostic criteria and symptoms/signs suggesting antibiotic use appropriate. Providers could override CDSS recommendations.
Razon, 2005 <sup>132</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)				

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Rattinger, 2012 <sup>131</sup> United States Patient N = 3,831 Provider N = NR for study population (intervention was "part of a larger quality improvement initiative...used by at least 1379 unique providers during the study period.") Practice N = NR	VA Salt Lake City Health Care System	Type of RTI (one or more diagnosis per patient): pneumonia 14%, bronchitis 77%, pharyngitis 41%, sinusitis 19%, nonspecific ARI 4% Signs and symptoms and duration: NR	Mean age: 57 years % female: 7.7 % nonwhite: 66 SES, education, frailty, comorbidities, prior RTIs, prior antibiotics: NR	NR
Razon, 2005 <sup>132</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)				

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Rattinger, 2012 <sup>131</sup> United States Patient N = 3,831 Provider N = NR for study population (intervention was "part of a larger quality improvement initiative...used by at least 1379 unique providers during the study period.") Practice N = NR	Time of year: January 2002 to December 2006 Patterns of disease activity, local tailoring: NR System-level characteristics: Veterans Affairs Health Care Systems	Visits "reviewed for congruence with the guidelines" developed by the CDC. Antibiotics always appropriate for pneumonia, never for acute bronchitis or nonspecific URI, and sometimes for pharyngitis sinusitis if specific criteria met.	"Multivariable logistic regression and difference-in-difference regression analyses...were developed to estimate the impact of the CDSS intervention on overall antibiotics prescribing congruence." Regression models adjusted for age, marital status, sex, and race/ethnicity.
Razon, 2005 <sup>132</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Rattinger, 2012 <sup>131</sup> United States Patient N = 3,831 Provider N = NR for study population (intervention was "part of a larger quality improvement initiative...used by at least 1379 unique providers during the study period.") Practice N = NR	Relative risk of a congruent prescription, intervention vs. control:  RR=1.24; 95% CI, 1.11 to 1.39 Targeted antibiotics: RR=2.57; 95% CI, 1.87 to 3.54 Antibiotics not targeted: RR=1.18; 95% CI, 0.69 to 2.01  "Adjusted multivariable difference-in-difference models between the two study sites, post- vs. pre-intervention periods" "We defined an ARI visit as 'congruent' with the guidelines if an antibiotic was either prescribed or withheld in accordance with the criteria" provided by CDC guidelines.	NR
Razon, 2005 <sup>132</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Rattinger, 2012 <sup>131</sup> United States Patient N = 3,831 Provider N = NR for study population (intervention was "part of a larger quality improvement initiative...used by at least 1379 unique providers during the study period.") Practice N = NR	NR	NR
Razon, 2005 <sup>132</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Rattinger, 2012 <sup>131</sup> United States Patient N = 3,831 Provider N = NR for study population (intervention was "part of a larger quality improvement initiative...used by at least 1379 unique providers during the study period.") Practice N = NR	NR	NR	
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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Reyes-Morales, 2009 <sup>133</sup> Mexico Patient N = 1,495 over course of study Provider N = 106 Practice N = NR	Time series Outcomes measured at baseline and after each stage of intervention (dates NR).	"ARI was defined as the presence of at least three of the following symptoms: runny nose, cough, malaise, fever, and/or sore throat for less than 2 weeks."	8 IMSS family medicine clinics, with 106 family physicians who agreed to participate.	Type: Multifaceted (Educational, Clinical, System-level) Target: Providers Description: Guideline development with algorithms based on clinical data and prognostic factors; training of clinical tutors; three-part educational intervention with interactive workshop sessions to discuss guidelines, individual tutorial with clinical tutor advising physician during patient visit, and peer review discussion of physicians' clinical cases.

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Reyes-Morales, 2009 <sup>133</sup> Mexico Patient N = 1,495 over course of study Provider N = 106 Practice N = NR	4/8 clinics with 58/106 physicians	NR	NR	Specialty: Family medicine 51.6% in intervention group, 57.8% in control Years of practice (median): 20 intervention, 21 control Type of clinic: NR Geographical region: 2 clinics in Mexico City, 4 in 2 northern states, two in one southern state

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Reyes-Morales, 2009 <sup>133</sup> Mexico Patient N = 1,495 over course of study Provider N = 106 Practice N = NR	Time of year, patterns of disease activity, and local tailoring: NR System-level characteristics: the Mexican Institute of Social Security (IMSS) is the largest public health care system in Mexico providing care to 45% of Mexican population	Appropriate if physician applied clinical guideline; antibiotics for pneumonia and for pharyngitis, otitis media and sinusitis associated with specific clinical signs and symptoms. No antibiotics for bronchiolitis, laryngotracheitis, asthma with ARI, rhinopharyngitis, vesicular pharyngitis, laryngitis, bronchitis.	There were "equal numbers of intervention and comparison clinics in each location," and "for each intervention clinic, the control clinic was similar in number of physicians, infrastructure, and population for which the clinic provided care." Not clear if similarity resulted from matching. Models adjusted for "cluster sampling of physicians," but adjustment for other confounders not discussed.

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Reyes-Morales, 2009 <sup>133</sup> Mexico Patient N = 1,495 over course of study Provider N = 106 Practice N = NR	Appropriate prescription of antibiotics (difference of mean proportions vs. baseline; 95% CI):  Post-workshop: Intervention: 14; 95% CI, 2.6 to 26 Control: -1.2; 95% CI, -11 to 8.3 Post-tutorial: Intervention: 11; 95% CI, -0.7 to 23 Control: -4.4; 95% CI, -14 to 5.3 Post-peer review: Intervention: 23; 95% CI, 10 to 35* Control: 1.5; 95% CI, -8.6 to 12 *p<0.05, intervention vs. control	NR

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Reyes-Morales, 2009 <sup>133</sup> Mexico Patient N = 1,495 over course of study Provider N = 106 Practice N = NR	NR	NR

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Reyes-Morales, 2009 <sup>133</sup> Mexico Patient N = 1,495 over course of study Provider N = 106 Practice N = NR	NR	NR	

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Rubin, 2005 <sup>134</sup> United States Patient N = 309 for chart review in intervention community, 17,483 for Medicaid data (354 of these in intervention community) (all pre+post) Provider N = NR Practice N = NR	Pre/post Intervention period: January through June 2001. Data collected retrospectively for intervention period and for baseline period of January through June 2000.	"acute URTI (e.g., pharyngitis, rhinosinusitis, otitis media, bronchitis, and nonspecific URTI)." "All patients presenting to their primary care professional with URTI symptoms were included in the study."	The two family practice groups in the study community, though one health care professional declined to participate (not clear whether this provider represented one of the two practices).	Type: Multifaceted (Educational, Clinical) Target: Patients, public, providers Description: Patient education materials, media campaign, physician small group session, algorithms for diagnosis and management of acute URTIs. Providers asked to use algorithms with ≥200 consecutive URTI patients.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Rubin, 2005 <sup>134</sup> United States Patient N = 309 for chart review in intervention community, 17,483 for Medicaid data (354 of these in intervention community) (all pre+post) Provider N = NR Practice N = NR	Medicaid data for Community A compared with "the rest of rural Utah." Chart review data pre/post comparison only.	Type of RTI: Bronchitis (14% in intervention community at baseline), streptococcal (3%) and nonstreptococcal (23%) pharyngitis, otitis media (33%), sinusitis (7%), nonspecific URTI (19%). Signs/symptoms and duration: NR	Baseline data for residents of Community A overall (not limited to URTI patients included in study): Median age: 27.7 years % female: 49  Other patient characteristics: NR	Provider characteristics: NR Type of clinic: family practice in Community A, NR for "rest of rural Utah" Medicaid comparison group Geographical region/population served: Community A is a rural Utah community of <10,000 residents

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Rubin, 2005 <sup>134</sup> United States Patient N = 309 for chart review in intervention community, 17,483 for Medicaid data (354 of these in intervention community) (all pre+post) Provider N = NR Practice N = NR	Time of year: January through June of two consecutive years. Pattern of disease activity: NR Locally tailored: NR System-level characteristics: rural Utah community, health care provided by 2 family practice groups	Algorithms focus on selecting narrower-spectrum antibiotics (e.g. amoxicillin) for streptococcal pharyngitis, acute otitis media, rhinosinusitis present for $\geq 14$ days in children and $\geq 7$ days in adults, and acute exacerbation of chronic bronchitis. Antibiotics not indicated for nonspecific URTI, croup, or bronchitis.	Logistic regression models for patient-level data included time, diagnosis and antimicrobial class.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Rubin, 2005 <sup>134</sup> United States Patient N = 309 for chart review in intervention community, 17,483 for Medicaid data (354 of these in intervention community) (all pre+post) Provider N = NR Practice N = NR	<p><b>Medicaid data:</b>                      Difference in proportion of URTI episodes treated with antibiotics (baseline - intervention, positive values indicate decreased use) for Community A (intervention) vs. the rest of rural Utah (comparison); p-value for Community A vs. control:</p> <p>All URTI episodes: 15.6% vs. 1.5%, p=0.006, p=0.004 controlling for diagnoses                      Acute bronchitis: 56.1% vs. 1.7%, p=0.024                      Pharyngitis, nonspecific URTI, acute sinusitis, otitis media: p=NS</p> <p>[Note: difficult to interpret highly-significant difference for all URTIs vs. generally not statistically significant differences for individual diagnoses.]</p> <p>By antimicrobial class:                      Macrolides: 13.4% vs. 0.2%, p&lt;0.001                      Cephalosporins, penicillins, quinolones: p=NS</p> <p><b>Medical record data:</b>                      Difference in proportion of URTI episodes treated with antibiotics for Community A (intervention) only, p-value for intervention period vs. baseline period: p&lt;0.05 for 3/3 macrolides, 1/3 penicillins, 4/4 cephalosporins, 1/2 quinolones</p>	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Rubin, 2005 <sup>134</sup> United States Patient N = 309 for chart review in intervention community, 17,483 for Medicaid data (354 of these in intervention community) (all pre+post) Provider N = NR Practice N = NR	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Rubin, 2005 <sup>134</sup> United States Patient N = 309 for chart review in intervention community, 17,483 for Medicaid data (354 of these in intervention community) (all pre+post) Provider N = NR Practice N = NR	NR	NR	Paper also reports local community pharmacy data, but prescriptions not linked to diagnoses and these aggregate data not abstracted. Apparent typographic error in Figure 2: chart review data for "urinary tract infection," vs. URTI in text of results.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Siegel, 2006 <sup>135</sup> United States Patient N = 194 Provider N = 47 Practice N = NR	Pre/post Retrospective survey on antibiotic prescribing before (1/1999 to 1/2000) and after (1/2002 to 1/2003) the AOM/SNAP study (1/2000 to 12/2000).	Children age 1 to 12 with AOM. Exclusion criteria: temperature >101.5F, AOM symptoms >48 hours, another AOM episode within 3 months, child "toxic appearing," tympanic membrane "not intact" or "signs of impending perforation," immunodeficiency, coexisting bacterial infection.	Pediatricians in the Cincinnati Pediatric Research Group, a PBRN.	Type: Clinical Target: Families of pediatric patients Description: Families given Safety-Net Antibiotic Prescription (SNAP), a prescription given with instructions not to fill it unless child did not improve after 48 hours.
Smabrekke, 2002 <sup>136</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)				

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Siegel, 2006 <sup>135</sup> United States Patient N = 194 Provider N = 47 Practice N = NR	PBRN pediatricians compared with "30 randomly selected community pediatricians."	Type of RTI: acute otitis media Signs/symptoms and duration: NR	Age: 18% 1 to 2 years old, 82% >2 to 12 Other characteristics: NR	Specialty: pediatrics Years in practice: NR but "not statistically significantly different between the 2 groups" Type of clinic: primary care (NR for control providers) Geographical region: Cincinnati, Ohio Population served: community of 1.8 million
Smabrekke, 2002 <sup>136</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)				

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Siegel, 2006 <sup>135</sup> United States Patient N = 194 Provider N = 47 Practice N = NR	Time of year: intervention and before and after data collection periods each a full calendar year (January through December or through the following January) Patterns of disease activity, local tailoring: NR System-level characteristics: Practice-Based Research Network in Cincinnati, vs. community pediatricians with setting not further characterized	"Several investigators have demonstrated that antibiotics have a very modest benefit in most children with AOM" (with journal articles cited). Exclusion criteria (see population criteria) to identify severe or chronic disease. Families instructed not to fill antibiotic prescription if child improved by 48 hours.	Some outcomes for the two provider groups were compared before and after the SNAP intervention (i.e. minimal adjustment for time as a confounder).
Smabrekke, 2002 <sup>136</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)			

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Siegel, 2006 <sup>135</sup> United States Patient N = 194 Provider N = 47 Practice N = NR	Antibiotics for AOM: "Before the study, the majority of both groups, 51%, were using antibiotics almost all the time for AOM compared to 20% after the study, p<.001" Reporting unclear for: 1) Frequency definition (76 to 95% and >95% are options on questionnaire), and 2) whether 20% applied to both groups after study Use of SNAP: "Only one community pediatrician used SNAP before the study, while 8 used it afterward, p<.05" Not reported for PBRN physicians.	NR
Smabrekke, 2002 <sup>136</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)		

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Siegel, 2006 <sup>135</sup> United States Patient N = 194 Provider N = 47 Practice N = NR	NR for provider comparison groups	NR
Smabrekke, 2002 <sup>136</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)		

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Siegel, 2006 <sup>135</sup> United States Patient N = 194 Provider N = 47 Practice N = NR	NR	NR	
Smabrekke, 2002 <sup>136</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)			

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

Author, Year Country Patient Sample Size Provider Sample Size Practice Sample Size	Study Design (e.g. pre/post, time series) Time frame	Patient Population Criteria	Provider Population Criteria	Intervention Strategy Type: (1) Educational/Behavioral (2) Communication (3) Clinical (4) System-level (5) Multifaceted Target of Intervention (patient, provider, etc.) Intervention Description
Smeets, 2009 <sup>137</sup> The Netherlands Patient N = NR Provider N = 382 providers Practice N = 141 (25 groups) (see Welschen, 2004)	Before/after	Patients from general practices within a geographically defined area in the middle region of the Netherlands	General practitioners in the predefined area of the Netherlands	<p>Type: Multifaceted</p> <ul style="list-style-type: none"> <li>-Educational</li> <li>Target: Providers</li> <li>Description: Educational material given to providers based on the Dutch National Guideline for RTIs and given at educational meetings that included 1) group education meeting with a consensus procedure on indication and type of Abs for RTIs with academic detailing at the start of the intervention.</li> </ul> <ul style="list-style-type: none"> <li>-Communication</li> <li>Target: Providers</li> <li>Description: Communication skills training to make better agreements with patients about prescriptions.</li> </ul> <ul style="list-style-type: none"> <li>- System</li> <li>Target: Providers</li> <li>Description: Audit and feedback given on prescriptions.</li> </ul>

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Smeets, 2009 <sup>137</sup> The Netherlands Patient N = NR Provider N = 382 providers Practice N = 141 (25 groups) (see Welschen, 2004)	Intervention (N=194): educational outreach visit including feedback, communication skills training, audit and feedback vs Control: no intervention, practices from the same region	NR	NR	Specialty: General practice Number of years in practice: NR Type of clinic: NR Geographical region: Europe Population served: 23-20% urban

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Smeets, 2009 <sup>137</sup> The Netherlands Patient N = NR Provider N = 382 providers Practice N = 141 (25 groups) (see Welschen, 2004)	Time of year: January to June 2007 Patterns of disease activity: NR Locally tailored: yes, based on the Dutch national guideline for RTIs System-level characteristics: National Health Service	Based on national guidelines for antibiotics for RTI	Sorted out based on previous research protocols (see refs 26, 27)

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Smeets, 2009 <sup>137</sup> The Netherlands Patient N = NR Provider N = 382 providers Practice N = 141 (25 groups) (see Welschen, 2004)	Number of prescriptions per 1000 patients in the intervention and control group: 2006: +12% (206) vs +15% (202), NS 2007: +13% (232) vs +12% (227); -1% difference, NS	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Smeets, 2009 <sup>137</sup> The Netherlands Patient N = NR Provider N = 382 providers Practice N = 141 (25 groups) (see Welschen, 2004)	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Smeets, 2009 <sup>137</sup> The Netherlands Patient N = NR Provider N = 382 providers Practice N = 141 (25 groups) (see Welschen, 2004)	NR	NR	

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Strandberg, 2005 <sup>138</sup> Sweden Patient N = 14,719 visits Provider N = 80 Practice N = NR	Time series Time frame: "before, during, and after the initial audit registration, before interventions and feedback of the audit data". Registration during 5 weeks in April and May 1995. Data extracted for five 5-week time periods: A (six months before registration), B (immediately before), C (registration), D (immediately after), and E (three months after).	Diagnoses: upper respiratory tract infection, otitis media, sinusitis, tonsillitis, acute bronchitis, chronic obstructive lung disease, or pneumonia.	All general practitioners (GPs) at 14 public health centres.	Intervention type: System-level Target: Providers (N=45) who agreed to participate in audit Description: Intervention studied was "the effect of the actual registration process" on providers who agreed to participate in an "audit on treatment of respiratory tract infections (RTIs)", measured before the audit intervention actually takes place. "The question is whether the attentiveness that a registration entails leads to changed attitudes."

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Strandberg, 2005 <sup>138</sup> Sweden Patient N = 14,719 visits Provider N = 80 Practice N = NR	Providers (N=35) who did not agree to participate in audit.	NR	NR	Specialty: 77.5% general practice, 5% locums, 17.5% residents Years in practice: NR Type of clinic: primary health care Geographical region: Blekinge county, Southern Sweden Population: 151,000 county inhabitants

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Strandberg, 2005 <sup>138</sup> Sweden Patient N = 14,719 visits Provider N = 80 Practice N = NR	Time of year, patterns of disease activity: registration in April/May, followup for 5 weeks immediately after and also 3 months after (~August). "We found it possible but less likely that the reduction [in antibiotic use] had anything to do with seasonal variations." Local tailoring: NR System-level characteristics: "14 health centres and about 80 publicly employed GPs. Within the county there were in addition 12 private GPs, but they were excluded."	"The aim was to reduce the prescription of antibiotics for RTI, and to change prescriptions towards a greater proportion of Penicillin V (PcV), with a reduction in the prescription of broad-spectrum drugs." No authority cited or definition of broad-spectrum antibiotic given.	Stratified time series analysis only: results reported for each of five time periods, but no adjustment for other confounders.

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Strandberg, 2005 <sup>138</sup> Sweden Patient N = 14,719 visits Provider N = 80 Practice N = NR	<p>Percentage of visits for RTI resulting in antibiotic prescription in each time period, A-E, participants vs. nonparticipants:</p> <p>A: RR=0.92; 95% CI, 0.87 to 0.97                      B: RR=0.87; 95% CI, 0.82 to 0.92                      C: RR=0.96; 95% CI, 0.90 to 1.0                      D: RR=0.96; 95% CI, 0.89 to 1.0                      E: RR=0.88; 95% CI, 0.81 to 0.95</p> <p>Percentage of prescriptions of Penicillin V and broad-spectrum antibiotics of all antibiotics prescriptions in each time period, participants vs. nonparticipants:</p> <p>A: PcV RR=1.2; 95% CI, 1.1 to 1.3                      Broad: RR=0.90; 95% CI, 0.79 to 1.0                      B: PcV RR=1.1; 95% CI, 1.0 to 1.2                      Broad: RR=0.89; 95% CI, 0.78 to 1.0                      C: PcV RR=1.1; 95% CI, 1.0 to 1.2                      Broad: RR=0.99; 95% CI, 0.85 to 1.2                      D: PcV RR=1.0; 95% CI, 0.93 to 1.1                      Broad: RR=1.1; 95% CI, 0.93 to 1.3                      E: PcV RR=0.94; 95% CI, 0.85 to 1.0                      Broad: RR=1.0; 95% CI, 0.83-1.2</p>	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Strandberg, 2005 <sup>138</sup> Sweden Patient N = 14,719 visits Provider N = 80 Practice N = NR	NR	NR

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<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Strandberg, 2005 <sup>138</sup> Sweden Patient N = 14,719 visits Provider N = 80 Practice N = NR	NR	NR	

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Trepka, 2001 <sup>139</sup> United States Patient N = 365 Provider N = NR Practice N = NR	Pre/post Baseline survey June/July 1997, intervention September-December 1997, post-intervention survey June-August 1998.	Household caregivers of children < 4 years surveyed (nonparent caregivers excluded from analyses). Diagnoses included in survey question on antibiotic indications: bronchitis, colds, dry cough, flu, nonstreptococcal sore throat.	"Primary care clinicians" and "staff at each primary care clinic."	Type: Educational Target: Patients and their parents, providers Description: Intervention conducted in northern Wisconsin (MESA-North). Parent and patient education: CDC pamphlet distributed to clinics, pharmacies, child care facilities; CDC posters to clinics and community organizations; presentations by nurse educators to parents and staff at child care centers, public health departments, schools, community organizations; newspaper articles on antibiotic resistance. Physician education: nurse educator presentations to primary care clinic staff; grand rounds presentation by study investigator; small-group teaching or telephone discussions with a physician educator; distribution of guidelines, fact sheets, and patient education materials.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for</b> <b>Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Trepka, 2001 <sup>139</sup> United States Patient N = 365 Provider N = NR Practice N = NR	Control area was the MESA-Central region, comprising 14 zip codes in central Wisconsin	NR	Patient characteristics (intervention + control): Age: NR % female: NR Race: 98% white, 2% nonwhite Ethnicity: 98% nonHispanic, 2% Hispanic SES, child's insurance: 75% private, 25% medical assistance Education (caregiver): 35% high school only, 65% some college	Provider characteristics: Specialty, type of clinic: primary care Years in practice: NR Geographical region: intervention conducted in 3 counties and 2 adjacent cities in northern Wisconsin; outcome survey conducted in the 8-zip code MESA-North region, a subarea of the intervention region. Population served: intervention population (MESA-North): population 27,692 (957 children <4); control 58,910 (2,655 <4)

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Trepka, 2001 <sup>139</sup> United States Patient N = 365 Provider N = NR Practice N = NR	Time of year: surveys 2 consecutive summers, intervention September to December Patterns of disease activity: NR Locally tailored: NR System-level characteristics: Study conducted in the Marshfield Epidemiologic Study Area (MESA), a defined geographic region with care provided by Marshfield Clinic regional network and subject sampling frame available for research. Intervention conducted by Marshfield Medical Research Foundation.	Survey question on whether antibiotics were indicated for 5 diagnoses (see Comments), where "higher scores indicated less accurate knowledge regarding indications for antibiotic use." Educational pamphlet "provides examples of when antibiotics are and are not needed for children (e.g., rarely for bronchitis, not for colds)." 	Yes: cofactors associated with post-intervention knowledge outcomes in univariate analysis ( $p < 0.1$ ) were entered into multivariate models. For ARA these were intervention area residence, preintervention ARA, parent & child ages, and exposure to interventions. For antibiotic indications score, univariate analysis showed no significant associations and unadjusted scores were reported.

# Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Trepka, 2001 <sup>139</sup> United States Patient N = 365 Provider N = NR Practice N = NR	NR	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Trepka, 2001 <sup>139</sup> United States Patient N = 365 Provider N = NR Practice N = NR	NR	Patient satisfaction: "Percentage of parents who brought their child to another physician because they did not receive an antibiotic decreased from 4.6% to 1.7% in the intervention area and increased in the control area from 2.2% to 3.8%. The difference between the 2 area changes was -4.5%; 95% CI, -8.0 to -0.9; p=0.02."

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Trepka, 2001 <sup>139</sup> United States Patient N = 365 Provider N = NR Practice N = NR	(See Comments for outcome definitions)  Factors associated with high post-intervention ARA in final multivariate model included exposure to 2 or more local interventions: OR=1.9; 95% CI, 1.1 to 3.1  Univariate comparison of high ARA, difference of proportions, (Post-Pre) <sub>I</sub> - (Post-Pre) <sub>C</sub> : +10% (95% CI +1.9% to +18%)  Mean antibiotic indications scores, intervention vs. control areas: Preintervention: 3.9 vs. 4.3, p=0.07 Postintervention: 2.7 vs. 3.5, p<0.001	NR	Outcome definitions: Antibiotic resistance awareness (ARA): high level of ARA defined as agreement with each of 3 statements on antibiotic overuse and resistance. Antibiotic indications score: using survey question on whether antibiotics are indicated for 5 respiratory diagnoses (bronchitis, cold, dry cough, flu, nonstreptococcal sore throat), "always", "sometimes," and "never" were assigned scores of 2, 1, and 0, respectively.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Vinnard, 2013 <sup>140</sup> United States Patient N = 3,421 (total patient visits pre + post) Provider N = 98 Practice N = NR	Prospective cohort study, with providers followed over time with pre/post intervention assessments for Academic detailing (AD) study and four time points for PM study.  AD study: patient visits assessed during 1998 (baseline) and 2000, with intervention conducted in 1999.  PM study: intervention conducted 9/1/01 to 1/1/02, with patient visits assessed during 4 time periods: 1/1/01 to 8/31/01, 1/1/00 to 8/31/00, 1/1/02 to 8/31/01, and 1/1/03 to 8/31/03.	Upper respiratory infections: acute bronchitis, cough, acute pharyngitis, acute URI, all by ICD-9 codes.	Academic detailing study: Intensive intervention group: 7 faculty providers with highest baseline antibiotic use for acute bronchitis Mild intervention group: 7 faculty providers with next highest baseline antibiotic use  Patient mailing study: Intervention group: faculty providers with highest number of visits for the inclusion diagnoses (N=48 in results).	Academic detailing study: Type: Multifaceted Target: Providers and patients Description: Intensive intervention: a pharmacist and the director of the hospital Antimicrobial Stewardship Program met with each provider, presented published literature, and gave "provider-specific evaluation results," along with patient education materials. Mild intervention: patient education materials alone mailed to providers.  Patient mailing study: Type: Educational Target: Patients Description: Educational brochure and explanatory letter signed by provider or Antimicrobial Stewardship director mailed to providers' patients with previous URI diagnoses.
Weiss, 2011 <sup>141</sup> Canada Patient N = Population of Quebec Provider N = Unclear Practice N = NR	Time-series April 2005 to December 2007	Patients filling prescriptions at pharmacies in Quebec that are part of the IMS Health database	"All physicians and pharmacists in Quebec."	Type: Educational Target: Clinicians Description: Eleven 2-page guidelines with information on prescribing antibiotics for lower and upper respiratory tract infections, urinary tract infections and C. difficile infections were distributed along with letters from key stakeholders. CME and medical schools were encouraged to promote the guidelines.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Vinnard, 2013 <sup>140</sup> United States Patient N = 3,421 (total patient visits pre + post) Provider N = 98 Practice N = NR	Academic detailing study: no intervention group of 14 nonfaculty providers  Patient mailing study: control group were nonfaculty providers with highest number of visits for inclusion diagnoses (N=22 in results)	NR	NR	Geographical region: Pennsylvania Other characteristics: NR
Weiss, 2011 <sup>141</sup> Canada Patient N = Population of Quebec Provider N = Unclear Practice N = NR	Pre-period. Other interventions are noted to possibly have been going on at the same time.	NR	NR	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Vinnard, 2013 <sup>140</sup> United States Patient N = 3,421 (total patient visits pre + post) Provider N = 98 Practice N = NR	Time of year: NR for AD study, February through August for PM study Patterns of disease activity, local tailoring: NR System-level characteristics: Clinical Practices of the University of Pennsylvania (CPUP) practice providers are university faculty; Clinical Care Associates (CCA) providers are nonfaculty but affiliated with the university.	Study outcome is proportion of visits for acute bronchitis or URI for which antibiotics prescribed. Limited reporting of broad-versus narrow-spectrum antibiotic use for PM study.	Intervention and control providers matched for baseline bronchitis visits. Models of effects of intervention on antibiotic prescribing included provider, time, and a time/ intervention interaction term. AD model also adjusted for sex and smoking.
Weiss, 2011 <sup>141</sup> Canada Patient N = Population of Quebec Provider N = Unclear Practice N = NR	NR	No clear definition provided.	Analysis of prescribing over time only.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Vinnard, 2013 <sup>140</sup> United States Patient N = 3,421 (total patient visits pre + post) Provider N = 98 Practice N = NR	<b>AD study:</b> Adjusted odds ratio; 95% CI for reduction in antibiotic use over time in intervention vs. control groups: Intensive intervention (with academic detailing): OR=2.8; 95% CI, 1.3 to 6.0 Mild intervention (patient materials only): OR=1.7; 95% CI, 0.7 to 3.8  <b>PM study:</b> Change in prescribing rate, pre/post time points pooled: Intervention group: 19% vs. 14% (-4.7%) Control group: 58% vs. 59% (+1.2%) p=0.13, intervention vs. control	NR
Weiss, 2011 <sup>141</sup> Canada Patient N = Population of Quebec Provider N = Unclear Practice N = NR	Total outpatient antibiotic prescriptions per 1000 population: 471 vs 526; 10.5% lower Decreased by 4.2% in the first year after implementation (2005; p=0.002)	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Vinnard, 2013 <sup>140</sup> United States Patient N = 3,421 (total patient visits pre + post) Provider N = 98 Practice N = NR	NR	NR
Weiss, 2011 <sup>141</sup> Canada Patient N = Population of Quebec Provider N = Unclear Practice N = NR	NR	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Vinnard, 2013 <sup>140</sup> United States Patient N = 3,421 (total patient visits pre + post) Provider N = 98 Practice N = NR	NR	NR	Two substudies included: academic detailing (AD) and patient mailing (PM)
Weiss, 2011 <sup>141</sup> Canada Patient N = Population of Quebec Provider N = Unclear Practice N = NR	NR	NR	

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Study Design (e.g. pre/post, time series)</b> <b>Time frame</b>	<b>Patient Population Criteria</b>	<b>Provider Population Criteria</b>	<b>Intervention Strategy Type:</b> <b>(1) Educational/Behavioral</b> <b>(2) Communication</b> <b>(3) Clinical</b> <b>(4) System-level</b> <b>(5) Multifaceted</b> <b>Target of Intervention (patient, provider, etc.)</b> <b>Intervention Description</b>
Wheeler, 2001 <sup>142</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				
Wutzke, 2007 <sup>143</sup> Australia Patient N = 12,217 Provider N = 5,758 Practice N = NR	Before/after study 1999 baseline, 2000 - 2004 intervention years	Australian population aged 15 y and over (national annual surveys of consumers) or aged 18 y or over (national omnibus surveys of consumers)	General practitioners and pharmacists	Type: Educational Target: Consumers (general public) and health professionals (general practitioners and pharmacists) Description: Small scale media-based community awareness campaign conducted via radio, television, and newspaper coverage in 2000. Larger scale interventions for consumers were implemented during the winter months in 2001, 2002, 2003, and 2004. Large scale intervention included persuasive message/tag line, various printed and electronic resources (information brochure for adults; posters for general practice, pharmacies, schools, and community centers; stickers and badges; prescription pads for symptomatic management and patient information leaflets distributed to GPs), mass media strategies including billboards, television, radio, and magazines. Small grants provided to community groups to implement community-based education sessions in 2001, 2002, and 2004.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Comparator</b>	<b>Patient Characteristics:</b> <b>Type of RTI</b> <b>Types of Signs and Symptoms</b> <b>Duration of Signs and Symptoms</b> <b>When Counting Started for Duration</b>	<b>Patient Characteristics:</b> <b>Mean Age</b> <b>Percent Female</b> <b>Ethnicity</b> <b>SES</b> <b>Educational Level</b> <b>Frailty</b> <b>Comorbidities</b> <b>Prior RTIs</b> <b>Prior use of Antibiotics</b>	<b>Provider Characteristics:</b> <b>Specialty</b> <b>Number of Years in Practice</b> <b>Type of Clinic</b> <b>Geographical Region</b> <b>Population Served</b>
Wheeler, 2001 <sup>142</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				
Wutzke, 2007 <sup>143</sup> Australia Patient N = 12,217 Provider N = 5,758 Practice N = NR	Pre-campaign vs. Post-campaign	NR	NR	Specialty: General practice and pharmacy Number of years in practice: NR Type of clinic: General practices and pharmacies Geographical region: Australia Population served: General public

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>Background Contextual Factors:</b> <b>Time of Year</b> <b>Patterns of Disease Activity</b> <b>Locally Tailored</b> <b>System-Level Characteristics</b>	<b>Definition of Appropriateness</b>	<b>Confounders and Method(s) Used to Control for Them</b>
Wheeler, 2001 <sup>142</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Wutzke, 2007 <sup>143</sup> Australia Patient N = 12,217 Provider N = 5,758 Practice N = NR	Time of year: Winter months (June - August) in 2000, 2001, 2002, 2003, and 2004 Patterns of disease activity: NR Locally tailored: Yes System-level characteristics: Australia's National Prescribing Service undertook campaign	NR	National annual surveys of consumers were stratified by age, gender, and region. National omnibus surveys of consumers were stratified by postcode area, age, and gender. For all consumer surveys, frequency distributions of weighted data were calculated for all variables. Analysis of drug utilization by Medicare Australia database involved augmented regression, which included seasonality, autocorrected error terms, and one point in the regression model to indicate the timing of the first intervention in 1999.

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ1 outcomes: Appropriate prescription and use of antibiotics</b>	<b>KQ2 outcomes: Antibiotic resistance</b>
Wheeler, 2001 <sup>142</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Wutzke, 2007 <sup>143</sup> Australia Patient N = 12,217 Provider N = 5,758 Practice N = NR	<p>Proportion of the community reporting taking antibiotics when ill with last cough, cold, or flu                      1999 % vs. 2000 % (change, p) vs. 2001 % (change, p) vs. 2003 % (change, p) vs. 2004 % (change, p): 10.8 vs. 10.0 (- 0.8, NS) vs. 10.1 (- 0.7, NS) vs. 9.8 (- 1.0, NS) vs. 7.4 (-3.4, p&lt; 0.05; 95% CI, 1.3 to 5.5</p> <p>Median number of original antibiotic prescriptions for nine antibiotics commonly used for URTI decreased at a rate of 0.18 prescriptions per 1000 consultations per GP per month (p &lt; 0.0001), equating to a decrease of 10.8 original antibiotic prescriptions per GP per year or 216,000 fewer PBS subsidized antibiotic prescriptions per year (given the approximate 20,000 GPs in Australia provide an average of 6,000 consultations per year)</p>	NR

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ3 outcomes: Mortality, hospital admission, medical complications, adverse drug effects</b>	<b>KQ4 outcomes: Clinic/ED visits, time to return to work/school, patient satisfaction, quality of life, symptom improvement, use of nonantibiotic treatments, utilization of vaccinations, quality metrics</b>
Wheeler, 2001 <sup>142</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)		
Wutzke, 2007 <sup>143</sup> Australia Patient N = 12,217 Provider N = 5,758 Practice N = NR	NR	Proportion of the community reporting actions when ill with last cough, cold, or flu 1999 % vs. 2000 % (change, p) vs. 2001 % (change, p) vs. 2002 % (change, p) vs. 2003 % (change, p) vs. 2004 % (change, p) Took nonprescription medicine: 67.5 vs. 68.9 (+ 1.4, NS) vs. 69.4 (+ 1.9, NS) vs. 70.5 (+ 3.0, NS) vs. 70.1 (+ 2.6, NS) Rested at home: 56.8 vs. 54.4 (-2.4, NS) vs. 53.7 (-3.1, NS) vs. 60.7 (+ 3.9, NS) vs. 57.5 (+ 0.7, NS) Asked pharmacists for advice: 20.2 vs. 20.6 (+ 0.4, NS) vs. 21.9 (+ 1.7, NS) vs. 22.4 (+ 2.0, NS) vs. 22.4 (+ 2.2, NS) Visited a doctor: 23.3 vs. 21.8 (- 1.5, NS) vs. 19.3 (- 4.0, NS) vs. 20.3 (- 3.0, NS) vs. 18.0 (- 5.3, p< 0.05)

## Appendix F. Evidence Table 3: Data Abstraction of Observational Studies

<b>Author, Year</b> <b>Country</b> <b>Patient Sample Size</b> <b>Provider Sample Size</b> <b>Practice Sample Size</b>	<b>KQ5 outcomes: Intermediate outcomes, improved knowledge, improved shared decision making</b>	<b>KQ6 outcomes: Adverse effects of the strategy, such as increased time burden on clinicians, sustainability, diagnostic resource use associated with POC testing, diagnostic coding</b>	<b>Comments</b>
Wheeler, 2001 <sup>142</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)			
Wutzke, 2007 <sup>143</sup> Australia Patient N = 12,217 Provider N = 5,758 Practice N = NR	Proportion of the community reporting certain behaviors are appropriate for cold and flu Pre 2002 % appropriate vs. Post 2002 % appropriate (change, p) vs. Post 2003 % appropriate (change, p) vs. Post 2004 % appropriate (change, p) Get some rest: 89.4 vs. 89.7 (+ 0.3, NS) vs. 90.8 (+ 1.4, NS) vs. 91.1 (+ 1.7, NS) Drink lots of fluids: 96.4 vs. 97.8 (+ 1.4, NS) vs. 97.3 (+ 0.9, NS) vs. 97.3 (+ 0.9, NS) Take antibiotics: 28.7 vs. 24.9 (- 3.8, NS) vs. 26.1 (- 2.6, NS) vs. 21.7 (- 7.0, p<0.05; 95% CI, 3.5 to 10.5	NR	

<sup>a</sup>Median adult and pediatric ARIs per practice multiplied by number of practices

<sup>b</sup>Median providers per practice multiplied by number of practices

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased selection?	High overall loss to followup or differential loss to followup?	Outcomes prespecified and defined?	Ascertainment techniques adequately described?
Ashe, 2006 <sup>104</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)				
Bjerrum, 2004 <sup>105</sup>	Unclear	Overall: Unclear* Differential: Unclear*	Yes	Yes
Bjerrum, 2006 <sup>106</sup>	Unclear: All 52 participating providers were invited and agreed to participate, but method for allocating to intervention vs. control group NR.	Unclear whether all GPs enrolled completed study. Data collected for control providers only in second time period.	Yes: antibiotics identified by WHO classification code	Yes: treatment given reported by provider using published Audit Project Odense method, citation given
Bjerrum, 2011 <sup>107</sup>	Unclear: providers invited to participate, selection criteria NR; results presented only for providers completing both registrations	Unclear: results presented only for providers participating in both registration periods, participation rates could be different before and after intervention (i.e. for comparison groups)	No: unclear how antibiotic prescribing and classification were defined	Yes: self-registry by GP during consultation, APO citation given

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of followup?	Overall quality rating	Comments
Ashe, 2006 <sup>104</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Bjerrum, 2004 <sup>105</sup>	Unclear	Yes	NA	Fair	* Number of clinicians enrolled or possibly lost to followup in the prospective registration of patients is not clearly reported
Bjerrum, 2006 <sup>106</sup>	Unclear: outcomes recorded by providers with no blinding	Yes: "we used 95% confidence intervals (CI) adjusted for clustering of data according to practices." Antibiotic prescribing outcomes also reported stratified by site of infection.	Yes: data collected over 3-week periods in two consecutive winter seasons	Fair	
Bjerrum, 2011 <sup>107</sup>	Unclear: outcomes recorded by providers with no blinding	Yes: "we used 95% confidence intervals (CI) adjusted for clustering to GPs." Antibiotic prescribing outcomes also reported stratified by country	Yes: data collected over 3-week periods in two consecutive winter seasons	Fair	Happy Audit study

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased selection?	High overall loss to followup or differential loss to followup?	Outcomes prespecified and defined?	Ascertainment techniques adequately described?
Blaschke, 2014 <sup>108</sup>	No: comparison groups defined based on whether or not RIDT was used and influenza diagnosed in the ED visit, and not clear that analysis adjusted for other factors that could affect outcomes	No (NA): cross-sectional	Yes, though no classification reported for antibiotics	Yes: used data from National Hospital Ambulatory Medical Care Survey (NHAMCS), an annual survey of US ED visits conducted by the National Center for Health Statistics and the CDC
Bush 1979 <sup>109</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)				
Chowdhury, 2007 <sup>110</sup>	Yes	No: antibiotic prescribing outcome reported for all 24 THC's	Unclear	No for outcomes: only that "prescribing data was collected from THC's records." Yes for exposure
Francis, 2006 <sup>111</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)				
Gonzales, 1999 <sup>112</sup> Gonzales, 2001 <sup>113</sup>	Yes	No	Yes	Yes

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of followup?	Overall quality rating	Comments
Blaschke, 2014 <sup>108</sup>	Unclear: used data from an independent national survey database, hospital staff collect data with training from Census Bureau, ICD-9 codes used for diagnoses, data "reviewed for completeness and accuracy and validated by representatives from the NCHS." However, methods for extracting study data from database and whether study personnel were blinded is not reported.	Unclear: Outcomes compared as percent differences across 3 groups defined by RIDT use and flu diagnosis; paper does not report any adjustment of these percent differences for factors likely affecting outcomes, though weights based on sampling design (including geographic region, hospital, ED) appear to be used in calculating CIs	NA: cross-sectional design	Fair	ICD-9 codes for influenza lack specificity. I suspect the PPV of such codes is poor
Bush 1979 <sup>109</sup> (Please refer to Boonacker, 2010 <sup>12</sup> systematic review)					
Chowdhury, 2007 <sup>110</sup>	Unclear	Yes: study restricted to clinics with high baseline use, with further matching of intervention and control groups by baseline use, methods for matching NR	Unclear	Fair	
Francis, 2006 <sup>111</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Gonzales, 1999 <sup>112</sup> Gonzales, 2001 <sup>113</sup>	Unclear	Yes	Yes	Fair	

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased selection?	High overall loss to followup or differential loss to followup?	Outcomes prespecified and defined?	Ascertainment techniques adequately described?
Gonzales, 2004 <sup>114</sup> Gonzales, 2005 <sup>115</sup>	Yes	No	Yes	Yes
Gonzales, 2008 <sup>1</sup>	Yes	No	Yes	Yes
Harris, 2003 <sup>116</sup>	Unclear	No	Yes	No
Hemo, 2009 <sup>117</sup>	Yes	No	Yes	Yes
Herman, 2009 <sup>118</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				
Holloway, 2009 <sup>119</sup>	Yes: four districts studied (of 75 total in Nepal), 2/4 districts randomly assigned to intervention (method NR); sites within districts, villages within sites, and households within villages randomly selected for data collection	No: four districts studied before and after intervention, loss to FU NR. Individual patients not followed longitudinally.	Yes: treatment information collected through household interviews	Yes for both exposures and outcomes. Diagnoses/ARI severity from survey responses validated against health workers' diagnoses in baseline study.
Isaacman, 1992 <sup>120</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of followup?	Overall quality rating	Comments
Gonzales, 2004 <sup>114</sup> Gonzales, 2005 <sup>115</sup>	Yes	Yes	Yes	Fair	
Gonzales, 2008 <sup>1</sup>	Yes	Yes	Yes	Good	Would have liked a comment about any "epidemics" like influenza which occurred in the comparison and control group areas
Harris, 2003 <sup>116</sup>	Unclear	Yes	Yes	Fair	
Hemo, 2009 <sup>117</sup>	Yes	Yes	Yes	Good	
Herman, 2009 <sup>118</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Holloway, 2009 <sup>119</sup>	Unclear: trained research staff used survey instrument validated for diagnosis, though no validation reported for treatments and blinding NR.	Yes: analysis includes ARI severity, time (pre/post), and intervention status	Yes: treatment outcomes, with winter season after intervention compared to winter season before.	Fair	
Isaacman, 1992 <sup>120</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased selection?	High overall loss to followup or differential loss to followup?	Outcomes prespecified and defined?	Ascertainment techniques adequately described?
Little, 2014 <sup>121</sup>	Yes; simple clinical proforma used to create a large generalizable prospective cohort; negligible barriers to recruitment	No (overall); No (differential)	Yes: all studies within the main DESCARTE study had same outcome measures; complications was main outcome measure	Yes: review of patient notes with a standardized proforma (separated into terms showing possible consultation dx or symptom presentation)
Litvin, 2013 <sup>122</sup>	No: intervention clinics volunteered to participate	No: one of 9 practices (11%) closed and withdrew (data included through 7/1/11)	Yes, with algorithms incorporating text strings and ICD-9 codes to define diagnoses, and CDC guidelines to define appropriate treatment by diagnosis	Yes for both exposures and outcomes.
Llor, 2011 <sup>123</sup> "Effect of two interventions..."	Unclear: intervention and control providers were from different communities, not further described	Unclear: results presented only for providers participating in both registration periods (intervention groups), and control providers participated in second registration period only.	No: unclear how antibiotic prescribing and classification were defined	Yes: self-registry by GP during consultation, APO citation given
Llor, 2012 <sup>124</sup> "C-reactive protein..."	Unclear: not described in this paper but in other Happy Audit studies intervention and control providers were from different communities, not further described	Unclear whether results for intervention groups presented only for providers participating in both registration periods, but this was true in other Happy Audit studies. Control providers participated in second registration period only.	No: unclear how antibiotic prescribing defined	Yes: self-registry by GP during consultation, APO citation given
Llor, 2012 <sup>123</sup> "Interventions to reduce..."	Unclear: intervention and control providers were from different communities, not further described	Unclear whether results for intervention groups presented only for providers participating in both registration periods, but this was true in other Happy Audit studies. Control providers participated in second registration period only.	No: unclear how antibiotic prescribing defined	Yes: self-registry by GP during consultation, APO citation given

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of followup?	Overall quality rating	Comments
Little, 2014 <sup>121</sup>	Yes: outcome assessors (reviewers) blinded to aim of study (assessing affect of antibiotic prescription strategies)	Yes: log reg accounting for clustering by GP, controlling for case report form variables	Yes: duration of followup 4 weeks	Good	
Litvin, 2013 <sup>122</sup>	Unclear: blinding and database validation NR	Yes: longitudinal models included time and "random practice effects". Practice-level observations weighted by "practices' numbers of ARI encounters during the quarter."	Yes: intervention conducted in two phases over 27 months, with ARI treatment outcomes	Fair	
Llor, 2011 <sup>123</sup> "Effect of two interventions..."	Unclear: outcomes recorded by providers with no blinding	Yes: regression model adjusted for use of RADTs, age, gender, presenting signs, diagnosis, and patient demand for antibiotics.	Yes: data collected over 3-week periods in two consecutive winter seasons	Fair	Happy Audit study
Llor, 2012 <sup>124</sup> "C-reactive protein..."	Unclear: outcomes recorded by providers with no blinding	Yes: regression model adjusted for use/results of CRP, age, gender, presenting symptoms/ signs, diagnosis, radiography, and patient demand for antibiotics	Yes: data collected in two consecutive winter seasons	Fair	Happy Audit study
Llor, 2012 <sup>123</sup> "Interventions to reduce..."	Unclear: outcomes recorded by providers with no blinding	Yes: regression model adjusted for use/results of CRP, age, gender, comorbidity, presenting signs, duration of symptoms, diagnosis, radiography, and patient demand for antibiotics	Yes: data collected over 3-week periods in two consecutive winter seasons	Fair	Happy Audit study

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased selection?	High overall loss to followup or differential loss to followup?	Outcomes prespecified and defined?	Ascertainment techniques adequately described?
Mainous, 2013 <sup>126</sup>	No: intervention clinics volunteered to participate in response to email to Practice Partner Research Network members; other PPRNet practices used as controls. No inclusion/exclusion criteria or excluded practices reported.	No: Loss to FU NR, but both intervention and control clinics belonged to an existing research network (PPRNet) with common EHR and quarterly data pooling	Yes, with algorithms incorporating text strings and ICD-9 codes to define diagnoses, and CDC guidelines to define appropriate treatment by diagnosis	Yes for both exposures and outcomes
Maor, 2011 <sup>127</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				
McKay, 2011 <sup>128</sup>	Unclear	No	No	No
McNulty, 2010 <sup>129</sup>	Yes	No	Yes	Yes
Perz, 2002 <sup>130</sup>	Unclear: intervention in one urban county, and the 3 other major urban counties in the state were controls. However, there were large baseline demographic differences (27% black in intervention county, range 54 to 90% in 3 control counties).	No: data reported for all 3 control counties (combined)	Yes, though antibiotic prescriptions not linked with individual visits and diagnoses: "prescriptions included were those filled for antimicrobial drugs administered orally and typically used for treatment of respiratory infections in pediatric outpatients." Outpatient visits for a diagnosed respiratory illness were a separate, secondary outcome (ICD-9 codes used).	Yes

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of followup?	Overall quality rating	Comments
Mainous, 2013 <sup>126</sup>	Unclear: blinding and database validation NR	Yes: Control clinics matched to intervention clinics for number of providers and baseline ARIs. Statistical adjustment for time, practice size and specialty, region, and baseline ARIs.	Yes: 15 months after intervention, with ARI treatment outcomes	Fair	
Maor, 2011 <sup>127</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
McKay, 2011 <sup>128</sup>	Unclear	Time trends for use of antibiotics only	Yes	Fair	
McNulty, 2010 <sup>129</sup>	unclear	Yes	Yes	Fair	
Perz, 2002 <sup>130</sup>	Unclear: validation of TennCare database and blinding NR	Yes: regression models for prescription rates adjusted for county, age, race, study year; antibiotic resistance stratified by study year and antibiotic category	Yes: 12 months after intervention, prescribing and resistance outcomes	Fair	

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased selection?	High overall loss to followup or differential loss to followup?	Outcomes prespecified and defined?	Ascertainment techniques adequately described?
Rattinger, 2012 <sup>131</sup>	Unclear: process for selecting the two VA health centers not described, and they were in different states (Maryland and Utah). There were large baseline differences in race and marital status, but outcomes were adjusted for these variables. For individual visits, exclusion criteria and numbers excluded were reported.	No: one intervention and one control site studied before and after intervention. Individual patients not followed longitudinally.	Yes, with algorithms incorporating text strings to define diagnoses, and CDC guidelines to define appropriate treatment by diagnosis	Yes: visits identified by automated case-finding algorithm and data for these visits then manually abstracted.
Razon, 2005 <sup>132</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)				
Reyes-Morales, 2009 <sup>133</sup>	Unclear: process for selecting clinics not described, though intervention and control clinics reported to be similar. Both intervention and control physicians "agreed to participate." Average three patients per physician analyzed at each stage, but how they were selected NR (all gave consent to participate).	No: outcomes reported for all 106 participating physicians	Yes	Yes

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of followup?	Overall quality rating	Comments
Rattinger, 2012 <sup>131</sup>	Unclear: cases identified by automated algorithm, but data from these visits manually abstracted and blinding NR	Yes: regression models adjusted for age, marital status, sex, and race/ethnicity	Yes: 4 years from start of intervention, prescribing outcomes	Fair	
Razon, 2005 <sup>132</sup> (Please refer to Vodicka, 2013 <sup>16</sup> systematic review)					
Reyes-Morales, 2009 <sup>133</sup>	Yes: some patient and physician data by self-report, but corroborated by record and prescription review and "Data were collected by previously trained nurses who were blinded to the hypothesis of the study and unaware of the intervention."	Unclear: intervention and control clinics similar in locations, number of physicians, infrastructure, and population served, but not clear if this resulted from a matching procedure. In addition, "the intervention effect was calculated by using the differences-in-differences model, adjusting for cluster sampling of physicians," but no further explanation of this adjustment or discussion of adjustment for other confounders.	Unclear: 7 months including 3-month intervention, baseline, and followup evaluations; season NR	Fair	

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased selection?	High overall loss to followup or differential loss to followup?	Outcomes prespecified and defined?	Ascertainment techniques adequately described?
Rubin, 2005 <sup>134</sup>	No: community selected because of baseline high frequency of cephalosporin use in children. For Medicaid data, "the rest of rural Utah" used as comparator, and there were baseline differences in antibiotic use between community and state (e.g. proportion of nonstrep pharyngitis treated with antibiotics: 95% vs. 65%). One of the few providers in Community A also declined to participate in study.	No: FU not specifically reported, but Medicaid claims data used for both baseline and intervention period, and manual chart review was done for URTI episodes in each period with comparable N's to Medicaid data.	Yes, with ICD-9 codes used to identify URTI episodes from charts and Medicaid claims	Yes
Siegel, 2006 <sup>135</sup>	No: 17 of 30 practitioners in a pediatric Practice-Based Research Network compared with 30 "randomly selected community pediatricians," of whom 12 (40%) did not respond. Selection method NR for PBRN providers.	No: data on prescribing practices collected retrospectively using questionnaires mailed to providers, so no loss to FU	Yes (antibiotic prescribing, SNAP use)	Yes: provider questionnaire reproduced in publication
Smabrekke, 2002 <sup>136</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)				
Smeets, 2009 <sup>137</sup>	No: 25 groups of GPs agreed to participate (out of 84 invited groups)	No: enrolled groups N= 141, at analysis, Intervention N=131, C= 127	Yes, RX claims data obtained from a regional health insurance company database	Yes

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of followup?	Overall quality rating	Comments
Rubin, 2005 <sup>134</sup>	Unclear: two data sources for patient-level data, Medicaid claims and chart review (no linking of these data sources reported), but blinding NR.	Yes: models for patient-level data included community, time, diagnosis and antimicrobial class, but not baseline antibiotic use which differed between groups	Unclear: followup data collected during the same period intervention was conducted, which was from January through June when URTI season likely ending	Poor	
Siegel, 2006 <sup>135</sup>	No: questionnaire asked providers to retrospectively estimate antibiotic prescribing and SNAP use at several timepoints before and after Otitis Media Study. Recall bias likely, as only PBRN providers participated in study.	Yes: outcomes for the two provider groups were compared before and after the SNAP intervention (i.e. minimal adjustment for time)	Yes: questionnaire covers 4-year period	Poor	
Smabrekke, 2002 <sup>136</sup> (Please refer to Boonacker, 2010 <sup>12</sup> and Vodicka, 2013 <sup>16</sup> systematic reviews)					
Smeets, 2009 <sup>137</sup>	Yes	Unclear	Yes	Fair	

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased selection?	High overall loss to followup or differential loss to followup?	Outcomes prespecified and defined?	Ascertainment techniques adequately described?
Strandberg, 2005 <sup>138</sup>	No: all 80 general practitioners at 14 public health centers invited to participate in audit; 45 who agreed were intervention group, 35 others were control group. Baseline differences in prescribing patterns between groups. 12 private GPs excluded.	Unclear: 4/45 participants (8.8%) and 5/35 nonparticipants (14%) were missing data at final followup. Considering all 5 time periods, data were missing for 2% of participating providers (4/225) and 19% of nonparticipants (33/175). Authors identify only "dropout of one and two GPs, respectively, because they had no registered patients during one of the periods."	Unclear: broad vs. narrow-spectrum antibiotics and appropriate use not clearly defined	No: unclear how 1998 data extract on diagnoses and treatments related to 1994/1995 study period data collection, or how diagnoses were defined in and extracted from electronic records.
Trepka, 2001 <sup>139</sup>	Unclear: intervention and control groups in different geographical regions of Wisconsin (north vs. central). Within these regions, households randomly selected for outcome surveys; 4.7% refused and 36% had no phone or could not be reached. No statistically significant difference in refusal rates between regions, but rates of those not reached NR by intervention group. However, baseline knowledge outcomes similar between regions.	No: 65/430 (15%) of respondents lost to FU overall, 18% in intervention and 13% in control areas. Analyses were restricted to parents completing both surveys.	Yes	Yes

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of followup?	Overall quality rating	Comments
Strandberg, 2005 <sup>138</sup>	Unclear: data extraction method NR (automated vs. manual), no blinding or database validation reported	No: stratified time series analysis only: results reported for each of five time periods, but no adjustment for other confounders, including baseline prescribing patterns which differed between participants and nonparticipants	Unclear: 3 months after registration intervention	Poor	
Trepka, 2001 <sup>139</sup>	Unclear: blinding and questionnaire validation NR	Yes: cofactors associated with knowledge outcomes in univariate analysis ( $p < 0.1$ ) were entered into multivariate models, though univariate results also reported	Yes: knowledge outcome, follow up survey one year after baseline survey and 9 months after intervention began	Fair	

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased selection?	High overall loss to followup or differential loss to followup?	Outcomes prespecified and defined?	Ascertainment techniques adequately described?
Vinnard, 2013 <sup>140</sup>	No: for AD study, intervention groups defined by high baseline antibiotic use. In PM study, there were large baseline differences in antibiotic use reported. In both groups, intervention providers were selected from university faculty (CPUP), and control group were nonfaculty providers (CCA).	No: results reported for all 28 providers in AD study; for PM study, results reported for <i>more</i> providers than described in methods (70 vs. 40)	Yes	Yes: research staff abstracted antibiotic data from medical records using structured abstraction form
Weiss, 2011 <sup>141</sup>	Yes, database	No (NA): no patient-level data	Yes	Yes
Wheeler, 2001 <sup>142</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)				
Wutzke, 2007 <sup>143</sup>	Yes	Unclear	Yes	Yes

## Appendix G. Evidence Table 4: Quality Assessment of Observational Studies

Author, Year	Nonbiased and adequate ascertainment methods?	Statistical analysis of potential confounders?	Adequate duration of followup?	Overall quality rating	Comments
Vinnard, 2013 <sup>140</sup>	Unclear: no blinding reported for outcomes assessors	Yes: intervention and control providers matched for baseline bronchitis visits. Models of effects of intervention on antibiotic prescribing included provider, time, and a time/intervention interaction term. AD model also adjusted for sex and smoking	Yes: one year for AD study, two years for PM study	Fair	Two substudies included: academic detailing (AD) and patient mailing (PM)  Clinical Practices of the University of Pennsylvania (CPUP) practice providers are university faculty; Clinical Care Associates (CCA) providers are nonfaculty but affiliated with the university
Weiss, 2011 <sup>141</sup>	Unclear	Unclear: model variables not provided; time trends for antibiotic prescriptions filled	Yes	Fair	
Wheeler, 2001 <sup>142</sup> (Please refer to Andrews, 2012 <sup>3</sup> systematic review)					
Wutzke, 2007 <sup>143</sup>	Yes	Unclear: population surveys were weighted by age and gender, provider surveys not adjusted or weighted, drug utilization data adjusted for seasonality and timing of the initial intervention	Yes	Fair	

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Aims	Timeperiod Covered	Eligibility Criteria
Doan, 2014 <sup>14</sup> Canada	Determine if the use of a rapid viral detection test for children with an ARI in EDs changes patient management and resource use (including precautionary testing, antibiotic use, and length of visit) in the ED, compared with not using a rapid viral detection test	Through December 2011	<p><b>Study Designs:</b> RCTs evaluating the use of rapid viral diagnosis in children admitted to the ED with an ARI</p> <p><b>Participants:</b> (1) Studies of otherwise healthy children aged 0-18 years old (2) Studies which reported separately on subgroups of children under 18 years of age, admitted to an ED with a clinical presentation consistent with ARI (fever and respiratory symptoms such as cough, runny nose, sore throat, or congested nose)</p> <p><b>Interventions:</b> Rapid viral diagnosis from nasal pharyngeal aspirates or swabs by direct or indirect immunofluorescent test, enzyme immunoassays, optical immunoassay, or molecular testing such as multiplex polymerase chain reaction. Results are made available during the participants' stay in the ED</p> <p><b>Outcome Measures</b> <b>Primary Outcomes:</b> (1) Antimicrobial prescription rate in the ED (reduction of antibiotic use by 25% [RR=0.75] as clinically important)</p> <p><b>Secondary Outcomes:</b> (1) Length of ED stay (reduction of 30 minutes considered clinically important) (2) Rate of ancillary tests (any blood tests or chest imaging or urine investigations) requested (reduction in ancillary testing of 25% [RR=0.75] considered clinically important) (3) Rate of physician visit (ED or office) within 2 weeks after discharged from ED (relative increase in physician visit within 2 weeks of discharge from an ED or 10% [RR=1.10] considered clinically important)</p>

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Number of Participants	Characteristics of Identified Articles: Study Designs	Characteristics of Identified Articles: Populations	Characteristics of Identified Articles: Interventions
Doan, 2014 <sup>14</sup> Canada	1,588 (759 in rapid viral testing group, 829 in control group)	Three RCTs and one quasi-RCT were included	<p>Bonner 2003: Previously healthy participants, age 2 months to 21 years old, presenting to ED with fever, respiratory symptoms, malaise, or headaches of <math>\leq 72</math> hours duration</p> <p>Poehling 2006: children &lt; 5 years old presenting to ED with fever or acute respiratory symptoms during the 2002-2003 and 2003-2004 influenza seasons</p> <p>Iyer 2006: children 2 to 24 months of age presenting to ED with fever</p> <p>Doan 2009: previously healthy children age 3 to 36 months old presenting to ED with fever and any respiratory symptoms</p>	<p>Bonner 2003: Treatment: results of nasopharyngeal swab for rapid influenza testing using FluOIA test (turnaround time &lt; 25 minutes) being revealed to treating physicians at initial patient assessment Control: results of the rapid test were not made available to the treating physicians</p> <p>Poehling 2006: Treatment: results of rapid influenza testing were made available to the treating physician prior to patient assessment Control: standard testing with results made unavailable until the subject had been discharged from the ED</p> <p>Iyer 2006: Treatment: nasal swab for rapid influenza testing (using Quickvue), providing a result within 30 minutes Control: nasal swab for rapid influenza testing (using Quickvue), but these were performed only twice daily to simulate routine laboratory testing turnaround, and results were not made available to the treating physician using the patient had been discharged from the ED</p>

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Main Results	Adverse Events
Doan, 2014 <sup>14</sup> Canada	<p>KQ 1: Antibiotics Prescribed in ED (Rapid Viral Testing vs. Control RR): RR=0.89; 95% CI, 0.71 to 1.12 Antibiotics Prescribed in ED, sensitivity analysis: 0.86 (0.61 to 1.22)</p> <p>KQ 2: NR</p> <p>KQ 3: NR</p> <p>KQ 4: Blood investigations (e.g. cell count and/or culture) (Rapid Viral Testing vs. Control RR): RR=0.79; 95% CI, 0.62 to 1.00 Blood investigations, sensitivity analysis: 0.61 (0.42 to 0.89) Urine testing (Rapid Viral Testing vs. Control RR): RR=0.97; 95% CI, 0.79 to 1.19 Urine testing, sensitivity analysis: 0.93 (0.70 to 1.25) Chest radiography (Rapid Viral Testing vs. Control RR): RR=0.77; 95% CI, 0.65 to 0.91 Chest radiography, sensitivity analysis: 0.59 (0.43 to 0.81) Visits to physician or ED post ED discharge (Rapid Viral Testing vs. Control RR): RR=1.00; 95% CI, 0.77 to 1.29</p> <p>KQ 5: NR</p>	<p>KQ 6: Mean ED length of visit in minutes (Rapid Viral Testing vs. Control, mean difference; 95% CI): -10.61; 95% CI, -22.47 to 1.25 Mean ED length of visit in minutes, sensitivity analysis: -19.47 (-51.38 to 12.44)</p>

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Aims	Timeperiod Covered	Eligibility Criteria
Doan, 2014 <sup>14</sup> Canada  Continued.			(4) Hospital admission rate (reduction in admission rate of 25% [RR=0.75] considered clinically important) (5) Acceptability of nasal specimen collection sampling for rapid viral testing (discomfort level with invasiveness of the procedure)

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Number of Participants	Characteristics of Identified Articles: Study Designs	Characteristics of Identified Articles: Populations	Characteristics of Identified Articles: Interventions
Doan, 2014 <sup>14</sup> Canada  Continued.				Doan 2009: Treatment: nasopharyngeal aspirate for rapid respiratory virus panel (influenza A/B, parainfluenza 1/2/3, RSV, Adenovirus) using direct immunofluorescence assay (Light Diagnostics SimulFluor Respiratory Screening agent) Control: routine admission to ED. Any test done was requested after assessment by treating physician

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Aims	Timeperiod Covered	Eligibility Criteria
<p>Schuetz, 2011<sup>19</sup> Schuetz, 2012<sup>20</sup> United States, Canada</p>	<p>Schuetz 2011: Summarize the evidence based on previous RCTs for using PCT measurement in respiratory infections and sepsis from the clinical settings for which the most RCT data are available, namely, primary care, the ED, the medical ICU, and the surgical ICU. Proposed clinical algorithms for use in future US trials</p> <p>Schuetz 2012: Assess the safety and efficacy of using procalcitonin for starting or stopping antibiotics over a large range of patients with varying severity of ARIs and from different clinical Settings</p>	<p>Through 2011</p>	<p>Study Designs: Schuetz 2011: RCTs including adults with a diagnosis of respiratory tract infections (i.e. pneumonia, acute exacerbations of COPD, or other respiratory tract infections) or sepsis</p> <p>Schuetz 2012: RCTs of adult participants with ARIs who received an antibiotic treatment either based on a procalcitonin algorithm or usual care/guidelines</p> <p>Clinical Settings: Primary care, the ED, or the ICU</p> <p>Interventions: Measurement of PCT levels to inform decisions regarding antibiotic therapy (i.e. regarding its initiation and/or duration)</p> <p>Primary Endpoints: Schuetz 2012: all-cause mortality and treatment failure at 30 days</p> <p>Secondary Endpoints: Schuetz 2012: antibiotic use, length of hospital stay, length of ICU stay, number of days with restricted activities within 14 days after randomization</p>

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Number of Participants	Characteristics of Identified Articles: Study Designs	Characteristics of Identified Articles: Populations	Characteristics of Identified Articles: Interventions
Schuetz, 2011 <sup>19</sup> Schuetz, 2012 <sup>20</sup> United States, Canada	4,221 total (2,610 in studies applicable to present review, e.g. primary care and select ED settings)	4 RCTs applicable to present review (2 multicenter noninferiority; 1 ED only, single center; 1 ED and inpatient multicenter)	Subjects with upper and lower RTI (2 studies) or CAP, AECOPD, bronchitis (2 studies)	Algorithm by PCT Level (µg/L) Primary care setting: <0.10, SRAA; 0.10- 0.25, RAA; > 0.25, FRA; recheck PCT level at 6-24 hours if no antibiotics initiated; or <0.25, RAA; >0.25. RFA  ED settings: <0.10, SRAA; 0.10-0.25, RAA; 0.25-0.50, RFA; >0.50, SRFA; recheck PCT level after 6-24 hours if no antibiotics initiated; or <0.10, SRAA; 0.10- 0.25, RAA; 0.25-0.50, RFA; >0.50, SRFA; retest PCT level every 2 days; discontinue antibiotics with same cutoffs

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Main Results	Adverse Events
<p>Schuetz, 2011<sup>19</sup> Schuetz, 2012<sup>20</sup> United States, Canada</p>	<p>KQ 1: <i>Schuetz 2011</i> Briel 2008: Antibiotics Use, Control vs. PCT Prescription: 97% vs. 25% Duration (mean): 7.1 vs. 6.2 days Relative Reduction, % Prescription: -74 Duration: -13</p> <p>Burkhardt 2010: Antibiotics Use, Control vs. PCT Prescription: 36.7% vs. 21.5% Duration (mean): 7.7 vs. 7.8 days Relative Reduction, % Prescription: -42 Duration: 1</p> <p><i>Schuetz 2012</i> PCT (n (%)) vs. Control (n (%)), Adjusted OR; 95% CI; p Initiation of antibiotics, Upper ARI: 43 (15) ED. 129 (48), OR=0.14; 95% CI, 0.09 to 0.22; p&lt; 0.001 Initiation of antibiotics, Acute bronchitis: 61 (24) vs. 185 (66), OR=0.15; 95% CI, 0.10 to 0.23; p&lt; 0.001</p> <p>PCT (median (IQR)) vs. Control (median (IQR)), Adjusted OR; 95% CI; p Duration of antibiotics in days, Upper ARI: 7 (5 to 8) vs. 7 (6 to 7), OR=-1.16; 95% CI, -2.08 to -0.24; p=0.013 Total exposure of antibiotics in days, Upper ARI: 0 (0 to 0) vs. 0 (0 to 7), OR=-2.64; 95% CI, -3.16 to - 2.11; p&lt; 0.001 Duration of antibiotics in days, Acute bronchitis: 7 (4 to 9) vs. 7 (5 to 8), OR=-0.38; 95% CI, -1.21 to 0.46; p=0.375 Total exposure of antibiotics in days, Acute bronchitis: 0 (0 to 0) vs. 5 (0 to 7), OR=-3.06; 95% CI, -3.69 to -2.43; p&lt; 0.001</p>	<p>KQ 6: NR</p>

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Main Results	Adverse Events
<p>Schuetz, 2011<sup>19</sup> Schuetz, 2012<sup>20</sup> United States, Canada</p> <p>Continued.</p>	<p>KQ 2: NR</p> <p>KQ 3: <i>Schuetz 2011</i> PCT Algorithm vs. No PCT Algorithm, Total; Weight, %; Fixed, Peto OR; 95% CI Mortality in Primary Care Trials: 507 vs. 501, 0.3, OR=0.13; 95% CI, 0 to 6.64</p> <p><i>Schuetz 2012</i>: PCT (n (%)) vs. Control (n (%)), Adjusted OR; 95% CI; p Mortality, Upper ARI: 0 (0) vs. 1 (0.4); NR; NR Treatment failure, Upper ARI: 93 (33.0) vs. 92 (34.5), OR=0.95; 95% CI, 0.73 to 1.24; p=0.687 Mortality, Acute Bronchitis: 0 (0) vs. 2 (0.8); NR; NR</p> <p>KQ 4: <i>Schuetz 2012</i>: PCT (median (IQR)) vs. Control (median (IQR)), Adjusted OR; 95% CI; p Days with Restricted Activities: 9 (6 to 14) vs. 9 (5 to 14), OR=0.05; 95% CI, -0.46 to 0.56, p=0.854</p> <p>KQ 5: NR</p>	

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Aims	Timeperiod Covered	Eligibility Criteria
Spurling, 2013 <sup>7</sup> Australia, United States	Evaluate use of delayed antibiotics compared with immediate or no antibiotics as a prescribing strategy for ARTIs	Through February 2013	<p>Study Designs: Randomized controlled trials and open randomized trials</p> <p>Participants: Patients of all ages defined as having ARTIs</p> <p>Interventions: (1) Delayed antibiotic use defined as strategy involving use of or advice to use antibiotics more than 48 hours after initial consultation (2) Immediate antibiotic use defined as immediate use of prescription oral antibiotics given at initial consultation (3) No antibiotic use defined as no prescription of antibiotics at initial consultation</p> <p>Outcome Measures: Primary (1) Clinical outcomes for sore throat, AOM, bronchitis, common cold (2) Antibiotic use (3) Patient satisfaction (4) Antibiotic resistance</p> <p>Secondary (1) Adverse events of antibiotics (2) Complications of disease (3) Re-consultation (4) Use of alternative therapies</p>

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Number of Participants	Characteristics of Identified Articles: Study Designs	Characteristics of Identified Articles: Populations	Characteristics of Identified Articles: Interventions
Spurling, 2013 <sup>7</sup> Australia, United States	3,157	RCTs studying the treatment of ARTIs with delayed antibiotics versus immediate or no antibiotics	<p>Adults and children with:</p> <ul style="list-style-type: none"> <li>(1) common cold or</li> <li>(2) cough or</li> <li>(3) sore throat or</li> <li>(4) cough and at least one symptom or sign localizing to lower respiratory tract</li> </ul> <p>Children with:</p> <ul style="list-style-type: none"> <li>(1) AOM or</li> <li>(2) sore throat</li> </ul>	<ul style="list-style-type: none"> <li>(1) Delayed antibiotics vs. immediate antibiotics</li> <li>(2) No antibiotics vs. delayed antibiotics</li> <li>(3) Delayed antibiotics vs. immediate antibiotics vs. no antibiotics</li> </ul>

## Appendix H. Evidence Table 5: Data Abstraction of Systematic Reviews

Author, Year Country	Main Results	Adverse Events
<p>Spurling, 2013<sup>7</sup> Australia, United States</p>	<p>KQ 1: Delayed antibiotics resulted in a significant reduction in antibiotic use compared with immediate antibiotics. A 'no antibiotics' strategy resulted in the least antibiotic use. Appropriateness of antibiotic prescribing and use NR/not defined.</p> <p>KQ 2: NR</p> <p>KQ 3: Minor differences in clinical AEs of antibiotics with no significant difference in complication rates. Antibiotic resistance: NR.</p> <p>KQ 4: Patient satisfaction Delayed vs. immediate antibiotics, OR; 95% CI: OR=0.52; 95% CI, 0.35 to 0.76 Overall 92% of participants in immediate antibiotics arms were satisfied vs. 87% in the delayed arms. Delayed vs. no antibiotics, OR; 95% CI: OR=1.44; 95% CI, 0.99 to 2.10</p> <p>Reconsultation rates: no difference between immediate and delayed groups</p> <p>Patient symptoms: no difference between delayed, immediate, and no prescribed antibiotics for clinical outcomes evaluated in cough and common cold. In patients with AOM and sore throat, immediate antibiotics were more effective than delayed for fever, pain, and malaise in some studies.</p> <p>KQ 5: NR</p>	<p>KQ 6: NR</p>

# Appendix I. Evidence Table 6: Quality Assessment of Systematic Reviews

<b>Author Year Country</b>	<b>Report clear review question, state inclusion and exclusion criteria of primary studies?</b>	<b>Substantial effort to find relevant research?</b>	<b>Adequate assessment of validity of included studies?</b>	<b>Sufficient detail of individual studies presented?</b>	<b>Primary studies summarized appropriately?</b>	<b>Quality Rating</b>
Doan, 2014 <sup>14</sup> Canada	Yes	Yes	Yes	Yes	Yes	Good
Schuetz 2011 <sup>19</sup> Schuetz 2012 <sup>20</sup> United States, Canada	Yes	Yes	Yes	Yes	Yes	Good
Spurling 2013 <sup>7</sup> Australia, United States	Yes	Yes	Yes	Yes	Yes	Good

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b>1. For patients with acute RTI and no clear indication for antibiotic treatment, what is the comparative effectiveness of particular strategies in improving the appropriate prescription or use of antibiotics compared with other strategies or standard care?</b>								
<b><u>Appropriate Antibiotic Prescribing or Use (overall prescribing/use considered indirect evidence)</u></b>								
<b>Educational Interventions</b>								
<b><i>Patient Education Interventions</i></b>								
<b><i>Clinic-based Interventions</i></b>								
Adults with acute bronchitis								
Low	RCT: 1 (968)	Medium	Direct	Unknown	Precise	Undetected	None	Adjusted absolute difference - 19.7%; 95% CI, -5.8 to -33.04 based on ICD-9 codes
Children up to age 14								
Low	RCT: 2 (679)	Medium	Indirect	Consistent	Precise	Undetected	None	Pooled estimate = 0.39 (95% CI, 0.26 to 0.58)
Insufficient	Observational: 1 (720)	Low	Indirect	Unknown	Imprecise	Undetected	None	No difference found in prescriptions for acute RTI (OR 0.76; 95% CI, 0.56 to 1.04)
Final Rating: Low								
Children ≤ 24 months; AOM								
Insufficient	RCT: 1 (499)	Low	Indirect	Unknown	Precise	Undetected	None	No effect seen. Mean number of antibiotics prescribed per patient diagnosed with AOM 1.7 vs. 1.9 (p=0.23)
<b><i>Mass Media Campaigns</i></b>								
Adults								
Low	Observational: 2 (N = 1,888 in 1 study, unclear number of adults in the other [total population N = 2,711,848 in post period])	Low	Indirect	Consistent	Precise	Undetected	None	Mass media campaigns did not affect prescribing for acute RTI in adults (p=0.9 to 1.0)

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Children								
Low	Observational: 3 (N = 84,979 in 1 study, unclear # children in the other [total population N = 2,711,848 in post period])	Low	Indirect	Consistent	Precise	Undetected	None	Mass media campaigns resulted in reduced prescribing for antibiotics to treat acute RTIs, particularly otitis media (OR 0.652; 95% CI, 0.591 to 0.718)
<b><i>Clinician Targeted</i></b>								
Low	RCT: 1 (75 providers)	Medium	Indirect	Unknown	Imprecise	Undetected	None	Limited evidence from one RCT suggests no difference in prescribing for acute rhinosinusitis (difference 1.4%)
Low	Observational: 2 (24 and all in Quebec)	Medium	Indirect	Consistent	Precise	Undetected	None	Small reductions in overall prescribing and reductions of 7 to 11% when targeting clinicians with high rate of prescribing, and no impact on prescribing for pharyngitis (+0.3%)
Final Rating: Low								
<b><i>Patient and Clinician Targeted</i></b>								
Low	RCT: 1 (1016 children)	Medium	Direct	Unknown	Precise	Undetected	None	Based on duration of symptoms, reduced inappropriate prescribing by 10.4% in pharyngitis (OR 0.6; 95% CI, 0.54-0.75)
Insufficient	Observational: 1 (Patient: 1177 Provider: 13)	Medium	Direct	Unknown	Precise	Undetected	None	Improved appropriate prescribing in sinusitis by 27% (p<0.001)
Final rating: Low								
<b><i>Patient and Clinician Targeted</i></b>								
Moderate	RCT: 5 (16 clinics + 2374 providers, 22,540 patients)	Medium	Indirect	Consistent	Precise	Undetected	None	
Low	Observational: 4 (2889 patients + 123,944 patient-years, 1500+ providers, and all in Australia)	Medium	Indirect	Consistent	Precise	Undetected	None	

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Final Rating: Moderate								Mean reduction in antibiotic prescriptions 8.2% (95% CI, 4.8% to 11.5%). Reductions in children 10% to 18%, more in younger children. Adults: mixed evidence for bronchitis, 9-13% for upper RTI. Minimal effect on pharyngitis, sinusitis.
<b>Communication Interventions</b>								
Communication vs. Educational: Low	RCT: 1 (30/552)	Medium	Direct	Unknown	Imprecise	Undetected	None	Appropriate antibiotic prescribing according to guidelines adapted by investigators (adjusted OR 1.03; 95% CI, 0.30 to 3.09)
Communication vs. Education: Low	RCT: 2 (30+/632)	Medium	Indirect	Inconsistent	Imprecise	Undetected	None	Overall antibiotic prescribing: One study found communication intervention to have a larger reduction compared with control (RR 0.17; 95% CI, 0.03 to 0.93) than education compared with control (RR 0.40; 95% CI, 0.08 to 1.92). Second study found no significant difference between communication and education interventions (RR 0.86; 95% CI, 0.40 to 1.93).
Communication vs. Usual Care: Moderate	RCT: 5 (594/5513)	Medium	Indirect	Consistent	Precise	Undetected	None	Overall antibiotic prescribing: Each of 5 studies of 5 different communication interventions found the intervention to reduce relative risk (range 0.69 to 0.17) and absolute risk (differences from 9.2% to 26.1%).

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Communication vs. CRP Testing: Low	RCT: 2 (123/2426)	Medium	Indirect	Inconsistent	Imprecise	Undetected	None	Overall antibiotic prescribing: One of 2 studies found the use of a communication intervention to be statistically significantly associated with higher relative risk of prescription (RR 1.17; 95% CI, 1.05 to 1.31). The second study found no significant difference (RR 0.85; 95% CI, 0.58 to 1.25).
<b>Clinical Interventions</b>								
<b>Delayed Prescribing Strategies</b>								
Delayed vs. Immediate Prescription: Low	RCT: 6 (1664)	Medium	Indirect	Consistent	Precise	Undetected	None	OR's ranged from 0.00 (95% CI, 0.02 to 0.08) to 0.20 (95% CI, 0.09 to 0.44)
Delayed vs. No Prescription: Low	RCT: 3 (835)	Medium	Indirect	Consistent	Precise	Undetected	None	OR's ranged from 1.30 (95% CI, 0.77 to 2.21) for cough to 4.06 (95% CI, 2.01 to 8.19) for acute otitis media
Different Delaying Strategies: Giving prescription with instructions vs. post-dating: Low	RCT: 2 (339)	Medium	Indirect	Consistent	Imprecise	Undetected	None	41% vs. 40% (OR 1.05; 95% CI, 0.68 to 1.62)
Different delaying strategies: Giving prescription with instructions vs. leaving for collection or recontacting: Low	RCT: 1 (319)	Medium	Indirect	Unknown	Imprecise	Undetected	None	OR 1.32 (95% CI, 0.68 to 2.58); OR 1.11 (95% CI, 0.58 to 2.11)
<b>Decision Rules</b>								
Overall prescriptions: Low	RCT: 1 (20)	Medium	Indirect	Unknown	Imprecise	Undetected	None	55% vs. 58%; p=NS
<b>C-Reactive Protein Point of Care Testing</b>								
Moderate	RCT: 5 (491/6197)	Medium	Indirect	Consistent	Precise	Undetected	None	Overall antibiotic prescribing: Four of 5 studies found the use of POC CRP testing to statistically significantly reduce the relative risk (range from 0.77 to 0.54). In unadjusted pooled analysis of 5 trials, RR = 0.69 (95% CI, 0.57 to 0.84).

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Low	Observational: 1 (367/1444)	Medium	Indirect	Unknown	Precise	Undetected	None	Overall antibiotic prescribing: Adjusted OR = 0.43 (95% CI, 0.33 to 0.58)
Final Rating: Low								Although the strength of evidence would be “moderate” for the indirect outcome measure of overall prescribing, indirectness limits the grade for appropriate antibiotic prescribing to “low”.
CRP vs. Interventions to Improve Communication Between Clinicians and Patients Low	RCT: 2 (123/2426)	Medium	Indirect	Inconsistent	Precise	Undetected	None	Overall antibiotic prescribing: One of 2 studies found the use of POC CRP testing to statistically significantly reduce the relative risk (RR 0.85; 95% CI, 0.77 to 0.95). The second study found no significant difference (RR 1.17; 95% CI, 0.80 to 1.72).
CRP with Clinical Algorithm vs. Clinical Algorithm Alone Low	RCT: 1 (1/131)	Medium	Indirect	Unknown	Imprecise	Undetected	None	Overall antibiotic prescribing: One study found no difference between the use of POC CRP testing with a clinical algorithm to guide chest x-ray and antibiotic treatment and use of the clinical algorithm alone (RR 1.23; 95% CI, 0.77 to 2.00).
<b><i>Procalcitonin Point of Care Testing</i></b>								
Adults: Moderate	RCT: 5 SR: 2 (2820)	Medium	Indirect	Consistent	Precise	Undetected	None	Reduced prescribing in upper RTI (OR 0.14; 95% CI, 0.09 to 0.22), acute bronchitis (OR 0.15; 95% CI, 0.10 to 0.23), primary care (OR 0.1; 95% CI, 0.07 to 0.14)
Children: Low	RCT: 1 (337)	Low	Indirect	Unknown	Precise	Undetected	None	Increased prescribing with procalcitonin (+ 21.7%; RR 4.34; 95% CI, 2.40 to 7.84)

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b><i>Tympanometry Point of Care Testing</i></b>								
Children: Low	RCT: 1 (398)	Medium	Direct	Unknown	Precise	Undetected	None	No, tympanometry did not impact prescribing (28.8% with tympanometry vs. 26.8% without; p=0.62)
<b><i>Rapid Strep Point of Care Testing</i></b>								
Appropriate prescribing: Low	RCT:1 (543)	Medium	Direct	Unknown	Precise	Undetected	NA	Inappropriateness of antibiotic prescription according to culture: 26.9% vs. 60.0%; p<0.001
Overall prescribing: Moderate	RCT: 3 (1896)	Medium	Indirect	Consistent	Precise	Undetected	NA	Lower with use of a rapid strep test with a range of 20 to 52 percent
<b><i>Rapid Viral Point of Care Testing</i></b>								
Rapid Viral Testing vs. usual care in adults: Insufficient	RCT: 1 (NR)	Medium	Indirect	Unknown	Precise	Undetected	NA	Proportion of patients prescribed significantly lower in the patients assigned to point-of-care testing; 4.5 versus 12.3 percent (7.8% difference; p<0.01).
Rapid viral Testing vs. usual care in Children: Low	RCT: 4 (NR)	Medium	Indirect	Consistent	Precise	Undetected	NA	Pooled estimate RR 0.89; 95% CI, 0.71 to 1.12 for overall prescribing
<b>System-Level Interventions</b>								
Appropriate prescribing: Moderate	RCT: 2 (12195)	Medium	Direct	Consistent	Precise	Undetected	Low adoption of intervention tools across studies	Difference between groups: 13% bronchitis, p=0.01; 24% AOM
Overall prescribing with > 50% use of system: Low	RCT: 2 (240 clinicians)	Medium	Indirect	Consistent	Precise	None	Rate of use = 57% and 100% (subgroup analysis)	Reduction of 9% with higher rates of use of system.

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b>Multifaceted Interventions</b>								
2 components: Low	RCT: 2 (Patient: 188832, Provider: 251)	Medium	Indirect	Inconsistent	Precise	Undetected	None	Range of absolute difference of differences (before to after) for intervention vs. control: -1.7% to 12%
3 components: Low	Observational: 1 (Patient, 1495; Provider, 145)	Medium	Direct	Unknown	Imprecise	Undetected	None	Absolute difference of differences (before to after): Reduction of 21.5% for intervention that combined clinical and provider education components
4 components: Low	Observational: 6 (Patient, ≥ 27,089; provider, ≥ 80,693, NR in some studies)	Medium	Indirect	Inconsistent	Precise	Undetected	None	Range of absolute difference of differences (before to after) for intervention vs. control: 0 to 24%
<b>Augmentation Interventions</b>								
Delayed + Educational: Insufficient	RCTs: 2 (Patients: 1066)	Medium	Indirect	Inconsistent	Precise	None	None	Inconsistent findings.
Clinician education+ Communication training: Low	RCT: 1 (Patient: 4264, Provider: 246)	Medium	Indirect	Unknown	Precise	None	None	
Electronic decision support + Communication Education: Moderate	RCT: 1 (12 rural communities, Patients: 407460, Providers: 334)	Medium	Direct	Unknown	Precise	None	None	
<b>Point of Care Tests Combined with Other Strategies</b>								
CRP + provider-focused communication vs. usual care and vs. communication alone: Low	RCT: 2 (Combo vs. usual = 2269 and vs. communication=2533)	Medium	Indirect	Consistent	Precise	Undetected	None	EPC-calculated pooled OR (95% CI) for combo vs. usual = 0.30 (0.26 to 0.36) and vs. communication alone = 0.67 (0.56 to 0.78)
CRP + provider-focused communication CRP: Moderate for URTI/LRTI, Low for LRTI alone	RCT: 1 for upper/lower (2224), 1 for lower alone (227)	Medium	Indirect	Unknown	Precise for URTI/ LRTI and imprecise for LRTI alone	Undetected	None	EPC-calculated OR (95% CI) for upper/lower RTI-internet-based training = 0.87 (0.72 to 1.04) and for lower alone/face-to-face training = 0.47 (0.25 to 0.86)
Rapid strep testing + clinical score vs. clinical score alone: Low	RCT: 2 (1130)	Medium	Indirect	Consistent	Imprecise	Undetected	None	Pooled rates: 36% vs. 47%; EPC-calculated pooled OR 0.70 (95% CI, 0.50 to 0.98)
Rapid strep testing + clinical score vs. delayed prescribing	RCT: 1 (328)	Medium	Indirect	Consistent	Imprecise	Undetected	None	35% vs. 46%; RR 0.73 (95% CI, 0.52 to 0.98)

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Rapid strep testing + decision rule vs. Rapid strep testing alone or usual care: Low	RCT: 1 (533)	Medium	Indirect	Unknown	Imprecise	Undetected	None	38% vs. 27% (RR 1.43; 95% CI, 0.98 to 2.11) vs. 58% (RR 0.66; 95% CI, 0.49 to 0.86)
Happy Audit, Provider/patient education + CRP vs. usual: Low	Observational: 4 (10312)	Medium	Indirect	Consistent	Imprecise for rhinosinusitis, ears, tonsils, sinuses, and pneumonia, precise for others	Undetected	None	OR (95% CI) range: 0.08 (0.00 to 0.71) for pneumonia to 2.17 (1.06 to 4.49) for ears
Happy Audit, Full intervention (provider/patient education + CRP) vs. partial intervention (all but CRP): Low	Observational: 3 (6176)	Medium	Indirect	Consistent	Imprecise for rhinosinusitis and pneumonia, precise for others	Undetected	None	OR (95% CI) range: 0.27 (0.15 to 0.49) for rhinosinusitis to 0.68 (0.42 to 1.08) for acute exacerbations of chronic bronchitis/COPD
<b>2. For patients with an acute RTI and no clear indication for antibiotic treatment, what is the comparative effect of particular strategies on antibiotic resistance compared with other strategies or standard care?</b>								
<b>Educational Interventions</b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated antibiotic resistance
<b>Communication Interventions</b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated antibiotic resistance

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b>Clinical</b>								
<i>Delayed Prescribing</i>								
<i>Watchful Waiting vs. Immediate Antibiotics</i>								
Percent of patients at day 12 with S. pneumoniae resistant to antibiotics: Low	RCT: 1 (223)	Medium	Direct	Unknown	Precise	Undetected	None	At day 12, S. pneumoniae multi-drug resistance was significantly greater in the immediate prescribing group: 4-6: 56% vs. 28%; p<0.02, and resistance to penicillin was lower; p<0.04)
<i>C-Reactive Protein Point of Care Testing</i>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated antibiotic resistance
<i>Procalcitonin Point of Care Testing</i>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated antibiotic resistance
<i>Tympanometry Point of Care Testing</i>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated antibiotic resistance
<i>Rapid Viral Point of Care Testing</i>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated antibiotic resistance. One trial reported percent of resistance isolates identified on throat swab, but the study did not evaluate this as an outcome in relation to the intervention
<b>System Level Interventions</b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated antibiotic resistance
<b>Multifaceted Interventions</b>								
<i>Augmentation Interventions</i>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated antibiotic resistance
<i>Point of Care Tests Combined with Other Strategies</i>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated antibiotic resistance

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b>3. For patients with an acute RTI and no clear indication for antibiotic treatment, what is the comparative effect of particular strategies on medical complications (including mortality, hospitalization and adverse effects of receiving or not receiving antibiotics) compared with other strategies or standard care?</b>								
<b>Educational Interventions</b>								
Medical complications: Low	RCT: 1 (2,711,848)	Medium	Direct	Consistent	Precise	Undetected	None	No difference in complications between groups
Medical complications: Low	Observational: 1 (819)	Medium	Direct	Consistent	Precise	Undetected	None	No difference in complications between groups
<b>Communication Interventions</b>								
Admission to hospital: Insufficient	RCT: 1 (2722; 18 events)	Medium	Direct	Unknown	Imprecise	Undetected	None	Hospitalization in communication group was slightly higher compared with usual care (0.5% vs. 0.2%), and lower compared with CRP testing (0.5% vs. 1.0%). Small number of events.
<b>Clinical Interventions</b>								
<b>Delayed Prescribing Strategies</b>								
<b>Immediate vs. No Prescription</b>								
Complications: Moderate	Observational: 1 (12829)	Medium	Direct	Unknown	Precise	Undetected	None	RR's ranged from 0.62 (95% CI, 0.43 to 0.91) to RR 0.66 (95% CI, 0.43 to 1.03), depending on multivariate model
<b>Delayed vs. No Prescription</b>								
Complications: Low	Observational: 1 (12829)	Medium	Indirect	Unknown	Precise	Undetected	None	RR's ranged from 0.58 (95% CI, 0.34 to 0.98) to RR 0.61 (95% CI, 0.34 to 1.10), depending on multivariate model
Diarrhea: (RTI: AOM) Low	RCT: 1 (206)	Medium	Direct	Unknown	Imprecise	Undetected	None	No events; OR 0.0 (0.0 to 0.0)
Diarrhea: (RTI: Sore throat) Low	RCT: 1 (365)	Medium	Direct	Unknown	Imprecise	Undetected	None	OR 1.57 (95% CI, 0.80 to 3.07)
Rash: (RTI: Sore throat) Low	RCT: 1 (365)	Medium	Direct	Unknown	Imprecise	Undetected	None	OR 0.51 (95% CI, 0.24 to 1.10)

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b><i>Delayed vs. Immediate Prescription</i></b>								
Diarrhea: (RTI: AOM) Low	RCT: 2 (550)	Medium	Direct	Consistent	Imprecise	Undetected	None	Pooled OR (fixed): 0.35 (95% CI, 0.21 to 0.59); Cochrane Q = 0.968058 (df = 1) p=0.3252
Diarrhea: (RTI: Cold) Low	RCT: 1 (129)	Medium	Direct	Unknown	Imprecise	Undetected	None	OR 0.82 (95% CI, 0.33 to 2.02)
Diarrhea: (RTI: Sore throat) Low	RCT: 1 (394)	Medium	Direct	Unknown	Imprecise	Undetected	None	OR 1.23 (95% CI, 0.67 to 2.28)
Hospitalization: Insufficient	RCT: 1 (402)	Medium	Direct	Unknown	Imprecise	Undetected	None	1 patient in no antibiotic group developed pneumonia and was admitted to the hospital (0.7%)
Rash: (RTI: AOM) Low	RCT: 1 (285)	Medium	Direct	Unknown	Imprecise	Undetected	None	OR 1.21 (95% CI, 0.41 to 3.58)
Rash: (RTI: Sore throat) Low	RCT: 1 (395)	Medium	Direct	Unknown	Imprecise	Undetected	None	OR 0.93 (95% CI, 0.41 to 2.11)
<b><i>Giving prescriptions with instructions vs. leaving prescriptions for collection vs. post-dating prescriptions vs. requesting recontact</i></b>								
Complications, diarrhea, rash, abdominal pain and vomiting: All Low	RCT: 1 (433)	Medium	Direct	Unknown	Imprecise	Undetected	None	Ranges: NSD for complications = 0% in patient-led to 3.7% in recontact; diarrhea = 7% for recontact to 21% for patient-led; rash = 2% for collection to 9% for patient-led; patient-led had higher rates of abdominal pain than recontact (31% vs. 10%) and higher rates of vomiting than collection (18% vs. 4%)
<b><i>C-Reactive Protein Point of Care Testing</i></b>								
Admission to hospital: Insufficient	RCT: 2 (4395; 36 events)	Medium	Direct	Unknown	Imprecise	Undetected	None	In two trials, the risk of hospitalization was nonsignificantly increased in CRP testing groups. Small number of events and all estimates imprecise.

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b><i>Procalcitonin Point of Care Testing</i></b>								
Mortality: Adults Low	RCT: 5 SR: 2 (2820)	Medium	Direct	Consistent	Imprecise	Undetected	None	No difference in mortality (OR 0.32; 95% CI, 0.01 to 7.98)
Composite safety and efficacy: Adults: Treatment Failure at 30 days Low	RCT: 5 SR: 2 (2820)	High to Medium	Direct	Consistent	Imprecise	Undetected	None	No difference (OR 0.94; 95% CI, 0.72 to 1.22)
Children: Safety Low	RCT: 1 (337)	Low	Direct	Unknown	Imprecise	Undetected	None	No difference (OR 1.21; 95% CI, 0.52 to 2.85)
Antibiotic adverse events: Children Low	RCT: 1 (337)	Low	Direct	Unknown	Imprecise	Undetected	None	Higher rate of adverse events in procalcitonin group (26% vs. 10%; 16% absolute difference; OR 3.03; 95% CI, 1.11 to 9.22)
Hospitalization: Children Low	RCT: 1 (337)	Low	Direct	Unknown	Imprecise	Undetected	None	The rate of hospitalization was not statistically significantly different between the groups (62% vs. 53%; OR 1.41; 95% CI, 0.68 to 2.93)
<b><i>Tympanometry Point of Care Testing</i></b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated this outcome
<b><i>Rapid Viral Point of Care Testing</i></b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated this outcome
<b>System Level Interventions</b>								
Electronic Decision Support Systems Medical complications: Low	RCT: 1 (NR)	Medium	Direct	Unknown	Precise	None	Low adoption of intervention tools across studies	Within 30 days there was no difference in the proportion of patients diagnosed with pneumonia at revisit.

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Electronic Decision Support Systems Hospitalizations: Low	RCT: 1 (NR)	Medium	Direct	Unknown	Precise	None	Low adoption of intervention tools across studies	No difference in rate of hospitalization within 30 days.
<b>Multifaceted Interventions</b>								
<b>Augmentation Interventions</b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated this outcome
<b>Point of Care Tests Combined with Other Strategies</b>								
Hospitalization for CRP + communication vs. usual care, CRP alone, or communication alone: Low	RCT: 1 (4264 vs. usual, 2451 vs. CRP, 2533 vs. communication)	Medium	Direct	Unknown	Imprecise	Undetected	None	EPC-calculated, unadjusted OR (95% CI) for combination vs. usual = 4.65 (1.21 to 17.87), vs. CRP = 1.07 (0.49 to 2.33), vs. communication = 2.17 (0.85 to 5.50)
<b>4. For patients with an acute RTI and not clear indication for antibiotic treatment, what is the comparative effect of particular strategies on other clinical outcomes (e.g., health care utilization, patient satisfaction) compared with other strategies or standard care?</b>								
<b>Educational Interventions</b>								
Return clinic/ED visits (within 2 weeks): Low	RCT: 2 (2112 patients)	Medium	Direct	Consistent	Imprecise	Undetected	None	No difference in return visits between groups
Overall clinic/ED visits (11-17 month followup): Moderate	RCT: 1 (877)	Medium	Direct	Consistent	Precise	Undetected	None	No difference in new clinic or ED visits between groups
Overall clinic/ED visits (11-17 month followup): Moderate	Observational: 1 (2,711,848)	Medium	Direct	Consistent	Precise	Undetected	None	No difference in new clinic or ED visits between groups
Satisfaction: Low	RCT: 2 (2112)	Medium	Direct	Consistent	Imprecise	Undetected	None	No difference in patient or parent satisfaction between groups

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b>Communication Interventions</b>								
Quality of life: Insufficient	RCT: 1 (149/359)	Medium	Direct	Unknown	Imprecise	Undetected	None	Intervention associated with nonsignificant higher physical QOL score (scale 1-100), mean difference of 0.4 (95% CI, -2.6 to 3.3); and nonsignificant lower mental QOL score (scale 1-100), with mean difference of -1.9 (95% CI, -4.9 to 1.1).
<b>Communication vs. Usual Care</b>								
Return clinic visits/reconsultation: Insufficient	RCT: 3 (561/2830)	Medium	Direct	Inconsistent	Imprecise	Undetected	None	Two trials found increased risk of reconsultation in the communication groups: RRs (95% CI) of 1.3 (0.7 to 2.3) and 1.33 (0.99 to 1.74). Another trial (patient n = 431) found decreased risk of 0.75 (0.57 to 1.00) within 28 days, and a lower mean number of visits for RTI per patient per year during a mean follow-up of 3.67 years (0.36 vs. 0.57; p=0.09).
Improvement in patient symptoms and/or speed or improvement: Low	RCT: 3 (475/3482)	Medium	Direct	Inconsistent	Imprecise	Undetected	None	Studies used different outcome measures, with diverse findings. Various interventions associated with: improvement in how patients felt (mean difference = 9%; p=0.08); worsened symptom score (mean difference = 0.06; p=0.357); prolonged resolution of symptoms (HR 0.79; p=0.004); and no difference in mean days off of work (3.37 vs. 3.37).
Patient satisfaction: Insufficient	RCT: 1 (40/431)	Medium	Direct	Unknown	Imprecise	Undetected	None	No difference in proportion of patients at least "very satisfied". 79% vs. 74%; unadjusted RR (95% CI) of 1.06 (0.95 to 1.18).

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Use of other diagnostic tests: Insufficient	RCT: 1 (40/431)	Medium	Direct	Unknown	Imprecise	Undetected	None	Small number of events. No significant differences in use of various diagnostic testing: chest X-ray (5% vs. 7%); blood testing (1% vs. 0%); other (0% vs. 2%).
<b>Communication vs. CRP Testing</b>								
Return clinic visits/reconsultation: Low	RCT: 1 (unclear/2119)	Medium	Direct	Unknown	Precise	Undetected	None	No association: RR (95% CI) of 0.94 (0.80-1.10).
Improvement in patient symptoms and/or speed or improvement: Low	RCT: 2 (~412/2550)	Medium	Direct	Unknown	Imprecise	Undetected	None	Two studies used different outcome measures. Minimal difference in days off of work (3.37 vs. 3.35); Higher symptom severity score [1.81 (SD 1.02) vs. 1.70 (SD 1.00)]; or median days to resolution of symptoms (6 vs. 5).
Use of other diagnostic tests: Insufficient	RCT: 1 (40/431)	Medium	Direct	Unknown	Imprecise	Undetected	None	Small number of events. No significant differences in use of various diagnostic testing: chest x-ray (5% vs. 5%); blood testing (1% vs. 1%); other (0% vs. 2%).
<b>Communication vs. Educational</b>								
Return clinic visits/reconsultation: Insufficient	RCT: 1 (30/552)	Medium	Direct	Unknown	Imprecise	Undetected	None	No association: RR (95% CI) of 0.97 (0.78 to 1.21).
Improvement in patient symptoms and/or speed or improvement: Insufficient	RCT: 1 (30/552)	Medium	Direct	Unknown	Imprecise	Undetected	None	Nonsignificant reduction in days with restricted activity (-0.40; 95% CI, 1.07 to 0.27); and no difference in being off of work (OR 1.00).
Patient satisfaction: Insufficient	RCT: 1 (30/552)	Medium	Direct	Unknown	Imprecise	Undetected	None	No difference in proportion of patients with a maximum patient satisfaction score. Responses highly skewed. 48% vs. 49%; adjusted OR (95% CI) of 1.00 (0.64 to 1.31).

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b>Clinical Interventions</b>								
<b><i>Delayed Prescribing Strategies</i></b>								
Reconsultation ≤ 1 month in cough, children with sore throat or AOM: Moderate	RCT: 4 (990)	Medium	Direct	Consistent	Precise	Undetected	None	No statistically significant difference; rate difference range: -3% to +4%
Reconsultation ≤ 1 month in adults with sore throat: Low	Observational: 1 (11950)	Medium	Indirect: each vs. no prescription	Unknown	Precise	Undetected	None	Possibly lower risk of reconsultation for new or nonresolving symptoms as minimal overlap in 95% CI's for comparisons to no antibiotics in most conservative model: Delayed = 0.61 (0.50 to 0.74); Immediate = 0.83 (0.73 to 0.94)
Reconsultation ≤ 5-6 months: Low	RCT: 2 (304)	Medium	Direct	Consistent	Imprecise	Undetected	None	No statistically significant difference; rate difference range: -1% to +9%
Reconsultation ≤ 1 year: Low	RCT: 1 (402)	Medium	Direct	Unknown	Imprecise	Undetected	None	Delayed = 22% vs. Immediate = 41% vs. No antibiotics = 22%; p=0.0001 for delayed/no vs. immediate
Symptom improvement in Children with sore throat: Low	RCT: 1 (229)	Medium	Direct	Unknown	Imprecise	Undetected	None	Delayed prescribing associated with significantly higher proportion of patients (p<0.0001) patients with severe symptoms at day 3
Symptom improvement in adults with cough: Low	RCT: 1 (402)	Medium	Indirect	Unknown	Imprecise	Undetected	None	Mean difference in days (95% CI) for duration of moderately bad symptoms vs. no antibiotics: Delayed antibiotics = 0.14 (-0.87 to 1.14); immediate = -1.08 (-2.1 to -0.09)
Satisfaction across various conditions: Moderate	RCT: 5 (1334)	Medium	Direct	Consistent	Precise	Undetected	None	Percent of patients satisfied or very satisfied: OR 0.52 (95% CI, 0.35 to 0.76)
<b><i>No vs. Immediate Prescribing</i></b>								
Clinic visits: Low	RCT: 1 (266)	Medium	Direct	Unknown	Imprecise	Undetected	None	Incidence rate ratio for reattendances within 1 month for immediate vs. no: 0.55 (95% CI: 0.33 to 0.91)
Resolution of symptoms by 3 days in patients with sore throat: Low	RCT: 1 (477)	Medium	Direct	Unknown	Imprecise	Undetected	None	35% vs. 37%; p=0.43

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Duration of days of moderately bad symptoms in patients with cough: Low	RCT: 1 (266)	Medium	Direct	Unknown	Imprecise	Undetected	None	Mean difference in duration in days of moderately bad for immediate vs. no: -1.08 (95% CI, -2.1 to -0.09)
% patients with sore throat very or moderately satisfied: Low	RCT: 1 (477)	Medium	Direct	Unknown	Precise	Undetected	None	90% vs. 96%; p=0.033
% patients with cough very satisfied: Low	RCT: 1 (266)	Medium	Direct	Unknown	Precise	Undetected	None	72% vs. 86%; P=0.0012
ED visits and QOL: Insufficient	No evidence	NA	NA	NA	NA	NA	NA	NA
<b><i>Delayed vs. No Prescribing</i></b>								
Sore throat: Low	RCT: 1 (466)	Medium	Direct	Unknown	Precise for satisfaction, imprecise for others	Undetected	None	Resolution in symptoms by 3 days: 30% vs. 35%; p=0.22  Very or moderately satisfied: 93% vs. 90%; p=0.31  Number of days off work/school: 1 vs. 2  Days of analgesic use: 4 vs. 4
Cough: Low	RCT: 1 (269)	Medium	Direct	Unknown	Imprecise	Undetected	None	One-month mean reattendance: 0.12 vs. 0.19; p=0.08  Mean difference in duration in days of moderately bad symptoms: 0.14 (95% CI, -0.87 to 1.14)  Very satisfied: 77% vs. 72%; p=0.22
Acute otitis media: Low	RCT: 1 (232)	Medium	Direct	Unknown	Imprecise	Undetected	None	Very or extremely satisfied: 95% vs. 91%; p=0.22

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b><i>Different Delayed Prescribing Strategies</i></b>								
Giving prescriptions with instructions, leaving prescriptions for collection, post-dating prescriptions, or requesting recontact: Low	RCT: 1 (433)	Medium	Direct	Unknown	Imprecise	Undetected	None	Median days of symptoms rated as moderately bad (4 for all); percent of patients with reconsultations within 1 month: 14%, 14%, 10%, 18%: p=0.563) or after 1 month: 37%, 32%, 39%, 39%; p=0.391) % patients very satisfied: 89%, 89%, 80%, 74%; p=0.667
<b><i>Clinical Prediction Score vs. Delayed Prescribing</i></b>								
Duration in days of symptoms rated as moderately bad or worse	RCT: 1 (325)	Medium	Indirect	Unknown	Imprecise	Undetected	None	Delayed vs. score: 5 vs. 4; HR 1.30 (95% CI, 1.03 to 1.63)
Return within one month	RCT: 1 (325)	Medium	Indirect	Unknown	Imprecise	Undetected	None	Score vs. delayed: 8% vs. 8%; RR 0.91 (95% CI, 0.47 to 1.72)
Return after one month	RCT: 1 (325)	Medium	Indirect	Unknown	Imprecise	Undetected	None	Score vs. delayed: 12% vs. 15%; RR 0.79 (95% CI, 0.47 to 1.29)
<b><i>C-Reactive Point of Care Testing</i></b>								
<b><i>CRP vs. Usual Care</i></b>								
Return clinic visits/reconsultation: Low	RCT: 3 (445/4810)	Medium	Direct	Consistent	Imprecise	Undetected	None	Pooled analysis indicates increased risk of reconsultation within 4 weeks
Improvement in patient symptoms and/or speed of improvement: Low	RCT: 4 (480/5622)	Medium	Direct	Inconsistent	Precise	Undetected	None	Studies used different interventions and outcome measures, mostly finding no differences. No significant difference in patients feeling recovered on day 7 (23% vs. 25%, p=0.73; mean days off of work (3.35 vs. 3.37); symptom severity score (1.79 vs. 1.79); or median days to resolution of symptoms (5 vs. 5). One study found "increased or unchanged morbidity" in CRP group (12% vs. 8%; OR 1.6; 95% CI, 1.0 to 2.6).

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Patient satisfaction: Insufficient	RCT: 2 (73/689)	Medium	Direct	Inconsistent	Imprecise	Undetected	None	1) No difference in % at least "very satisfied": 76.8% vs. 76.0%; unadjusted RR (95% CI) of 1.0 (0.91 to 1.13). 2) Higher % of CRP group at least "very satisfied": 76.3% vs. 63.2%; unadjusted RR (95% CI) of 1.21 (1.02 to 1.43).
Use of other diagnostic tests: Insufficient	RCT: 1 (40/431)	Medium	Direct	Unknown	Imprecise	Undetected	None	Small number of events. No significant differences in use of various diagnostic testing: chest x-ray (5% vs. 7%); blood testing (1% vs. 0%); other (2% vs. 2%).
<b>CRP vs. Clinical Management Algorithm</b>								
Return clinic visits/reconsultation: Insufficient	RCT: 1 (NR/131)	Medium	Direct	Unknown	Imprecise	Undetected	None	Nonsignificant higher return visits in CRP group: 40% (95% CI, 28% to 52%) vs. 33% (95% CI, 21% to 45%), p=0.46.
<b>CRP vs. Communication Skills Training</b>								
Return clinic visits/reconsultation: Low	RCT: 1 (~ 372/2119)	Medium	Direct	Unknown	Precise	Undetected	None	Borderline significant lower reconsultation in CRP group compared with communication training group: RR (95% CI) of 0.86 (0.74 to 1.02).
Improvement in patient symptoms and/or speed of improvement: Low	RCT: 2 (~412/2550)	Medium	Direct	Unknown	Imprecise	Undetected	None	Two studies used different outcome measures. Minimal difference in days off of work (3.35 vs. 3.37); Lower symptom severity score [1.70 (SD 1.00) vs. 1.81 (SD 1.02)]; or median days to resolution of symptoms (5 vs. 6).
Use of other diagnostic tests: Insufficient	RCT: 1 (40/431)	Medium	Direct	Unknown	Imprecise	Undetected	None	Small number of events. No significant differences in use of various diagnostic testing: chest x-ray (5% vs. 5%); blood testing (1% vs. 1%); other (2% vs. 0%).

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b><i>Procalcitonin Point of Care Testing</i></b>								
Quality of life or illness burden: Adults Insufficient	RCT: 1 (458)	Low	Indirect	Unknown	Imprecise	Undetected	None	No difference between groups.
Days with limited activity: Adults Low	RCT: 2 (1008)	Medium	Direct	Consistent	Imprecise	Undetected	None	9 days in both groups; p=0.854
Days of work missed: Adults Low	RCT: 1 (458)	Low	Direct	Unknown	Imprecise	Undetected	None	No difference in days missed from work; 4.9 and 4.8
Symptoms at 28 days: Adults Low	RCT: 1 (458)	Low	Direct	Unknown	Imprecise	Undetected	None	No difference in % with symptoms at 28 days; 43% in both groups
<b><i>Tympanometry Point of Care Testing</i></b>								
Tympanometry Curves: Children Insufficient	RCT: 1 (398)	Medium	Indirect	Unknown	Imprecise	Undetected	None	No difference in curves (normal bilaterally, some movement bilaterally, and flat curve on either side) between groups prescribed an antibiotic or not; p=0.84, 0.14 and 0.10
<b><i>Rapid Viral Point of Care Testing</i></b>								
Rapid Viral Testing vs. No or Delayed Rapid Viral Testing	RCT: 5 (NR)	Low	Yes	Yes	Precise	Not detected	NA	Two studies evaluated use of CXR and found significant decreases in CXR use associated with rapid viral testing. Three studies evaluated urine culture and blood test ordering and found no significant difference. One study identified no difference in lab test ordering overall. One study evaluated the frequency of repeat visits to ED and found no difference.

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Rapid Strep Testing vs. No or Delayed Rapid Strep Testing	RCT: 4 (NR)	Medium	Yes	NA	NA	NA	NA	One study reported a variety of such measures. This study compared delayed prescribing versus clinical score versus clinical score + rapid test. No difference in the proportion of patients returning with sore throat after the intervention, and no meaningful difference in severity of ST in the 2 to 4 days after the intervention.
<b>System Level Interventions</b>								
Return clinic/ED visits: Moderate	RCT: 3 (NR)	Medium	Direct	Consistent	Precise	None	Low adoption of intervention tools across studies	No differences between groups in return clinic visits or ED visits.
<b>Multifaceted Interventions</b>								
<b>Multicomponent</b>								
Patient and clinician interventions combined: Satisfaction Low	RCT: 1 (Patient 3843, Provider 89)	Medium	Direct	Unknown	Imprecise	None	None	Patient satisfaction ( % change, SD): 0 vs. 0: No difference Total satisfaction scores 63% vs. 69%; p=0.15
Patient and clinician interventions combined: Satisfaction Low	Observational: 1 (Patient 4489, Provider 93)	Low	Direct	Unknown	Precise	None	None	No difference; 63% vs. 69%, p=0.15 and adjusted RR 1.1 (95% CI, 0.81 to 1.3).
Overall: Low								
Multifaceted Patient interventions: Insufficient	RCT: 2 (266)	Medium	Direct	Inconsistent	Imprecise	None	None	One study found the satisfaction score higher when no antibiotic was prescribed but the other found no difference in scores.
Reconsultation clinic visits: Insufficient	RCT: 3 (Patient 821, Provider 40)	Medium	Direct	Inconsistent	Imprecise	None	None	Two studies find conflicting results for reconsultation for current episode; 0.17 vs. 0.11 (p=0.02) and 10.6% vs. 13.3% (NS) Rate of consultation for subsequent episode, adjusted IRR 1.27 (95% CI, 0.86 to 1.87), p=0.229

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
Reconsultation clinic visits: Low	Observational: 1 (Patient 4489, provider 93)	Low	Direct	Unknown	Precise	None	None	Patients Returning for Care within 30 Days: Acute bronchitis: -0.7 vs. -0.2, p=0.08 Pneumonia: -0.2 vs. 1.0, p=0.08
Overall: Insufficient								
<b><i>Point of Care Tests Combined with Other Strategies</i></b>								
Internet-based provider communication training + CRP for RTI: Resolution of moderately bad symptoms: Low	RCT: 1 (6771)	Medium	Direct vs. control; Indirect vs. other groups	Unknown	Precise	Undetected	None	Adjusted HR's Control vs. intervention ranged from 0.77 (95% CI, 0.65 to 0.91) for both to 0.87 (95% CI, 0.74 to 1.03) for CRP alone
Small-group face-to-face provider communication training + CRP for lower RTI: Reconsultation, days off work, diagnostic testing use: Low	RCT: 1 (431)	Medium	Direct	Unknown	Imprecise	Undetected	None	Days off work: Range, 3.35 for CRP alone to 3.39 for combined  Average reconsultations: Range, 0.18 for communication alone to 0.40 for CRP alone  Chest x-ray: 0.05 to 0.05, Blood: 0.01 to 0.05, Other (spirometry, sputum): 0.00 to 0.02
Duration in days of moderately bad or worse symptoms: RADT + clinical score vs. clinical score alone or delayed prescribing: Low	RCT: 1 (489)	Moderate	Direct	Unknown	Imprecise	Undetected	None	4 vs. 4 vs. 5; NSD
Return within 1 months: RADT + clinical score vs. clinical score alone or delayed prescribing: Low	RCT: 1 (489)	Moderate	Direct	Unknown	Imprecise	Undetected	None	6% vs. 8% vs. 8%, NSD
Return within 1 months: RADT + clinical score vs. clinical score alone or delayed prescribing: Low	RCT: 1 (489)	Moderate	Direct	Unknown	Imprecise	Undetected	None	16% vs. 12% vs. 15%, NSD

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b>5. For patients with an acute RTI and no clear indication for antibiotic treatment, what is the comparative effect of particular strategies on achieving intended intermediate outcomes, such as improved knowledge regarding the use of antibiotics for acute RTIs (clinicians and/or patients), improved shared decisionmaking regarding the use of antibiotics, and improved clinician skills for appropriate antibiotic use (e.g., communication appropriate for patients' literacy level and/or cultural background)?</b>								
	NA	NA	NA	NA	NA	NA	NA	Strength of evidence was not evaluated for these outcomes, as per our protocol
<b>6. What are the comparative nonclinical adverse effects of strategies for improving the appropriate use of antibiotics for acute RTIs (e.g., increased time burden in clinicians, patients, clinic staff)?</b>								
<b>Educational Interventions</b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated nonclinical adverse effects of the strategy
<b>Communication Interventions</b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated nonclinical adverse effects of the strategy
<b>Clinical Interventions</b>								
<b>Delayed Prescribing Strategies</b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated nonclinical adverse effects of the strategy
<b>C-Reactive Protein Point of Care Testing</b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated nonclinical adverse effects of the strategy

## Appendix J. Strength of Evidence

Key Question Outcome Strength of Evidence Grade	Study Design: Number of Studies (N)	Study Limitations	Directness	Consistency	Precision	Reporting Bias	Other Issues	Finding
<b><i>Procalcitonin Point of Care Testing</i></b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated nonclinical adverse effects of the strategy
<b><i>Tympanometry Point of Care Testing</i></b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated nonclinical adverse effects of the strategy
<b><i>Rapid Viral Point of Care Testing</i></b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated nonclinical adverse effects of the strategy
<b>System Level Interventions</b>								
	NA	NA	NA	NA	NA	NA	NA	No studies evaluated nonclinical adverse effects of the strategy
<b>Multifaceted Interventions</b>	NA	NA	NA	NA	NA	NA	NA	No studies evaluated nonclinical adverse effects of the strategy
<b><i>Point of Care Tests Combined with Other Strategies</i></b>								
CRP testing + communication training for clinicians: Low	1 (NR)	Medium	Direct	Unknown	Imprecise	Undetected	NA	Up to 13 minutes more time requires for combined training

## Appendix K. Abbreviations Used in Evidence Tables

<b>Abbreviaton</b>	<b>Definition</b>
AAFP	American Academy of Family Physicians
ACP	American College of Physicians
AD	academic detailing
AOM	acute otitis media
ARA	antibiotic resistance awareness
ARI	acute respiratory infection
CDC	Centers for Disease Control
CDS	computer-assisted decision-support
CDSS	clinical decision support system
DHMC	Denver Health Medical Center
CHF	congestive heart failure
CI	confidence interval
CME	Continuing Medical Education
COPD	chronic obstructive pulmonary disease
CPGs	clinical practice guidelines
CPR	clinical prediction rules
CRP	C-reactive protein
CVD	cardiovascular disease
DCS	decisional conflict scale
ED	emergency department
EHR	electronic health record
FCHVs	female community health volunteers
FMG	Family Medicine Group
FP	family physician
GERD	gastro-esophageal reflux disease
GP	general practitioner
HMO	Health Management Organization
HR	hazard ratio
ICC	intra-cluster correlation coefficient
ICD-9	international classification of diseases codes
ICE	information and content exchange module
IDSA	Infectious Diseases Society of America
IMS	Information Management System
IMSS	Mexican Institute of Social Security
INF	Influenza
IQR	inter quartile range
IRR	incidence rate ratio
ITT	intention-to-treat
IVDA	intravenous drug abuse
LR	likelihood-ratio test
LRTI	lower respiratory tract infection
MCO	Managed Care Organization
MD	Medical Doctor
MV	Matrix variate logistic (MV-logistic) regression model

## Appendix K. Abbreviations Used in Evidence Tables

<b>Abbreviaton</b>	<b>Definition</b>
N	number randomized or enrolled
NA	not applicable
NR	not reported
NS	not significant
OM	otitis media
OME	otitis media with effusion
OR	odds ratio
OTC	over the counter drug
p	p-value
PDS	printed decision support
PCN	Penicillin
PCP	Primary Care Physician
PcV	Penicillin V
PDA	personal digital assistant
PM	personal mailing
POC	point-of-care
QoL	quality of life
RADT	Rapid Antigen Detection Test
RCT	randomized controlled trial
RI	respiratory infection
RN	Registered Nurse
PA	Physicians Assistant
NP	Nurse Practitioner
RR	relative risk
RTI	respiratory tract infection
RX	Prescription
SNAP	safety-net antibiotic prescription
SD	standard deviation
SDM	shared decisionmaking
SES	socioeconomic status
STG	standard treatment guidelines
THC	Thana Health Complexes
TMP-SMX	Trimethoprim (TMP) Sulfamethoxazole (SMX), treatment
UK	United Kingdom
URTI	upper respiratory tract infection
VA	Veterans Affairs
vs.	versus
WBC	white blood cell
WHO	World Health Organization
WIC	walk-in clinic

## Appendix References

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