



# Effective Health Care Uncomplicated Urinary Tract Infections in Non-Pregnant Women Nomination Summary Document

## Results of Topic Selection Process & Next Steps

- *Uncomplicated Urinary Tract Infections in Non-Pregnant Women* was found to be addressed by a number of existing systematic reviews and meta-analyses. Given that these existing systematic reviews and meta-analyses cover this nomination, no further activity will be undertaken on this topic.
  - Grigoryan L, Trautner BW, Gupta K. Diagnosis and management of urinary tract infections in the outpatient setting: a review. *JAMA*. 2014;312(16):1677-1684.
  - Knottnerus BJ, Grigoryan L, Geerlings SE, et al. Comparative effectiveness of antibiotics for uncomplicated urinary tract infections: network meta-analysis of randomized trials. *Fam Pract*. 2012;29(6):659-670.
  - Matthews SJ, Lancaster JW. Urinary tract infections in the elderly population. *Am J Geriatr Pharmacother*. 2011;9(5):286-309.
  - Falagas ME, Vouloumanou EK, Trogias AG, et al. Fosfomycin versus other antibiotics for the treatment of cystitis: a meta-analysis of randomized controlled trials. *J Antimicrob Chemother*. 2010;65(9):1862-1877.
  - Beerepoot MA, Geerlings SE, van Haarst EP, et al. Nonantibiotic prophylaxis for recurrent urinary tract infections: A systematic review and meta-analysis of randomized controlled trials. *J Urol* Dec 2013; 190(6):1981-1989.
  - Jepson RG, Williams G, Craig JC. Cranberries for preventing urinary tract infections. *Cochrane Database Syst Rev* 2012; 10:Cd001321.
  - Wang CH, Fang CC, Chen NC, et al. Cranberry-containing products for prevention of urinary tract infections in susceptible populations: A systematic review and meta-analysis of randomized controlled trials. *Arch Intern Med* Jul 9 2012; 172(13):988-996.

## Topic Description

**Nominator(s):** Health care professional association  
**Nomination Summary:** The nominator has requested an AHRQ systematic review on this topic to support the development of clinical guidelines on the management of uncomplicated urinary tract infections (UTI) in non-pregnant women. The nominator's current guideline is a 2012 reaffirmation and update of its 2008 guideline. The nomination included nine key questions (KQ), which are listed below. The SRC determined that KQs 6 and 7 from the nomination would be evaluated under another nomination work-up, topic 0626- Recurrent UTI in Women. Following a discussion with the nominator regarding the broad scope of the nomination, it was determined that the scope would be focused on KQs 1, 2, 3, 4, and 8. The nominator stated that KQs 5 and 9 were not a priority for

review and agreed that the SRC could remove these questions from the work-up of this topic. It was also determined that the brief should focus on antibiotics as a treatment strategy.

### **Staff-Generated PICOs**

#### **KQs 1 and 2**

**Population(s):** Non-pregnant women with suspected uncomplicated UTI

**Intervention(s):** Urinalysis or urine culture followed by treatment

**Comparator(s):** Empiric treatment (antibiotics) without prior urinalysis or urine culture

**Outcome(s):** Reduction of symptoms, elimination of infection, UTI complications, antibiotics complications, health-related quality of life (HRQoL), functional status, relapse/recurrence of UTI

#### **KQs 3 and 4**

**Population(s):** Non-pregnant women with uncomplicated acute bacterial cystitis

**Intervention(s):** Single or multi-dose of various antibiotics

**Comparator(s):** Those listed (i.e., compared to each other)

**Outcome(s):** Reduction of symptoms, elimination of infection, UTI complications, antibiotics complications, health-related quality of life (HRQoL), functional status, relapse/recurrence of UTI

#### **KQ 8**

**Population(s):** Non-pregnant, post-operative women with UTI and an in-dwelling bladder catheter

**Intervention(s):** Single or multi-dose of various antibiotics (oral or IV)

**Comparator(s):** Those listed (i.e., compared to each other)

**Outcome(s):** Reduction of symptoms, elimination of infection, UTI complications, antibiotics complications, health-related quality of life (HRQoL), functional status, relapse/recurrence of UTI

#### **Key Questions from Nominator:**

1. In non-pregnant women with symptoms of a UTI, is empiric treatment of urinary tract infection without performing urinalysis more effective than performing a urinalysis before treatment?
2. In non-pregnant women with a UTI, does the use of urine culture improve treatment outcomes compared with no urine culture?
3. In non-pregnant women with uncomplicated acute bacterial cystitis, what is the most effective antimicrobial treatment regimen?
4. In non-pregnant women with uncomplicated acute bacterial cystitis, is single-dose therapy as effective as therapy of longer duration?
5. In non-pregnant women with a UTI, what is the most effective treatment for uncomplicated acute pyelonephritis compared with other treatments?
6. In non-pregnant women with recurrent cystitis, is cranberry an effective intervention to prevent recurrence compared with other treatments?
7. In non-pregnant women with cystitis, is estrogen an effective preventive intervention compared with other treatments?

8. In non-pregnant postoperative women with an in-dwelling bladder catheter, are antibiotics an effective treatment for UTI compared with other treatments?
9. In non-pregnant women, is screening and treatment for asymptomatic bacteriuria effective at lowering the rate of complicated UTIs?

## Considerations

- The topic meets EHC Program selection criteria. (For more information, see <http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/>.)
- Data suggests that nearly half of all women in the US will experience a urinary tract infection (UTI) in their lifetimes. This represents a significant clinical and financial burden on the US health care system. The symptoms of a UTI may negatively affect a women's quality of life and, if left untreated, can lead to potentially life-threatening complications, such as septicemia. Despite the frequency of UTIs, there is uncertainty about what strategies are best for the treatment of these women. Providers may be uncertain of whether urinalysis or urine culture is necessary to diagnose a UTI prior to prescribing treatment. In addition, providers may be uncertain about which antibiotics are most suitable to treat UTIs in women. This uncertainty may lead to inappropriate treatment including overtreatment. Overtreatment with broad-spectrum antibiotics can also lead to antimicrobial resistance that may require changes to traditional treatment regimens. Updated clinical recommendations on the topic, based on the most recent evidence, will assist providers in making treatment decisions.
- In regards to uncomplicated UTI in non-pregnant women, the following comprehensive systematic review addressed KQs 1, 2, 3, and 4.
  - A 2014 systematic review from Grigoryan et al. found that acute uncomplicated cystitis can be diagnosed without an office visit (i.e., patients can be diagnosed via telephone without urinalysis or other diagnostic tests) or urine culture. Antimicrobial therapy with trimethoprim-sulfamethoxazole (160/800 mg twice daily for three days), nitrofurantoin (100 mg twice daily for 5-7 days), or fosfomycin trometamol (3 g in a single dose) is indicated for acute cystitis in adult women. Fluoroquinolones should generally be reserved for invasive infections. However, individualized assessment is needed to determine risk factors for resistance.
- The following older meta-analyses and systematic review were found relevant to KQs 3 and 4:
  - A 2012 meta-analysis on antibiotics for the treatment of UTI from Knottnerus et al. found that ciprofloxacin and gatifloxacin appeared to be the most effective treatments for uncomplicated UTI in women, while amoxicillin-clavulanate appeared the least effective (literature search from 2000-2010).
  - A 2011 systematic review from Matthews et al. on UTIs in older adults found that shorter courses of antibiotics (3-6 days) were favored in treating uncomplicated cystitis in older adult women. Local resistance patterns should be considered when prescribing treatment. For older women living in long-term care communities, nitrofurantoin (100 mg, twice a day for 5 days) or trimethoprim/sulfamethoxazole (160/800 mg, twice a day for 3 days) can be used as initial empiric therapy (literature search through April 2011).
  - A 2010 meta-analysis from Falagas et al. found that fosfomycin may be a good alternative to other antibiotics such as quinolones or trimethoprim-sulfamethoxazole for treatment of cystitis in non-pregnant women (literature search through January 2010).
- In regards to recurrent UTI (KQs 6 and 7), the following relevant systematic reviews were identified:

- A 2013 systematic review titled *Nonantibiotic prophylaxis for recurrent urinary tract infections: A systematic review and meta-analysis of randomized controlled trials assessed the effectiveness, tolerability and safety of non-antibiotic prophylaxis in adults with recurrent UTI*. The review included RCTs published by April 2013. The review looked at the prophylactic use of oral immunostimulant OM-89, vaginal vaccine Urovac® (not FDA approved), vaginal estrogens, cranberries, acupuncture, oral estrogens and lactobacilli for recurrent UTI. The meta-analysis found that cranberries decreased UTI recurrence (2 trials, sample size 250, Jadad score 4, RR 0.53, 95% CI 0.33-0.83). It also reported that vaginal estrogens showed a trend toward preventing UTI recurrence (2 trials, sample size 201, Jadad score 2.5, RR 0.42, 95% CI 0.16-1.10) but oral estrogens did not decrease the rate of UTI recurrence. The authors cautioned that while pooled findings for some interventions were sometimes statistically significant, pooled findings for other interventions should be considered tentative until corroborated by more research.
- A 2012 Cochrane review titled *Cranberries for preventing urinary tract infections* addressed the use of cranberries for the prevention of UTI, including recurrent UTI. Compared to placebo, water or no treatment, cranberry products were not effective in reducing the number of symptomatic UTIs. The review included a meta-analysis of RCTs and quasi-RCTs published through July 2012.
- A 2012 systematic review titled *Cranberry-containing products for prevention of urinary tract infections in susceptible populations: A systematic review and meta-analysis of randomized controlled trials*, addressed use of cranberry-containing products for prevention of UTI using meta-analysis. The review included RCTs published up to November 2011. Although no restrictions were made on the population in the inclusion criteria for this review, a subgroup analysis showed that cranberry-containing products were effective in women with recurrent UTIs compared to placebo or non-placebo controls.