

STANDARD OPERATING PROCEDURE- POLICY

RECURRENT URINARY TRACT INFECTIONS

SCOPE/APPLICABILITY:

Urinary tract infections (UTIs) are common in women. A UTI has been defined as 10^5 colony forming units/mL (CFU/mL) on culture; however, since 30 to 50% of women with a bladder infection have colony counts between 10^2 to 10^4 , some recommend 10^2 as the cut off for the diagnosis of a UTI¹. Laboratory reports often do not report less than 10^4 CFU/mL, so for the purposes of this document we will define a UTI as at least 10^4 CFU/mL with symptoms consistent with UTI. UTI symptoms include suprapubic tenderness, CVA pain or tenderness, urinary frequency, urinary urgency, or dysuria². Approximately 60% of women have a UTI during their lifetime and 25% of this group will have recurrent UTIs³. Recurrent UTIs have been defined as two infections in 6 months or three in 12 months. Women with recurrent UTIs require special considerations. Therefore, the purpose of this policy is to standardize those aspects of recurrent UTI management that can reasonably be performed on all non-pregnant women presenting with this diagnosis. This policy applies to non-pregnant women who present with recurrent urinary tract infections.

PURPOSE:

The purpose of this policy is to describe routine management for the majority of women presenting with recurrent UTIs including lab work, diagnostic work up, and treatment.

EVIDENCE:

Recurrent UTIs are defined as three UTI episodes in the last 12 months or two episodes in the last 6 months. It has been estimated that 8-11% of women will have a UTI in a given year with 5 to 30% of those women having a recurrent infection within 12 months^{4,5}. Risk factors for recurrent UTIs in premenopausal women include sexual intercourse, use of spermicides, first UTI less than 15 years of age, and history of UTIs in their mother^{4,6}. Risk factors in postmenopausal women include vaginal prolapse, urinary incontinence, changes in vaginal flora, and incomplete voiding^{4,5}. Recurrent UTIs cause significant discomfort and result in high health care costs secondary to numerous outpatient visits, diagnostic tests, and prescriptions^{4,5}. The following procedures should be considered in the work up and treatment of women with recurrent UTIs.

PROCEDURE:

1. Workup⁶:
 - a. Physical examination.
 - b. Measurement of post-void residual urine volume.
 - c. Diabetic screening as indicated.
2. Urinalysis and midstream urine culture and sensitivity should be performed with the first presentation of symptoms in order to establish a correct diagnosis of recurrent UTIs⁶. (III)
 - a. Only check urine cultures on follow-up patients if they are symptomatic for a UTI.

This information is a guideline and should not be considered as inclusive of all proper treatments or methods of care or as a statement of the standard of care.

3. Patients with persistent hematuria or multiple symptomatic bacterial urinary tract infections aside from *Escherichia coli* should undergo cystoscopy and imaging of the upper urinary tract⁶. (III)
4. Sexually active women suffering from recurrent urinary tract infections and using spermicide should be encouraged to consider an alternative form of contraception⁶. (II-2B)
5. Prophylaxis for recurrent UTIs should not be undertaken until a negative culture 1 to 2 weeks after treatment has confirmed eradication of the UTI⁶. (III)
6. Continuous daily antibiotic prophylaxis using cotrimoxazole, nitrofurantoin, cephalexin, trimethoprim, trimethoprim-sulfamethoxazole, or a quinolone during a 6 to 12 month period should be offered to women with recurrent UTIs⁶. (IA)
 - a. The duration of the intervention is not clear, maximal duration included in the Cochrane review was one year⁴
 - b. The decision of best antibiotic choice should be based on current community patterns of resistance, adverse effects, and cost⁴.
 - c. Fosfomycin 3g PO q 10 days is another prophylactic alternative⁸.
7. Women with recurrent UTIs associated with sexual intercourse should be offered post-coital prophylaxis as an alternative to continuous therapy in order to minimize cost and side effects⁶. (IA)
8. Acute self-treatment should be restricted to compliant and motivated patients in whom recurrent UTIs have been clearly documented⁶. (IB)
9. Vaginal estrogen should be offered to postmenopausal women who experience recurrent UTIs⁶. (IA)
10. Cranberry use is controversial:
 - a. Patients should be informed that the literature regarding the effectiveness of cranberry products is mixed^{6,7}.
11. Acupuncture may be considered as an alternative in the prevention of recurrent UTIs in women who are unresponsive to or intolerant of antibiotic prophylaxis⁶. (IB)
12. Probiotics and vaccines cannot be offered as proven therapy for recurrent urinary tract infections⁶. (II-2C)
13. Based on limited data, D-Mannose may be effective at preventing recurrent UTIs (2g PO daily) but further studies are needed⁹.
14. Methenamine hippurate may be effective for short-term prophylaxis (approximately one week) in patients without renal tract abnormalities or neuropathic bladder¹⁰.
 - a. Methenamine is degraded to formaldehyde which acts as a bacteriostatic agent.
 - b. Urine needs to be acidic for this to be effective (pH < 5.5), ascorbic acid (Vitamin C) may be used for this.
15. Based on available evidence, ascorbic acid (Vitamin C) cannot be recommended for the prevention of UTIs³. Other behavioral modifications such as type of underwear, post-coital voiding, or wiping front to back may be beneficial for some women but there is no data to support or refute these practices.

REFERENCES:

1. Hooton TM. Clinical Practice. Uncomplicated urinary tract infection. *N Engl J Med* 2012 Mar 15;366(11):1028-37

This information is a guideline and should not be considered as inclusive of all proper treatments or methods of care or as a statement of the standard of care.

2. CDC
3. Geerlings SE, Beerepoot MA, Prins JM. Prevention of recurrent urinary tract infections in women: antimicrobial and nonantimicrobial strategies. *Infect Dis Clin Norht Am* 2014;28(1):135-47.
4. Albert X, Huertas I, Pereiro I, et al. Antibiotics for preventing recurrent urinary tract infection in non-pregnant women. *Cochrane Database of Systematic Reviews* 2004: CD001209
5. Perrotta C, Aznar M, Mejia R, Albert X, et al. Oestrogens for preventing recurrent urinary tract infection in postmenopausal women. *Cochrane Database of Systematic Reviews* 2008: CD005131
6. Epp A, Larochelle A, Lovatsis D, et al. Recurrent urinary tract infection. *J Obstet Gynaecol Can.* 2010; 32(11):1082-90 (AHRQ review)
7. Jepson RG, Williams G, Craig JC, et al. Cranberries for preventing urinary tract infections. *Cochrane Database of Systematic Reviews* 2012: CD001321
8. Lichtenberger P, Hooton TM. Antimicrobial prophylaxis in women with recurrent urinary tract infections. *Int J Antimicrob Agents* 2011;38 suppl:36-41
9. Kranjcec B, Papes D, Altarac S. D-Mannose powder for prophylaxis of recurrent urinary tract infections in women: a randomized clinical trial. *World J Urol* 2014; 32(1):79-84
10. Lee BSB, Bhuta T, Simpson JM, et al. Methenamine hippurate for preventing urinary tract infections. *Cochrane Database of Systematic Reviews* 2012: CD003265

I: Evidence obtained from at least one properly randomized controlled trial

II-1: Evidence from well-designed controlled trials without randomization

II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one center or research group.

II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940's) could also be included in this category.

III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

A: There is good evidence to recommend the clinical preventive action

B: There is fair evidence to recommend the clinical preventive action

C: The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making


D: There is fair evidence to recommend against the clinical preventive action

E: There is good evidence to recommend against the clinical preventive action

L: There is insufficient evidence (in quantity or quality) to make a recommendation: however, other factors may influence decision making.



APPROVALS:

SOP Owner:	Peter Jeppson, MD	Date: 6/24/2020
Chair Approval:		Date: 6/29/2020
Effective Date:	June 24, 2020	