

DECISIONS

# Frequent urinary tract infections in a premenopausal woman

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**Competing interests:**

Blayne Welk has received investigator-initiated grant funding from Astellas. Duane Hickling has consulted for and received honoraria from Astellas, Allergan, Firmagon and Pfizer.

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The clinical scenario is fictional.

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A 35-year-old healthy premenopausal woman presented with a 24-hour history of worsening dysuria and urinary frequency. She had no associated flank pain or costovertebral angle tenderness to suggest pyelonephritis. Urine dipstick testing was positive for leukocyte esterase and nitrite. The patient reported two documented urinary tract infections (UTIs) in the past eight months. Her previous urine cultures had grown pan-sensitive *Escherichia coli*, and her symptoms had resolved promptly with oral antibiotics.

**What diagnoses should be considered in this patient?**

The most likely diagnosis is recurrent UTIs. These recurrent infections are important given their high prevalence and their negative effect on quality of life.<sup>1</sup> Other potential diagnoses to consider include sexually transmitted infection, bladder pain syndrome, pelvic floor dysfunction, overactive bladder and vaginitis (Box 1).<sup>2</sup>

**Does this patient need further investigations?**

Recurrent UTIs are common: 20%–50% of women will experience at least one UTI recurrence after their index infection and a subset

(about 5%) will have multiple recurrences, often within the first three months after the index infection.<sup>3</sup> For most of these women, further evaluation is not necessary. In a case series of young women with frequent UTIs, cystoscopy and renal or pelvic imaging did not reveal any important abnormalities that influenced patient management.<sup>4</sup>

Further testing should be limited to women with atypical features or with multiple episodes of pyelonephritis. Complicating factors that may suggest the patient should be referred to a specialist include prior urologic or pelvic floor surgery, history of renal stone disease, genitourinary or neurologic abnormalities, substantial urinary symptoms (e.g., severe urinary urgency or frequency, or urinary-related pain), radiation to the pelvis, or inadequate response to antibiotics.<sup>4</sup>

**What lifestyle changes should be recommended?**

Doctors have long recommended a “common sense” collection of suggestions for avoiding UTIs, such as good perineal hygiene, natural underwear material, postcoital voiding, and improved fluid intake and voiding habits. However, when these factors were evaluated in a large case-control study, these conservative measures

Box 1: Differential diagnosis for premenopausal women with symptoms of frequent urinary tract infections <sup>2</sup>	
Diagnosis	Clinical features
Sexually transmitted infection	History of new sexual contacts
Bladder pain syndrome (interstitial cystitis)*	Pain with a full bladder, which improves with voiding. Often associated with substantial urinary frequency.
Pelvic floor dysfunction*	Vaginal pain, dyspareunia and urinary symptoms.
Overactive bladder*	Urinary frequency and urgency, with or without urge incontinence.
Vaginal infection or vaginitis	Primary complaint is vaginal irritation, itch or discharge.
Bladder cancer	Gross or microscopic hematuria in the setting of negative urinary cultures. May have severe urinary frequency and urgency.

\*For bladder pain syndrome, pelvic floor dysfunction and overactive bladder, symptoms persist over time with negative cultures and little response to antibiotics.

did not differ between women with and without frequent UTIs.<sup>5</sup> On multivariable analysis, frequency of sexual activity and exposure to spermicides (which disrupt vaginal flora<sup>1</sup>) were the only behavioural factors significantly associated with repeated UTIs.<sup>5</sup>

### Are there any nonantibiotic options available for this patient?

Cranberry supplementation is one of the most commonly discussed strategies for the prevention of UTIs. Cranberry's effectiveness was initially attributed to acidification of the urine; however, it is actually owing to a group of tannins (proanthocyanidins) that prevent the adherence of bacteria to the layer of epithelial cells of the bladder (urothelium).<sup>1</sup> Dose-dependent inhibition of bacterial adherence has been shown in laboratory studies; however, this has not translated into consistent results in clinical trials. A comprehensive meta-analysis of randomized trials did not find an effect of cranberry supplementation on repeated UTIs.<sup>6</sup> Interpretation of these studies is hampered by the use of different cranberry supplements, which were often juice (associated with high patient drop-out due to the volume) or tablets that had inconsistent concentrations of proanthocyanidins.

Other potential strategies that have been examined in the literature include probiotics (to restore an altered vaginal microbiota<sup>3</sup>), oral uropathogen vaccines (available in Europe), vitamin C, methenamine salts, acupuncture and D-mannose. However, there is either insufficient evidence or availability in Canada to recommend their use at this time.<sup>1,7,8</sup>

### What antibiotic options are available to prevent further UTIs?

In women who tend to have UTIs temporally related to sexual activity, postcoital prophylaxis with a single dose of antibiotic has been shown in a randomized clinical trial to reduce repeat UTIs.<sup>3,7</sup> A Cochrane review examined continuous, low-dose antibiotic prophylaxis and found a significantly lower rate of UTIs while women were taking antibiotics; however, there was no lasting impact after the discontinuation of antibiotics.<sup>9</sup> Finally, self-start antibiotics have been shown to work well; in small cohort studies, most women were able to self-diagnose their UTI, which they treated successfully with their self-start prescriptions.<sup>3</sup> Choice of antibiotic is dependent on local resistance patterns and the patient's previous urine culture sensitivities (which are predictive of future antibiotic sensitivity).<sup>10</sup>

### The case revisited

The woman asked her partner to use condoms without spermicide. She was given a standing requisition for urine cultures (for when she is unsure about whether she has a UTI) and a repeat prescription for five days of nitrofurantoin (100 mg orally twice daily) to use in a self-start manner for symptoms consistent with a UTI. She was asked to seek medical attention if her symptoms persisted despite the antibiotics or if she had symptoms of a more severe infection, such as fever or flank pain.

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