



EDITORIAL COMMENT

This paper focuses on the significant costs of treating recurrent urinary tract infection (UTI) in females. Factors related to anatomy, hormones, menopause, and sexual activity create conditions more favorable for UTI occurrence in women. Studies have suggested that UTI is up to 30 times more common in women.

In recurrent UTI, it is estimated that less than 1.5% of women will have findings of urinary tract abnormality or other serious pelvic disease. Clearly the authors point out that indiscriminate use of expensive imaging studies or endoscopic evaluations are to be discouraged except in cases with high clinical suspicion. A large study conducted in France clearly showed that proper first diagnosis led to less costs and reduced need for imaging or other costly studies. In the majority of cases when imaging is felt to be needed, a KUB and renal ultrasound are usually sufficient.¹

Use of holistic and dietary regimens can be effective as is pointed out however these forms of treatment are of limited success, do have associated out of pocket costs to patients, but also do not contribute to the occurrence of antibiotic resistant bacteria.

In premenopausal women with recurrent UTIs, cranberry prophylaxis has not been shown to be cost-effective compared to trimethoprim-sulfamethoxazole prophylaxis. Yet, the additional costs attributed to development of antibiotic resistance were likely higher though not defined in this reference.²⁻⁴

Indiscriminate use of antibiotics without proper culture and sensitivity studies to allow for treatment adjustment increases the incidence of antibiotic resistance. This is a problem of great global health concern as the rapid evolution of highly multidrug resistant strains of bacteria is occurring at an alarming rate.

Historically, studies in humans and primates to evaluate the effects of recurrent UTI on the urinary tract have led to the finding of p-fimbriated lines, *Escherichia coli* (*E coli*) in particular. This has given us a better understanding of the process of ascending infection as well as persistent colonization.⁵

One hope to reduce the cost of recurrent UTI and help prevent continued emergence of highly resistant bacterial strains is found in the development of vaccines. For many decades, researchers have worked on a variety of approaches in seeking to create a vaccine to prevent recurrent UTI or UTI altogether.

A recent vaccine that has raised interest favors immunoinactive prophylaxis using a suspension of inactivated complete cells of different strains of *E coli*, *Klebsiella pneumonia*, *Proteus mirabilis*, and *Enterococcus faecalis*. The formulation allows for sublingual administration making its use easy and comfortable. The polyvalent bacterial vaccine is effective in the reduction of UTI vs continuous low-dose antibiotic prophylaxis in frail institutionalized older adults and provides an improvement in the quality of life.⁶⁻⁸

The World Health Organization estimates that 700,000+ persons die annually from bacterial infections. Some 23,000+ die in the United States according to Centers for Disease Control and Prevention (CDC) data with over 2 million illnesses annually caused by drug resistant bacteria. Estimated costs in the US are \$20-25 billion in excess health expenditures and \$35 billion additional for lost productivity. As a species, we are in dire need of new antibiotics, vaccines and diagnostics to end the rise of drug resistant bacteria.⁹

The clear benefit of the use of antibiotic prophylaxis to individual patients may well be outweighed by the potential harm to both patient and society due to increased frequency of every more antibiotic resistant bacteria. This is often a difficult clinical bargain for every physician to make.

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References

1. François M, Hanslik T, Dervaux, et al., et al. The economic burden of urinary tract infections in women visiting general practices in France: a cross-sectional survey. *BMC Health Serv Res*. 2016;16:365. Published online 2016 Aug 9. <https://doi.org/10.1186/s12913-016-1620-2>. PMID: PMC4977873.
2. Bosmans JE, Beerepoot MAJ, Prins JM, et al. Cost-effectiveness of cranberries vs antibiotics to prevent urinary tract infections in premenopausal women: a randomized clinical trial. *PLoS One*. 2014;9:e91939. Published online 2014 Apr 4. <https://doi.org/10.1371/journal.pone.0091939>
3. Beerepoot MAJ, Riet G, Nys S, et al. Cranberries vs antibiotics to prevent urinary tract infections: a randomized double-blind noninferiority trial in premenopausal women. *Arch Intern Med*. 2011;171:1270-1278. <https://doi.org/10.1001/archinternmed.2011.306>.
4. Fisher H, Oluboyede Y, Chadwick T, et al. Continuous low-dose antibiotic prophylaxis for adults with repeated urinary tract infections (AnTIC): a randomised, open-label trial. *Lancet Infect Dis*. 2018;18:957-968.
5. Winberg J. P-fimbriae, bacterial adhesion, and pyelonephritis. *Arch Dis Child*. 1984;59:180-184.
6. Roberts JA, Hardaway K, Kaack B, et al. Prevention of pyelonephritis by immunization with P-Fimbriae. *J Urol*. 1984;131:602-607.
7. Farhan B. ICS 2018: the impact of the use of vaccine against recurrent urinary tract infections in frail elderly patients. <https://www.urotoday.com/conference-highlights/2018-ics/106622-ics-2018-the-impact-of-the-use-of-vaccine-against-recurrent-urinary-tract-infections-in-frail-elderly-patients.html>, Presented by: Padilla-Fernández B, Lorenzo-Gómez MF, González-Casado I et al: Salamanca, Spain.
8. CARB-X: Combating antibiotic resistant bacteria <https://carb-x.org/partners/>.
9. The Antimicrobials Working Group: <https://www.antimicrobialsworkinggroup.org/antimicrobial-resistance>.

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AUTHOR REPLY

There is no debating that the rising incidence of recurrent urinary tract infections (RUTI) has created a large burden on patients and our health care system. There is much needed research in this area to provide effective, expeditious, and inexpensive preventative and therapeutic options that do not contribute to increasing rates of antibiotic resistance.

RUTI is largely a bladder limited disease. Therefore, a treatment localized to the organ of interest is urgently needed. There has been some success in bladder antibiotic irrigation with gentamicin which is an option for those who already use catheterization for incomplete bladder emptying¹ as well as bladder fulguration of trigonitis to eliminate quiescent intracellular reservoirs of bacteria in the bladder mucosa.²

Conservative measures including adequate fluid intake, discouraging detrimental toileting behaviors as a result of chronic holding behaviors or concomitant pelvic floor dysfunction, avoidance of