
Urological Survey

INFECTION AND INFLAMMATION OF THE GENITOURINARY TRACT

Nosocomially Acquired Urinary Tract Infections in Urology Departments. Why an International Prevalence Study is Needed in Urology

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Int J Antimicrob Agents, **23S1**: S30–S34, 2004

Nosocomially acquired urinary tract infection (NAUTI) is the most frequent nosocomial infection and a particular problem in urology departments. The incidence of NAUTI has become an important quality parameter and a legal issue. Several characteristics related to the health care provider, the patient and the procedures are known to increase the risk of NAUTI. The single most important risk factor for NAUTI is an indwelling catheter. NAUTI may be prevented by good health care facilities, evidence-based practice, wise patient selection and surgical skill. But the most important factors are tailored antibiotic prophylaxis and continuous monitoring of the incidence and pathogens causing NAUTI in each institution. Raising antimicrobial resistance in some countries calls for a closer monitoring of NAUTI on international level within urology. There is room for improvement in urinary catheter care in many hospitals, and the importance of patient and urological risk factors for development of NAUTI is not fully known. In order to meet these challenges the European Society for Infections in Urology is planning a prevalence study combined with a quality improvement initiative related to NAUTI.

Editorial Comment: The most important risk factor for nosocomially associated urinary tract infections in urology patients is an indwelling urethral catheter. Indwelling urethral catheterization is frequently associated with antimicrobial prophylaxis for surgery. The worldwide emergence of uropathogenic resistant strains and the increasing prevalence of nosocomial urinary tract infections are alarming. To their credit, the European Society for Infection in Urology is planning a prevalence study combined with a quality improvement initiative related to this problem. Simple techniques such as decreasing the incidence and duration of catheterization, more prudent use of prophylactic antimicrobials and sharing of information on the spread of resistant organisms should help to define better and, hopefully, decrease this major problem.

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Non-Hospital Antimicrobial Usage and Resistance in Community-Acquired Escherichia Coli Urinary Tract Infection

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J Antimicrob Chemother, **52**: 1005–1010, 2003

Objectives: To investigate the correlation between non-hospital antimicrobial consumption and resistance.

Methods: Information on the non-hospital sales of antimicrobials from 14 European countries in 1997 and 2000 was compared with the antimicrobial resistance profiles of *Escherichia coli* isolated from women with community-acquired urinary tract infection in the same countries in 1999/2000.

Results: There was no statistically significant correlation between the consumption of and resistance to co-amoxiclav, cefadroxil, fosfomycin, mecillinam, sulfamethoxazole, trimethoprim or trimethoprim-sulfamethoxazole. On the other hand, there were statistically significant correlations between consumption of broad-spectrum penicillins and quinolones. In 1997 and 2000 and resistance to ciprofloxacin (P range 0.0005–0.0045) and nalidixic acid (P range 0.0013–0.0049). Total antimicrobial consumption in 1997 was significantly correlated to ciprofloxacin (P = 0.0009) and nalidixic acid (P = 0.0018) resistance, and there were significant relationships between quinolone consumption in both years and resistance to gentamicin (P range 0.0029–0.0043) and nitrofurantoin (P range 0.0003–0.0007). *E. coli* with multiple antimicrobial resistance were significantly more common in countries with high total antimicrobial consumption.

Conclusions: Owing to the frequent presence of many possible confounding factors, antimicrobial resistance to one drug does not always correlate well to the consumption of the same drug or closely related

drugs. This study showed that the degree of antimicrobial consumption was significantly correlated to the incidence of multidrug-resistant *E. coli*.

Editorial Comment: There has been wide variation in European sales of antimicrobials and in the frequency of antimicrobial resistance in *E. coli*. The highest sales and resistance figures were recorded in the Mediterranean countries. There was no relationship between antimicrobial consumption and resistance for some drugs such as amoxicillin-potassium clavulanate, cefadroxil and trimethoprim, whereas there were strong and significant relationships between consumption of ciprofloxacin and broad-spectrum penicillins and resistance to ciprofloxacin. Owing to the frequent presence of many possible confounding factors, antimicrobial resistance to one drug does not always correlate well to the consumption of that same drug or closely related drugs. What this means for the practitioner is that we should all attempt to decrease unnecessary antimicrobial use and follow local antibacterial resistance data to guide empirical antimicrobial therapy better.

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Cranberries for Preventing Urinary Tract Infections

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Cochrane Database Syst Rev, (2): CD001321, 2004

BACKGROUND: Cranberries (particularly in the form of cranberry juice) have been used widely for several decades for the prevention and treatment of urinary tract infections (UTIs). The aim of this review is to assess the effectiveness of cranberries in preventing such infections. **OBJECTIVES:** To assess the effectiveness of cranberry juice and other cranberry products in preventing UTIs in susceptible populations. **SEARCH STRATEGY:** Electronic databases and the Internet were searched using English and non English language terms; companies involved with the promotion and distribution of cranberry preparations were contacted; reference lists of review articles and relevant trials were searched. Cochrane Central Register of Controlled Trials (CENTRAL—the Cochrane Library, issue 1, 2003) was searched in February 2003. **SELECTION CRITERIA:** All randomised or quasi randomised controlled trials of cranberry juice/products for the prevention of urinary tract infections in susceptible populations. Trials of men, women or children were included. **DATA COLLECTION AND ANALYSIS:** Two reviewers independently assessed and extracted information. Information was collected on methods, participants, interventions and outcomes (urinary tract infections (symptomatic and asymptomatic), side effects and adherence to therapy). RR were calculated where appropriate, otherwise a narrative synthesis was undertaken. Quality was assessed using the Cochrane criteria. **MAIN RESULTS:** Seven trials met the inclusion criteria (four cross-over, three parallel group). The effectiveness of cranberry juice (or cranberry-lingonberry juice) versus placebo juice or water was evaluated in six trials, and the effectiveness of cranberries tablets versus placebo was evaluated in two trials (one study evaluated both juice and tablets). In two good quality RCTs, cranberry products significantly reduced the incidence of UTIs at twelve months (RR 0.61 95% CI: 0.40 to 0.91) compared with placebo/control in women. One trial gave 7.5 g cranberry concentrate daily (in 50 ml), the other gave 1:30 concentrate given either in 250 ml juice or in tablet form. There was no significant difference in the incidence of UTIs between cranberry juice versus cranberry capsules (RR 1.11 95% CI: 0.49 to 2.50). Five trials were not included in the meta-analyses due to methodological flaws or lack of available data. However, only one reported a significant result for the outcome of symptomatic UTIs. Side effects were common in all trials, and dropouts/withdrawals in several of the trials were high. **REVIEWERS' CONCLUSIONS:** There is some evidence from two good quality RCTs that cranberry juice may decrease the number of symptomatic UTIs over a 12 month period in women. If it is effective for other groups such as children and elderly men and women is not clear. The large number of dropouts/withdrawals from some of the trials indicates that cranberry juice may not be acceptable over long periods of time. In addition it is not clear what is the optimum dosage or method of administration (e.g. juice or tablets). Further properly designed trials with relevant outcomes are needed.

Cranberry Juice and Urinary Tract Infection

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Clin Infect Dis, **38**: 1413–1415, 2004

Cranberries have long been the focus of interest for their beneficial effects in preventing urinary tract infections (UTIs). Cranberries contain 2 compounds with antiadherence properties that prevent fimbriated *Escherichia coli* from adhering to uroepithelial cells in the urinary tract. Approximately 1 dozen clinical trials have been performed testing the effects of cranberries on the urinary tract. However, these trials suffer from a number of limitations. Most importantly, the trials have used a wide variety of cranberry products, such as cranberry juice concentrate, cranberry juice cocktail, and cranberry capsules, and they

have used different dosing regimens. Further research is required to clarify unanswered questions regarding the role of cranberries in protecting against UTI in general and in women with anatomical abnormalities in particular.

Editorial Comment: This excellent systematic review addresses the potential medical benefits of cranberries. It has been established *in vitro* that substances in cranberries can block adherence of bacteria to their receptors on the urothelium. From the results of 2 well conducted trials there is some evidence to recommend cranberry juice for the prevention of UTI in women with recurrent symptomatic UTIs. However, the large number of dropouts/withdrawals from some of the trials indicates that cranberry juice may not be acceptable for long periods. Furthermore, there is no clear evidence as to the amount and concentration that need to be consumed, and the length of time for treatment to be most effective. Mean annual cost of prophylaxis was \$624 and \$1,400 for cranberry tablets and juice, respectively. At best, cranberry juice/tablets may be minimally effective but further trials are certainly needed to validate their effectiveness and economic impact.

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