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Practice points

Preventing *Escherichia coli* bacteraemia through improved community urinary tract infection (UTI) management: use of the TARGET Uncomplicated UTI audit tool in primary care

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The urogenital tract is the commonest source for *Escherichia coli* bacteraemia nationally [1]. Prior treatment for urinary tract infection (UTI) within the preceding four weeks was the largest independent effect associated with *E. coli* bacteraemia with a urinary source in a national sentinel surveillance study [1]. Consultation for UTI offers a critical intervention point in *E. coli* sepsis prevention. Since 68.3% (1153 out of 1168) of the sample had *E. coli* bacteraemia within one day of admission, improvements in primary care UTI management are key [1].

Despite national guidelines, there is variation in the primary care management of UTI [2]. Regional variation exists in trimethoprim:nitrofurantoin ratios and duration of therapy for uncomplicated UTI [3]. A descriptive study of antibiotic prescribing at 537 British general practices between 1995 and 2011 found trimethoprim treatment for longer than three days for uncomplicated UTI and significant variation between practices (interquartile range: 16–71%) [4].

General practitioners (GPs) report providing safety netting advice to patients with UTI, but feel that evidence is lacking when offering preventative advice [5]. In one study, GPs were reported to assume that patients wanted antibiotics. When patients were interviewed they described motivation to seek self-care and prevention advice, not antibiotics. Public Health England (PHE) has developed a TARGET (Treat Antibiotics Responsibly, Guidance, Education, Tools) UTI toolkit, which includes an 'Uncomplicated UTI' self-audit template and evidence-based uncomplicated UTI leaflets that prompt shared decision-making, safety netting, and prevention advice [6,7].

At University College London Hospital, fortnightly multidisciplinary meetings and a retrospective review of 269 *E. coli* bloodstream infections in 2017–2018 found that 57% (152 out of 269) were community onset. Practices across Camden and Islington Clinical Commissioning Group (CCG) were invited to participate in a quality improvement project on UTI management. Two trainees at one practice in Islington, North London, responded and a retrospective audit of uncomplicated UTI management was conducted in January 2018.

Two GP registrars manually reviewed practice consultation notes using EMIS electronic patient records. An EMIS read code search of all patients seen with UTI within the preceding month was undertaken which identified 40 patients for inclusion. Data were collected using the Uncomplicated UTI TARGET tool and PHE Diagnosis of Urinary Tract Infection as the audit standard [7].

Antibiotic agent was given according to PHE guidelines in 97% (36 out of 40) of patients, and for the advised duration in 83% (30 out of 36) [7]. Safety netting advice was given in 62.5% (25 out of 40), self-care advice in 35% (14 out of 40), guidance on the natural history of UTI in 15% (six out of 40) and

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information on antibiotic resistance and use 2.5% (one out of 40). No patients were offered the TARGET UTI leaflet at baseline.

Islington is a high-performing CCG with respect to the Quality Premium (12% percentile) for trimethoprim:nitrofurantoin prescribing ratios, which is supported by these data [3]. Duration of therapy was inappropriate in a few cases. Six non-compliant prescriptions were attributed to a locum GP who lacked familiarity with local guidance. Induction of locums may be an important area to address nationally, indeed Open Prescribing data suggest that adherence to three-day courses for uncomplicated UTI varies throughout the year [3].

The low rates of documented advice on safety netting and self-care represent key areas for improvement and offer the greatest potential for the prevention of progression to systemic sepsis following UTI and the prevention of future UTI. Evidence-based safety netting advice includes a return to the GP practice at 48 h if symptoms are unresolving, and if there are fevers or chills, costo-vertebral tenderness, and drowsiness. Self-care measures include adequate hydration (six to eight cups per day), wiping front to back, post-intercourse micturition, and vaginal oestrogen/D-mannose for the prevention of recurrent infections.

Consultation of a GP by a patient with UTI offers a unique opportunity to educate patients on antimicrobial stewardship. Inappropriate treatment of asymptomatic bacteriuria increases the likelihood of pyelonephritis [8]. There was inadequate guidance on natural history and antimicrobial resistance in this audit. The TARGET UTI leaflet could both offer a 'take home gift' in lieu of a prescription and support time-pressured GPs and practice nurses with this responsibility.

Limitations of this study include the small sample size, single site data, and retrospective data collection. The absence of a read code for uncomplicated UTI means that complicated UTIs may have been included in the sample.

Findings were presented to practice staff at a clinical governance meeting, CCG prescribing advisor, and Quality and Safety Manager with a recommendation to embed the TARGET UTI patient leaflet on EMIS, re-audit and share learning across the CCG. Learning points were presented at a CCG training day and national infection control conferences.

Attention must be given to counselling patients with UTI with safety netting and self-care advice. PHE TARGET UTI audits and leaflets are easy to use, evidence-based, software embeddable, and available in other languages and larger font size. Wider audit and adoption are recommended in order to deliver reductions in healthcare-associated Gram-negative bloodstream infections.

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