Title	Dipsticks and Diagnostic Algorithms in Urinary Tract Infection: Development and Validation, Randomized Trial, Economic Analysis, Observational Cohort, and Qualitative Study
Agency	NETSCC, HTA, NIHR Evaluation and Trials Coordinating Centre
	Alpha House, University of Southampton Science Park, Southampton, SO16 7NS, United Kingdom; Tel: +44 2380 595 586, Fax: +44 2380 595 639; hta@soton.ac.uk, www.hta.ac.uk
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Aim

1) To estimate independent clinical and dipstick predictors of urinary tract infection (UTI) and develop clinical scores to predict infection. 2) To test the clinical scores in an independent sample. 3) To understand the natural history of UTI and its key determinants. 4) To perform a randomized controlled trial (RCT) comparing management using the clinical and dipstick scores with common alternative management strategies. 5) To estimate resource use in each management strategy and estimate cost effectiveness. 6) To understand women's understanding and concerns in the presentation and management of UTI.

Conclusions and results

Validation testing study: 66% of women had confirmed UTI. A dipstick rule – based on the presence of nitrite, or both leucocytes and blood – was moderately sensitive (75%), but less specific (66%) (positive predictive value [PPV] 81%, negative predictive value [NPV] 57%). The NPV was 76% for all three dipstick results being negative; the PPV 92% for having nitrite *and* either blood or leucocyte esterase. Offensive smell (of urine) was not found to be predictive in this sample; for a clinical score using the remaining three predictive clinical features the NPV was 67% for none of the features, and the PPV 82% for three features.

Observational study: Compared with infections that were sensitive to antibiotics, resistant infections lasted 56% longer (incidence rate ratio [irr] 1.56; 95% confidence interval 1.22 to 1.99, p<0.001), and no antibiotics 62% longer (irr 1.62; 1.13 to 2.31, p=0.008). Symptom duration was shorter if the doctor was perceived to be positive about diagnosis/prognosis, and longer with somatic symptoms, previous cystitis, and severe symptoms.

Randomized trial: Antibiotic use differed between antibiotic management groups (immediate 97%, MSU 81%, dipstick 80%, symptom score 90%, delayed 77%, likelihood ratio test p=0.011), and also in using MSUs at the initial consultation (23%, 89%, 36%, 33%, 15% respectively, p<0.001), but the difference in symptomatic outcomes was small.

Qualitative study: When patients are asked to delay taking antibiotic medication, the sometimes protracted, uncomfortable, and worrying journey from "person to patient" needs to be acknowledged, their expressions of bodily change validated, and the rationale for not taking the antibiotics made clearer.

Recommendations

See Executive Summary link at www.ncchta.org/project/1205.asp.

Methods

The report covers 6 studies, including a validation development study concerning the diagnostic clinical score and diagnostic dipstick score (training study). Patients with suspected UTI had UTI confirmed using the European Urinalysis guidelines standard. Independent clinical and dipstick predictors of diagnosis were estimated, and both a dipstick score and a clinical score were developed.

Further research/reviews required

See Executive Summary link at www.ncchta.org/project/1205.asp.

Written by Professor Paul Little, University of Southampton, NETSCC, United Kingdom