

The DUTY Study- Childhood urinary tract infection

Full reference and link to full text of paper

Butler CC, O'Brien K, Pickles T, Hood K, Wootton M, Howe R, Waldron CA, Thomas-Jones E, Hollingworth W, Little P, Van Der Voort J, Dudley J, Rumsby K, Downing H, Harman K, Hay AD; DUTY study team. Childhood urinary tract infection in primary care: a prospective observational study of prevalence, diagnosis, treatment, and recovery. *Br J Gen Pract.* 2015; **65**:e217-23.

<https://bjgp.org/content/65/633/e217> (Free full text)

Summary

Untreated urinary tract infections (UTIs) in children can lead to kidney damage, however, they are often difficult to diagnose. In the past, GPs have often prescribed antibiotics for children with the symptoms associated with UTIs meaning that even if they had missed the UTI, children got some treatment for it. However, these were not necessarily the best antibiotics for a UTI and also with drives to decrease antibiotic prescribing, more UTIs may go untreated. At the time of the study, the actual prevalence of undiagnosed UTIs in children was not known. The aim was to investigate how often UTIs were present and how often diagnosed in acutely ill children. Also to investigate frequency and appropriateness of antibiotic prescribing, and how this effected recovery.

This was a prospective observational study so patients were recruited to the study then followed up. No change to their treatment was made as part of the study. Recruitment took place in 234 primary care recruiting sites; 226 general practices, 4 walk in centres and 4 children's emergency departments. Children if they were "constitutionally unwell" with any acute infection-like illness were recruited even if the clinician was confident of the diagnoses. The clinicians then recorded patient details, details of the illness and treatments prescribed and also their view of the most likely diagnosis both before and after a urinary dipstick test. Urine samples were taken for microbiological analysis.

Of the 6079 urine samples, 339 (5.6%) were positive for a UTI. In 68.3% of cases the UTI had not been diagnosed although of these 30.3% had been prescribed antibiotics anyway although only 26% were considered appropriate antibiotics for the UTI. Conversely, 86% of the children who had been correctly diagnosed with a UTI were prescribed antibiotics and 77.1% of these were appropriate. This still meant that 52.1% of children with a UTI did not receive antibiotics. Children with appropriate antibiotic prescription at the initial consultation improved slightly more quickly (3.5 compared with 4 days, $P=0.005$). The authors hoped that recognition of UTIs in acutely unwell children would be improved through the use of a validated clinical algorithm quantifying the diagnostic relationship between symptoms, signs, dipstick testing and laboratory confirmed UTI.

Image:



Impact

This paper was the RCGP Research Paper of the Year 2015 winner of the infection category. It has been included in NICE guidelines for diagnosing and treating children with UTIs.

Thinking points

1. This is a prospective cohort study. This means that patients are first recruited then followed up. Observational studies can only show associations rather than causation. Prospective cohort studies are considered slightly less subject to bias than retrospective (find patients then look back at what happened to them earlier) cohort studies. A prospective design means that there is less missing data, as tests, measurements and samples can be taken as part of the study rather than relying on the routine healthcare data recorded at the time.
2. The study website can still be viewed here: <http://www.dutystudy.org.uk>. It is still possible to look at the information given to patients and their doctors at the time of the study.
3. For children who were still in nappies at the time of the study, for whom “clean catch” samples couldn't be obtained, nappy pads were used. The study group even published a