Diagnostic tests and algorithms used in the investigation of haematuria: systematic reviews and economic evaluation


CRD summary
This review found that there were insufficient data to establish an evidence-based algorithm for the diagnosis and investigation of haematuria; a hypothetical algorithm, based on clinical practice and other published algorithms, was proposed.

Objectives
To determine the most effective way to diagnose and investigate haematuria in adults.

Review methods
Many databases were searched, including MEDLINE, EMBASE, Dissertation Abstracts, and NHS EED, up to August 2004. The Internet was searched; journals and conference proceedings were handsearched; reference lists of included papers were checked; and experts were consulted.

Various designs of study were eligible for each of four questions; the inclusion and exclusion criteria were reported.

Two reviewers initially selected the studies. One reviewer assessed full papers, extracted the data, and assessed quality, all of which were checked by a second reviewer. Pooled positive and negative likelihood ratios were calculated, with median likelihood ratios and interquartile ranges.

Results of the review
There were 118 studies (eight were economic evaluations). No studies investigated the effectiveness of algorithms for diagnostic accuracy, 19 evaluated tests for the detection of haematuria, six investigated the presence of haematuria as a sign of disease, and 80 evaluated tests to determine the underlying cause of haematuria.

Eighteen out the 19 detection studies evaluated dipstick tests. Most suggested that these were moderately useful in establishing the presence of, but could not be used to rule out, haematuria.

Six studies of haematuria as a test for the presence of a disease indicated that the detection of micro-haematuria alone was not useful in ruling in or out the presence of a significant underlying pathology (urinary calculi or bladder cancer).

Forty-eight of the 80 cause studies assessed methods to localise the source of bleeding. Studies varied, but those of red blood cell morphology with a cut-off value of 80% dysmorphic cells for glomerular disease might help to rule in a renal cause for haematuria. The evidence was sparse for laboratory tests for bladder cancer, suggesting that tumour markers were not useful for ruling out cystoscopic investigation, but urine cytology might have some value in confirming (but not ruling out) malignancy. Imaging techniques were too varied to be evaluated.

The economic analysis most strongly favoured microscopy after a positive dipstick for the detection of haematuria in low prevalence populations; ultrasound then computed tomography was the dominant strategy (most effective and cheapest) for upper urinary tract imaging; and cystoscopy only after a negative cytology or tumour marker might be cost-effective for lower urinary tract imaging in low-risk patients.

Detailed analyses of various different strategies and populations were presented in the full report.

Conclusions
There were insufficient data to establish an evidence-based algorithm for the diagnosis and investigation of haematuria; a hypothetical algorithm, based on clinical practice and other published algorithms, was proposed.

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Record Status
This is a high quality systematic review involving CRD that meets the criteria for inclusion on DARE. As CRD reviews are of high quality this structured abstract presents a brief summary of the review methods, the results and conclusions.