

The effectiveness of the ultrasound bladder scanner in reducing urinary tract infections: a meta-analysis

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Abstract

Aim. To synthesise the evidence available in the literature on the effectiveness of the ultrasound bladder scanner in reducing the risk of urinary tract infection.

Background. Acute urinary retention is the inability to empty the bladder notwithstanding it being full and is frequent in the postoperative period. Using the ultrasound bladder scanner for the measurement of urinary residue, nurses are able to evaluate the presence of urinary retention, monitor the volume and the excessive relaxation of the bladder and avoid unnecessary catheterisations. The association between urinary catheterisation and urinary tract infection is well documented in the literature.

Design. A meta-analysis was conducted.

Method. An extensive review was carried out by two researchers using multiple databases, including all articles published from 1 January 1986–8 February 2008. No restrictions were adopted with regard to language. Studies on (1) documenting hospitalised patients with a need to evaluate bladder urinary volume, (2) comparing the use of the ultrasound bladder scanner vs. the clinical judgment of the nurses in

the evaluation of acute urinary retention followed by a decision regarding whether or not to apply a bladder catheter and (3) those documenting the impact on urinary tract infection associated with catheterisation were included.

Results. A total of 61 articles were retrieved, of which 58 were excluded because they did not meet the inclusion criteria. The overall effectiveness of the bladder ultrasound scanner in the reduction of urinary tract infection associated with catheterisation was OR 0.27 (IC95% 0.16–0.47; *p*-value 0.00000294, variance 0.08, weight 12.50).

Discussion. The ultrasound bladder scanner helps to define and monitor bladder urinary volume and therefore, to catheterise patients only when necessary. Although there were numerous factors affecting the clinical heterogeneity of the included studies, the reduction in risk of urinary tract infection associated with catheterisation was consistent.

Conclusion. The use of the ultrasound bladder scanner for evaluating and monitoring the residue volume in immediate postoperative patients, aged 18 or above, reduces unnecessary catheterisations and therefore the risk of urinary tract infection associated with catheterisation.

Relevance to clinical practice. The systematic use of the ultrasound bladder scanner in the peri-operative period could increase the appropriateness of catheterisation and reduce patient discomfort, costs and days of hospitalisation associated with urinary tract infection associated with catheterisation.

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