



Topic Exploration Report

Topic explorations are designed to provide a high-level briefing on new topics submitted for consideration by Health Technology Wales. The main objectives of this report are to:

1. Determine the quantity and quality of evidence available for a technology of interest.
2. Identify any gaps in the evidence/ongoing evidence collection.
3. Inform decisions on topics that warrant fuller assessment by Health Technology Wales.

Topic:	Urinary catheter valves for people who require long-term catheter use
Topic exploration report number:	TER251

Introduction and aims

A catheter valve is a device connected to the end of a urinary catheter which allows urine to be stored in the bladder, thus eliminating the need for a urine drainage bag. The valve is released at regular intervals to prevent over-distension of the bladder or dilation of the renal tract.

Alternative catheter drainage options used in current practice include drainage bags or in/out catheterisation/non-permanent catheterisation. It is unclear whether the addition of valves to catheters reduces the risk of urinary tract infection in people who require long-term catheter use. It is also not known whether there are optimal types of valves or combinations of valves, bags and catheters which are most effective in reducing infection. While there is a current policy on catheters for NHS Wales, valves are not widely used in current practice.

Health Technology Wales researchers searched for evidence comparing catheter valves with drainage bags or in/out catheterisation in people who require long-term catheter use.

Summary of evidence

HTW searches identified three relevant UK guidelines and two systematic reviews, summarised below. The guidelines did not make recommendations on the specific type of catheter valves which should be used. The guidelines recommend that catheter valves can be used as an alternative to drainage bags, based on comparable costs, a lack of evidence demonstrating a difference in urinary tract infection rates and patient preferences. The most recent surveillance review of evidence in this area conducted for NICE CG139 in 2017 concluded that no update was needed of its recommendations on catheter valves. Primary studies published since 2017 were searched and one abstract for a randomised controlled trial was identified.

Guidelines

NICE CG139 (2003) 'Healthcare-associated infections: prevention and control in primary and community care' makes recommendations on catheter drainage options and catheter maintenance which are relevant to this topic. The Guideline recommends that in patients for whom it is appropriate, a catheter valve can be used as an alternative to a drainage bag. Regarding catheter maintenance, the Guideline recommends that indwelling catheters should be connected to a sterile closed urinary drainage system or catheter valve. In 2017, NICE undertook a surveillance review and decided that these recommendations did not need to be updated. The recommendations were based on one study which found no significant difference in urinary tract infection between catheter valves and standard drainage systems, but a patient preference for catheter valves. The Guideline made a recommendation that further randomised controlled trials comparing approaches to urinary drainage, including urethral indwelling catheterisation with and without a drainage bag (i.e. a valve) should be conducted.

NICE CG148 (2012) 'Incontinence due to neurogenic lower urinary tract dysfunction (NLUTD)' searched for evidence comparing catheter valves with urinary drainage in people with incontinence due to NLUTD, however no RCTs, observational studies or economic evaluations were identified. The Guideline included estimates of weekly and annual costs based on committee assumptions on resource use, to which NHS Drug Tariffs were applied. The Guideline found that the annual costs of catheter valves were marginally higher than those of day use urinary drainage bags used on their own. This was due to the slight increase in cost associated with catheter valves. As there was no evidence of benefit of one intervention over the other, the Guideline cited the recommendation from CG139 that 'In people for whom it is appropriate a catheter valve may be used as an alternative to a drainage bag.' It recommended 'to ensure that a catheter valve is appropriate, take into consideration the person's preference, family member and carer support, manual dexterity, cognitive ability, and lower urinary tract function when offering a catheter valve as an alternative to continuous drainage into a bag'.

Guidelines on the Prevention of Catheter-associated Urinary Tract Infection published in 2011 on behalf of the Strategy for the Control of Antibiotic Resistance in Ireland (SARI) by HSE Health Protection Surveillance Centre state that the benefit of using catheter valves to prevent catheter-associated urinary tract infection is not proven, but that their use may increase comfort for specific patient groups. This was based on a systematic review which found no difference in infection rates between catheter valves and drainage bags, but which did identify evidence that patients preferred catheter valves. It noted that the use of catheter valves is contraindicated in patients with limited bladder capacity, reflux or renal impairment, detrusor instability, mental disorientation, impaired bladder sensation, poor manual dexterity or immobility.

Systematic Reviews

A systematic review (Eijkel & Griffiths, 2006) included randomised and quasi-randomised controlled trials comparing catheter valves with drainage systems. The systematic review included one crossover randomised study (n=22) and one prospective randomised study (n=99). The systematic review concluded that there was insufficient evidence that catheter valves reduce infection and catheter blockage, although it found no evidence of harm. It further concluded that patients may prefer catheter valves but that it is unclear whether this is generalizable to those with significant disability.

A systematic review (Tenke et al 2007) of studies on the development, therapy and prevention of catheter-associated urinary tract infections searched for studies such as meta-analyses of randomised controlled trials and used a survey to rate studies' recommendations. The survey found that 'a minority of patients can be managed with the use of a non-return (flip) valve catheter, avoiding a closed drainage bag' and that 'such patients may exchange the convenience of on-demand drainage with an increased risk of infection'.

Primary studies

HTW searched for primary studies published since 2017, when NICE conducted a surveillance review for CG139 and concluded that no update was necessary, and found one randomised controlled trial published in 2020.

The study compared a continuous drainage bag (n=51) with a urinary catheter valve which attaches to the end of a Foley catheter (n=46) in women who underwent urogynecologic surgery and who are discharged home with a urinary catheter. It is unclear whether the population in this study matches the population of interest (long-term catheter use). The primary outcome of the study was post-operative UTI rates within 30 days of surgery. The urinary catheter valve (32.6%) was non-inferior to the continuous urinary drainage bag (33.3%). Patient satisfaction was measured using a Foley satisfaction questionnaire. Patients were more satisfied with the urinary catheter valve as compared to the traditional continuous drainage bag ($p \leq 0.001$).

Areas of uncertainty

No studies were found which considered the effectiveness of different types of valves in reducing the risk of urinary tract infections, or which considered the effectiveness of different combinations of valves, bags and catheters.

The guidelines and studies focused on comparing catheter valves with drainage bags. No studies compared catheter valves with in/out catheterisation/non-permanent catheterisation.

Conclusions

NICE and SARI/HSE guidelines recommend that catheter valves can be used as an alternative to drainage bags, based on comparable costs, a lack of evidence demonstrating a difference in urinary tract infection rates and patient preferences. Since 2017, when the most recent surveillance review was conducted for NICE CG139, one abstract of a randomised controlled trial was identified. The study similarly concluded that urinary catheter valves increased patient satisfaction without affecting the post-operative UTI rate in women being discharged with a urinary catheter.

The guidelines and studies did not consider which specific types of valves, or which combination of valves and catheters are optimal.

Brief literature search results

Resource	Results
HTA organisations	
Healthcare Improvement Scotland	We did not identify any relevant evidence from this source
Health Technology Assessment Group	<ul style="list-style-type: none"> SARI by HSE Health Protection Surveillance Centre. Guidelines for the Prevention of Catheter-associated Urinary Tract Infection. Published date: 2011. https://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/infectioncontrolandhai/guidelines/File,12913,en.pdf
Health Information and Quality Authority	We did not identify any relevant evidence from this source
EUnetHTA	We did not identify any relevant evidence from this source
International HTA Database	We did not identify any relevant evidence from this source
UK guidelines and guidance	
SIGN	We did not identify any relevant evidence from this source
NICE	<ul style="list-style-type: none"> National Institute for Health and Care Excellence. Healthcare-associated infections: prevention and control in primary and community care [CG139]. Published date: 28 March 2012. Last updated: 15 February 2017. https://www.nice.org.uk/guidance/cg139 National Institute for Health and Care Excellence. Urinary incontinence in neurological disease: assessment and management [CG148]. Published date: 08 August 2012. https://www.nice.org.uk/guidance/cg148
Secondary literature and economic evaluations	
Cochrane library	We did not identify any relevant evidence from this source
Medline (via Ovid or Pubmed) <i>Systematic reviews, meta-analyses, economic evaluations.</i>	<ul style="list-style-type: none"> van den Eijkel E, Griffiths P. Catheter valves for indwelling urinary catheters: a systematic review. Br J Community Nurs. 2006 Mar;11(3):111-2, 114. doi: https://doi.org/10.12968/bjcn.2006.11.3.20586 Tenke P, Kovacs B, Bjerklund Johansen TE, Matsumoto T, Tambyah PA, Naber KG. European and Asian guidelines on management and prevention of catheter-associated urinary tract infections. Int J Antimicrob Agents. 2008 Feb;31 Suppl 1:S68-78. doi: https://doi.org/10.1016/j.ijantimicag.2007.07.033
Primary studies	
Cochrane library	<ul style="list-style-type: none"> Dhariwal L, Chiu S, Salamon C. A urinary catheter valve is non-inferior to continuous bladder drainage with respect to post-operative UTIs: a randomized controlled trial. Int Urogynecol J. 2020 Jul 18. doi: https://doi.org/10.1007/s00192-020-04436-9
Medline (via Ovid or Pubmed) <i>Primary studies</i>	We did not identify any relevant evidence from this source
Date of search:	April 2021
Concepts used:	Urinary, Catheter, Valve, Urinary Catheterization, Urinary Tract Infections