



Intermittent Catheters: To reuse or not

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Patients with spinal cord injury or disease (SCI/D) who manage their bladder with intermittent catheterization do so with the expectation that they have a reasonable quality of life, remain continent and have few urinary tract infection (UTI) episodes. Waites [1] retrospectively demonstrated that the average number of UTI episodes in an SCI patient/year was 18/year, with 1.8 febrile UTIs/year. This was revised to 0.68 symptomatic UTIs/100 days or ~2.5 afebrile UTI's per year [2, 3]. There is a wide variance in which individuals with SCI develop 'UTIs', and there are rate differences based upon bladder management [4, 5]. The reason for this wide variation in why individuals have repeated, few or no episodes of acute cystitis is unknown. The neurological injury, bladder management, urothelial, bacterial, and blood factors play a role, but the precise etiology, pathophysiology and prevention mechanisms require further research.

New and Del Popolo describe the pros and cons of single use and reuse of intermittent urinary catheterization [6, 7]. Arguments for reuse of catheters are reduced essentially to consideration of the healthcare economic consequences, both to individual and systems, and the considerable amount of resultant non-recycled waste. Arguments against the reuse of catheters center around patient comfort with a particular catheter type and the risk of urinary tract infections. Healthcare systems around the world would also consider the financial consequences of each scenario, the poorer nations perhaps supporting the reuse of urinary catheters.

For instance, In the United States, the FDA only approve urinary catheters as a single use item, though up to ~2007 they may have been reused (off label) for intermittent catheterization. Centers for Medicare and Medicaid Services, the national payor for individuals who are over aged 65, have disabilities

or who are indigent made rule changes to the hospital inpatient prospective payment systems in fiscal year 2007 [8]. Reimbursement for in-hospital UTIs caused by catheterization while in the hospital were excluded from Medicare payments from October 1st 2008 [9]. This rule change led to hospital monitoring of catheter associated urinary tract infections (CAUTI) under the hospital-acquired infections umbrella. Intermittent catheters were supplied in much larger numbers to stop reuse, and new policies were introduced in US hospitals regarding urinary tract catheterization including intermittent catheterization. Despite this, there is no clear evidence that UTIs are marked decreased by use of single use catheters, or that repeated use of intermittent catheters leads to a marked increase in UTIs in individuals with SCI/D patients [6, 7].

UTIs are one of the primary outcome measures in assessing new urinary catheter technology. The term UTI can have many meanings, from life threatening illness to a simple cystitis, and UTIs are treated differently depending on the individual presentation and circumstance. Thus, in reporting UTIs in individuals with neurogenic bladder managed by some form of catheterization, the diagnostic criteria, symptoms, site, nature, severity, causative organism, and treatment with duration, recovery time, complications, and if reinfection or persistence occur need to be clearly reported for each episode. If only the microbiological findings are considered, the diagnosis might be incorrect. Thus, the reporting mechanism and UTI definition in patients with neurogenic bladder needs be fully standardized to allow meaningful comparison between trials and outcome descriptions (see Refs. 8, 14–17 in [6] and Refs. 8 & 9 in [7]).

Urinary retention, either due to the male prostate enlargement or neurological injury, is not new, and intermittent catheterization has been described in various forms with many different styles and techniques and catheter types since 1500BC [10, 11] just as there are descriptions of patients who fared poorly due to infection.

Decisions about intermittent catheterization and catheter use, type, size, frequency of use (or reuse) and other management come down to the individual, physician interactions, and hospital system policies as an ongoing process.

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Determining the best form of bladder management that is most suitable for the individual is based on the individual's neurological injury, personal preferences, abilities, and resultant quality of life. Against this may be the physician, provider, caregiver, and/or family biases, number and nature of infections, problems with incontinence, progression of medical comorbidities, including renal insufficiency, mental or physical abilities, and other intangible issues. Currently, there is no clear scientific evidence showing what method or type of catheter use is most advantageous.

Despite this, intermittent catheterization (with single or repeated use of the catheter) has been a very useful tool of bladder management for many centuries and is likely to remain so.

Compliance with ethical standards

Conflict of interest The author declares no conflict of interest.

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