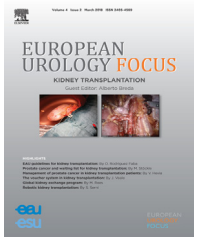
available at www.sciencedirect.com
journal homepage: www.europeanurology.com/eufocus



Point of Focus Debate: Con – Neuro-urology

Multiuse Catheters for Clean Intermittent Catheterization in Urinary Retention: Is There Evidence of Inferiority?

Tess van Doorn, Bertil F.M. Blok *

Department of Urology, Erasmus Medical Center, Rotterdam, The Netherlands

At present, European patients who perform clean intermittent catheterization (CIC) for urinary retention can only use single-use catheters. This is in contrast to many non-European countries, such as Australia, Canada, Japan, and the USA, where reuse of a catheter is common practice in more than 50% of cases [1,2]. According to the definition of CIC a clean technique is used, including both disposable and cleaned reusable catheters. Aseptic intermittent catheterization (IC) consists of antiseptic preparation and the use of sterile (single-use) catheters and gloves [3]. The European Association of Urology neurourology guidelines suggest that aseptic IC should be used whenever possible, but that superiority compared to CIC is not established [3].

The literature on differences in safety and efficacy between single- and multiuse catheters is conflicting and comprises a low level of evidence. On the one hand, it has been suggested that reuse of catheters introduces unwanted bacteria and increases the risk of symptomatic urinary tract infections (UTIs), stone formation, and urethral strictures [4]. On the other hand, evidence suggests that reusable catheters are as safe and effective as disposable catheters [5].

A recent randomized clinical trial on CIC comparing single-use and reused poly(vinyl chloride) catheters among 75 pediatric patients with spina bifida showed no difference in the incidence of UTIs or bacteriuria [6]. In a Cochrane analysis, Prieto et al [7] found no differences in UTI incidence between patients using multiuse catheters and those using single-use catheters. This review was withdrawn in 2017 after reassessment of data reported by Christison et al [8].

A challenging aspect of comparing and merging data is the variation in, or lack of, definition of UTIs in trials, as pointed out by Christison et al [8]. After data analysis of the Cochrane review was adjusted using the most recent Infectious Diseases Society of America criteria, no significant differences between single- and multiuse catheters were found. However, final conclusions were drawn according to the previously used (outdated) criteria, revealing a trend favoring hydrophilic over other catheters [8].

Another difficulty is the lack of consensus on the most efficient method for cleaning catheters. Different cleaning techniques have been studied and this diversity makes the available data even less generalizable [2]. The optimal cleaning method should be identified in future trials.

The current literature mostly focuses on patients with a spinal cord injury. This group accounts for only a percentage of all patients on chronic CIC. Idiopathic causes of urinary retention are much less studied. The idiopathic and neurogenic populations differ in various ways, such as presentation and complaints at the time of a UTI and mobility and/or hand function.

The possible advantages of reusing catheters are evident. From a patient perspective, these include greater mobility because of having to carry only one catheter, having to store fewer catheters at home, having less baggage when traveling and therefore lower costs when flying, and no fear of running out of catheters. From an environmental perspective, Sun et al [9] reported that single-use catheters in the USA alone were responsible for 206 million l of waste a year, equivalent to 80 Olympic-sized swimming pools, and that catheters laid end-to-end would circumscribe the earth more than 5.5 times. These calculations were solely for catheters used by patients with neurogenic conditions; the idiopathic population was not considered. In addition, most catheters are made of nonbiodegradable material [9]. The reduction in environmental burden for multiuse catheters should be taken into account when considering

* Corresponding author. Department of Urology, Dr Molewaterplein 40, Rotterdam 3015 GD, The Netherlands. Tel.: +31 10 7032414.
E-mail address: b.blok@erasmusmc.nl (Bertil F.M. Blok).

https://doi.org/10.1016/j.euf.2019.09.018

Please cite this article in press as: van Doorn T, Blok BFM, Multiuse Catheters for Clean Intermittent Catheterization in Urinary Retention: Is There Evidence of Inferiority?. Eur Urol Focus (2019), https://doi.org/10.1016/j.euf.2019.09.018

reuse. In addition, if single- and multiuse catheters have equivalent safety and efficacy, the potential savings from reuse of catheters can contribute to mitigating growing health care costs [10].

There is no multiuse catheter with US Food and Drug Administration or Conformité Européenne approval commercially available. Thus, reuse of catheters is outside their intended use, which cannot be recommended and is not reimbursed by health insurance companies. Although this argument is put forward against multiuse, it could be a reason to develop a catheter especially for reuse, since reuse is already common.

The exclusive advocacy for single-use catheters seems to be based on biased assumptions rather than existing evidence. The only conclusion that can be drawn from the current literature is that a high-grade level of evidence from a randomized controlled trial involving an adequate sample size, a sufficient cleaning method, and a clear definition of UTI is needed. Such a trial should consist of patients with neurogenic and idiopathic conditions requiring CIC so that practice recommendations can be formulated for all individuals performing CIC for bladder drainage. Until then, no conclusion on the superiority of either single- or multiuse catheters can be drawn.

Conflicts of interest: The authors have nothing to disclose.

Acknowledgement: Financial support was provided by the Dutch Organization for Medical Sciences (ZonMW; B.F.M.B.), project number 853001104. The funder had no role in the preparation of the manuscript.

References

[1] Yoshida M, Igawa Y, Higashimura S, Suzuki M, Niimi A, Sanada H. Translation and reliability and validity testing of a Japanese version of the Intermittent Self-Catheterization Questionnaire among disposable and reusable catheter users. Neurourol Urodyn 2017;36:1356–62.

[2] Hakansson MA. Reuse versus single-use catheters for intermittent catheterization: what is safe and preferred? Review of current status. Spinal Cord 2014;52:511–6.

[3] Blok B, Castro-Diaz D, Del Popolo G, et al. EAU guidelines on neurourology. Arnhem, The Netherlands: European Association of Urology; 2019.

[4] Bogaert GA, Goeman L, de Ridder D, Wevers M, Ivens J, Schuermans A. The physical and antimicrobial effects of microwave heating and alcohol immersion on catheters that are reused for clean intermittent catheterisation. Eur Urol 2004;46:641–6.

[5] Kovindha A, Mai WN, Madersbacher H. Reused silicone catheter for clean intermittent catheterization (CIC): is it safe for spinal cord-injured (SCI) men? Spinal Cord 2004;42:638–42.

[6] Madero-Morales PA, Robles-Torres JI, Vizcarra-Mata G, et al. Randomized clinical trial using sterile single use and reused polyvinylchloride catheters for intermittent catheterization with a clean technique in spina bifida cases: short-term urinary tract infection outcomes. J Urol 2019;202:153–8.

[7] Prieto JA, Murphy C, Moore KN, Fader MJ. Intermittent catheterisation for long-term bladder management (abridged Cochrane review). Neurourol Urodyn 2015;34:648–53.

[8] Christison K, Walter M, Wyndaele JJM, et al. Intermittent catheterization: the devil is in the details. J Neurotrauma 2018;35:985–9.

[9] Sun AJ, Comiter CV, Elliott CS. The cost of a catheter: an environmental perspective on single use clean intermittent catheterization. Neurourol Urodyn 2018;37:2204–8.

[10] Bermingham SL, Hodgkinson S, Wright S, Hayter E, Spinks J, Pellowe C. Intermittent self catheterisation with hydrophilic, gel reservoir, and non-coated catheters: a systematic review and cost effectiveness analysis. Br Med J 2013;346:e8639.

Please cite this article in press as: van Doorn T, Blok BFM, Multiuse Catheters for Clean Intermittent Catheterization in Urinary Retention: Is There Evidence of Inferiority?. Eur Urol Focus (2019), https://doi.org/10.1016/j.euf.2019.09.018