

OUTCOME COMPARISON OF DIFFERENT APPROACHES TO SELF-INTERMITTENT CATHETERIZATION IN NEUROGENIC PATIENTS: A SYSTEMATIC REVIEW

Hypothesis / aims of study

Different types of catheters and techniques have been described in the past three decades to identify the best self-intermittent catheterization method. Our goal is to systematically review the literature on the most appropriate material and technique to perform self-intermittent catheterization in the adult neurogenic population.

Study design, materials and methods

A systematic review search was performed through PubMed/Medline and Embase databases to study all types of self-intermittent catheters, and analysing their impact on urinary tract infections (UTI), urethral trauma, cost-effectiveness, quality of life and patient's satisfaction. We used the following keywords "intermittent catheterization/catheterisation", "neurogenic", "urinary catheters for intermittent use", "urethral catheterization/catheterisation" published by November 2015.

Results

After screening 3367 articles, 33 were included in the final synthesis (level of evidence 1b to 2b). The 2,515 trial participants were mainly spinal cord injury adults and women with multiple sclerosis. Hydrophilic coated catheters tended to decrease the incidence of UTI as well as urethral trauma and improve patient's satisfaction when compared to non-hydrophilic coated catheters. Similarly, prelubricated catheters were associated with better results in terms of patient satisfaction. Sterile technique seemed to decrease the incidence of recurrent UTI; however, these results are counter balanced by significantly increasing cost compared to clean catheterization.

Table 1- pooled analysis of different types of self-intermittent catheters outcomes

Outcome	No. of patients (No. of studies)	Follow-up range	Results, % [range]	
UTI	430 (4)	6-12 months	Hydrophilic 44.7% [13-64]	Non-Hydrophilic 51.2% [14-82]
Bacteriuria	180 (3)	1-12 months	Hydrophilic 70.5% [43.7-91]	Non-Hydrophilic 73.5% [53-96]
Microhematuria	302 (3)	3days-12 months	Hydrophilic 38% [23-58]	Non-Hydrophilic 58.2% [34-67]
Patient satisfaction	427 (3)	7days-12 months	Hydrophilic 24.4% [9.3-36]	Non-Hydrophilic 14.8% [8.6-21.9]
Patient preference	266 (4)	2days-72 months	Compact Hydrophilic 50.6% [8.6-70]	Non-compact Hydrophilic 49% [30-91.4]

Interpretation of results

The evidence supports the benefits of hydrophilic coated and pre-lubricated catheters in terms of patient's satisfaction, quality of life, and complications rate.

Studies greatly varied in terms of setting (e.g. acute care neurology units, community, long-term care), length of follow up (i.e. one day to several months), definitions of outcomes, types of catheters and techniques compared, and characteristics of patients included.

Based on randomized control trials reported in the literature, patient population using single-use hydrophilic catheters have an estimated incidence of UTI between 40–60%, compared with the observed UTI prevalence for multiple use of 70–80% stated in observational studies. However, the overall clinical evidence remains insufficient for powerful decision making.^[1,2]

There is inadequate evidence to confirm that sterile intermittent catheterizations are superior to clean technique with respect to UTI incidence. Moreover, standardized symptomatic UTI definitions and a homogeneous population are necessary.

The average price cost per week of uncoated catheter with multiple-use is around £0.5/1US\$/0.8 euros, whereas the cost of a single-use coated catheter will be around £28/46US\$/36.4 euros per week. However, the former cost might increase considering the expenses identified with add-on lubricants, sterilization methods, washing, complication levels, time spent and patient preference.^[3]

Overall, in neurogenic populations, greater degree of satisfaction are seen with hydrophilic and pre-lubricated catheters with their advantages of convenience, comfort and ease of insertion when compared to conventional polyvinyl chloride. It's also strongly recommended to apply a validated tool for future studies to assess patient satisfaction.

Concluding message

The present review demonstrated advantages of hydrophilic-coated catheters in decreasing risk of UTI and urethral trauma as well as improving patient's satisfaction. Prelubricated catheters has been shown to be superior to conventional polyvinyl chloride catheters. Randomized controlled trials comparing hydrophilic and prelubricated catheters must be conducted to assess possible superiority and cost-effectiveness.

References

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Disclosures

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