Cleansing Methods During the Insertion and Maintenance of Indwelling Urinary Catheters: Clinical Effectiveness and Guidelines
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Acknowledgments:

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About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.
Research Questions

1. What is the clinical effectiveness of cleansing during the insertion and maintenance of indwelling urinary catheters in patients admitted to acute or long-term care settings?

2. What are the evidence-based guidelines associated with the cleansing during the insertion and maintenance of indwelling urinary catheters in patients admitted to acute or long-term care settings?

Key Findings

Three systematic reviews with meta-analyses and one randomized controlled trial were identified regarding the clinical effectiveness of cleansing during the insertion and maintenance of indwelling urinary catheters for admitted patients in acute or long-term care settings. Additionally, seven evidence-based guidelines were identified.

Methods

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2012 and June 13, 2017. Internet links are provided where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

<table>
<thead>
<tr>
<th>Population</th>
<th>Admitted patients in acute or long-term care settings with indwelling urinary catheters</th>
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<tbody>
<tr>
<td>Intervention</td>
<td>Cleansing during the insertion and maintenance of the indwelling urinary catheter, particularly meatal cleansing</td>
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<tr>
<td>Comparator</td>
<td>Q1: Various cleansing techniques; Various cleansing solutions; Q2: No comparator</td>
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<tr>
<td>Outcomes</td>
<td>Q1: Clinical effectiveness (e.g., but not limited to, infection rates between cleansing methods/cleansing solutions, reduction in infection rates, patient satisfaction, which method provides the better outcome with regard to patient outcomes, etc.), safety (e.g., harms related to certain methods of cleansing, using different solutions, etc.); Q2: Guidelines</td>
</tr>
<tr>
<td>Study Designs</td>
<td>Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, evidence-based guidelines</td>
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Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials and evidence-based guidelines.

Three systematic reviews with meta-analyses and one randomized controlled trial were identified regarding the clinical effectiveness of cleansing during the insertion and maintenance of indwelling urinary catheters for admitted patients in acute or long-term care settings. Additionally, seven evidence-based guidelines were identified. No relevant health technology assessments were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

Three systematic reviews with meta-analyses,1,3 one randomized controlled trial (RCT),4 and seven evidence-based guidelines5–11 were identified regarding the clinical effectiveness of cleansing during the insertion and maintenance of indwelling urinary catheters for admitted patients in acute or long-term care settings. There was an overall agreement in the literature that water or saline (with or without soap) is either equivalent or superior to disinfecting agents for cleansing during the insertion and maintenance of indwelling urinary catheters.1–8,10,11

One systematic review with meta-analysis1 evaluated the effectiveness of antiseptic cleansing prior to urinary catheter insertion for preventing catheter-associated urinary tract infections (CAUTIs). This review included 14 RCTs.1 No information regarding the patient setting was available in the abstract. Meta-analysis reported no difference in the incidence of CAUTIs between cleaning with antiseptic agents (povidone-iodine, chlorhexidine, or green soap) and non-antiseptic agents (soap, water, or saline).1

A second systematic review with meta-analysis2 investigated the effectiveness of different strategies for replacing long-term indwelling catheters. A total of 107 participants from three RCTs were included in the review. The strategies assessed were various time intervals between catheter replacement, the use of antibiotic prophylaxis at the time of replacement, and the difference between two cleaning solutions as part of catheter replacement.2 Although the evidence was limited, the authors concluded that there was no difference in the incidence of asymptomatic bacteruria between cleaning with chlorhexidine and water at the time of catheter replacement.2

A third systematic review with meta-analysis3 evaluated the effectiveness of cleaning the urinary meatus with water or saline versus disinfecting with antiseptic solutions prior to catheter insertion. The patient setting was not specified in the abstract. The authors concluded that there was no difference between cleaning and disinfecting the urinary canal prior to insertion of a urinary catheter.3 There was limited evidence that cleaning with water or saline may decrease the incidence of urinary tract infections.3

One RCT4 evaluated the effectiveness of perirethral cleansing with either 10% povidone-iodine, 0.05% chlorhexidine gluconate, or sterile water prior to indwelling urinary catheter insertion for the prevention of CAUTIs in children. One hundred and twenty-two patients were randomly allocated to receive one of the three cleansing solutions. The observed rates of CAUTIs did not significantly differ between groups.4
Seven evidence-based guidelines containing recommendations regarding cleansing during the insertion and maintenance of indwelling urinary catheters were identified. These were published by the National Institute for Health and Care Excellence (NICE),\(^5\) the Joanna Briggs Institute (JBI),\(^6\) the Centers for Disease Control and Prevention (CDC),\(^9\) and the Agency for Healthcare Research and Quality (AHRQ).\(^{10,11}\) Three guidelines recommend cleansing to be performed with soap and water,\(^{5,10,11}\) one guideline recommends the use of sterile saline,\(^7\) two guidelines stated that there is no difference between water and antiseptic solutions,\(^{6,8}\) and one guideline recommends that further research is needed to make a recommendation between antiseptic solutions versus sterile water or saline.\(^9\)

**References Summarized**

**Health Technology Assessments**

No literature identified.

**Systematic Reviews and Meta-Analyses**

   PubMed: PM27986361

   PubMed: PM27457774

   PubMed: PM24626369

**Randomized Controlled Trials**

   PubMed: PM27824737

**Guidelines and Recommendations**


   Requires subscription


See: Catheter Care/Maintenance

Appendix — Further Information

Previous CADTH Reports


Systematic Reviews and Meta-Analyses

Role of Cleansing Techniques and Solutions Unclear


Guidelines and Recommendations

Unspecified Population


Clinical Practice Guidelines – Uncertain Methodology


Review Articles


Additional References
