10-2014

Cleansing agent utilization efficacy prior to foley insertion: Summary

Children's Mercy Kansas City

Office of Evidence Based Practice – Specific Care Question:

In hospitalized pediatric patients with indwelling urinary catheters, does the use of betadine for cleansing prior to catheter insertion reduce the risk of CAUTI during the first 3 days of catheter dwell, compared to cleansing with soap and water.

Do hospitalized pediatric patients with indwelling urinary catheters experience more dermatitis following insertion using betadine as a cleaning agent or soap and water?

Specific Care Question :

In hospitalized pediatric patients with indwelling urinary catheters, does the use of povidone-iodine for cleansing prior to catheter insertion reduce the risk of CAUTI during the first 3 days of catheter dwell, compared with cleansing with soap and water? What is the harm associated with using povidone-iodine as a cleansing agent?

Question Originator:

Catheter Associated Urinary Tract Infection Hospital Acquire Complications Team. Team members that identified the literature to include in this review were:

Michele Fix, MSN RN NE-BC
Mary Hunter RN, BSN

Plain Language Summary from The Office of Evidence Based Practice: Summary:

Question 1:

The Healthcare Infection Control Practices Advisory Committee (Gould et al., 2010) published a guideline that expanded the original Guideline for Prevention of Catheter-Associated Urinary Tract Infections (Wong, 1981). Gould et al. (2010) state that in the acute care hospital setting, "sterile gloves, drape, sponges, an **appropriate antiseptic or sterile solution** for periurethral cleaning, and a single-use packet of lubricant jelly for insertion" should be used when inserting a urinary catheter (p. 321). However, the author of this document could not find any citations supporting this statement.

In addition to the guideline, there was one very low quality study (Nasiriani et al., 2009) which reported no significant increase in urinary tract infections between the use of tap water or povidone-iodine in cleansing the periuretheral area (see pages 4-5). Given the paucity of replication studies related to periuretheral cleansing agents and the Guidelines developed by the Healthcare Infection Control Practices Advisory Committee, the EBP Office would recommend the use of an appropriate antiseptic solution or sterile solution.

Question 2:

Due to the ethical issues related the study design needed to answer this question, case studies are the only type of literature available to answer this question. Case study literature cannot be tabled by the Office of EBP. The recommendation that the EBP Office can make is if the CAUTI HAC identifies povidone-iodine to be the "appropriate antiseptic solution" used to cleanse the periuretheral area, the solution should not be allowed to pool under the patient. Exposing the patient skin's to wetness and moisture leads to skin-softening and tissue disintegration which can increase the likelihood of a chemical burn to the patient's buttocks (Chiang, Lin, & Yeh, 2011; Rees, Sherrod, & Young, 2011).

EBP Scholar's responsible for analyzing the literature:

J.A. Bartlett, PhD, RN

EBP team member responsible for reviewing, synthesizing, and developing this document:

J.A. Bartlett, PhD, RN

Children's Mercy

If you have questions regarding this Specific Care Question – please contact Michele Fix @ mfix@cmh.edu or Mary Hunter @ mehunter@cmh.edu

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Search Strategy and Results:

Prior to a PubMed search, C . Butler, MLS, Librarian-Informationist, identified the *Guideline for Prevention of Catheter-Associated Urinary Tract Infections* (Gould et al., 2010). Given this guideline it was determined to search the scientific literature limited to after January 1, 2009.

The search for question one follows:

1. ("Catheters, Indwelling"[Mesh] OR "Catheter-Related Infections"[Mesh] OR "Urinary Tract Infections/prevention and control"[Mesh]) AND "Povidone-Iodine"[Majr] Filters: From 2009/01/01 to 2014/12/31
2. urinary tract infection AND povidone-iodine (keywords) Filters: From 2009/01/01 to 2014/12/31 (Seven articles identified by C. Butler, MLS, Librarian-Informationist)

Five articles identified from the above search strategy for review to include in synthesis by M. Fix and M. Hunter:

Al-Farsi, Oliva, Davidson, Richardson, and Ratnapalan (2009)
Jeong et al. (2010)
Sublett (2009)
Nasiriani et al. (2009)
Ercole et al. (2013) is an integrated review. The primary articles (Al-Farsi et al., 2009; Nasiriani et al., 2009) identified in the Ercole et al. (2013) review that could potentially answer question one were also identified in the PubMed search.

The search for question two follows:

"Povidone-Iodine/adverse effects"[Majr] Filters: From 2009/01/01 to 2014/12/31, Child: birth-18 years (Seven articles identified by C. Butler, MLS, Librarian-Informationist)

Three articles identified to include in synthesis by M. Fix , MSN RN NE-BC and M. Hunter, RN, BSN:

Chiang et al. (2011)
Gray, Katelaris, and Lipson (2013)
Rees et al. (2011)

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Guideline/Studies included in this review:

Gould et al. (2010)
Nasiriani et al. (2009)

Studies not included in this review with rationale for exclusion:

Author	Rational for exclusion
Ercole et al. (2013)	Integrative review.
Al-Farsi et al. (2009)	The study population included all patients requiring urinary catheterization for the diagnosis of UTI therefore it would not be inappropriate to create a causal relationship with between the UTI and the cleansing solution.
Jeong et al. (2010)	This study calculated the interval and cumulative incidence of CAUTI rates receiving one of four daily perineal care assignments (soap-and-water, skin cleansing foam, 10% povidone-iodine solution, and normal saline) on females requiring indwelling urinary catheters. The authors did not measure the outcome of dermatitis.
Sublett (2009)	This was a column reviewing Nasiriani et al. (2009) article.
Chiang et al. (2011)	Case report
Gray et al. (2013)	Letter to the editor
Rees et al. (2011)	Case report

Method Used for Appraisal and Synthesis:

The Cochrane Collaborative computer program, Review Manager (RevMan 5.1.7) was used to synthesize the analyzed study.

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Characteristics of included study :

Nasiriani 2009

Methods Randomized Control Trial (RCT)

Participants
Setting: Iran, Academic hospital
Randomized: Treatment group (tap water group) n = 36; Control group (povidone-iodine group) n = 36
Completed: Treatment group (tap water group) n = 30; Control group (povidone-iodine group) n = 30
Age: mean age for the 60 study participants was 48.18 ± 10.32 years
Gender: All participants were female
Inclusion criteria: women undergoing inpatient gynecology surgery who required urinary catheterization as part of their routine care and were expected to have their catheter in place for 24 to 48 hours
Exclusion criteria: Women were excluded from the study if they took an antibiotic drug the week prior to their surgery, if their catheter was removed before 24 hours, or if there were bacteriruia on the first urine sample.
Power analysis: The authors did not provide a power analysis

Interventions All catheters were removed 24 hours following surgery. Routine sterile hospital procedure was followed during insertion of the catheter for all subjects.
Treatment group: tap water was used to clean the periurethral area
Control group: povidone-iodine was used to clean the periurethral area

Outcomes Rates of UTI (colony count greater than 10^5): Two urine specimens were obtained from each patient for urinalysis and culture, one at the time of catheterization (a clean voided urine specimen) and the other at the time of catheter removal 24 hours post-surgery.

Notes

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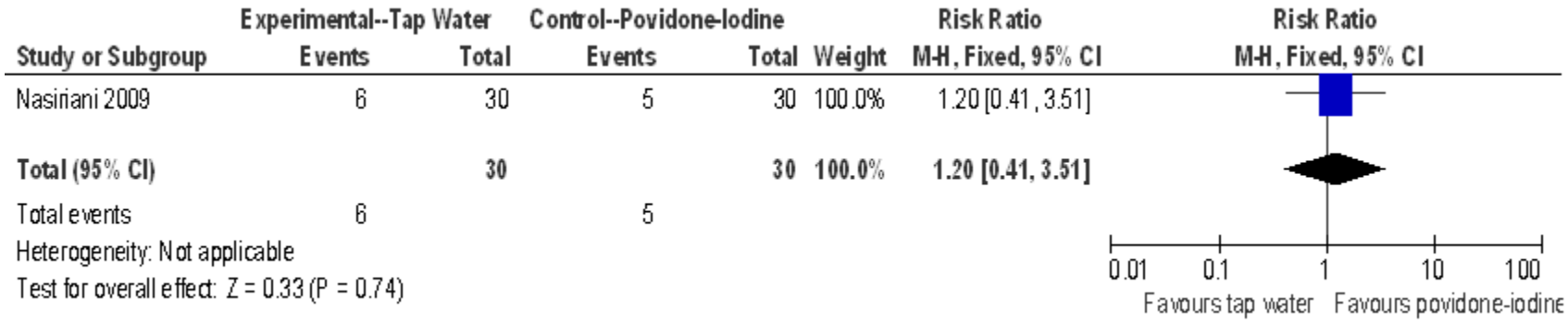
Risk of bias table

Bias	Scholars' judgment	Support for judgment
Random sequence generation (selection bias)	Unclear Risk	Insufficient information about the sequence generation process was reported to permit judgment.
Allocation concealment (selection bias)	Unclear Risk	Insufficient information about the allocation concealment process was reported to permit judgment.
Blinding of participants and personnel (performance bias)	Unclear Risk	The research team reports a single-blinded design was used; however, they do not report who was blinded.
Blinding of outcome assessment (detection bias)	Unclear Risk	The research team reports a single-blinded design was used; however, they do not report who was blinded.
Incomplete outcome data (attrition bias)	Unclear Risk	Per protocol analysis occurred with the data.
Selective reporting (reporting bias)	Unclear Risk	
Other bias	Unclear Risk	

Figures:



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