DOI: 10.1590/S0080-623420130000600023

Effectiveness of cleaning or disinfecting the urinary meatus before urinary catheterization: a systematic review

EFICÁCIA DA LIMPEZA OU DESINFEÇÃO DO MEATO URINÁRIO ANTES DA CATETERIZAÇÃO URINÁRIA: REVISÃO SISTEMÁTICA

EFICACIA DE LA LIMPIEZA O DESINFECCIÓN DEL MEATO URINARIO ANTES DEL CATETERISMO URINARIO: REVISIÓN SISTEMÁTICA

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ABSTRACT

The urinary tract infections associated with catheterization are very common in hospital and home care contexts. Currently there are several recommendations for its prevention, however, when approaching the kind of solute used in the urinary meatus prior to catheterization doubts continue to persist. Thus this study aimed at determining the effectiveness of cleaning the urinary meatus with water or saline comparing to its sterilization through a systematic review and meta-analysis. In order to do so, the principles proposed by the *Cochrane Handbook* were followed, a critical analysis was conducted by two researchers and the statistical analysis was performed with the use of STATA 11.1. We concluded that the cleaning or disinfection of the urinary canal prior to bladder catheterization is not statistically significant (OR=1.07, CI 95%=0.68-1.68, p=0.779) and that there is some evidence that the use of water/saline reduces rates of UTI (urinary tract infection).

DESCRIPTORS

Urinary tract infections
Urinary catheterization
Disinfection
Water

RESUMO

As infeções do trato urinário associadas à cateterização são muito frequentes no contexto comunitário e hospitalar. Existem atualmente várias recomendações para sua prevenção, contudo, quando abordado o soluto a utilizar no meato urinário previamente à algaliação continuam a persistir dúvidas. Assim, este estudo procurou determinar a eficácia da limpeza do meato urinário com água ou soro fisiológico comparativamente à sua assepsia por meio de uma revisão sistemática com metanálise. Para isso foram seguidos os princípios propostos pelo *Cochrane Handbook*, a análise crítica realizada por dois investigadores e a análise estatística com recurso ao programa STATA 11.1. Podemos concluir que a limpeza ou desinfeção do meato urinário previamente à cateterização vesical não é estatisticamente significativa (OR=1,07, IC 95%=0,68-1,68, p=0,779), existindo alguma evidência de que a utilização de água/soro fisiológico reduz as taxas de ITU.

DESCRITORES

Infecções urinárias
Cateterismo uninário
Desinfecção
Água

RESUMEN

Las infecciones del tracto urinario asociadas con cateterismo son muy comunes en el contexto comunitario y hospitalario. Actualmente existen varias recomendaciones para su prevención. Sin embargo, las dudas persisten en la elección del soluto utilizado en el meato urinario antes del cateterismo. Por lo tanto, este estudio trata de determinar la eficacia de la limpieza del meato urinario con agua/solución salina comparativamente con su asepsia, mediante la realización de una revisión sistemática con meta-análisis. Para lo cual, se siguieron los principios propuestos por el Manual Cochrane, el análisis crítico realizado por dos investigadores y el análisis estadístico utilizando el programa STATA 11.1. Podemos concluir que la limpieza o desinfección del meato urinario antes del cateterismo no es estadísticamente significativo (OR=1,07, 95%CI=0,68-1,68, p=0,779) existiendo algunas evidencias de que el uso de agua/solución salina reduce las tasas de ITU.

DESCRIPTORES

Infecciones urinaria
Cateterismo urinario
Desinfección
Agua

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Português / Inglês
www.scielo.br/reeusp

Received: 05/01/2013
Approved: 07/12/2013

INTRODUCTION

The urinary tract infection (UTI) is one of the most common nosocomial infections that occur primarily after bladder catheterization. Several measures are already strongly recommended for the prevention of urinary tract infection associated with catheterization, however, doubts still persist about the most appropriate procedure when it comes to the solute to be used in the urinary meatus prior to insertion of urinary catheter[1].

There are several risk factors related to urinary tract infection such as immunosuppressive therapy, a prolonged stay in hospital, urological handling and the aforementioned bladder catheterization. Among them, the most relevant to the development of UTI is undoubtedly the presence of a urinary catheter, since it corresponds to approximately 80% of cases[2].

The practices of bladder catheterization, the assessment of its need (based on individual risk assessment of the person); selection of the type of urinary catheter (according to the expected duration); aseptic insertion and maintenance of urinary catheter and system and its correct removal are relevant from the point of view of prevention and control of UTI[2].

Several measures are recommended for the prevention of infection related to bladder catheterization such as reducing the duration of catheterization (the most important measure), maintaining a closed drainage system, care with the urinary meatus, the use of a technique for sterile collection and use of the recommended insertion technique[1-3]. Benefits of using many of them for reducing infections has been scientifically proven.

However, when doing research on the recommended technique for bladder catheterization, the subject is still found to be controversial. On the one hand there is the uniform opinion about the need to reduce the existing urinary meatus flora before the introduction of the urinary catheter, but the doubt remains regarding the procedure to be used: antisepsis or cleaning[1].

Among the various recommendations, in which the Portuguese (Portugal) are included, some guidelines and studies indicate that urinary meatus should be cleaned with water or saline solution since there is no advantage in using antiseptic solution to clean it prior to insertion of urinary catheter as a way to prevent UTI[4-5].

There are advantages and disadvantages to using water, saline and antiseptic solutions, which should be subject to scrutiny. Regarding secondary reactions, water and saline have minimal effects. Antiseptic solution on its turn may cause skin irritation, burning, and anaphylactic reactions[6-7]. Furthermore, it is noteworthy that the latest recommendations emphasize the need for further research of this issue categorized as *no recommendation/ unresolved issue*[2].

The present study aims to gather and organize all the results of studies on cleaning the urinary meatus with water or saline or antiseptic solution prior to bladder catheterization for preventing UTI, aiming to reach the highest level of evidence and grade of recommendation (A – systematic review with meta-analysis) in order to document the *state of the art* and to attest that clinical decisions are based on the best available evidence.

The research question was defined as: *What is the effectiveness of cleaning with water or saline compared to the urinary meatus antisepsis before the introduction of urinary catheter, in prevention of urinary tract infections?*

The present study aims to gather and organize all the results of studies on cleaning the urinary meatus with water or saline or antiseptic solution prior to bladder catheterization for preventing UTI, aiming to reach the highest level of evidence and grade of recommendation...

METHOD

This is a systematic review with meta-analysis conducted by using literature in the following databases: Google Scholar; CINAHL Plus with Full Text, MedicLatina, Academic Search Complete, MEDLINE with Full Text, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Nursing & Allied Health Collection: Comprehensive (via EBSCO), PubMed and Google scholar. Furthermore, the analysis of the literature lists of some review studies allowed us to add two primary studies. A search was also carried out in the database of the library ESSV (Escola Superior de Saúde de Viseu), in which a study was obtained[1].

The descriptors used for the location of the references were: *water, antiseptic, urinary catheterization, urinary tract infections e randomized controlled trials*; and the following strategy was adopted to search in the aforementioned databases:

#1 MeSH descriptor *Water* (explode all trees)

#2 MeSH descriptor *Antiseptic* (explode all trees)

#3 MeSH descriptor *Urinary Catheterization* (explode all trees)

#4 MeSH descriptor *Urinary Tract Infections* (explode all trees)

#5 MeSH descriptor *Randomized Controlled Trials as Topic*; (explode all trees)

#6 [#1 AND #2 OR #3 OR #4] (TI Title)

#7 [#1 AND #2 OR #3 OR #4 AND #5] (Title and abstract)

The first sample of studies was composed of 9641 studies and the requirements for analysis were:

- Full text;
- Date of publication (from 2000 to the present day);
- Languages: Portuguese and English.

Inclusion and exclusion criteria were defined as presented in Chart 1.

Chart 1 – Inclusion and exclusion criteria for the selection of studies - Viseu, Portugal, 2013.

Selection criteria	Inclusion criteria	Exclusion criteria
Participants	Aged over 18 years;No prior bladder catheterization;No signs of UTI;Without administration of antibiotics.	All studies that did not meet the inclusion criteria.
Interventions	Use of water or saline and antiseptics.	All studies that did not use the solutes of inclusion criteria.
Comparisons	Comparison between the use of water or saline with antiseptic to clean the urethral meatus prior to bladder catheterization.	All studies that did not compare the groups of the inclusion criteria.
Outcomes	Studying the variable:- Number of users with urinary tract infection.	All studies that did not analyze the variable of inclusion criteria.
Design	Experimental and quasi-experimental studies;Systematic reviews.	Other designs besides the ones in the inclusion criteria.

A critical analysis of the studies was conducted by two researchers individually and none of them had knowledge of the results of the analysis of the other at any point in the process[8].

For the critical evaluation of the quality of the included studies were used the instruments *Grid for the critical analysis of a study describing a prospective, clinic, randomized, controlled essay* of the Centro de Estudos de Medicina Baseada na Evidência (Center for medicine based on evidence) of the Faculdade de Medicina de Lisboa and *were only considered as studies of quality* the ones with score equal to or higher than 75%[9].

Similar studies in terms of population and interventions had their results combined and meta-analysis was performed using the STATA® 11.1. The results were expressed as *odds ratio* (OR) with confidence intervals of 95% (CI 95%).

In the absence of significant heterogeneity the fixed effects model was used when combining the studies. In the presence of significant heterogeneity, alternative analyzes were conducted using the random effects model[10].

RESULTS

The initial sample (n=9.641) was reduced to 1.562 studies that had their titles and abstracts analyzed to refine the whole process. Among these, 1.539 were repeated for not specifically referring to the topic under study or for being duplicated, and the sample decreased to 23 studies. After applying the inclusion and exclusion criteria 18 studies that did not meet the requirements for the composition of the sample were eliminated and only five were selected for the corpus of this study.

A descriptive summary was prepared with the most important aspects of each of the studies, as well as an analysis of the quality. We elaborated an individual chart for each study, in which were summarized the main features and dimensions of the randomized and controlled clinical trials (RCT) in the sample.

In the study carried out in 2009[1] the incidence of UTI was evaluated when using povidone iodine or saline to disinfect or clean the urethral meatus prior to insertion of the urinary catheter. The sample included 60 participants with a diagnosis of stroke with mean age of 73.93 years, of both sexes, divided into two groups: the experimental (n=10), in which cleaning of the urinary meatus was done with saline, and the control (n=14), in which the disinfection of the urinary meatus was performed with povidone iodine. The inclusion criteria were diagnosis of stroke, presence of urine output, absence of previous bladder catheterization, absence of antibiotics therapy and of UTI. The exclusion criteria was the length of stay inferior to 72 hours[1].

Another study conducted in 2008[4] was developed with a sample of 20 clients who received home care. Initially there were 26 customers, however, four refused to participate in the day of changing the bladder catheter and two were excluded for having UTI and taking antibiotics for fever. Participants were randomly divided into two groups: the experimental (n=12), in which the urinary meatus disinfection was done with 0.05% chlorhexidine gluconate and the control (n=8), in which sterile water was used. Inclusion criteria was defined as: age, number of UTI, number of diagnoses, duration of catheterization, frequency of care to the meatus, sex, accommodation, activity level and colony count. In the study four urine samples were collected from each participant[4].

A third study conducted in 2009[5] aimed at comparing the bacteriuria incidence rates and UTI in 60 women undergoing gynecological surgery in which the cleaning and disinfection of the meatus prior to insertion of the urinary catheter was performed with water and povidone iodine solution. Participants were randomly selected to constitute the experimental group (n=30), in which the cleaning of urethral meatus was done with water, and the control group (n=30), in which the disinfection the urinary meatus was performed with a solution of povidone iodine. It were accepted the female participants with an average age of 48.18 years and the inclusion factors included age and

number of vaginal examinations. As exclusion factors, the authors considered all cases that had proceeded to taking antibiotic in the previous week and all who had bacteriuria in the first urine culture. Two urine cultures were taken; the first when inserting the catheter and the second after its removal 24 hours after surgery[5].

The study carried out in 2002[11] examined whether the effect of saline solution and povidone iodine applied to the canal, as well as administration of 1g of antibiotic, prevent UTI after transurethral resection of the prostate. A total of 167 participants with benign prostatic hyperplasia were randomized into three groups: in group A (n=66) it was applied a compress soaked in saline at the meatus; in group B (n=64) it was applied a compress soaked in povidone iodine at the meatus; and in group C (n=37) it was administered 1g of antibiotic. The inclusion criteria were men with benign prostatic hyperplasia with an average age of 66.5 years. The exclusion criteria were the presence of pyuria and bacteriuria in the month prior to surgery, history of prostate cancer, the presence of urinary calculi, antibiotic therapy, hepatic or renal impairment and immunosuppression. The presence of UTI was assessed at the intraoperative moment when removing the bladder catheter and in the first consultation after discharge from hospital[11].

The study from 2001[12] carried out between October 1999 and April 2000, included 436 pregnant women who were randomly divided into two groups: the experimental group (n=217), in which was performed disinfection of the urinary meatus with chlorhexidine gluconate 0 1% and the control group (n=219), in which the urinary canal cleaning was done with water. The inclusion criteria were: age, parity, previous number of UTI and number of vaginal examinations during delivery. The urinary colonization was done through a urine culture, collected 24 h after insertion of the urinary catheter[12].

With regard to the hierarchy of evidence and for having adopted the classification proposed by the *Evidence-Based On-Call* (http://www.eboncall.org, accessed in Viseu, January 2013) we can say that we have a level 1b, which is related to randomized and controlled clinical trials (RCT) because four of the included studies[4-5,11-12] are RCT. The study by Fernandes[1] presents a level 2b because it is not a randomized clinical trial (uncontrolled or unblinded).

As we are conducting a systematic review of the literature with meta-analysis of randomized and controlled clinical trials, we will reach the first level of evidence (1a) and the established recommendations will be of level A.

Chart 2 – Characteristics of the included studies, meta-analysis and corresponding OR – Viseu, Portugal, 2013.

Authors/ Year/Country	Type of study/ Population	Interventions		Results/ Outcomes	Conclusions	OR (95% CI)
		Experimental	Control			
Cheung *et al.*, 2008[4] (China)	RCT/ n=20 Elderly in home care	Chlorhexidine gluconate 0.05%	Sterile water	There is no statistically significant difference in the incidence of symptomatic UTI (X^2=3.33, p=0.7). Infection: Water: 0/8 (0%) Antiseptic: 0/12 (0%)	The sterile water does not increase the UTI, improving cost effectiveness.	1.47 (0.03-81.55)
Nasiriani *et al.*, 2009[5] (Iran)	RCT/ n=60 Women undergoing gynecological surgery	Sterile water	Povidone iodine	There is no statistically significant difference in the incidence of symptomatic UTI. (X^2 = 0.111; df = 1; p=0.5). Infection: Water: 6/30 (20%) Antiseptic: 5/30 (17%)	No increase of effectiveness in reducing UTI with the use of antiseptic.	1.25 (0.34-4.64)
Ibrahim & Rashid, 2002[11] (Saudi Arabia)	RCT/ n=167 Men after transurethral resection of the prostate	A- Saline B- 1gr of intravenous antibiotic	Povidone iodine	The analysis of bacteriuria was not statistically significant in the three groups. (A-27%, B-27%; C-29.5%; p=0.94). Infection: Saline: 18/66 (27%) Antiseptic: 19/64 (30%)	No increase of effectiveness in reducing UTI with the use of antiseptic or with antibacterial prophylaxis.	0.89 (0.41-1.90)
Webster *et al.*, 2001[12] (Australia)	RCT/ n=436 Pregnant women	Chlorhexidine gluconate 0.1%	Water	The incidences of UTI were similar. Infection: Water: 18/219 (8%) Antiseptic: 20/217 (9%)	The number of UTI does not vary depending on the technique and solute used.	0.88 (0.45-1.72)
Fernandes, 2009[1] (Portugal)	RCT/ n=60 Users with stroke	Saline	Povidone iodine	The canal disinfection with povidone iodine is more effective in prevention of UTI when compared with the saline (X^2=5.53, p=0.019). Infection: Saline: 7/10 (70%) Antiseptic: 2/14 (14%)	There is an increased efficacy in reducing UTI when antiseptics are used.	14.00 (1.86-105.27)
Fixed effects model						1.07 (0.68-1.68)*

* Results do not have statistical significance (p = 0.779).
Test for heterogeneity: Q = 6.870 on 4 *degrees of freedom* (p = 0.143).

Statistical analysis

In order to proceed to the statistical analysis (meta-analysis) of the results, initially the odds ratios and standard deviations were calculated according to the fixed effects model, which assumes that there is a size effect similar and true in all studies, with differences explicable only by sampling error[10]. Chart 2 presents the characteristics of the included studies and the results of the meta-analysis.

As shown in table 2, we can infer that the studies are homogeneous because the heterogeneity is not significant according to the Cochran's Q test (p = 0.143), which confirms the choice of using the fixed effects model when combining studies.

Examining the *forest plot* (Figure 1) we can infer that as the combined result of the meta-analysis "touches" the vertical line, there is no statistical significance. Despite that fact, it is noteworthy that the number of infections among the groups is not the same. After the analysis of these findings we can infer that there is a higher risk of urinary infection in the group of disinfection, which is corroborated by figure 1 and the meta-analytic result OR=1.07 (0.68-1.68), although not reaching the level of significance (p=0.779).

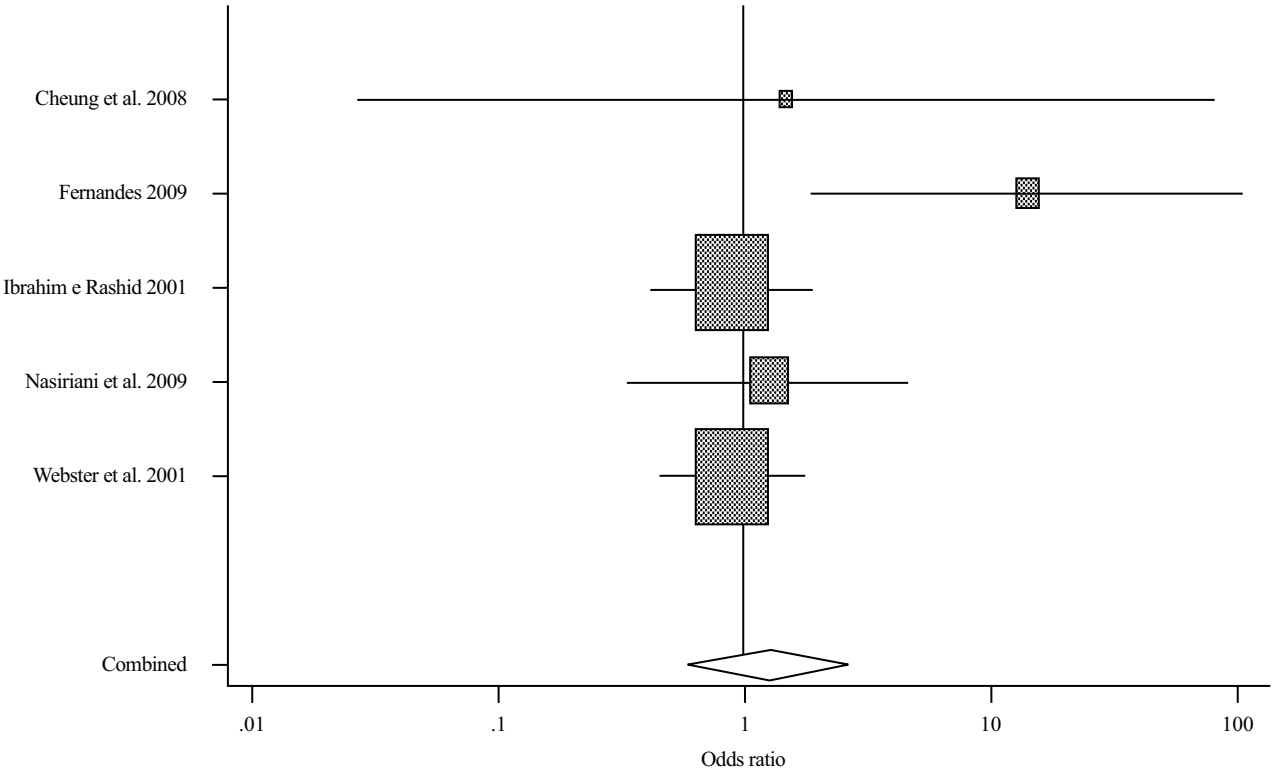

Figure 1 – Forest plot (fixed effects model) – Viseu, Portugal, 2013.

DISCUSSION

For the initially stated research question the objective was to analyze the main results and their applicability.

After critical analysis of the quality of the study carried out in 2009[1], it showed a score of 63%, which is below 75%, the minimum required to be considered a *study of quality* and to be incorporated to the corpus of this study. However, we considered necessary and appropriate to include this article because it was the only study in Portugal and therefore relevant to external validity and transferability of the results of our study to the Portuguese population.

According to this study, there is significant difference in the incidence of UTI when using povidone iodine or saline prior to insertion of the urinary catheter, in other words, the incidence of UTI is dependent on the solute used. The results indicate that the antisepsis of the urinary meatus with povidone iodine prior to insertion of the bladder catheter is most beneficial in the prevention of UTI when compared with cleaning with saline[1].These data contradict the results published in other studies with the same objective[4-5,11-12].

In the analysis of the 2008[4] study, which aimed at comparing the risk of symptomatic UTI when using chlorhexidine gluconate 0.05% *versus* sterile water for cleaning the canal before insertion of a urinary catheter, the results showed no significant difference in the acquisition of UTI, whether performing cleaning or disinfection of the urinary meatus[4].

The conclusion of the study from 2001[12] is similar. Even though there is no significant evidence between cleaning or disinfecting the urinary meatus, there is the need to strictly adhere to an aseptic technique for performing bladder catheterization and it was found that there are advantages in terms of cost-effectiveness when canal cleaning is done[12].

The authors of the study conducted in 2002[11] also reported that the rate of bacteriuria did not differ when performed cleaning or disinfection of the meatus. However, when doing the antibacterial prophylaxis, it was observed an increased efficacy in reducing bacteremia during surgery, thus with no significant difference[11].

Some authors suggest the need for additional research to see if it is safe to perform the cleaning of urinary meatus without any occurrence of UTI. If these studies are conclusive, proving that this practice is not associated with increased UTI, it may become a common practice, since there may be allergic reactions to the antiseptic solution. Moreover, the costs will be lower thus having the greatest benefits[5].

However, in accordance with the best available evidence, the use of antiseptic and anti-microbial solutions for disinfection of the urinary meatus does not reduce the risk of UTI. The cleaning of the canal with water is sufficient to keep the area clean. Water, saline or antiseptic are equally effective in cleaning or disinfecting the meatus [13].

In defense of the evidence found, it should be noted however, that the results of the RCT included in the corpus of this study coincide with the results of the meta-analysis and reveal that cleaning and disinfection of the urinary meatus prior to bladder catheterization do not show statistically significant differences, as there is no difference in the acquisition of UTI (OR= 1.07, CI 95%=0.68-1.68, p=0.779).

The need to continue to investigate the matter should be reinforced requiring researchers to increasingly complain of institutions that perform or record systematic reviews. These institutions must include theoretical revisions or revisions that also concern the theoretical dimensions of empirical work[14].

CONCLUSION

Based on the analysis of the selected studies, we can state that the initially proposed objectives have been achieved, being possible to globally correspond to the research question of this review: *What is the effectiveness of cleaning with water or saline compared to the urinary meatus antisepsis before the introduction of urinary catheter, in prevention of urinary tract infections?*

After the analysis of the studies no evidence was found that the use of water/saline solution to clean the canal increases the rates of UTI. There is however some evidence of reducing these infections when comparing with antiseptic disinfection, although not reaching statistical significance.

Since there is some evidence that the use of water/saline reduces rates of UTI, we suggest the realization and implementation of a new guideline, with the primary objective of greater management resources, making the technique related to the research question a general subject to all health professionals.

REFERENCES

1. Fernandes C. Incidência e controlo da infeção urinária em doentes com AVC. Rev Investig Enferm. 2009;6(14):6-14.
2. Centers for Disease Control and Prevention; Healthcare Infection Control Practices Advisory Committee. Guideline for Prevention of Catheter-associated urinary tract infections, 2009 [Internet]. 2009 [cited 2013 Jan 23]. Available from: http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf
3. Crouzet J, Bertrand X, Venier AG, Badoz M, Husson C, Talon D. Control of the duration of urinary catheterization: impact on catheter-associated urinary tract infection. J Hosp Infect. 2007;67(3):253-7.
4. Cheung K, Leung P, Wong YC, To OK, Yeung YF, Chan MW, et al. Water versus antiseptic periurethral cleansing before catheterization among homecare patients: a randomized controlled trial. Am J Infect Control. 2008;36(5):375-80.
5. Nasiriani K, Kalani Z, Farnia F, Motavasslian M, Nasiriani F, Engberg S. Comparison of the effect of water versus povidone-iodine solution for periurethral cleaning in women requiring an indwelling catheter prior to gynecologic surgery. Urol Nurs. 2009;29(2):118-21, 131.
6. Al-Farsi S, Oliva M, Davidson R, Richardson SE, Ratnapalan S. Periurethral cleaning prior to urinary catheterization in children: sterile water versus 10% povidone-iodine. Clin Pediatr (Phila). 2009;48(6):656-60.
7. Hung A, Giesbrecht N, Pelingon P, Bissonnette R. Sterile water versus antiseptic agents as a cleansing agent during periurethral catheterizations. NENA Outlook. 2010;33(2):18-21.
8. Higgins J, Green S. Cochrane handbook for systematic reviews of interventions: version 5.0.2 [Internet]. London: The Cochrane Collaboration; 2009 [cited 2013 Jan 20] Available from: http://www.cochrane-handbook.org
9. Carneiro A. Como avaliar a investigação clínica: o exemplo da avaliação crítica de um ensaio clínico. J Port Gastrenterol. 2008;15(1):30-6.
10. Rodrigues C, Ziegelmann P. Metanálise: um guia prático. Rev HCPA. 2010;30(4): 435-46.

11. Ibrahim A, Rashid M. Comparison of local povidone-iodine antisepsis with parenteral antibacterial prophylaxis for prevention of infective complications of TURP: a prospective randomized controlled study. Eur Urol. 2002;41(3):250-6.

12. Webster J, Hood RH, Burridge CA, Doidge ML, Phillips KM, George N. Water or antisseptic for periurethral cleaning before urinary catheterization: a randomized controlled trial. Am J Infect Control. 2001;29(6):389-94.

13. Leaver RB. The evidence for urethral metal cleansing. Nurs Stand. 2007;21(41):39-42.

14. Soares CB, Yonekura T. Systematic review of theories: a tool to evaluate and analyze selected studies. Rev Esc Enferm USP [Internet]. 2011 [cited 2013 Jan 20];45(6):1507-14. Available from: http://www.scielo.br/pdf/reeusp/v45n6/en_v45n6a33.pdf

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