A survey of nursing advice on sterile or clean urinary drainage bags for long-term indwelling urinary catheterisation

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Report to the Nursing Committee of the International Continence Society

From: Members of the Practice Subcommittee

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Preface

This project involved a survey of practice concerning the use of sterile or clean urinary drainage bags for long-term indwelling urinary catheterisation. It was undertaken by members of the Practice Subcommittee of the International Continence Society Nursing Committee in response to this issue being identified in 2009 as a topic of clinical interest to nurses specialising in continence nursing.

Acknowledgements

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Introduction

Urethral and/or supra-pubic indwelling urinary catheters (hereafter referred to as IDC) are sometimes used for individuals whose incontinence cannot be managed by other methods, or for individuals with a terminal illness, urinary obstruction or extensive decubitus ulcers (Agency for Health Care Policy & Research, 1996). Some individuals require catheters for short periods of time (short-term catheterisation), others require long-term catheterisation. Although there is a lack of agreement about the period of time that constitutes long-term catheterisation, the Society for Healthcare Epidemiology of America (SHEA) defines short-term catheterisation as IDC use <30 days and long-term catheterisation as IDC use ≥30 days (Nicolle, 2001a).

In long-term care facilities in Canada, approximately about 5% to 10% of residents of have an IDC (which may last for weeks, months or years) (Nicolle, 2001b) and in the UK, 9% of long-term care residents have an IDC (McNulty et al., 2003) however rates are thought to increase to 40% or more in some places (McNulty et al., 2003, DoH, 2000). In the USA, a recent prevalence study in five states gave prevalence rates of IDC use in .5 million nursing home residents ranges from 4.5% at admission to 12.6% at annual assessment (Rogers et al., 2008).

The prevalence of long-term IDC use in the community is less clear; however one study found that 4% of a district nurse's caseload in the UK involved care related to individuals with an IDC (Roe & Brocklehurst, 1987]. In another study involving 4010 older people (>65 years) receiving home care in 11 European countries, the prevalence of IDC use was 5.4% (range 0–23%) (Sorbye et al., 2005). The highest rates derive from a study by Landi et al., (2004) which identified that 38.1% of 1004 frail older community-dwelling women in Italy had an IDC.

A significant problem associated with the use of IDC is catheter-associated urinary tract infection (CAUTI) (Getliffe & Newton, 2006; Niël-Weise et al., 2005; Warren, 1994; Wilde et al., 2010). Getliffe and Newton (2006) reported an incidence of CAUTI of 8.5-10.7% in a community-based sample of 129 catheterised patients in the UK. Wilde et al., (2010) found that the self-rated incidence of CAUTI among 10 individuals receiving home care and 33 individuals with a spinal cord injury report in the USA was 70%. Rates vary widely depending on a number of factors including limitations in the quality and consistency of catheter related information, as well as a lack of standardised criteria used to define CAUTI (Getliffe & Newton, 2006).

The incidence of bacteria in the urine (bacteriuria) has been estimated to be about 3% to 10% higher each day after catheter insertion (Warren, 1982). Therefore, after one month of insertion of a catheter almost all patients are bacteriuric. The mechanisms by which bacteria enter the catheterised bladder are well established and include:

- direct entry (inoculation) at the time of catheter insertion
- extraluminally by ascending from the urethral meatus along the catheter urethral interface
- intraluminally by reflux of the organisms into the catheter lumen (Tambyah 1999; Warren 2001).

Another key consideration is the development of bioflims and encrustation (colonisation of microorganisms on the catheter surface) which are more resistant to treatment with antimicrobial agents than are free-living bacteria in the urine (Getliffe, 2003). The morbidity and mortality associated with CAUTI is considerable.

The morbidity and mortality associated with CAUTI is considerable. The risks of long-term IDC use are pyelonephritis, bacteremia, urosepsis and death, vesical or renal calculi, periurethral infections (including epididymitis and prostatitis) and bladder cancer (Warren et al., 1989; Warren et al., 1982; Locke et al., 1985; Kunin, 1997; Kunin et al., 1987; Rosser et al., 1999). Landi et al., (2004) for example found that catheterised subjects were more likely to die within a year (RR 1.44; 95%% CI 1.01-2.07) than non-catheterised subjects. These negative consequences highlight the importance of ensuring an evidence-based approach to minimising CAUTI..

The Centers for Disease Control provide extensive evidence-based recommendations for the prevention of CAUTI that specifically address the following topics:

I. Appropriate catheter use
II. Proper techniques for urinary catheter insertion
III. Proper techniques for urinary catheter maintenance
IV. Quality improvement programs
V. Administrative infrastructure
VI. Surveillance (Gould, 2009).

In relation to proper techniques for urinary catheter maintenance, the CDC advises the use of sterile equipment and the maintenance of a closed system of drainage (see Appendix A for summary list of CDC recommendations for IDC maintenance). Maintaining a sterile, closed system of urinary drainage involves using a sterile catheter with each catheter insertion as well

as sterile urinary drainage bags and having no interruptions or disconnections to the system. Using sterile equipment and maintaining a closed system of drainage however, present practical challenges for many IDC users who may elect to wear a urinary drainage bag attached to their leg during the day and change to a larger capacity bag or collecting device at night. Such changes involve disrupting an otherwise closed system of drainage. Moreover, changing to a new sterile bag for each occasion of use has important cost implications. Thus, in practice some IDC users clean and re-use their urinary drainage bags.

At this point in time, the relative risk and benefits associated with using a clean or sterile urinary drainage bag for long-term IDC use is unclear. A review of the Cochrane library reveals three systematic reviews on the use of a long-term IDC (see Appendix B); however patient outcomes associated with the use of clean or sterile urinary drainage bags were not addressed. Thus, there is a gap in evidence about the relative risk of cleaning and reusing urinary drainage bags for individuals living in the community with a long-term IDC. To address this gap, developed a survey to gain foundational information about the advice nurses give to IDC users regarding the use of clean or sterile urinary drainage bags and to explore factors associated with this advice. As methods for gaining such information and accessing the appropriate target group were unclear from the outset, the project was conducted as a pilot study.

Objectives

The objectives of the project were to:

1. Identify the advice nurses give to IDC users on sterile or clean urinary drainage bags for long-term IDC.
2. Compare and contrast nurses' advice to IDC users on sterile or clean urinary drainage bags for long-term IDC.
3. Describe factors that inform nurses' advice to IDC users on sterile or clean urinary drainage bags for long-term IDC.
4. Assess the best way to conduct a larger survey and to access a larger and more targeted sample of nurses.

Methods

The project was conducted as a descriptive, exploratory pilot project. The target group included members of the International Continence Society (ICS) who identified themselves as nurses (n=130). They were invited to complete a purpose designed survey that contained questions about the advice they give to IDC users regarding clean or sterile urinary drainage bags (See

Appendix C). The surveys were distributed through the ICS secretariat. Members were advised to return the completed survey to the ICS secretariat. Any potentially identifiable information was removed from the survey and they were then emailed in bulk to the project team. Data was qualitative. The data was analysed using Predictive Analytics SoftWare (PASW) version 17. Frequencies were done for the categorical data and written responses were analysed using thematic analysis. Ethical approval to conduct the survey was provided by Flinders University: Project No 4825.

Findings

Of 130 nurse members of the ICS, 28 responded to the survey. Of these, 22 (78.6%) indicated that their work included giving advice about the use of sterile or clean urinary drainage bags for long-term IDC users who lived in the community and 6 (21.4%) did not. The findings are based on respondents who identified themselves as providing advice to community-dwelling long-term IDC users (*n*=22).

Demographics

Fifteen of 22 (68.2%) respondents indicated the country and state (province) in which they worked:

- Australia: 7 (31.8%)
- Canada: 4 (18.2%)
- Belgium: 1 (4.5%)
- UK: 1 (4.5%)
- USA: 1 (4.5%)
- Switzerland: 1 (4.5%) (see Figure 1)

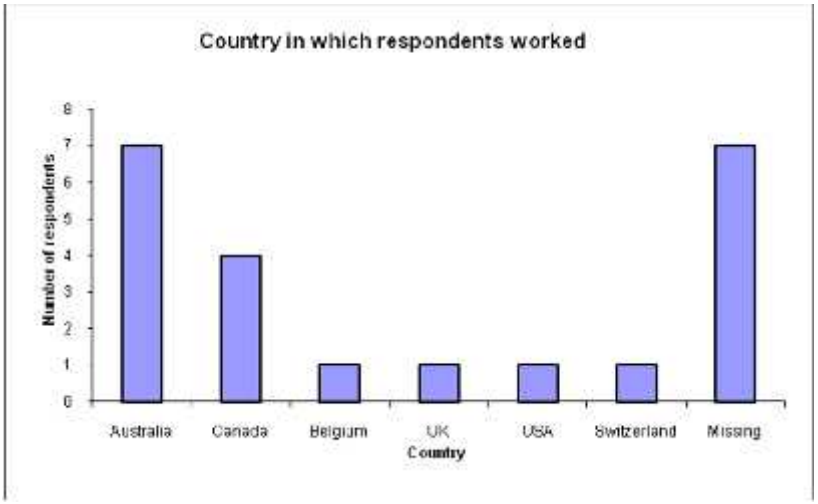

Figure 1. Number of responses for country in which respondents worked

Of 21 respondents who identified the type of organisation they worked for, ten (45.5%) identified a hospital, nine (40.9%) identified a community based organisation and two (9.1%) identified 'other' (see Figure 2).

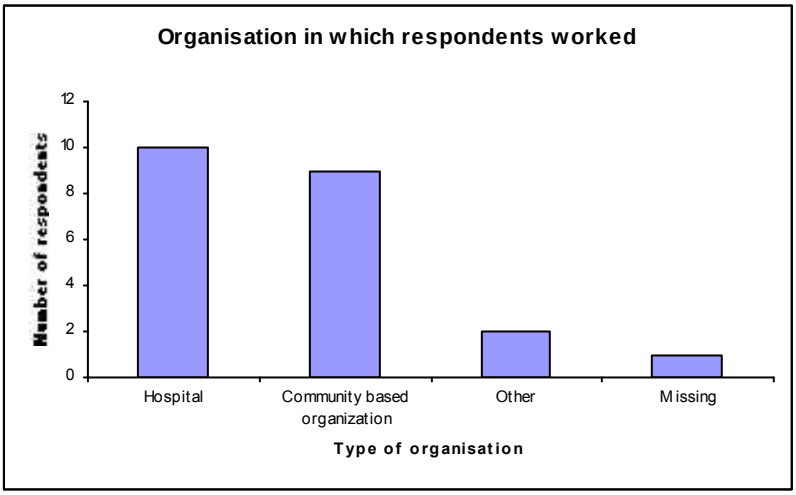

Figure 2. Number of responses for organisations in which respondents worked

Most respondents (*n*=21: 95.5%) identified nursing as the health discipline in their organisation that was responsible for educating consumers about catheters, however one respondent additionally ticked 'medicine' and two additionally ticked other (i.e. hygiene advisor (*n*=1) and NCA (*n*=1). Data were missing for one respondent (4.5%) (see Figure 3).

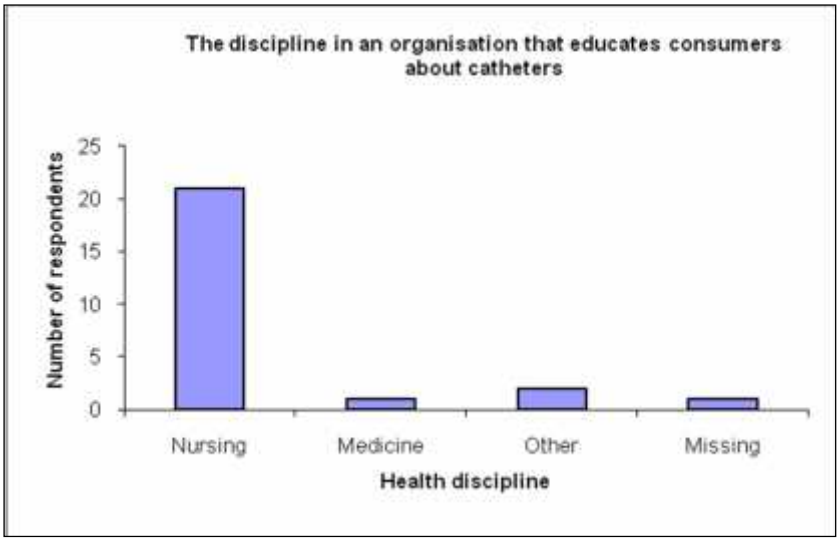

Figure 3. The health discipline responsible for educating clients about catheters

Clean or sterile urinary drainage bags for IDC

Fifteen respondents (68.2%) indicated that they advise IDC users to reuse urinary drainage bags and 10 (45.5%) indicated that they advise single sterile use. Other responses indicate that some respondents recommend both sterile and non-sterile bags and single use of non-sterile bags (see Figure 4).

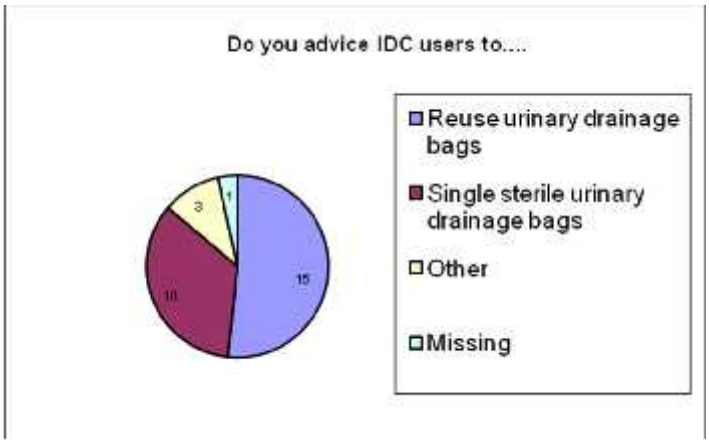

Figure 4. Advice given to clients about single use or reuse of urinary drainage bags.

Factors that influence nurses advice about sterile or clean urinary drainage bags for IDC

Nineteen respondents (86.4%) self-identified factors that influenced their advice to IDC users about the use of sterile or clean urinary drainage bags for long-term IDC. The cost of catheters was cited by 45.5% of respondents (*n*=10) as a factor. Six respondents (27.3%) cited equipment features and potential for UTI whilst 3 (13.6%) cited guidelines or best practice as follows:

- The type of equipment (some respondents indicated that some apparatus should remain sterile whilst other equipment, such as the overnight bag could be re-sterilised in the clients own home)
- How the equipment is labelled (if labelled as single use – use as directed)
- The medical status of the patient
- Whether they use a leg bag as well as a night bag
- The potential for UTI's
- Best available evidence/guidelines/policy (such as the number of items allowable)
- Coverage through private insurance (see Figure 5).

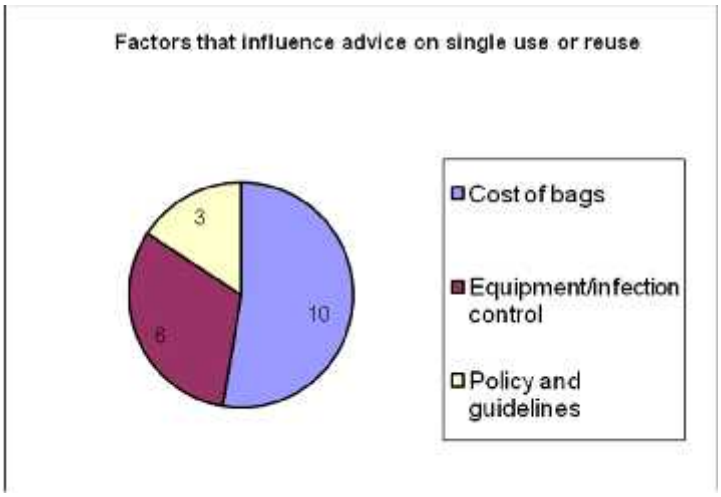

Figure 5. Factors that influence advice on single use or reuse

Of the 18 (81.8%) responses to the question of whether or not there are any catheter users for whom reuse of their catheter bags would be cautioned, 12 (54.5%) respondents responded 'yes' and six (27.3%) respondents responded 'no'. Data were missing for 4 (18.2%) (see Figure 6).

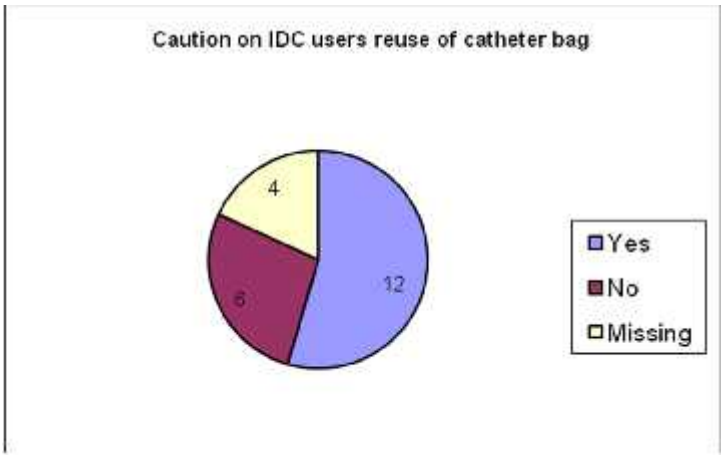

Figure 6. Number of respondents who indicated caution about reuse of catheter bag

Of those respondents who indicated that there are IDC users for whom reuse of their catheter bags would be cautioned, the following cautions were listed:

- All individuals with an IDC
- Individuals who are at risk of infection (if they have more than 3 infections per year)
- Individuals with wounds (decubitus or operations)
- Individuals whose environment places them at risk
- Individuals who are immune system is compromised

- Catheter blockage
- Urethral strictures or bleeding (usually male)
- Individuals whose medical condition would be worsened by a UTI
- Individuals whose dependencies mean that they cannot clean the bags after use
- Individuals in residential and nursing homes

Financial assistance to purchase IDC supplies

Of 22 respondents, 20 (90.9%) indicated that IDC users in their country have access to some form of government financial assistance to obtain their catheter bag supplies and 2 (9.1%) did not. Fifteen (68.2%) indicated that access to government financial assistance was subject to eligibility criteria and no eligibility criteria was reported by four respondents (18.2%). Eligibility criterions that were cited included:

- Financial situation, having a low income or being on welfare/a pension / healthcare card / Medicare or Medicaid
- Eligibility for nursing services
- Diagnosis of a permanent health disorder (i.e. neurological condition) supported with medical authorisation
- Age restriction (under age 65 years)
- Funding eligibility varies from state to state
- Type of bladder dysfunction

Respondents were invited to indicate the extent to which access to financial assistance influenced the advice they gave to IDC users concerning the reuse or single use of urinary drainage bags. Fifty percent (n=11) respondents indicated that access to financial assistance had minimal influence on the advice they gave. Only 13.6% (n=3) indicated that access to financial assistance greatly influenced their advice (see Figure 7).

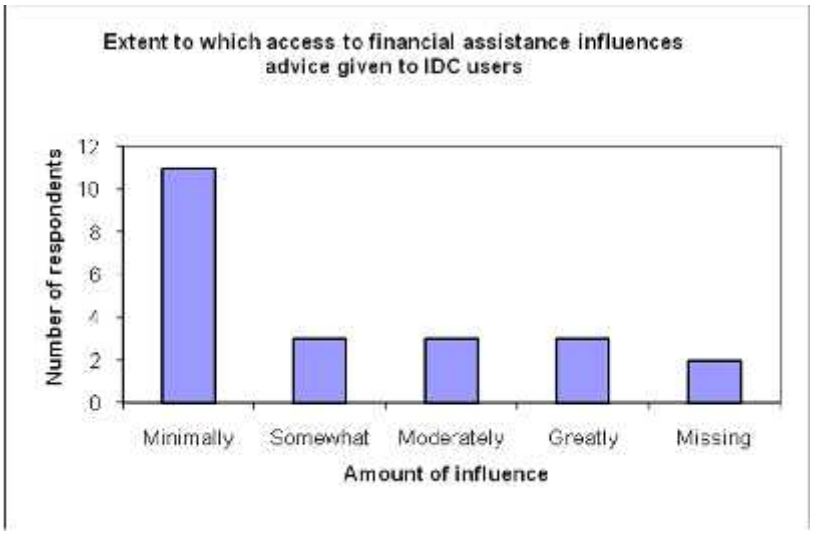

Figure 7. Extent to which access to financial assistance influences advice given to IDC users on single use or reuse of urinary drainage bags

Cleaning and storing bags for IDC users who are advised to reuse their urinary drainage bags

Participants who advise IDC users to reuse their urinary drainage bags were invited to indicate the nature of advice they give concerning methods to clean and store drainage bags. Eighteen respondents (81.1%) responded however three responses suggest that the question was additionally completed by participants who do not advise IDC users to reuse their urinary drainage bags. Of those respondents who do however recommend reuse, the most common advice is to clean bags with water and vinegar (*n*=7); a sterilising or bleach solution *(n*=3); dishwashing detergent / soap and water (*n=3*) or just plain water (*n*=1). The following procedure is an aggregate of the type of advice:

- *Clean hands*
- *Disconnect night bag from leg bag or catheter valve.*
- *Empty bag content in toilet*
- *Close drainage tap of bag*
- *Rinse bag with (hot/cold) water (? temperature - > 70 degrees)*
- *Fill bag with vinegar/ household bleach (1 part vinegar to 4 - 8 parts water)/detergent (Limit bleach to weekly use as it can cause the bag to break and use vinegar in between)*
- *Soak bag for minimum 2 hours,*
- *Empty and dry bag with a clean towel*
- *Leave bag to dry, with drainage tab open.*
- *Lay bag flat and press out any air toward drainage tap,*

- *Close drainage tap*
- *Clean cap end tips by rubbing alcohol prior to reconnection*

Frequency of bag changes for IDC users who are advised to reuse their urinary drainage bags

Eighteen respondents (81.1%) indicated the advice they give to IDC users about how frequently urinary drainage bags should be changed. Fourteen (63.6%) respondents indicated that they advise IDC users to change their bags within a certain timeframe (generally every 7 days), two (9.1%) recommended changing the bag according to the frequency recommended by manufacturer, one (4.5%) stated that the bag should be changed at the time of the catheter change, and one respondent (4.5%) recommended the bag be changed according to its appearance (i.e. the presence of sediment/debris).

Factors that respondents identified as influencing their advice about the frequency of bag changes were provided by 15 respondents (68.2%). They included:

- The cost of the bags
- Whether they use both types of bags
- The degree of sediment/ debris in the tubing/bag
- Client factors such as their immunological status, living conditions, presence of a carer at client's home and their abilities and disabilities.
- Policy
- National guidelines
- Manufacturer's guidelines
- The best available evidence
- Product licence.

Discussion

The objectives of the current pilot project were to identify, compare and contrast the advice nurses give to IDC users on sterile or clean urinary drainage bags for long-term IDC and to explore factors that inform this advice. Whilst the sample size was limited to 28 respondents whose work involves providing advice to IDC users living in the community, the findings reveal that most of the respondents (68.2%) advise IDC users to clean and reuse urinary drainage bags. Because of the limited sample size, data were insufficient to unable us to compare and contrast nurses advice by country or by the IDC users' access to financial assistance to obtain catheter supplies.

The cost of equipment was commonly identified as a factor that influenced nurses' advice about reuse. At the same time, most respondents indicated that IDC users had access to some form of government financial assistance to obtain their catheter bag supplies – albeit with restrictions due to eligibility criteria. Paradoxically, when asked to rate the extent to which IDC users access to financial assistance influenced the advice they gave to IDC users concerning the reuse or single use of urinary drainage bags, most respondents (n=14) indicated that it had minimal or somewhat of an effect, and only six indicated that it had a moderate or great effect. These inconsistent responses require further investigation; however the possibility that participants misinterpreted the question should be considered and taken into account in the design of future surveys on this topic.

Whilst some nurses advise against the reuse of urinary drainage bags under any circumstance, others advise reuse for selective IDC users. In addition to concerns about the cost of purchasing catheter supplies, the IDC user's risk for infection, (as determined by their medical condition, immunological status and living arrangement) was a key consideration that influenced nurses decision-making. Living in an institutional care settings such as residential and nursing homes or being unable to clean the apparatus were other factors that were identified as influencing advice about re-use.

Advice on methods to clean urinary drainage bags varied however the most commonly recommended cleaning agent was water and vinegar, followed by a sterilising or bleach solution or dishwashing detergent (soap and water). We did not explore the rationale for choosing different cleaning agents or methods however the findings of early research suggest that bleach is more effective than vinegar or other solutions in removing contaminants from drainage bags (Hashisaki et al., 1984) (Giroux and Perkash, 1985) and when used on a daily basis on has no

adverse outcomes (Dillie et al., 1993) (Rooney, 1994). As each of these studies were conducted some time ago and have not been summarised or critical analysed through a systematic review, individual findings should be approached with some caution.

Responses to questions about the advice nurses give to IDC users about how frequently urinary drainage bags should be changed revealed that most respondents advise a weekly bag change. A subcommittee of the International Consultation on Incontinence which reviewed evidence concerning 'Management using Continence Products' noted "there is little research to support the common practice of changing drainage bags every five to seven days"…. and "practice appears to be based upon expert opinion, anecdotal evidence and manufacturers recommendations." (Cottendon et al., 2005. p. 178). In the current project, nurses' indicated that their advice was influenced by: the cost of the bags, the appearance of the bag, client factors, or external factors such as policy, guidelines, manufacturers' instructions' and whether or not the supply of bags was rationed. It was also influenced by their perceptions of policy (local and national), as well as guidelines and best available evidence.

Conclusion

The findings of the current pilot study suggest that some long-term IDC users clean and reuse their urinary drainage bags on the basis of nursing advice. While this practice is inconsistent with CDC recommendations to use sterile equipment, it would appear that it is largely based on cost concerns, pragmatic considerations and a risk versus benefits analysis. A key concern for nurses who advise patients to clean and reuse urinary drainage bags is the potential for litigation associated with recommending a practice that does not concur with the CDC recommendations and the absence of evidence to guide practice. Whilst IDC users invariably manage their catheter in a way that best suits them, nurses play a key role in providing education and advice about management strategies. Therefore IDC users' practices related to IDC maintenance and the association of these practices to CAUTI should concerns all nurses. Findings of this survey reveal that the advice some nurses give to IDC users is based on their perception of 'best practice/guidelines/evidence/research' or on policies that are established at local or national level. Such policies often limit the type and number of supplies available to consumers.

A number of nurses perceive that their advice regarding single use is informed by a concern that reusing cleaned urinary drainage bags will increase the long-term IDC users' risk of infection. To the best of our knowledge, no such evidence exists to date. Clearly, there is a need for a

systematic review of the evidence for cleaning and reusing urinary drainage bags for long-term IDC users. This review should report long-term IDC users' practices related to IDC maintenance and their association with CAUTI and specifically establish the evidence base for the risk of CAUTI associated with cleaning and reusing urinary drainage bags. In the interim, it would seem important that long-term IDC users are fully informed about the lack of evidence to support or negate using clean or sterile urinary drainage bags and be given the opportunity to choose

The cost of catheter supplies however appears to be a major consideration in influencing what advice nurses give to long-term IDC users about using sterile or clean bags. The cost associated with purchasing urinary drainage bags on an ongoing basis is considerable. Whilst 90% of respondents indicated that IDC users in their state/country have some access to financial support to purchase their supplies, this access was limited. Further research is required to establish level of financial support and to ensure an equitable approach.

Recommendations

Given the findings of this survey, we suggest there is a need to consider:

- Supporting further research to establish IDC users' access to financial assistance to obtain sufficient supplies of sterile catheter-related equipment as the basis for advocating for equitable access.
- Supporting a systematic review on long-term IDC users' practices related to IDC maintenance and their association with CAUTI
- Identifying the policies, guidelines and best available evidence that inform nurses' advice to IDC users on sterile or clean urinary drainage bags for long-term IDC.
- Establishing long-term IDC users' practices related to IDC maintenance and their association with CAUTI (including the relative risk of CAUTI associated with cleaning and reusing urinary drainage bags).
- Recommending that IDC users be informed of the lack of evidence to support or negate using clean or sterile urinary drainage bags and given the opportunity to choose

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Appendix A. Centers for Disease Control (2009). Guideline for Prevention of Catheter-associated Urinary Tract Infections: IDC maintenance

The following apply to techniques for ICD maintenance:

- Following aseptic insertion of the urinary catheter, maintain a closed drainage system
- If breaks in aseptic technique, disconnection, or leakage occur, replace the catheter and collecting system using aseptic technique and sterile equipment.
- Consider using urinary catheter systems with preconnected, sealed catheter-tubing junctions.
- Maintain unobstructed urine flow.
- Keep the catheter and collecting tube free from kinking.
- Keep the collecting bag below the level of the bladder at all times. Do not rest the bag on the floor. Empty the collecting bag regularly using a separate, clean collecting container for each patient; avoid splashing, and prevent contact of the drainage spigot with the nonsterile collecting container
- Use Standard Precautions, including the use of gloves and gown as appropriate, during any manipulation of the catheter or collecting system.
- Complex urinary drainage systems (utilizing mechanisms for reducing bacterial entry such as antiseptic-release cartridges in the drain port) are not necessary for routine use.
- Changing indwelling catheters or drainage bags at routine, fixed intervals is not recommended. Rather, it is suggested to change catheters and drainage bags based on clinical indications such as infection, obstruction, or when the closed system is compromised.
- Unless clinical indications exist (e.g., in patients with bacteriuria upon catheter removal post urologic surgery), do not use systemic antimicrobials routinely to prevent CAUTI in patients requiring either short or long-term catheterization.
- Further research is needed on the use of urinary antiseptics (e.g., methenamine) to prevent UTI in patients requiring short-term catheterization.
- Do not clean the periurethral area with antiseptics to prevent CAUTI while the catheter is in place. Routine hygiene (e.g., cleansing of the meatal surface during daily bathing or showering) is appropriate.
- Unless obstruction is anticipated (e.g., as might occur with bleeding after prostatic or bladder surgery) bladder irrigation is not recommended

Centers for Disease Control (2009). Guideline for Prevention of Catheter-associated Urinary Tract Infections, Retrieved 9th August, 2010 from http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf

Appendix B: Cochrane systematic reviews on long-term IDC

Reference	Objectives	Results	Authors' conclusions
Hagen S, Sinclair L, Cross S. Washout policies in long-term indwelling urinary catheterisation in adults. Cochrane Database of Systematic Reviews 2010, Issue 3. Art. No.: CD004012. DOI: 10.1002/14651858.CD004012.pub4	To determine if certain washout regimens are better than others in terms of effectiveness, acceptability, complications, quality of life and economics for the management of long-term indwelling urinary catheterisation in adults.	Five trials met the inclusion criteria involving 242 patients (132 completed) in two cross-over and three parallel-group randomised controlled trials. Only three of the eight pre-stated comparisons were addressed in these trials. Some trials addressed more than one comparison (e.g. washout versus no washout and one type of washout solution versus another). The analyses reported for the two cross-over trials were inappropriate as they were based on differences between groups rather than differences within individuals receiving sequential interventions. Two parallel-group trials had limited value: one combined results for suprapubic and urethral catheters and one had data on only four participants. Only one trial was free of significant methodological limitations, but its sample size was small. Three trials compared no washout with one or more washout solution (saline or acidic solutions) and authors tended to conclude no difference in clinical outcomes between washout and no washout. In the one trial which had data of sufficient quality to allow interpretation, no difference was detected between washout and no washout groups in the rate of symptomatic urinary tract infection or time to first catheter change. Three trials compared different types of solution: saline versus acidic solutions (two trials); saline versus acidic solution versus antibiotic solution (one trial). Authors tended to report no difference between different washout solutions but the data were too few to support their conclusions. The one trial which warranted consideration concluded no difference between saline and an acidic solution in terms of symptomatic urinary tract infections or time to first catheter change.	The data from five trials comparing differing washout policies were sparse and trials were generally of poor quality or poorly reported. The evidence was too scanty to conclude whether or not washouts were beneficial. In the first instance we require further rigorous, high quality trials with adequate power to detect any benefit from washout being performed as opposed to none. Then trials comparing different washout solutions, washout volumes, frequencies/timings and routes of administration are needed.

Jamison J, Maguire S, McCann J. Catheter policies for management of long term voiding problems in adults with neurogenic bladder disorders. Cochrane Database of Systematic Reviews 2004, Issue 2. Art. No.: CD004375. DOI: 10.1002/14651858.CD004375.pub2	To assess the effects of using different types of urinary catheters and external (sheath) catheters in managing the neurogenic bladder compared to alternative management strategies or interventions.	Approximately 400 studies were scrutinised. No trials were found that met the inclusion criteria, and five studies were excluded from the review.	Despite a comprehensive search no evidence from randomised or quasi-randomised controlled trials was found. It was not possible to draw any conclusions regarding the use of different types of catheter in managing the neurogenic bladder.
Niël-Weise BS, van den Broek PJ. Urinary catheter policies for long-term bladder drainage. Cochrane Database of Systematic Reviews 2005, Issue 1. Art. No.: CD004201. DOI: 10.1002/14651858.CD004201.pub2	To determine if certain catheter policies are better than others in terms of effectiveness, complications, quality of life and cost-effectiveness in long-term catheterised adults and children.	Seven trials met the inclusion criteria involving 328 patients in four crossover and three parallel-group randomised controlled trials. Only two of the pre-stated six comparisons were addressed in these trials. Three trials compared antibiotic prophylaxis with antibiotics when clinically indicated. For patients using intermittent catheterisation, there were inconsistent findings about the effect of antibiotic prophylaxis on symptomatic urinary tract infection. For patients using indwelling urethral catheterisation, one small trial reported fewer episodes of symptomatic UTI in the prophylaxis group. Four trials compared antibiotic prophylaxis with giving antibiotics when microbiologically indicated. For patients using intermittent catheterisation, there was limited evidence that receiving antibiotics reduced the rate of bacteriuria (asymptomatic and symptomatic). There was weak evidence that prophylactic antibiotics were better in terms of fewer symptomatic bacteriuria.	No eligible trials were identified that compared alternative routes of catheter insertion. The data from seven trials comparing differing antibiotic policies were sparse, particularly when intermittent catheterisation was considered separately from in-dwelling catheterisation. Possible benefits of antibiotic prophylaxis must be balanced against possible adverse effects, such as development of antibiotic resistant bacteria; these cannot be reliably estimated from currently available trials.

Appendix C: A survey of nursing advice on sterile or clean urinary drainage bags for long term bladder management

***Instructions**:*
Thank you for completing this survey. We are interested in identifying the advice nurses give concerning the use of sterile or clean urinary drainage bags for long term bladder management and to explore factors that inform this advice. Please feel free to add additional information in the comments section. This survey is designed to be anonymous however if you feel that providing information on your country/state identifies you, you may prefer to avoid completing question 12.

***Please note:** Use of a sterile urinary drainage bag refers to the single use of a sterile bag. It is discarded after use. Use of a clean urinary drainage bag refers to multiple use of a bag. It is cleaned and reused.*

- Please indicate if your work includes giving advice to individuals living in the community who have an indwelling urethral catheter for long term bladder management and who use urinary drainage bags?
  ☐ Yes
  ☐ No (*thank you – you have completed this survey – It is important that you now email back to ICS secretariat. Please do so.*)

- Do you advise these catheter users to:
  ☐ Reuse urinary drainage bags
  ☐ Use single sterile urinary drainage bags
  ☐ Other (please specify)……

- Which factors influence this advice?
  .....
  .....

- Are there any catheter users for whom you would caution reuse of their catheter bag?
  ☐ Yes *(please list)*……☐ No

- Do catheter users in your country have access to **any** form of government financial assistance to obtain their catheter bag supplies?
  ☐Yes (go to Q6) ☐ No (go to Q8)

- What level of government financial assistance is available?
  ☐ Full financial assistance ☐ Partial financial assistance

- Are there any eligibility criteria for access to government financial assistance?
  ☐ Yes (please list)……☐ No

- Does access to financial assistance influence the advice given to consumers concerning the reuse or single use of urinary drainage bags?
  ☐ Minimally ☐ Somewhat ☐ Moderately ☐ Greatly

Please answer the following questions only if catheter users are advised to reuse urinary drainage bags

- What advice is given to catheter users about how they should clean and store their drainage bags?
  .....
  .....

- What advice is given to catheter users about how frequently they should change their drainage bags?
  .....
  .....

- Which factors influence this advice?
  .....
  .....

- In which country and state (province) do you work?
  ……..*(optional question)*

- Your organisation
  ☐ Hospital
  ☐ Community based organisation
  ☐ Other *(please specify)* …….

- Which health discipline in your organisation is responsible for educating consumers about catheter management? *(you may tick more than one response)*
  ☐ Nursing
  ☐ Medicine
  ☐ Other *(please specify)* …….

Further Comments:
…….
……..

Thank you for participating in this membership survey
We invite you to return it by 17th July 2010 by email to the International Continence Society Secretariat: info@icsoffice.org