




ORIGINAL ARTICLE

EVIDENCE-BASED PRACTICES: CONTINUOUS BLADDER CATHETERISM IN CLINICAL PRACTICE*

PRÁTICAS BASEADAS EM EVIDÊNCIAS: CATETERISMO VESICAL CONTÍNUO NA PRÁTICA CLÍNICA
PRÁCTICAS BASADAS EN LA EVIDENCIA: CATETERISMO VESICAL CONTINUO EN LA PRÁCTICA CLÍNICA

Nicole Hertzog Rodrigues¹, Débora Monteiro da Silva², Luana Gabriela Alves da Silva³

ABSTRACT

Objective: to analyze aspects of the continuous bladder catheter insertion technique in clinical inpatient units of a hospital. **Method:** this is a qualitative, descriptive, exploratory study. Data were collected through semi-structured interviews, recorded, transcribed and submitted to the Content Analysis technique in the Categorical Analysis modality. **Results:** the categories were listed: << Professional practice in the face of continuous bladder catheterization >>; << Domain and search for technical and scientific knowledge >> and << Suggestions for improving patient care using continuous bladder catheterization >>. **Conclusion:** it is concluded that the procedure has been performed in a different and non-uniform way, with its standardization and the pressing need for more evidence and studies on the subject being relevant. It is observed that the continuous bladder catheterization procedure, like others, faces a dichotomy between practice, teaching and scientific evidence on the subject. **Descriptors:** Urinary Catheterization; Patient Safety; Patient Assistance; Nursing Care; Evidence Based Nursing; Protocols.

RESUMO

Objetivo: analisar aspectos da técnica de inserção do cateter vesical contínuo em unidades de internação clínica de um hospital. **Método:** trata-se de um estudo qualitativo, descritivo, exploratório. Procedeu-se à coleta de dados mediante entrevista semiestruturada, gravadas, transcritas e submetidas à técnica de Análise de Conteúdo na modalidade Análise Categorical. **Resultados:** elencaram-se as categorias: << Prática profissional frente ao cateterismo vesical contínuo >>; << Domínio e busca de conhecimento técnico-científico >> e << Sugestões para melhoria do cuidado ao paciente em uso de cateterismo vesical contínuo >>. **Conclusão:** conclui-se que o procedimento tem sido realizado de forma distinta e não uniforme, sendo relevantes a sua padronização e a necessidade premente de mais evidências e estudos sobre o tema. Observa-se que o procedimento de cateterismo vesical contínuo, assim como outros, enfrenta uma dicotomia entre a prática, o ensino e as evidências científicas sobre o assunto. **Descritores:** Cateterismo Urinário; Segurança do Paciente; Assistência ao Paciente; Cuidados de Enfermagem; Enfermagem Baseada em Evidências; Protocolos.

RESUMEN

Objetivo: analizar aspectos de la técnica de inserción continua de catéter vesical en unidades de internación clínica de un hospital. **Método:** este es un estudio cualitativo, descriptivo, exploratorio. Los datos fueron recolectados a través de entrevistas semiestructuradas, registradas, transcritas y enviadas a la técnica de Análisis de Contenido en la modalidad de Análisis Categorical. **Resultados:** se enumeraron las categorías: << Práctica profesional frente a la cateterización vesical continua >>; << Dominio y búsqueda de conocimientos técnicos y científicos >> y << Sugerencias para mejorar la atención al paciente mediante cateterismo vesical continuo >>. **Conclusión:** se concluye que el procedimiento se realizó de manera distinta y no uniforme, con su estandarización y la urgente necesidad de más evidencia y estudios sobre el tema que sean relevantes. Se observa que el procedimiento de cateterización vesical continua, como otros, enfrenta una dicotomía entre la práctica, la enseñanza y la evidencia científica sobre el tema. **Descritores:** Cateterismo Urinario; Seguridad del Paciente; Asistencia al Paciente; Cuidados de Enfermería; Enfermería Basada en la Evidencia; Protocolos.

¹Lutheran University of Brazil/ULBRA. Gravataí (RS), Brazil.  <https://orcid.org/0000-0003-2974-2780>. ² <https://orcid.org/0000-0003-2043-1521>
³ <https://orcid.org/0000-0002-5181-8238>

*Article extracted from the Undergraduate Thesis << Evidence-based practices: continuous bladder catheterization in clinical practice >>. Lutheran University of Brazil/ULBRA. 2019.

How to cite this article

Rodrigues NH, Silva DM da, Silva LGA da. Evidence-based practices: continuous bladder catheterization in clinical practice. J Nurs UFPE on line. 2020. 2020;14:e244759 DOI: <https://doi.org/10.5205/1981-8963.2020.244759>

INTRODUCTION

It is known that the use of scientific evidence in clinical practice has been recommended, considering the quality of care and the promotion of patient safety. Through the implementation of evidence-based practice, nursing allows changes in their professional performance, starting to be guided by a reflective praxis, based on scientific knowledge. It is noticed, in Brazil, that this theme is still recent, little known and discussed.¹

It is understood that evidence-based practice is relevant among professionals who seek a quality standard of safe care.² Currently, patient safety care has become a priority, leading to proposals for international health policies and efforts by institutions, professionals and patients, in order to effectively minimize and control risks arising from health services.³

It is stated that, in clinical practice, continuous bladder catheterization remains a factor that deserves more attention and control by health professionals.⁴ It is observed, with respect to technical execution, that it is not uncommon to verify actions that are not in accordance with the technique of performing the procedure, reflecting the lack of standardization among professionals, and patients end up becoming targets of errors due to these unsafe practices.⁵

It is understood that sometimes the exercise of the profession is guided by tradition and not up-to-date scientific evidence. Evidence should support nurses to promote changes in their care practice. The last decades have been marked by an increase in the production of national scientific research to support evidence-based practice, however, the gap between research and practice still prevails. It becomes necessary to make professionals aware of the relevance of fighting barriers to the implementation of this practice, seeking to improve work processes in all its dimensions of performance.⁶⁻⁷

It is warned that, despite being widely used in the treatment of hospitalized patients, bladder catheterization is not without risks and complications,⁸ because about 16 to 25% of hospitalized patients are exposed to bladder catheterization and, as it is a sterile procedure, its biggest complication is urinary infection.⁹⁻¹¹ Educational interventions, such as the implementation of protocols in hospital institutions, favor the standardization of the maintenance of invasive devices, which may reduce colonization and subsequent cases of infection.¹²⁻⁴

It is also estimated that many patients prolong the use of the catheter beyond what is necessary, favoring the colonization of fungi and bacteria. In addition, the associated costs, resulting in losses to the public and private health system, are

generated by the length of stay of the device. There is also a risk of urethral trauma due to traction, restricted mobility and discomfort.⁵ It is observed, in addition to this, the existence of other complications resulting from the execution of the technique, such as the use of excessive catheter size and partial inflation of the cuff.⁴

It is noteworthy that continuous bladder catheterization is an invasive procedure widely used in nursing care practice, being necessary for the treatment of patients in pathological processes. When performing this procedure, care must be taken to govern the care in order to ensure the maintenance of patient safety, guarantee the quality of the care provided and minimize possible complications resulting from instrumentalization. Therefore, research on this topic is necessary, in order to clarify steps in the procedure that cause doubts, questions and divergences in their execution.

OBJECTIVE

- To analyze some aspects of the continuous bladder catheter insertion technique, in clinical inpatient units of a hospital.

METHOD

This is a qualitative, descriptive, exploratory study, developed with clinical inpatient units of a hospital in the metropolitan region of Porto Alegre, Rio Grande do Sul. The hospital is characterized as being general and medium-sized.

The study population was composed of ten nurses from that hospital institution who performed the nursing profession for at least one year, worked for at least six months at the institution, being in full professional practice during the collection period, working in an inpatient unit and who agreed to sign the Free and Informed Consent Term (FICT). Nurses who were on vacation / time off or on leave due to some kind of leave and who did not accept to participate in the study were excluded.

Data was collected through interviews using a semi-structured instrument, containing, in the first part, data related to the characterization of the sample, and, in the second part, subjective questions that met the objectives of the study. Data collection was carried out in the period of March 2019. In order to assess the adequacy of the data collection instrument, a pilot interview with a participant who met the criteria for choosing the participants was applied to verify that the questions were clear, the sequence was adequate, and that they met the research objectives.

It is noteworthy that the interviews were recorded, transcribed and recorded through the nurses' verbal report and, subsequently, submitted to analysis. The data obtained through the

interviews were analyzed according to the three steps proposed by Bardin: (1) pre-analysis; (2) the exploration of the material and, finally, (3) the treatment of the results, with inference and interpretation.¹⁵

The research project was approved by the Ethics and Research Committee (REC) of the Lutheran University of Brazil, registering it under number CAAE 03162818.1.0000.5349. Participants were provided with the Free and Informed Consent Term (FICT) containing information about the study and its objectives, the participants remained with a copy of the term and had complete freedom of adhesion, guaranteeing their safety and data protection in all stages of the study.

RESULTS

Ten nurses were interviewed: nine female and one male, and the age group of the interviewees ranged between 25 and 50 years; the training time among the participants ranged from one to nine years; the length of service at the institution ranged from ten months to 11 years and, of the ten interviewees, eight have a specialization or postgraduate degree.

It was found that, from the content of these interviews, the following categories emerged: "Professional practice in the face of continuous bladder catheterization"; "Domain and search for technical-scientific knowledge" and "Suggestions for improving patient care using continuous bladder catheterization", totaling three categories, which will be presented below.

◆ CATEGORY 1: Professional practice regarding bladder catheterization

In this category, some steps of the technique performed during the continuous bladder catheterization procedure in nurses' care practice were addressed: volume for inflation of the catheter cuff; need for pre-test and solution used for cuff inflation.

It was investigated as to the volume used for the inflation of the catheter cuff and it was found that the procedure has been performed differently and not uniformly by the professionals.

I think it's 25 ml., Probe 16 I think it's 25 to 40 ml. [...] I put it there according to the manufacturer's guidance, but it is usually 25. (E1)

20 ml. [...] until I try to put the 20, but if I see that she won't be able to, then I put a little less, ten or 15. Always like that. Then I take it out for later even to know how much I can put in there. (E2)

Inflate the cuff with normally 15 to 20 ml. of water. (E10)

There are also differences in clinical practice regarding the execution of the pre-test for cuff inflation, according to the statements below.

I no longer test the cuff that [...] has been discontinued. [...] some articles came out saying that inflating the cuff before placing it has a greater risk of causing an injury to the urethra. (E1)

Test the cuff before. (E2)

It is revealed, in the case of the solution used for cuff inflation, that, of the ten interviewees, eight reported using distilled water and two mentioned using saline.

I fill the syringe with ice cream to inflate. (E4)

We use water, here is distilled water, you know, to be able to inflate the cuff, 15 ml., Saline is not used because of crystallization. (E7)

It is pointed out that, although the majority of the interviewees use distilled water, two of the nurses interviewed do not follow this recommendation. Nursing, in view of the professional's competencies and responsibilities in view of bladder catheterization, is to seek and be constantly improving and updating technical-scientific.

◆ CATEGORY 2: Domain and search for technical and scientific knowledge

One tried to identify, in this category, the aspects that permeate continuous bladder catheterization related to the search and mastery of technical and scientific knowledge by nurses. Nurses were asked about participation in training or courses on the topic, in view of the relevance of technical-scientific knowledge and permanent education for the care of patients using a bladder catheter.

Only in college, in classes and in college, not here. (E2)

Already, here at the hospital. (E4)

No, inside the institution, we only have POPs here, but no training. (E6)

It is noteworthy, from the results, that eight of the interviewees never participated in training or courses, claiming to have contact only during graduation with training related to bladder catheterization, and only two nurses said they had participated in training. It is noticed that the majority of respondents do not usually participate in training or training on the topic.

It is observed, next, that, when asked about how and where they seek knowledge and clarify doubts regarding decision making regarding aspects that permeate the execution of the procedure, nurses usually resort to the institutional Standard Operating Procedure (SOP) and their colleagues as a way to answer questions about the procedure, and two interviewees said they had no doubts related to the execution of the catheterization.

[...] as for the procedure, we have SOPs, right, so, we follow SOPs. (E7)

With colleague or with the doctor. One of the two. (E8)

I have no doubts. (E9)

◆ CATEGORY 3: Suggestions for improving patient care using continuous bladder catheterization

In this category, suggestions proposed by nurses were investigated to improve and qualify the care provided to the patient using continuous bladder catheterization. It is understood that the fact of pointing out difficulties is not enough if there is no proposition of suggestions to improve the aspects addressed.

It was noted that the interviewees recognized the importance of greater standardization for the execution of the procedure. It was claimed, in this context of non-standardization of the technique, that the practice is performed according to what they learn in college. It is also observed, in the interviewees' statements, that they mention the importance of implementing protocols and training. This scenario is clarified through the statements below.

[...] I think there should be maybe more since college, more training, so that when we leave college, we know how to do it, all in the same way. (E2)

[...] I think this should be more standardized; of course, it changes from institution to institution, procedure everyone knows how to do. (E9)

[...] I never stopped to think about it [...] because, as we learn like that in college, sometimes, we don't even go back to see if we can do it differently or not. I think it would have to have updated SOP and be followed by everyone within the institution, updated, right. (E8)

It is warned that bladder catheterization is a complex procedure and involves a range of processes. Thus, the importance of using updated protocols and promoting continuing education is emphasized, aiming at improving quality and safety in the execution of this procedure.

DISCUSSION

It is noticed that, as well as in relation to the various procedures routinely performed by Nursing, in the publications associated with urinary catheterization, the range of aspects addressed is small and this has little to do with innovation, technology and infection prevention in its performance.¹⁶

It is revealed, addressing the need or not to perform the pre-test, that studies are lacking to compare the two practices. It is known that there are those who claim that the pre-test should not be recommended, since the catheters are previously tested during manufacture and insufflation can distort the cuff forming grooves, resulting in increased trauma.¹⁷ However, it is claimed by others, however, that the cuff should be tested to rule out the possibility of leaks and defects.⁹ It is necessary, considering that bladder

catheterization is a frequent procedure in the professional practice of nurses, with greater technical precision and development of research to elucidate aspects that do not yet have a consensus.

It is noted that, in the nurse's care practice, the performance of this procedure is commonly practiced, permeates the training of the professional and requires investment in research. It is added, regarding the volume for cuff inflation, that the results found corroborate the divergences already existing in the literature, there are discussions between the authors and currently there is no consensus on the recommended volume. It is stated, by some references, that the volume must be determined by the probe manufacturer.¹⁶

It is evident that only distilled water is used to inflate the cuff of the probe, since the saline contains sodium, which can result in the formation of crystals inside the bladder, which can cause lesions in the urethra.¹⁷

It is considered that, for an improvement in the practice in relation to bladder catheterization, it is essential to identify the gaps in this care practice, so that specific interventions can be performed.¹⁸⁻⁹ By using evidence in care practice, these professionals can offer better quality of care to patients and families.¹⁹

It is believed that, in order to provide assistance to patients in an appropriate and safe manner, nursing needs to be and constantly seek technical and scientific improvement and updating for health care practices. It is believed that nurses' skills and responsibilities in the face of continuous bladder catheterization are of vital importance and impact on the patient's life.¹⁶

Evidence-based interventions are considered to enable nurses to judge whether or not the patient needs to use the bladder catheter and removal when unnecessary.² It should be used, as it is an invasive and risky procedure, only according to its indications and when necessary, for that, scientific knowledge is needed, in this aspect, mainly regarding its indications.

Among the indications for the use of continuous bladder catheterization, the impossibility of performing spontaneous urination, the treatment in women with grade IV pressure injury, in which contact with urine is impairing the healing of the lesion, and monitoring of urine output in hemodynamically unstable and postoperative patients.⁹

It should be noted that, despite the complications related to the procedure, it is beneficial for patients in different clinical situations, with the role of the nurse and his team to prevent complications, and must implement measures to ensure the safety and quality of care provided in the assistance.²⁰

It is added that, considering that the procedure is commonly performed in hospital institutions and considering its complexity, the commitment of professionals is necessary, aiming to ensure patient safety, requiring scientific support.^{16,21} It is believed that the clarification and demystification by means of scientific evidence on issues concerning the performance of the procedure become valid, considering that, in clinical practice, Nursing needs to be and constantly seek improvement and updating for healthcare practices.²⁰

It is believed that most nurses perform the practice of Nursing according to what was taught to them during their graduation combined with their experiences of clinical practice. It is observed, however, that this method of applicability of Nursing care does not guarantee that Nursing practice is scientifically based on updated literature.¹⁷

It should be noted that it is up to the nursing training courses to prepare the academic for reality, integrating science and the need for constant reevaluation of practice and conduct, by encouraging the search for technical and scientific improvement and critical sense.¹⁶

It is noticed that the aspects involved in the performance of bladder catheterization must be addressed in hospital protocols, including methods of continuing education, in order to direct nurses to the correct handling of catheters.²² The application of training and capacity building is seen through continuing education courses for nurses who handle bladder catheters as an effective method for improving care praxis.²³

CONCLUSION

It is known that continuous bladder catheterization is an invasive and complex procedure that nurses perform in their daily care practice. In the researched institution, the procedure has been performed in a different and non-uniform way. The techniques used to perform continuous bladder catheterization and, consequently, for the correct handling of the cuff in different ways, are described in the literature, and their standardization and the pressing need for more evidence and studies on the subject are relevant.

It was found that there is no consensus on the volume and need for pre-test for cuff inflation. Today, it is recommended to use only distilled water in the cuff, since saline solutions or other electrolytes pose the risk of crystallization after long periods, which can make deflation of the cuff difficult when trying to remove the catheter.

The results show that there is still a lack of standardization and protocols that govern the correct technique for performing continuous bladder catheterization and, consequently, what

would be the correct cuff handling. There are still, despite being a common procedure in the hospital environment, doubts about some stages of its performance, requiring greater investments in research to clarify stages that cannot yet be proven. In view of the fact that the procedure is performed frequently in patient care, there is a need for greater engagement and responsibility of professionals with regard to the acquisition and search for knowledge, aiming to scientifically support the care practice.

It was found that the continuous bladder catheterization procedure, like others, faces a dichotomy between practices, teaching and scientific evidence on the subject. Training is pointed out through continuing education courses for nurses as an effective way to standardize the procedure within the researched institution.

As a limitation of this research, the little theoretical reference updated in relation to the evidence in the practice of bladder catheterization is presented, since, in the publications on the subject, there are few subjects addressed and these are related to urinary infections and new technologies incorporated into the practice for performing the procedure.

It is believed that this research may provide support for new studies to be conducted in this area in order to establish the best nursing care for patients undergoing bladder catheterization and to clarify points that cannot yet be evidenced.

CONTRIBUTIONS

It is informed that all authors contributed equally in the design of the research project, collection, analysis and discussion of data, as well as in the writing and critical review of the content with intellectual contribution and the approval of the final version of the study.

CONFLICT OF INTERESTS

Nothing to declare.

REFERENCES

1. Bandeira AG, Witt RR, Lapão LV, Madruga JG. The use of a methodological framework in the implementation of evidence as part of nursing research. *Texto contexto-enferm.* 2017 Apr/Aug;26(4):1-7. DOI: [10.1590/0104-07072017002550017](https://doi.org/10.1590/0104-07072017002550017)
2. Andrade VLF, Fernandes FAV. Prevention of catheter-associated urinary tract infection: implementation strategies of international guidelines. *Rev Latino-Am Enfermagem.* 2016 Mar;24:e2678. DOI: [10.1590/1518-8345.0963.2678](https://doi.org/10.1590/1518-8345.0963.2678)
3. Carlesil KC, Padilha KG, Toffoletto MC, Roldán CH, Juan MAC. Patient safety incidents and nursing

workload. *Rev Latino-Am Enfermagem*. 2017 Apr;25(1):1-8. DOI: [10.1590/1518-8345.1280.2841](https://doi.org/10.1590/1518-8345.1280.2841)

4. Coelho IR, Silva HD. Indwelling urinary catheter use among hospitalized patients in the surgical clinic of a university hospital. *J Ciên Saúde* [Internet]. 2018 Jan/Apr [cited 2019 Aug 10];1(1):41-50. Available from: <https://docplayer.com.br/85804026-Jornal-de-ciencias-da-saude-jcs-hu-ufpi.html>

5. Barros LAA, Paiva SS, Gonçalves Filho A, Souza SMA. Risk nursing diagnostics for adverse events in bladder catheterization installation delay. *J Nurs UFPE on line*. 2016 Sept;10(9):3302-12. DOI: [10.5205/reuol.9571-83638-1-SM1009201615](https://doi.org/10.5205/reuol.9571-83638-1-SM1009201615)

6. Danski MTR, Oliveira GLR, Pedrolo E, Lind J, Johann DA. Importance of evidence-based practice in nurse's work processes. *Ciênc Cuid Saúde*. 2017 Apr/June;16(2):01-6. DOI: [10.4025/ciencucuidsaude.v16i2.36304](https://doi.org/10.4025/ciencucuidsaude.v16i2.36304)

7. Camargo FC, Iwamoto HH, Galvão CM, Monteiro DAT, Goulart MB, Garcia LAA. Models for the implementation of evidence-based practice in hospital based nursing: a narrative review. *Texto contexto-enferm*. 2017 Jan;26(4):01-12. DOI: [10.1590/0104-07072017002070017](https://doi.org/10.1590/0104-07072017002070017)

8. Galiczewski JM, Shurpin KM. An intervention to improve the catheter associated urinary tract infection rate in a medical intensive care unit: direct observation of catheter insertion procedure. *Intensive Crit Care Nurs*. 2017 June;40:26-34. DOI: [10.1016/j.iccn.2016.12.003](https://doi.org/10.1016/j.iccn.2016.12.003)

9. Ministério da Saúde (BR), Agência Nacional de Vigilância Sanitária. Medidas de prevenção de infecção relacionada à assistência à saúde [Internet]. Brasília: Ministério da Saúde; 2017 [cited 2019 Oct 24]. Available from: <https://www20.anvisa.gov.br/segurancadopacient e/index.php/publicacoes/item/caderno-5>

10. Doreste FCPL, Pessoa ALLS, Queiroz NR, Luna AA, Silva NCM, Souza PA. Patient safety and urinary tract infection prevention measures related to delay vesical catheterization. *Rev Enferm Atual* [Internet]. 2019 Jul/Sept [cited 2019 Aug 10];89(27):1-8. Available from: <https://revistaenfermagematual.com.br/index.php/revista/article/view/61/506>

11. Barbosa LR, Mota EC, Oliveira AC. Urinary tract infection associated with bladder catheter in intensive care unit. *Rev Epidemiol Controle Infecç*. 2019 Apr/June; 9(2):103-8. DOI: [10.17058/reci.v9i1.11579](https://doi.org/10.17058/reci.v9i1.11579)

12. Miranda AL, Oliveira ALL, Nacer DT, Aguiar CAM. Results after implementation of a protocol on the incidence of urinary tract infection in an intensive care unit. *Rev Latino-Am Enfermagem*. 2016 Sept;24(1):1-9. DOI: [10.1590/1518-8345.0866.2804](https://doi.org/10.1590/1518-8345.0866.2804)

13. Galiczewski JM. Interventions for the prevention of catheter associated urinary tract

infections in intensive care units: An integrative review. *Intensive Crit Care Nurs*. 2016 Feb;32:01-11. DOI: [10.1016/j.iccn.2015.08.007](https://doi.org/10.1016/j.iccn.2015.08.007)

14. Rezaei MS, Bagheri-Nesami M, Nikkhab A. Catheter-related urinary nosocomial infections in intensive care units: An epidemiologic study in North of Iran. *Caspian J Intern Med*. 2017;8(2):76-82. DOI: [10.22088/cjim.8.2.76](https://doi.org/10.22088/cjim.8.2.76)

15. Bardin L. *Análise de Conteúdo*. Lisboa: Edições 70; 2016.

16. Mazzo A, Bardivia CB, Jorge BM, Souza Junior VD, Fumincelli L, Mendes IAC. Urinary catheterization delay: clinical practice. *Enferm Glob* [Internet]. 2015 Apr [cited 2019 Aug 10];38(1):60-8. Available from: http://scielo.isciii.es/pdf/eg/v14n38/en_clinica3.pdf

17. Perry AG, Potter PA, Elkin MK. *Procedimentos e intervenções de enfermagem*. 5th ed. Rio de Janeiro: Elsevier; 2013

18. Mota EC, Oliveira AC. C. Catheter-associated urinary tract infection: why do not we control this adverse event? *Rev Esc Enferm USP*. 2019 May; 53:e03452. DOI: [10.1590/S1980-220X2018007503452](https://doi.org/10.1590/S1980-220X2018007503452)

19. Mota EC, Oliveira AC. Prevention of catheter-associated urinary tract infection: what is the gap in clinical practice? *Texto contexto-enferm*. 2019 May; 28:e20180050. DOI: [10.1590/1980-265x-tce-2018-0050](https://doi.org/10.1590/1980-265x-tce-2018-0050)

20. Silva MR, Cazorla IM, Silva JLA, Almeida THRC, Oliveira PP, Barbosa DA. Continuing education in bladder catheterization for the prevention of urinary Tract infection. *REME Rev Min Enferm*. 2019;23:e-1219. DOI: [10.5935/1415-2762.20190067](https://doi.org/10.5935/1415-2762.20190067)

21. Nogueira HKL, Góes ACF, Oliveira DF, Simões NA, Fernandes MS, Fernandes MS. Knowledge of intensive professionals about the bundle for the prevention of urinary tract infection associated with the use of probes. *J Nurs UFPE on line*. 2017 Dec;11(12):4817-25. DOI: [10.5205/1981-8963-v11i12a15209p4817-4825-2017](https://doi.org/10.5205/1981-8963-v11i12a15209p4817-4825-2017)

22. Gupta SS, Irukulla PK, Shenoy MA, Nyemba V, Yacoub D, Kupfer Y. Successful Strategy to decrease indwelling catheter utilization rates in an academic medical intensive care unit. *Am J Infect Control*. 2017 Dec;45(12):1349-55. DOI: [10.1016/j.ajic.2017.06.020](https://doi.org/10.1016/j.ajic.2017.06.020)

23. Rabelo LM, Alexandre KV, Ferreira LS. Hygienization of the hands by the nurse in the passage of the vesical demon probe in the intensive therapy unit. *RPBeCS*. 2018;5(10):41-6. DOI: [10.6084/m9.figshare.8285441](https://doi.org/10.6084/m9.figshare.8285441)

Corresponding author

Nicole Hertzog Rodrigues

Email: nicolehertzogrodrigues@gmail.com

Submission: 2020/03/31

Accepted: 2020/06/16

Copyright© 2019 Journal of Nursing UFPE on line/JNUOL.



This is an Open Access article distributed under the terms of the [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by/4.0/). This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. Recommended for maximum dissemination and use of licensed materials.