



Journal of Nursing

Revista de Enfermagem

UFPE On Line

ISSN: 1981-8963

ORIGINAL ARTICLE

EPIDEMIOLOGICAL PROFILE OF PATIENTS IN THE ICU, IN USE OF INDWELLING VESICAL CATHETER

PERFIL EPIDEMIOLÓGICO DOS PACIENTES NA UTI, EM USO DE CATETER VESICAL DE DEMORA

PERFIL EPIDEMIOLÓGICO DE LOS PACIENTES EN CUIDADOS INTENSIVOS, EN USO DE CATÉTER VESICAL PERMANENTE

Ana Clara de Melo Souza Tolentino¹, Vivian Schutz², Antônio Augusto de Freitas Peregrino³, Roberto Carlos Lyra da Silva⁴

ABSTRACT

Objective: identifying the epidemiological profile of patients using indwelling catheters (CVD) admitted to the intensive care unit (ICU) and the incidence of urinary tract infection (UTI). **Method:** a transversal, prospective study among adults in the ICU, in two university hospitals in the city of Rio de Janeiro/RJ, based on documentary sources, during the months of September to December 2012. The sample was made of 27 records. The study was approved by the Research Ethics Committee, CAAE 04626512.9.0000.5285. **Results:** 11 men and 16 women, average age of 54,3 and 67.38 years old, respectively, were included. Cancers were observed as the major underlying disease (25,9%). Among the comorbidities, the highlighted was hypertension (59,3%), COPD (18,5%) and T2DM (14,8%). The permanence of CVD in both institutions was 8-15 days (37%). UTI has not been identified in the sample. **Conclusion:** can question a possible masking of UTI, since the drugs used in the units have broad spectrum coverage and make the microorganisms that are typically involved. **Descriptors:** Epidemiology; Intensive Care Unit; Nursing; Urinary Catheterization; Urinary Tract Infections.

RESUMO

Objetivo: identificar o perfil epidemiológico dos pacientes em uso do cateter vesical de demora (CVD) internados na unidade de terapia intensiva (UTI) e a incidência de infecção do trato urinário (ITU). **Método:** estudo transversal, prospectivo, realizado com adultos internados na UTI, em dois hospitais universitários da cidade do Rio de Janeiro/RJ, com base em fontes documentais, durante os meses de setembro a dezembro de 2012. A amostra composta por 27 prontuários. O estudo foi aprovado pelo Comitê de Ética em Pesquisa, CAAE 04626512.9.0000.5285. **Resultados:** foram incluídos 11 homens e 16 mulheres, com média de idade de 54,3 anos e 67,38 anos, respectivamente. Observaram-se as neoplasias como a principal doença de base (25,9%). Dentre as comorbidades, destacou-se HAS (59,3%), DPOC (18,5%) e DM2 (14,8%). O tempo de permanência do CVD nas duas instituições foi de 8 a 15 dias (37%). Não foi identificada ITU na amostra. **Conclusão:** pode-se questionar um possível mascaramento de ITU, uma vez que os medicamentos utilizados nas unidades têm amplo espectro e fazem cobertura aos microrganismos que normalmente estão envolvidos. **Descritores:** Epidemiologia; Unidade de Terapia Intensiva; Enfermagem; Cateterismo Urinário; Infecções Urinárias.

RESUMEN

Objetivo: identificar el perfil epidemiológico de los pacientes que utilizan catéteres permanentes (ECV), ingresados en la unidad de cuidados intensivos (UCI) y la incidencia de la infección del tracto urinario (ITU). **Método:** estudio transversal, prospectivo en adultos de la UCI, en dos hospitales universitarios de la ciudad de Río de Janeiro/RJ, con base en fuentes documentales, en los meses de septiembre a diciembre, 2012. La muestra fue de 27 expedientes. El estudio fue aprobado por el Comité de Ética en Investigación, CAAE 04626512.9.0000.5285. **Resultados:** 11 hombres y 16 mujeres, edad media de 54,3 años y 67,38 años, respectivamente, fueron incluidos. Los cánceres se observaron como la enfermedad subyacente importante (25,9%). Entre las comorbilidades, lo más destacado fue la hipertensión arterial (59,3%), EPOC (18,5%) y la diabetes tipo 2 (14,8%). La permanencia de las enfermedades cardiovasculares en las dos instituciones fue 8-15 días (37%). La UTI no se ha identificado en la muestra. **Conclusión:** se puede interrogar a un posible enmascaramiento de UTI, ya que los fármacos utilizados en las unidades cuentan con una cobertura de amplio espectro y hacer que los microorganismos que normalmente están involucrados. **Descriptores:** Epidemiología; Unidad de Cuidados Intensivos; Enfermería; Cateterismo Urinario; Infecciones del Tracto Urinario.

¹Nurse, Master's student, Postgraduate Program in Nursing, School of Nursing Alfredo Pinto/Federal University of the State of Rio de Janeiro/UNIRIO. Rio de Janeiro (RJ), Brazil. Email: anaclaratolentino@gmail.com; ²Nurse, Professor, School of Nursing Alfredo Pinto / Federal University of the State of Rio de Janeiro/UNIRIO. Rio de Janeiro (RJ), Brazil. Email: vshutz@gmail.com; ³Nurse, Professor, State University of Rio de Janeiro/UERJ. Rio de Janeiro (RJ), Brazil. Email: antonioap@uerj.br; ⁴Nurse, Professor, School of Nursing Alfredo Pinto/Federal University of the State of Rio de Janeiro/UNIRIO. Rio de Janeiro (RJ), Brazil. Email: proflyra@gmail.com



INTRODUCTION

The indwelling catheters (CVD) is one of the most invasive devices used in health care, and its insertion procedure, which most contributes to the development of complications, depending on the technique, the drainage system, employee care applied, length of stay for CVD, presence of comorbidities and advanced age.¹⁻³

According to the Sanitary Surveillance Agency,⁴ CVD should only be used when absolutely indicated its use in patients who require accurate control of urine output; patients with chronic manifestations of cognitive impairment, incontinence or physical disability; Patients requiring surgery bladder or urinary obstruction and irrigation therapy instillation or bladder. Furthermore, for some patients, other methods for bladder drainage are to be considered as suprapubic catheterization, use of intermittent catheterization or external collectors. When catheterization is unnecessary done, the catheter should be removed as early as possible.

The surgical center is the area of the hospital where most of the indwelling catheter was inserted (71,3%), followed by the intensive care unit (ICU) (16,9%) and emergency (5,9%). About 12% to 16% of patients in ICUs have a CVD inserted at some point during hospitalization.⁵

The complications caused by the use of CVD can be classified as infectious or traumatic.⁶ As the breakdown of the body's defense mechanisms favors infections, urinary tract infection (UTI) is the most frequent.⁷ Epidemiological data show that 35% to 45% of all nosocomial infections acquired in the hospital are UTI, and 80% are related to the use of CVD.⁸ Furthermore, the insertion of CVD can cause other complications such as urethral trauma, pain and false path, allowing the installation of infection at another site in the body, kidney and bladder urolithiasis, urethritis, periuretrite, periurethral abscess, urethral diverticulum, urethral fistula, prostatitis, epididymitis, penile necrosis and bladder cancer.^{7,9}

There are several risk factors associated with infection while using CVD among them being female, present age, present anatomical and physiological disorders of the urinary tract, absence of prophylactic antibiotics, the disconnection of the junction of the collector tube with CVD the colonization of the urethral meatus, duration of catheterization and have underlying diseases such as diabetes.^{5,8}

During the hospital stay in the ICU, these resources for therapy and invasive procedures can cause such complications may be associated with microbial invasion through the damaged mucosa, and indwelling lesions that lead to abscess formation ICU, which may result in fistulas, and the risk for complications such as ICU, of 2,5% for a day of catheterization, 10% for two to three days, 12,2% for 4-5 days and reached 26,9% with equal to or longer than 6 days.^{5,10-1}

As nursing is responsible for the vesicle urinary catheters in the ICU, it is important to know the profile of this type of patient, in order to provide lower risks of complications associated with CVD and consequent reduction of hospitalization. It is of utmost importance performing their nursing actions based on technical, scientific and managerial knowledge, intending on avoidance of harm to the patient, however, it is known that not all health institutions can obtain adequate resources to provide the quality of care which is seen as a goal to be achieved, but it requires control in order to be able to evaluate its effectiveness and for that, we need to establish measurable parameters, deployment and use of certain programs and protocols is required.⁶

When thinking on a better investigation related to nursing care of the patient using CVD in ICU clinical aspects, this study has as its object of study **the epidemiological profile of patients on CVD in the ICU and the incidence of UTI**, with the search for answers to the following questions: What are the basic pathologies/reason for hospitalization of patients on CVD in the ICU? What are the comorbidities of patients on CVD in the ICU? To address these issues, the following objectives were **set**:

- Identifying the epidemiological profile of patients using indwelling catheters (CVD) admitted to the intensive care unit (ICU)
- Identifying the incidence of urinary tract infection (ICU) Identify the epidemiological profile of patients on CVD in the ICU and the incidence of having ICU.

METHOD

A cross-sectional, prospective study with adult ICU, based on documentary sources, inserted in the research of the dissertation "The cost of indwelling urinary catheters in hospitalized patients in the ICU".⁶

The study was conducted in two ICUs of two university major hospitals located in the city of Rio de Janeiro/RJ. It was chosen by the institutions belonging to both public school health. For a better presentation of the study



units will name ICU A and ICU B.

The ICU has a capacity of six beds, two reserved for contact isolation. Regarding the nursing staff of the unit, it has two nurses and five nursing staff per shift, on a 12x60 hours and a nurse coordinator of the unit diarist regime.

The profile of ICU patients is of surgical high complexity and make recommendations for monitoring until stabilization, but coming from the wards of the institution admissions may occur if the patients had some type of late complication of surgery or other framework that aggravate their condition health.

The ICU B has a capacity of seven beds, one being occupied by a patient who is hospitalized for 11 years. Thus, we considered the capacity of six beds for having higher turnover between them. Regarding the nursing staff of the unit, it has two nurses and four nursing staff per shift under 12x60 hours, a nurse coordinator of the unit diarist regime and three secretaries. In addition, the unit has 13 resident nurses working in differentiated and flexible schedules, as academic activities. The profile of the patients in the surgical unit is highly complex, especially cardiovascular and onco-haematological character.

Regarding the insertion of CVD to the ICU A, the same procedure is performed exclusively by nurses in the sector, unless the patient undergoes a surgical procedure and it is inserted into the operating room, the anesthesiologist. ICU B, the same procedure is followed, except that within the operating room procedure is performed by the circulating nurse.

The average time of data collection at each institution was of 60 days, from Monday to Friday during the day. Thus, it was possible to include the largest possible number of patients in the study, as well as being in contact with most of the routines.

There were eligible patients aged over 18 years old who did not undergo prophylactic antibiotic therapy for ITU before indwelling catheterization procedure takes and who underwent CVD during the current ICU. The study excluded those who were part of a clinical and/or who had a history of bacteriuria test so they could have changed due to the use of extra features cost these complications. Of the 57 patients admitted during the study period, 33 belonged to the ICU A and 24 B. From the ICU application of inclusion and exclusion criteria, the sample consisted of 27 patients, 14 in the ICU A and ICU B 13.

It was used documentary analysis of medical records of patients admitted to ICUs who were with CVD to obtain clinical and epidemiological data from specific form, and pre-tested from simulations of situations by one of the researchers, in order to validate content formatting, and appropriateness of the items present in the instrument and the study objectives.

During the gathering, a routine has been established for the identification and tracking of medical records of patients who remained in the ICU, being first passed around to see which patients were making use of CVD; after it was established the presence of a new patient in the unit, starting the filling of the log record with patient inclusion record (including patients): if the patient met the inclusion criteria, a form of data collection would be completed in accordance with the information contained in their files; in the case of patients included above, was verified your daily prescription as well as any adverse event in the chart.

After the first month of data collection in the ICU, the information that the industry would undergo a work of restructuring, with patients being transferred to another location emerged. Thus, it was decided to stop collecting on the unit for a month, until there was stabilization of services in other sectors of the hospital. When the collection was resumed, it was observed that, of the 06 beds available at the previous location, the ICU had only two beds and prioritizing those patients with greater complexity; those in immediate or another type of postoperative complication would be allocated in the wards according to pathology.

During data collection in ICU B, it was observed that most of the patients referred to the unit were immunocompromised, not fitting the inclusion criteria and thus justifying the difference in the number of patients included in ICU A and ICU B (14 and 13 patients, respectively). No big turnover between beds in the unit was observed, because although patients were immunocompromised, mostly remained in treatment after being transferred to wards or going to death.

Due to the characteristics of the units are similar, it was decided to compile data for analysis.

RESULTS

The data for 27 clients, 11 men and 16 women in both units were analyzed. It was observed that the largest number of admitted clients were female (59,3%), with a mean age



of 67,38 years (SD = 17,0). The male customers accounted for 40,7% (n = 11), mean age 54.3 years (SD = 22,2) (Table 1).

Table 1. Distribution of the samples according to gender and age. Rio de Janeiro/RJ, 2012.

Sociodemographic data		n	%
Gender	Female	16	59,3
	Male	11	40,7
	Total	27	100
Age	<30	2	7,7
	31-40	2	7,7
	41-50	4	15,4
	51-60	4	15,4
	61-70	2	7,7
	71-80 years old	13	50
	Total	27	100

In categorizing patients' health, according to table 2, there is a predominance of clinical patients with neoplasms (colon adenocarcinoma, blastoma colon, colon cancer, metastatic breast cancer, hepatocellular carcinoma and distal esophageal cancer), as the main underlying pathology of these (25.9%).

Table 2. Pathological records. Rio de Janeiro/RJ, 2012.

Characteristics of health		N	%
Patient's type	Clinical	16	59,3
	Surgical	11	40,7
	Total	27	100
Pathology of base/Reason for hospitalization	Abdominal wall abscess	1	3,7
	Colon adenocarcinom	1	3,7
	Right hip arthroplasty	1	3,7
	Colon blastoma	1	3,7
	Ureteral stone	1	3,7
	Colon cancer	1	3,7
	Metastatic breast cancer	1	3,7
	Carcinoma hepathocell cancer	2	7,4
	Procto surgery	2	7,4
	DPOC	2	7,4
	Pulmonary embolism	1	3,7
	Enterectomy-small intestine	1	3,7
	Cystic Fibrosis	1	3,7
	Pregnant - fetal distress	1	3,7
	Hepatectomia	1	3,7
	Hemodynamic instability post PCR	2	7,4
	Acute renal failure	1	3,7
	Pulmonary Lobectomy media right	1	3,7
	Distal esophageal neoplasm	1	3,7
	For left hilar pulmonary nodule	1	3,7
	Mass to clarify in sigmoid and bladder	1	3,7
	Myasthenia gravis	1	3,7
	Community Pneumonia	1	3,7
	Total	27	100

Among the comorbidities observed, according to Table 3, we highlight the SAH (59,3%) with the highest frequency in the sample, followed by COPD (18,5%) and T2DM (14,8%). Hypertension is a common comorbidity in patients with T2DM, as the graph below. Increased blood pressure is an independent, linear and continuous risk factor for cardiovascular disease.^{7,8}



Table 3. Comorbidities of patients admitted. Rio de Janeiro/RJ, 2012

Health features		Patients hospitalized in the ICU		N	%
		ICU 1	ICU 2		
		1	2		
Type of patient	Clinical	6	10	16	59,3
	Surgical	8	3	11	40,7
	Total	14	13	27	100
Comorbidities	Without Comorbidities	6	4	10	37
	HAS	1	2	3	11,1
	HAS + DA	1	0	1	3,7
	HAS + DM2	1	1	2	7,4
	HAS + DM2 + IRA	1	0	1	3,7
	HAS + DM2 + IRespA + Pneumonia	0	1	1	3,7
	HAS + DPOC	1	3	4	16,7
	HAS + DPOC + Obesity + IRA	1	0	1	3,7
	Allergic rhinitis	1	0	1	3,7
	HAS + DAP + IH	1	0	1	3,7
	HAS + AT	0	1	1	3,7
	HAS + Hep. C	0	1	1	3,7
	Total	14	13	27	100

Tables 4 and 5 present the data concerning the permanence of CVD, where we observe that the average for the two institutions was 8-15 days (37%). In a study conducted in ICUs

demonstrated a risk of ICU of 2,5% for a day of catheterization, 10.0% for 2 to 3 days, 12,2% for 4-5 days and reached 26,9% with the duration equal to or greater than 6 days.⁵

Table 4. On-call time with the CVD in both Icus. Rio de Janeiro/RJ, 2012

Information about the CVD		n	%
Residence time with CVD.	< 24 hours	1	3,7
	1-3 days	7	26,0
	4-7 days	6	22,2
	8-15 days	10	37,0
	16-21 days	2	7,4
	22-28 days	0	0
	29-30 days	0	0
	>30 days	1	3,7
	Total	27	100

Table 5. Relationship between the length of stay of CVD, as used literature in both ICU. Rio de Janeiro/RJ, 2012

Information about the CVD		n	%
Residence time with CVD	Until 1 day	5	18,5
	2-3 days	3	11,1
	4-5 days	2	7,4
	>6 days	17	63,0
	Total	27	100

By observing Table 6, we prove that, in general, the surgery center is the area of the

hospital where most of CVDs is inserted (55,6%), followed by ICU (44,4%).



Table 6. Insertion of CVD. Rio de Janeiro/RJ, 2012

		n	%
Insertion site of CVD	Surgical Center	15	55,6
	ICU	12	44,4
	Total	27	100
Professional who entered the CVD.	Nurse	17	63,0
	Anesthesiologist	8	29,6
	Nursing technician	2	7,40
	Total	27	100

Regarding professional who entered the CVD also according to table 6, the nurse is presented as the most professional that performs the procedure (63%), followed by medical professional (29,6%) and nursing technician (7,4%).

On the type of collection system, all patients used the closed system, with a positive point for the prevention of ITU⁹, saying that "the use of a urinary drainage system must ensure the sterility of the system as a whole, through the use fitted to

disposable plastic bags for some devices that aim to reduce further the incidence of ICU. "

As noted in Table 7, it was not identified ITU associated with CVD, which probably had the influence of some factors within the units studied, such as the use of broad-spectrum antibiotics to treat the underlying pathology of each patient (not antibiotics prophylaxis according to guidelines of the SBU, 2004) .10 regarding the purpose of the use of antibiotics, pneumonia comes in first place (25,0%).

Table 7. ITU frequency and use of antibiotics. Rio de Janeiro/RJ, 2012

Information about the urinary tract		n	%
Presented ITU after urinary catheterization?	Yes	0	0
	No	27	100
	Total	27	100
In use of antibiotics?	Yes	16	59,3
	No	11	40,7
	Total	27	100
Purpose:	Pneumonia	4	25,0
	Respiratory infection	1	6,25
	Pulmonary Aspiration	1	6,25
	Pulmonary sepsis	1	6,25
	Respiratory infection by pulmonary aspiration	1	6,25
	Upper airway secretion	1	6,25
	Abdominal sepsis	1	6,25
	Prophylaxis abdominal sepsis	1	6,25
	Abdominal wall abscess	1	6,25
	Sepsis in surgical wound	1	6,25
	Prophylaxis in surgical incision	1	6,25
	Subcutaneous Panniculitis	1	6,25
	Not informed	1	6,25
	Total	16	100
Other complications related to CVD?	Yes	0	0
	No	27	27,0
	Total	27	100

It was not possible to identify UTI associated with CVD among patients who participated in the sample. However, the antibiotic Piperacillin 4g, associated with ICU

B Tazobactama 500mg and 2g Cefepime Hydrochloride in the ICU were used, it may be questioned about a possible masking of UTI, as in figure 1.



Antibiotics	Cefepime Hydrochloride 2g ¹¹	Piperacillin 4g, associated with tazobactama 500mg ¹²
Intended use for old people	• Lower respiratory tract infections, including pneumonia and bronchitis; • Complicated urinary tract infections, including pyelonephritis (kidney infection); • No complicated urinary tract infections; • Infections of the skin and skin structures; • Intra-abdominal infections, including peritonitis and biliary tract infections; • Gynecological infections; septicemia (sepsis); • Specific treatment in patients with Febrile Neutropenia (smaller amount of neutrophils, and abnormal that relates to fever) • Surgical prophylaxis in patients undergoing intra-abdominal surgery.	• Infections of the lower respiratory tract (pneumonia); • Urinary tract infections (complicated or not complicated); • Intra-abdominal infections; • Infections of skin and soft tissues; • Widespread bacterial infection; • Gynecological infections, including infections of the inner wall of the uterus in the postpartum and inflammatory disease of the female reproductive system; • Neutropênicas, febrile infections in association with an aminoglycoside antibiotic; • Infections of the bones and joints and; • Polimicrobianas infections (more than a micro-organism that causes).
ICU in which was used	ICU A	ICU B

Figure 1. Indication of antibiotics in each institution. Rio de Janeiro / RJ 2012

DISCUSSION

In the past 30 years, the epidemiology of nosocomial infections has received attention in the medical literature, being a public health issue worldwide³⁵ and its relation to the assessments of cost has been crafted in order to seek an alternative to the high costs procedures and treatments in health.

The values obtained in this study allowed finding that the largest number of admitted clients was women, with average age of 67,38 years old. The age range of the population still looks relatively young, despite the recent fall in the birth rate. People aged 45 or older accounted for 20,4% and people aged 65 and over only 5,2% of the population in 2000.¹³

The Brazilian population up to the age of 44 should decrease in absolute terms between 2000 and 2050, and estimates indicate a total of 105 million people aged 45 or older in 2050, which represents an increase of 199% compared the year 2000.¹³ for people between 65 and 74, the estimates show an increase of 321% between 2000 and 2050, and for people aged 75 and older is expected growth of 62,2% in the same period. The age structure of the population will be similar to the current age structure of the developed countries, with 45,0% of people aged 45 or older and 19,8% of persons aged 65 or older.¹⁴

In the year 2012 show that people over 50 years old accounted for 39,7% of the total number of hospitalizations and 58.4% of days in the Network/SUS in 2012.¹⁵ These data feed a recurring concern of managers , whether in public or private sphere, about paying the bill these increasingly expensive and specialized services. If a few decades ago the population did not survive the diseases like cancers, whose discovery was made when it found itself advanced, currently the diagnostic tests,

surgical procedures and treatment contribute to the increase in life expectancy and the consequent costs involved .

Among the underlying diseases/reason for admission, there was a predominance of clinical patients with neoplasms as the main underlying pathology. Among the comorbidities observed, highlighted the systemic hypertension (SH), followed by chronic obstructive pulmonary disease (COPD) and diabetes mellitus type 2 (DM2). Assuming that the Brazilian population, in general, had an increase in life expectancy, the emergence of neoplastic diseases is the result of a population that does not die from infectious diseases in large frequency.⁷ The elderly are more vulnerable to degenerative diseases insidious beginning, such as cardiovascular and cerebrovascular diseases, cancer, pathological conditions that affect the musculoskeletal system and the senses,⁷ corroborating the data shown in Figure 2.

The admissions for circulatory diseases (including hypertension and heart disease) are the leading cause of hospitalization in health care to people aged 45 or older. Diseases of spine/back and arthritis/rheumatism, although showing a high prevalence among the population aged 45 and older, were not relevant causes of hospitalization.¹⁶

Diseases of the respiratory tract (including bronchitis/asthma) appeared as the second leading cause of hospitalization in SUS for these age groups.¹⁶ Diseases of the digestive, genitourinary, infectious/parasitic, cancer and metabolic unit were also relevant from the point of view of morbidity for people 45 years or older.

The analysis of the projections and the finding of the data collected in the field bring a concern for the future of the health system and how the planning of preventive action



campaigns is needed. In the case of a company with a predominantly elderly future, the present moment for these types of campaigns allows time to be interpreted as "long-term investment" in reducing future social spending.

Regarding COPD, in a report by the World Health Organization,¹⁶ it is estimated that it is the fourth leading cause of death, accounting for 5% of all deaths worldwide. In Brazil, COPD mortality increased from 7,88/100.000 cases in 1980 to 19,04/100.000 in 1990, representing an increase of 340%.¹⁶ Thus, the reduction in mortality from other causes, most countries from the 1980s, and has extended the lifespan, also increased the exposure time to other health-compromising factors such as tobacco, resulting in a real increase in the incidence of COPD, requiring more medical care and hospitalizations^{17,18}.

The patient who is admitted to an ICU indicates that your case requires constant monitoring of vital signs, hemodynamic status and respiratory function. This patient profile is constantly subjected to invasive procedures and may make use of mechanical ventilation, central venous catheter, etc. In the case of the patient who shows signs of hemodynamic instability, this is subjected to urethral catheterization takes in order to achieve precisely measure urine output, as well as in planning the volume of fluid to be infused throughout the day.¹⁹

By observing the data presented in Figures 4 and 5, related to the permanence of CVD, 63% of patients using CVD by more than 6 days had a risk of 26,9% of developing UTI, and the surgical center area hospital where most of CVDs is inserted, followed by UTI.⁵ However, in each surveyed field, we found that ICU B had the highest number of inserts CVDs within the unit and may be reflective of the type of inpatient unit in (clinical patient). The ICU, most CVDs was inserted in the operating room (55,6%), reflecting also the type of the inpatient unit (surgical patients).

In the studied units, the nurse appeared as the professional who performed the procedure more bladder catheterization delay. Article 8, section I, paragraph "h", Decree No. 94.406/87 of COFEN¹⁹ legitimizes "the nurse falls nursing care increased technical complexity and requiring appropriate scientific knowledge and ability to make immediate decisions," being the one CVD them.

The nurse belongs to a category that requires a professional level of broad knowledge and more complex, requiring higher education,¹⁹ therefore, it is noteworthy

that the prevention of complications resulting from insertion of a CVD, in general, is in the hands of nursing and starts from the decision by bladder catheterization, choice of optimal catheter insertion in skill, ensuring the correct setting, avoiding excessive weight in the drainage bag and preventing the removal or accidental pull even.²⁰⁻¹

When there is education and training of professionals, care is done consciously, with improved quality of care and prevention of adverse events. This may be one factor that contributes to the incidence of non-UTI, in which case the nurse performs technical and scientific assessment during all stages of the procedure.⁶

Whereas bladder indwelling catheterization has become the most common intervention performed in the urinary tract, ITU is the second leading cause of infection in the hospital environment, related mainly to the insertion and loitering CVD.^{20,21,22} Such infection is predictable, currently entering the list of complications that are not reimbursable by health systems, as in the case of the U.S. health system.²²

The unnecessary use of CVD is also associated with a greater tendency to develop an ITU, since the cost of antibiotic treatment generates a large burden on the cost of admission, the increased length of stay in the hospital to perform the treatment itself.²¹⁻²

ITU was not identified in the sample can be questioned about possible masking ITU since the drugs used in ICU each have broad spectrum coverage and make the microorganisms which are normally involved in ITUs, for example: Enterobacter sp Klebsiella sp. Pseudomonas sp. Proteus sp. Serratia sp. Staphylococcus sp. Perhaps this is one of the most significant factors in which, even without a treatment protocol established units, obscure the presence of ITU in these patients.

REFERENCES

1. How-to Guide: Prevent Catheter-Associated Urinary Tract Infections. Cambridge, MA: Institute for Healthcare Improvement [Internet]. 2011 [cited 2014 Mar 19]. Available from: <http://www.ihl.org>
2. Gokula M, Smolen D, Gaspar PM, Hensley SJ, Benninghoff MC, Smith M. Designing a protocol to reduce catheter-associated urinary tract infections among hospitalized patients. Am J Infect Control [Internet]. 2012 [cited 2014 Jan 6];40:1002-04. <http://www.ajicjournal.org/article/S0196-6553%2811%2901334-4/abstract>



3. Regina Fink R, Gilmartin H, Richard A, Capezuti E, Boltz M, Wald H. Indwelling urinary catheter management and catheter-associated urinary tract infection prevention practices in Nurses Improving Care for Health system Elders hospitals. Am J Infect Control [Internet]. 2012 Oct [cited 2014 Jan 6];40(8):715-20. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22297241>

4. Brasil. Agência Nacional de Vigilância Sanitária. Infecção do trato urinário relacionada a cateter vesical. Available from: http://www.anvisa.gov.br/servicos/contr/ole/rede_rm/cursos/rm_controle/opas_web/modulo5/pre_urinario2.htm

5. Lo E, Nicolle L, Classen D, Arias KM, Podgorny K, Anderson DJ et al. Strategies to Prevent Catheter-Associated Urinary Tract Infections in Acute Care Hospitals. Infection Control and Hospital Epidemiology [Internet]. 2008 [cited 2014 Jan 6];29:S41-S50. Available from: <http://www.wsha.org/files/82/HAI-Catheter-AssocUrinaryTractStrategies.pdf>.

Tolentino ACMS, Schutz V, Peregrino AAF, Mata VE. Análise dos custos associados ao cateterismo vesical de demora em pacientes hospitalizados: revisão integrativa. J Nurs UFPE on line [Internet]. 2013 May [cited 2014 Jan 6];7(spe):4251-60. Available from: <http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/3972/pdf/2649>

6. Pinto LC, Ricardo ED, Leitão CB, Kramer CK, Zanatta CM, Gross JL et al. Controle Inadequado da Pressão Arterial em Pacientes com Diabetes Mellitus Tipo 2. Arq Bras Cardiol [Internet]. 2010 [cited 2014 Jan 6]; 94(5):651-5. Available from: <http://www.scielo.br/pdf/abc/v94n5/aop02910.pdf>.

7. Sociedade Brasileira de Cardiologia. Epidemiologia da Hipertensão Arterial [Internet]. São Paulo, [s.d.]. Available from: <http://departamentos.cardiol.br/dha/vdiretriz/03-epidemiologia.pdf>.

8. Mardone R, Viana F, Carvalho M, Moura ME. A prática dos profissionais de enfermagem na prevenção e controle das infecções hospitalares associadas aos procedimentos invasivos [Internet]. 2010 [cited 2013 Mar 3]. Available from: <http://www.sofi.com.br/conteudo/pr%C3%A1tica-dos-profissionais-de-enfermagem-na-preven%C3%A7%C3%A3o-e-controle-das-infec%C3%A7%C3%B5es-hospitalares->

9. Sociedade Brasileira de Urologia. MANU: Manual de Urologia [Internet]. 2010. [cited 2014 Mar 01]. Available from:

<http://www.sbu-sp.org.br/arquivos/publicacoes/OS1658-MANU-ManualdeUrologia-03-08-10.pdf>

10. Bristol-Myers Squibb Farmacêutica S.A. Cloridrato de Cefepima 2g. São Paulo, [s.d.]. Available from: [http://www4.anvisa.gov.br/base/visadoc/BM/BM\[25467-1-0\].PDF](http://www4.anvisa.gov.br/base/visadoc/BM/BM[25467-1-0].PDF)

11. Wyeth Indústria Farmacêutica. Piperacilina 4g, associada com tazobactama 500mg. São Paulo, 2013.

12. Instituto Brasileiro De Geografia E Estatística. Brasil: Tábua Completa de Mortalidade - Ambos os Sexos. [s.d.] [cited 2013 Apr 04]. Available from: <http://www.ibge.gov.br/home/estatistica/populacao/tabuadevida/2010/ambossexos.pdf>

13. United Nations. World population prospects: the 2012 revision [Internet]. New York: United Nations [cited 2013 Mar 7]. Available from: <http://esa.un.org/unpp/index.asp?panel=2>

14. Brasil. Ministério da Saúde - Sistema de Informações Hospitalares do SUS [Internet]. [cited 2013 Mar 7]. Available from: <http://www2.datasus.gov.br/DATASUS/index.php?area=02>

15. World Health Organization. The global burden of disease: 2008 Update, Geneva [Internet]. [cited 2014 Jan 6]. Available from: http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf

16. Benseñor I, Fernandes T, Lotufo P. Chronic obstructive pulmonary disease in Brazil: mortality and hospitalization trends and rates, 1996-2008. Int J Tuberc Lung Dis [Internet]. 2011 [cited 2014 Jan 6];15(3):399-404. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21333110>

Tolentino ACMS, Schutz V, Peregrino AAF, Mata VE. Análise dos custos associados ao cateterismo vesical de demora em pacientes hospitalizados: revisão integrativa. J Nurs UFPE on line [Internet]. 2013 May [cited 2013 Nov 6];7(spe):4251-60. Available from: <http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/3972/pdf/2649>

17. Schutz V, Leite JL. Custo e Preço do Processo de Cuidar Direto da Enfermeira na Unidade de Terapia Intensiva. Rev pes cuid fundam online [Internet]. 2011 [cited 2013 Nov 6]; 3(1):1552-15617. Available from: <http://www.eeap.com.br/conteudo.asp?Codmenu=65>

18. Conselho de Enfermagem do Estado do Rio de Janeiro. Lei do exercício Profissional. 1986.



19. Schumm K, Lam T. Types of urethral catheters for management of short-term voiding problems in hospitalized adults: a short version Cochrane review. *Neurology and Urodynamics* [Internet]. 2008 Oct [cited 2012 Nov 7];27:738-46. Available from: <http://onlinelibrary.wiley.com/doi/10.1002/nau.20645/pdf>

20. Saint S, Meddings JA, Calfee D, Kowalski CP, Krein SL. Catheter-associated urinary tract infection and the Medicare rule changes. *Ann Intern Med* [Internet]. 2009 June [cited 2012 Nov 6];150(12):877-84. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2754265/>



Submission: 2013/01/07

Accepted: 2014/06/26

Publishing: 2014/10/01

Corresponding Address

Ana Clara de Melo Souza Tolentino

Rua Figueiredo Magalhães, 870

Copacabana

CEP 22031-011 – Rio de Janeiro (RJ), Brazil