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ORIGINALES

Measures for the adhesion to biosafety recommendations by the nursing team

Medidas para adesão às recomendações de biossegurança pela equipe de enfermagem

Medidas para la adhesión a las recomendaciones de bioseguridad para el equipo de enfermería

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ABSTRACT:

Objective: To evaluate the knowledge on biosafety recommendations among nursing professionals working in Intensive Care Units.
Method: This was a quantitative, descriptive, and cross-sectional study. An adapted questionnaire was used to evaluate adherence to biosafety recommendations.
Results: Out of the 145 nursing professionals interviewed, 88.3% (128) reported having received training on biosafety. Regarding hand hygiene (HH) with soap and water, 97.9% (142) mentioned performing this procedure before and after contact with patients and before and after removing sterile gloves or executing procedures. The majority claimed to be aware of the use of PPE. Emphasis is given to weaknesses in the knowledge about the properties of alcohol and occupational risks. The main difficulty related to the use of PPE was its unavailability in the unit.
Conclusion: The majority of nursing professionals demonstrated having knowledge about biosafety. However, this knowledge does not guarantee compliance to guidelines by professionals.

Keywords: Exposure to Biological Agents; Patient Safety; Nursing Team.

RESUMO:

Objetivo: Avaliar o conhecimento as recomendações de biossegurança junto aos profissionais de enfermagem em Unidades de Terapia Intensiva.

Método: Quantitativo, descritivo e de corte transversal. Utilizou-se questionário adaptado para avaliar a adesão às recomendações de biossegurança.
Resultados: Dos 145 profissionais da enfermagem entrevistados, 88,3%(128) afirmaram terem recebido capacitação acerca de biossegurança. Quanto a higienização das mãos (HM) com água e sabão, 97,9%(142) mencionaram realizar este procedimento antes/após o contato com o paciente e antes/após remoção das luvas estéreis ou de procedimentos. Por outro lado, a maioria afirmou ter conhecimento quanto ao uso de EPI. Destaca-se fragilidades ainda nos quesitos conhecimento quanto as propriedades do álcool e riscos ocupacionais. A principal dificuldade apontada para o uso desses equipamentos foi a indisponibilidade na unidade.
Conclusão: A maioria dos profissionais de enfermagem demonstrou ter conhecimento sobre biossegurança. No entanto este conhecimento não garante o cumprimento das normas pelos profissionais.

Palavras-chave: Exposição a Agentes Biológicos; Segurança do Paciente; Equipe de Enfermagem.

RESUMEN:

Objetivo: Evaluar los conocimientos de las recomendaciones de bioseguridad en profesionales de enfermería en unidades de cuidados intensivos.
Método: Cuantitativo, descriptivo y transversal. Se utilizó un cuestionario adaptado para evaluar el seguimiento a las normas de bioseguridad.
Resultados: De 145 profesionales de enfermería 88,3%(128) mencionaron que recibieron capacitación sobre bioseguridad. Respecto de la higiene de las manos con agua y jabón, 97,9%(142) informó hacerlo antes/después del contacto con el paciente y antes/después de quitarse los guantes estériles y/o de procedimientos. La mayoría afirmó tener conocimiento sobre el uso de PPE. Destácanse fragilidades en cuanto al conocimiento de las propiedades del alcohol y los riesgos laborales. La principal dificultad señalada para utilización de los PPE fue la falta de disponibilidad de estos equipos en las unidades.
Conclusión: La mayoría demostró tener conocimiento sobre bioseguridad. Sin embargo este conocimiento no asegura el cumplimiento de las normas por parte de los profesionales.

Palabras clave: Exposición a Agentes Biológicos; Seguridad del Paciente; Grupo de Enfermería.

INTRODUCTION

Biosafety is a combination of good practices that have revolutionized work processes in health[1] through the adoption of priorities and strategies, being a multidisciplinary, normative, doctrinal, behavioral reducing, and risk eliminating field.

In this perspective, research has identified different actions to change behaviors among health professionals, especially regarding the continuous use of personal[2] and collective[3] protective equipment, by seeking to increase professional awareness that can lead to safe and globalized practice.

Considering the recommendations of the World Health Organization (WHO)[4], biosafety in the Intensive Care Unit (ICU) became a focus of research due to the number of severe patients requiring high complexity care, which expose nurses to the contraction of diseases resulting from procedures involving biological, chemical, physical, ergonomic, and psychosocial risks[5].

Therefore, attention to biosafety issues among nursing professionals working in these units is necessary in order to reduce the risk of contamination and accidents at work[6]. Studies have identified nursing professionals as the category that is most susceptible to work-related accidents due to their great exposure to biological material. The high rate of exposure is related to the fact that they are the largest group of professionals in health care services, have more direct contact with patients, and the frequency and

type of procedures performed[7,8].

Hence, the Regulatory Norm number 32 (NR 32) from the Ministry of Labor and Employment was established in Brazil aiming at defining basic guidelines for health care establishments for the implementation of measures to protect the health and safety of professionals[9].

Despite these guidelines and preventive measures, the low adherence of these professionals to the use of personal protective equipment (PPE) and collective protective equipment (CPE), combined with the non-adoption of precautionary measures, are related to these professionals' knowledge and attitude. The factors that predispose to low adherence were: difficulty adapting to the use of PPE, equipment inadequacy, lack of motivation, work overload, inadequate physical structure, equipment absence or inaccessibility in the nursing station, and lack of knowledge on occupational hazards[10].

This study evaluated the knowledge on biosafety and identified factors that influence the adherence to biosafety recommendations among nursing professionals in the Intensive Care Units of a reference hospital in the State of Sergipe, Brazil.

MATERIAL AND METHODS

This was a quantitative, descriptive, and cross-sectional study conducted in three intensive care units (general, surgical, and pediatric) of a large hospital in the State of Sergipe, Brazil, with a physical capacity of 574 beds. These units provide care in several specialties and are sites for teaching, research, and extension activities.

The study population initially consisted of 230 nursing professionals comprised of 176 nursing technicians and 54 nurses working in three different shifts. Out of this total, 49 professionals were excluded because they were on vacation or leave for medical treatment. Out of the remaining 181 participants, 36 were excluded due to inappropriate questionnaire completion; 145 participants composed the final study sample.

The inclusion criterion was being a nursing professional who had worked for at least six months in the studied unit; the exclusion criteria were being on vacation, leave for medical care, or not present at the unit at the time of data collection.

The study began after approval by the Research Ethics Committee of the Federal University of Sergipe under Certificate of presentation for ethical evaluation nº 25183913.2.0000.5546.

Data collection was performed from October of 2014 to February of 2015 using an adapted and self-administered questionnaire composed of 24 multiple-choice questions[15]. Prior authorization to use this questionnaire was requested from its authors. The instrument is composed of two parts: data for sample characterization and questions related to biosafety recommendations.

All participants provided a free and volunteer participation consent before the study start.

The GraphPad Prism 5 software was adopted for data analysis using descriptive

statistics; results are presented in means and standard deviation and the *Student* t-test was used to compare answers between categories.

RESULTS

Out of the 145 professionals in the study sample, 71.7% (104) were nursing technicians and 28.3% (41) were nurses.

A total of 77.2% (112) were females, 70.3% (102) were between 22 and 35 years old, and 76.6% (111) had up to ten years of experience in the profession. The evaluation of adherence to vaccination showed that 77.9% (113) reported being immunized against Hepatitis B in three doses.

Out of the 104 nursing technicians, 24% (25) had complete college degrees with a predominance of courses in the areas of health sciences (16.3% - 17) and human sciences (7.7% - 8).

The analysis of the knowledge about biosafety showed that 88.3% (128) received this training in their curricular content. Out of this total, 57.2% (83) sought to update knowledge more than two years ago through reading scientific journals, online studies, and during their participation in service training, courses, lectures, and symposia.

Regarding hand hygiene (HH) with soap and water, 97.9% (142) mentioned performing this procedure before and after contact with patients and before and after removing sterile gloves or executing procedures. A total of 92.4% (134) mentioned using sterile or procedural gloves when handling materials that pose a risk of exposure.

The knowledge about the microbial growth inhibitory property of 70% alcohol was reported by 51% (53) of nursing technicians and 71% (29) of nurses ($p = 0.0306$). Nevertheless, 62.5% (65) of nursing technicians and 85.3% (35) of nurses stated that this solution did not have the property to eliminate impurities and organic material ($p = 0.0074$).

Therefore, 63.4% (66) of technicians and 83% (34) of nurses reported that this product could be used in the absence of visible impurities ($p = 0.0225$). Regarding the recommendation to use 70% alcohol "only during contact with the same patient", 86.5% (90) of nursing technicians and 97.5% (40) of nurses stated not knowing this recommendation ($p = 0.04970$).

The analysis of the "risk of developing an infection in the ocular mucosa after contact with blood" showed that 52% (54) of technicians and 83% (34) of nurses considered that there was only a risk if the patient presented a blood-borne infectious disease ($p = 0.0022$).

A total of 96.6% (140) professionals mentioned the following as possible infections, among the main ones, that can be acquired due to the nature of ICU work: Hepatitis B, C, and HIV. Regarding the performance of serological tests after a work-related accident involving body fluids, 90.3% (131) stated that tests for HIV and Hepatitis B and C should be performed (on the day of the event, and three, six, and twelve months after the event).

When asked about the standard precautionary measures, 100% (104) nursing technicians and 95% (39) nurses (p = 0.0233) stated that these measures consist of using PPE, washing hands, being vaccinated against hepatitis B, and discarding piercing material in a rigid-walled container. Conversely, 100% (104) of technicians and 95% (39) of nurses considered that using face mask, shoe covers, 70% alcohol for hand rubbing, and being vaccinated against tetanus are not considered measures that effectively guarantee biosafety (p = 0.0233).

The difficulties regarding the use of personal protective equipment (PPE) were distributed as 38.6% (56) with the use of protective eyewear, 15% (22) with the use of two types of PPE(between gloves, masks, and goggles), 9% (13) with the use of all equipment, 6.2% (9) with the use of three types of PPE (between masks, gloves, goggles, and gowns), 5.5% (8) with the use of masks, and 3.4% (5) with the use of gowns/aprons.

The main difficulty mentioned was the unavailability of equipment in the unit; 29% (42) for the use of goggles and 23.4% (34) for the use of gowns. No difficulties in using masks were reported by 68% (71) of technicians and 85% (35) of nurses (p = 0.0365). The issue of fogging goggles during work was not reported as a difficulty in adherence by 74% (77) of nursing technicians and 90% (37) of nurses (p = 0.0321).

Regarding the cleaning procedure of surfaces contaminated with biological materials, specifically patients' beds, 48.3% (70) stated that disinfection should be performed using 70% alcohol and 40.7% (59) considered an initial cleaning with soap and water necessary to followed by 70% alcohol. A total of 84.1% (122) mentioned the necessity of packing produced garbage in a suitably identified milky white plastic bag.

DISCUSSION

The sample in this study represent a productive population and is similar to some reported in studies performed with nursing professionals in an intensive care unit[12,13]. The majority of participants had up to ten years of professional experience. In a study carried out with intensive care unit nursing professionals, 64% (16) had less than five years of experience[12]. It is stated that, the risk of accidents at work decreases for each year of practice. Therefore, professionals with less than five years of work experience are more likely to suffer occupational accidents[14].

Out of the technical professionals interviewed, a small percentage attended college, which corroborates the results in a study with technical professionals working in the ICU and Urgent services carried out in the northeastern region where only 28.97% [53] attended college[15].

Most of the study's participants stated that they had an update on the subject more than two years ago during their training; the most used resources for becoming current on the subject were scientific journals and websites, similar to what has been reported in other studies[12,16]. Thus, it can be inferred that nursing professionals are expressing great concern about being updated on this subject.

Education is undoubtedly a powerful instrument to correct mismatches between health education, practice, and the SUS principles and guidelines among health professionals[17]. The educational component in health institutions is essential for the

development of professional competencies as well as a fundamental factor in achieving the quality of care and the practical experience in nursing.

Regarding hand hygiene (HM) with soap and water, most professionals demonstrated knowledge about the recommendations, which corroborates observations in other studies[2,18]. It is noteworthy that the performance of HH during professional health care practices contributes to the prevention of Health Care Related Infections (HCRI), interrupting the cycle of pathogen transmission[19].

In this study, most professionals reported using sterile or procedural gloves when handling biohazardous material. Conversely, a study on biosafety shows that 68% of venous punctures performed by nursing professionals were performed without using procedural gloves[20]. However, it is noted that the most frequently used PPE during procedures are gloves[16]. It can be emphasized that the knowledge that the professional has about a particular issue may not necessarily represent adherence to it; the professional needs to be responsible for the awareness in the proper use of PPE.

Concerning the knowledge about the property of 70% alcohol to inhibit microbial growth, most but not all professionals had this knowledge. According to a study[11], 58.8% of participants answered that alcohol is used because of its sterilization capacity, 18.7% because of its ability to reduce and eliminate organic matter in the hands, and 14.1% because of its ability to inhibit bacterial growth.

According to ANVISA, the friction of hands with alcoholic preparations should last from 20 to 30 seconds to be effective reducing the microbial load in hands. Its use can replace sanitation with soap and water, provided there are no apparent impurities[21].
The professionals mentioned that, due to the nature of their work, Hepatitis B, C, and HIV are among the main infections possible to be acquired. In agreement with the study, 96.3% of participants identified HIV and Hepatitis B and C virus as the main work-related infections[11]. There is still great concern among professionals regarding infectious diseases[22].

Most participants showed knowledge about the period of serological examinations after a work accident involving body fluids. It should be emphasized that medical evaluation after occupational exposures is essential to analyze the severity of the exposure as well as to prescribe and indicate chemoprophylaxis in the shortest possible time[23].

Most interviewees claimed to have knowledge about the standard precautionary measures. This result was similar to those reported in a study carried out by the Infection Control Commission in Portuguese Hospitals where 93% of respondents stated knowing about these measures[24]. However, another study reported that most professionals showed little knowledge about standard precautionary measures and the risks to which they are exposed[25]. This context leads us to reflect on the need to continue reinforcing professional adherence to biosafety measures.

In this respect, adherence to the Standard Precaution (PP) is related to the individual safety of workers and the adoption of pre- and post-exposure preventive measures are necessary in order to control hospital infections. Therefore, PP is based on the adoption of strategies to assist any patient suspected of contamination or infectious process, and thus, preventing the spread of pathogenic microorganisms[26]

The difficulty to use goggles and masks has also been evaluated in other studies[27]. However, the difficulty in using protective goggles was mainly related to the collective use because the same equipment is shared, which generates concerns regarding equipment asepsis[11].

The difficulties in using gowns/aprons were related to unavailability in the unit, forgetfulness on the part of the professional, short time to don it (in emergency situations), and the belief that its use is irrelevant[11]. A study showed that the difficulties indicated by professionals for low adherence to PPE use are associated with organizational, managerial, and relational factors such as: inadequate physical structure, availability and accessibility of protective equipment, lack of routines, work overload, stress, and improvisation and stress in labor relations[10].

As for the cleaning procedure commonly adopted in the case of surface contamination with biological materials, specifically patients' beds, most participants did not consider cleaning with 70% alcohol or with soap and water to be necessary. In view of this result, it is inferred that the methods of cleaning and disinfection in the studied institution need to be reviewed. Thus, according to ANVISA[28], cleaning consists on the removal of visible impurities (organic and inorganic) from objects and surfaces, either manually or mechanically, using water and soap or enzymatic products; it is still considered an essential step in successful disinfection because the presence of organic and inorganic matter can interfere with the effectiveness of this process.

Most professionals affirmed the need to use a white milky plastic bag, properly identified, for the disposal of generated garbage. A survey carried out at the General Hospital of Porto Alegre with nursing workers identified that despite the professionals' claim in separating hospital waste, most did not know the guidelines, which leads to inadequate action[29]. Accordingly, another study performed in a public hospital in Paraná identified the presence of common garbage packed in a milky white plastic bag[30], which evidenced a lack of knowledge in the standardization for this procedure.

CONCLUSION

Most professionals demonstrated awareness of biosafety issues regarding the HH recommendations, use of gloves, 70% alcohol properties, occupational risks, and standard precautionary measures. Nevertheless, in spite of this majority, it is necessary to emphasize that the results on some percentages are not significant for the category studied, specifically in knowledge about the properties of alcohol and occupational risks. On the other hand, it is emphasized that the possession of knowledge does not guarantee the effective adherence to these measures in the studied units. It should also be noted that some of the professionals do not have the knowledge that is consistent with what is expected in their professional practices.

Among the factors that make it difficult to adopt biosafety measures, the main justification was the unavailability of PPE in the unit. Most participants did not consider disinfection with 70% alcohol necessary to decontaminate surfaces, which indicates a fragility in procedures.

In view of the results, it is necessary to continue fomenting strategies for the adoption of biosafety measures in line with policies for patient safety.

It is imperative that nursing professionals understand the need for self-care minimizing

the occupational risks to which they are exposed during the exercise of their profession. This stance will contribute to the quality of the know-how in nursing.

REFERENCES

1. Sangioni LA, Pereira DIB, Vogel FSF, Botton SA. Princípios de biossegurança aplicados aos laboratórios de ensino universitário de microbiologia e parasitologia. Ciência Rural. [internet] 2013 [acesso em 28 ago 2016]; 43(1): 91-9. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S01038478201300010016
2. Souza ELV, Nascimento JC, Caetano JA, Ribeiro RCV. Uso dos equipamentos de proteção individual em unidade de terapia intensiva. Rev. Enf. Ref. [internet] 2011 [citado em: ago 26 2016]; serIII (4): 125-33. Disponível em: http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S0874028320110002000113&lng=pt
3. Angelini E, Camerini G, Diop M, Roche P, Rodi T, Schippa C, et al. Respiratory Health – Exposure Measurements and Modeling in the Fragrance and Flavour Industry. Plos one [internet] 2016 [acesso em: 28 ago 2016]; 11 (2): e0148769. Disponível em: http://www.ncbi.nlm.nih.gov/pubmed/26863607
4. World Health Organization. WHO guidelines on hand hygiene in health care. World Health Organization, Geneva, Switzerland; 2009. [acesso em: ago 28 2016]. Disponível em: http://apps.who.int/iris/bitstream/10665/44102/1/9789241597906_eng
5. Medeiros AL, Costa MBS, Sousa MCJ, Rosenstock KIV. Gerenciamento de riscos e segurança no trabalho em unidades de saúde da família. R bras ci Saúde. [internet] 2013 [acesso em: 01 set 2016]; 17(4):341-48. Disponível em: http://periodicos.ufpb.br/ojs/index.php/rbcs/article/view/12677/11434
6. Nishide VM, Benatti MCC, Alexandre NMC. Ocorrência de acidente do trabalho em uma unidade de terapia intensiva. Rev Latino-am Enferm. [internet] 2004 [acesso em: ago 29 2016]; 12 (2): 204-11. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S01041169200400020009
7. Rampal L, Zakaria R, Sook LW, Zain AM. Needle Stick and Sharps Injuries and Factors Associated Among Health Care Workers in a Malaysian Hospital. European Journal of Social Sciences. [internet] 2010 [acesso em: 29 ago 2016]; 13 (3): 354-62. Disponível em: https://www.researchgate.net/publication/235607171_Needle_Stick_and_Sharps_Injuries_and_Factors_Associated_Among_Health_Care_Workers_in_a_Malaysian_Hospital
8. Cvejanov-Kezunovic L, Mustajbegović J, Milošević M, Čivljak R. Occupational exposure to blood among hospital workers in Montenegro. Arch. Ind. Hyg. Toxicol. [internet] 2014 [acesso em: 29 ago 2016]; 65: 273–80. Disponível em: http://www.degruyter.com/view/j/aiht.2014.65.issue-3/10004-1254-65-2014-2493/10004-1254-65-2014-2493.xml
9. Brasil. Ministério do Trabalho e Emprego. Portaria n. 485, de 11 de novembro de 2005. Aprova a norma regulamentadora n.32 (Segurança e Saúde no Trabalho em Estabelecimentos de Saúde). [legislação na Internet]. Brasília; 2005. [acesso em: 05 fev 2016]. Disponível em:http://sbbq.iq.usp.br/arquivos/seguranca/portaria485.pdf
10. Neves HCC, Souza ACS, Medeiros M, Munari DB, Ribeiro LCM, Tipple AFV. Segurança dos trabalhadores de enfermagem e fatores determinantes para adesão aos equipamentos de proteção individual. Rev. Latino-Am. Enfer. [internet] 2011 [acesso em: 29 ago 2016]; 19 (2): 354-61. Disponível em: http://www.scielo.br/pdf/rlae/v19n2/pt_18.pdf
11. Oliveira AC, Machado BCA, Gama CS. Conhecimento e adesão às recomendações de biossegurança no Corpo de Bombeiros Militar de Minas Gerais.

Rev.Esc Enferm. USP. [internet] 2013 [acesso em: 28 ago 2016]; 47 (1): 115- 27. Disponível em: http://www.scielo.br/pdf/reeusp/v47n1/a15v47n1.pdf
12. Bonini AM, Zeviani CP, Canini SRMS. Exposição ocupacional dos profissionais de enfermagem de uma unidade de terapia intensiva a material biológico. Rev. Eletr. de Enferm. [internet] 2009 [acesso em: 29 ago 2016]; 11(3): 658-64. Disponível em: http://www.fen.ufg.br/fen_revista/v11/n3/v11n3a25.htm
13. Lima IAS, Oliveira GG, Rodrigues ARG, NMA Sousa. Acidentes Ocupacionais com Pérfurocortantes: Estudo com profissionais de enfermagem. Rev Interd. Saúde. 2015 [acesso em: 29 ago 2016]; 2 (1): 26-43. Disponível em: http://www.interdisciplinaremsaude.com.br/Volume_3/Trabalho_03.pdf
14. Clarke SP, Rockett JL, Sloane DM, Aiken LH. Organizational climate, staffing, and safety equipment as predictors of needlestick injuries and near-misses in hospital nurses. American Journal of Infection Control. [internet] 2002 [acesso em: 29 ago 2016]; 30(4): 207-16. Disponível em: http://www.ncbi.nlm.nih.gov/pubmed/12032495
15. Medeiros RC. Acidentes de trabalho: análise em profissionais de enfermagem que atuam nas unidades de terapia intensiva e urgência. Dissertação (Mestrado em enfermagem). Natal/RN: Programas de pós-graduação em enfermagem- Universidade Federal do Rio Grande do Norte. [internet] 2010 [acesso em: 29 ago 2016]. Disponível em: https://repositorio.ufrn.br/jspui/handle/123456789/14712
16. Pereira FMV, Malaguti-Toffano SE, Silva AM, Canini SRMS, Gir E. Adesão às precauções-padrão por profissionais de enfermagem que atuam em terapia intensiva em um hospital universitário. Rev.Esc. Enferm. USP. [internet] 2013 [acesso em: 29 ago 2016]; 47(3): 686-93. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342013000300686
17. Ministério da Saúde (BR). Secretaria-Executiva. Subsecretaria de Assuntos Administrativos. Educação Permanente em Saúde: um movimento instituinte de novas práticas no Ministério da Saúde. Brasília: Ministério da Saúde; 2014. [acesso em: 29 ago 2016]. Disponível em: http://bvsms.saude.gov.br/bvs/publicacoes/educacao_permanente_saude_movimento_instituinte.pdf
18. Locks L, Lacerda JT, Gomes E, Tine ACPS. Qualidade da higienização das mãos de profissionais atuantes em unidades básicas de saúde. Rev Gaúcha Enferm. [internet] 2011 [acesso em: 29 ago 2016]; 32(3): 569-75. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1983-14472011000300019
19. Bathke J, Cunico PA, Maziero ECS, Cauduro FLF, Sarquis LMM, Cruz EDA. Infraestrutura e adesão à higienização das mãos: desafios à segurança do paciente. Rev Gaúcha Enferm. [internet] 2013 [acesso em: 29 ago 2016]; 34 (2): 78-85. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1983-14472013000200010
20. Silva AH, Brito OS, Oliveira PM, Oliveira RC. Fatores de risco que predispõe a ocorrência de complicações associada à punção venosa periférica. Rev. Enferm. UFPE on line. [internet] 2011 [acesso em: 28 ago 2016]; 5 (7) 1691-700. Disponível em: http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/download/1631/3233
21. Brasil. Agência Nacional de Vigilância Sanitária. Segurança do paciente: Higienização das mãos. Brasília: ANVISA; 2007 [acesso em: 28 ago 2016]. Disponível em: http://www.anvisa.gov.br/servicosaude/manuais/paciente_hig_maos.pdf
22. Ribeiro IP, Rodrigues AM, Silva IC, Santos JD. Riscos ocupacionais da equipe de enfermagem na hemodiálise. Rev. Interd. [internet] 2016 [acesso em: 28 ago 2016]; 9 (1): 143-52. Disponível em: http://revistainterdisciplinar.uninovafapi.edu.br/index.php/revinter/article/view/663

23. Oliveira AC, Paiva MHRS. Análise dos acidentes ocupacionais com material biológico entre profissionais em serviços de atendimento pré-hospitalar. Rev. Latino-Am. Enfermagem. [internet] 2013 [acesso em: 28 ago 2016]; 21(1):309-15. Disponível em: http://www.scielo.br/scielo.php?pid=S0104-11692013000100004&script=sci_arttext&tlng=pt
24. Aires S, Carvalho A, Aires E, Calado E, Aragão I, Oliveira J, et al. Avaliação dos conhecimentos e atitudes sobre precauções padrão-Controlo de infecção dos profissionais de saúde de um hospital central e universitário português. Acta Med Port. [internet] 2010 [acesso em: 28 ago 2016]; 23(2):191-202. Disponível em: http://actamedicaportuguesa.com/revista/index.php/amp/article/viewFile/616/300
25. Campos SF, Vilar MAS, Vilar DAV. Biossegurança: Conhecimento e Adesão às Medidas de Precauções Padrão num Hospital. Rev. bras. ci. Saúde.[internet] 2011 [acesso em: 28 ago 2016]; 15(4):415-20. Disponível em: http://periodicos.ufpb.br/ojs/index.php/rbcs/article/view/9830
26. Lacerda M KS, Souza SCO, Soares DM, Silveira BRM, Lopes JR. Precauções padrão e precauções baseadas na transmissão de doenças: Revisão de Literatura. Rev. Epid. Control Infec. [internet] 2014 [acesso em: 28 ago 2016]; 4 (4):254-59. Disponível em: https://online.unisc.br/seer/index.php/epidemiologia/article/view/4952
27. Piai-Morais TH, Orlandi FS, Figueiredo RM. Fatores que influenciam a adesão às precauções-padrão entre profissionais de enfermagem em hospital psiquiátrico. Revi. Esc. Enferm. USP. [internet] 2015 [acesso em: 28 ago 2016]; 49(3):473-80. Disponível em: http://www.scielo.br/pdf/reeusp/v49n3/pt_0080-6234-reeusp-49-03-0478.pdf
28. Brasil. Agência Nacional de Vigilância Sanitária. Segurança do paciente em serviços de saúde: limpeza e desinfecção de superfícies. Brasília: ANVISA; 2010 [acesso em: 28 ago 2016]. Disponível em: http://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/item/seguranca-do-paciente-em-servicos-de-saude-limpeza-e-desinfeccao-de-superficies
29. Doi KM, Moura GMSS. Resíduos sólidos de serviços de saúde: uma fotografiado comprometimento da equipe de enfermagem. Rev. Gaúcha Enferm. [internet] 2011 [acesso em: 28 ago 2016]; 32 (2): 338-44. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1983-14472011000200018
30. Valério MC, Castanheira NP. Análise quali-quantitativa do lixo produzido em hospital público do Paraná: viabilidade econômica através da correta segregação de materiais recicláveis. Rev. Meio Ambiente e Sustentabilidade. [internet] 2013 [acesso em: 28 ago 2016]; 4(2):44-65. Disponível em: http://www.grupouninter.com.br/web/revistameioambiente/index.php/meioAmbiente/article/download/239/95

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