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EXPERIENCE REPORT

Implementação de um banco de dados para a CCIH de um hospital: relato de experiência

Implementation of a database for a NICC in a hospital: experience report

Aplicación de una base de datos para a CCIH un hospital: informe de experiencia

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ABSTRACT

Objective: To report the experience of a nurse resident in the planning, development and implementation of a NICC database at a Federal Hospital in the city of Rio de Janeiro. **Method:** Experience Report whose focus is the description of all stages, from conception of the Epi-Info program to its early use by hospital professionals. The study was conducted between the months of November 2011 and February 2012. **Results:** The study required the nurse resident to carry out a multidisciplinary activity, allowing them to develop practical articulation of ideas and conflict resolution. **Conclusions:** The perception of the needs of each training unit, a proactive attitude and willingness to implement innovative activities can be a differential for a nursing resident. **Descriptors:** Nursing, In-service training, Infection.

RESUMO

Objetivo: Relatar a experiência de um enfermeiro residente no planejamento, desenvolvimento e implementação de um banco de dados para a CCIH de um Hospital Federal do município do Rio de Janeiro. **Método:** Relato de experiência cujo foco é a descrição de todas as etapas, desde a concepção do programa no Epi-Info até o início da utilização pelos profissionais do hospital. O trabalho foi realizado entre os meses de novembro de 2011 e fevereiro de 2012. **Resultados:** A pesquisa exigiu do enfermeiro residente a realização de uma atividade com caráter multiprofissional, permitindo ao mesmo o desenvolvimento prático de articulação de ideias e resolução de conflitos. **Conclusões:** A percepção das necessidades de cada unidade de treinamento, a postura proativa e a disposição para a execução de atividades inovadoras pode ser um diferencial para um enfermeiro residente. **Descritores:** Enfermagem, Treinamento em serviço, Infecção.

RESUMEN

Objetivo: Reportar la experiencia de una enfermera residente en la planificación, elaboración y aplicación de una base de datos para la CCIH un Hospital Federal en la ciudad de Rio de Janeiro. **Método:** Relato de experiencia cuyo objetivo es la descripción de todas las etapas, desde el diseño del programa Epi-Info de hasta inicio de su uso por el personal del hospital. El estudio se realizó entre los meses de noviembre de 2011 y febrero de 2012. **Resultados:** El estudio de lo enfermero residente necesario para llevar a cabo una actividad con carácter multidisciplinario, lo que le permite desarrollar la articulación práctica de las ideas y la resolución de conflictos. **Conclusiones:** La percepción de las necesidades de cada unidad de entrenamiento, una actitud proactiva y la voluntad de llevar a cabo actividades innovadoras puede ser un diferenciador para el enfermero residente. **Descriptores:** Enfermería, Entrenamiento en servicio, Infección.

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INTRODUCTION

The nosocomial infection (NI) in Brazil is in a public health problem, requiring assistance from the public sector for the definition of control parameters. The creation of Nosocomial Infection Control Committees (NICC) was a milestone, since they have come to play within the institutions the control functions of processes and of education of hospital community with regard to the infections.[1]

Despite the formation of multidisciplinary NICCs, great part of the responsibility of both prevention and control of infections is assumed by nurses becoming a challenge for these professionals. Some aspects are as essential points for the nursing work of NICC and, among these; we highlight the promotion of debates, conducting training and dissemination of information for staff. With the development of these actions a change of behavior of health professionals is expected regarding the nosocomial infection control.[2]

The resident nurse's experience in NICC has a duration of approximately 20 days, and in this period, is it possible for this professional perform managerial and educational activities related to the control of nosocomial infections. Among the managerial roles, include: control of hospital waste, notification, registration and control of infections identified by the department of microbiology and preparation of advice on methods and materials used in the sterilization process. In the educational field, the highlights are: the planning and execution of training and in-hospital events aimed at training and awareness of health professionals in relation to good practice for the control of nosocomial infections.

Residence in nursing, deployed at the start of the 1960s, had as its objective the implicit training complement of newly graduated nurses, preparing them to adapt to the context of the health care system. [3] Currently, the residency program structure in nursing aims at the qualification of the resident nurse as a professional critic, for this reason it promotes access to various activities aiming at the articulation of knowledge related to research, the assistance, the extension and the teaching of nursing. [4] In this sense, the in-service training in NICC allows nurses residents both the consolidation of knowledge regarding the possibility for the identification of possible service needs, contributing to the control process for nosocomial infections.

In addition to the knowledge of the technologies available for the identification, control and treatment of nosocomial infections, the multidisciplinary team of the NICC needs clear information about the population attended by the service, the main microorganisms identified, the sectors with the highest rates of nosocomial infections, among others, enabling the planning of actions that are more effective. Therefore, the objective of this work is to report the experience of a resident nurse in the planning, development and implementation of a database for the storage and future research of information of the NICC a Federal Hospital in the municipality of Rio de Janeiro.

METHODOLOGY

The methodology used in this study is a descriptive study, where researchers propose studying the level of service of a certain sector of a public agency, as well as discovering the existence of associations between variables that characterize the type, the kind and the forms of control of nosocomial infections.

The descriptive studies have as primary objective the description of the characteristics of a given population or phenomenon and then the establishment of relationships between variable.[5]

Thus, during practice in service, the resident nurse found that NICC received copies of all the positive results of cultures performed by the Microbiology Laboratory. Some information such as the type of sample and the microorganism identified were stored in spreadsheets, allowing the realization of some analyses. Although functional, the spreadsheets presented some limitations such as the inability to register the antibiogram for each microorganism identified or performing the crossing of variables. After some discussion, it was decided in the team the possibility of creating a database for the NICC using tool EPI-Info 3.5, the Centers for Disease Control and Prevention (CDC).

The CDC is one of the 13 largest secretaries of the Department of Health and Human Services of the United States of America. Currently, the CDC is globally recognized by conducting surveys and investigations and using their findings to promote improvements in the quality of life of the people, in addition to providing responses to health emergencies, be they local, national or international. The Epi Info is a registered trademark of CDC, being composed of a series of programs for the Microsoft Windows with the purpose to be used by health professionals in conducting investigations, management of databases and statistical analyses. With the Epi Info you can quickly develop a questionnaire or a table, customize the process of entering information and analysis of the data.[6]

The study was carried out in the period from November 2011 to march 2012, at the Hospital Federal Cardoso Fontes, after the request and approval of the Coordinator of the NICC. The development of the work began with a visit to the microbiology laboratory of the hospital, in order to understand the operation of the equipment for culture analyses. As could be verified on this occasion, the process of identification of the microorganisms is performed an automated manner, that is, for each type of microorganism identified testing is conducted with a series of antibiotics to identify the resistance profile (antibiogram). It is worth noting that although there is a possibility of changing the parameters, in general, the list of antibiotics tested is previously defined in the product, based on the standards of the Clinical and Laboratory Standards Institute (CLSI).[7]

Because of the wide variety of types of biological samples can be analyzed and the large number of existing microorganisms, the need has arisen to perform a search for the identification of existing standard in the hospital. After a thorough review of the results of cultures of the first quarter of the year 2011 were identified 23 types of biological samples

used and 40 microorganisms, among these the Gram-positive bacteria, Gram-negative and the fungi. Based on the standard of microorganisms identified in the hospital and in the pattern of achievement of antibiogram of CLSI was defined a list of 43 antibiotics can be tested.

During data collection, it was identified that there are results repeated for the same client, as the spreadsheet model used so far did not allow the identification of the client and, therefore, even the repeated results were counted as new cases of infection. This fact indicated the need to develop a mechanism to decrease the possibility of recording results repeated in the database.

In order to allow a comparison between the rates of infection in different sectors of the hospital, a survey was carried out in the hospitalization units, resulting in a list of 20 medium and high complexity services in the institution.

Later, from the information obtained in the survey data and based on the needs of the NICC, three environments were defined for data entry in the database: **Identification, Different Cultures and MRSA Cultures**.

● **Identification:** in order to characterize clients admitted in the hospital, with positive results for infection, were chosen the variables Registration of the Client, the Client's Name, Gender, Date of Birth, Date of Admission, Date of Collection, Age and Month. The age of the client and the current month are calculated by the program from the previous variable. Concomitantly, included in this environment were two buttons for access to the following environments. When the system user provides the "Client Registration" number, if this number already exists in the database, the system opens a window showing all the results of cultures existing for that client. Therefore, the user can check if the current result has already been recorded, thus avoiding repetition of data.

● **Different Cultures:** this environment was created with the purpose of analyzing the results of cultures. Variables Client Name and Client Registration previously completed are automatically displayed, to reduce the possibility of errors. The variables chosen for the analysis of cultures were: Type of Material, Number of Samples, Service and Microorganism, being these four variables of the type "Legal Value Field", i.e. a pre-defined list in which the user has the possibility to choose one of the options. In the variable Number of Samples, the user can choose between one and five samples analyzed. In order to enable the storage and the future analysis of the antibiogram, we defined in Different Cultures a field for the selection of the antibiotics tested for each type of microorganism identified by the equipment of the laboratory of microbiology, being these variables of type "Check List", with the options R (Resistant), S (Sensitive) and I (Indeterminate).

● **Culture of MRSA:** due to the importance that infection with methicillin-resistant staphylococcus aureus (MRSA) hospital has a routine for tracking this microorganism. Tracking begins immediately after the client's admission in one of the hospital sectors, and is conducted weekly during the hospitalization period. This environment

has been created to record the results of cultures of MRSA separately from other microorganisms. Besides the variables, Client Name and Registration Number of the Client, automatically populated by the system, are used the variables of type "Legal Value Field": Material, Isolated Microorganism and Conclusion. The material used in this case is the "nasal Swab" and the isolated microorganism is staphylococcus aureus. The completion variable has three possible outcomes: positive research for MRSA, negative results for MRSA and inconclusive research. Finally, it is submitted the antibiogram, in which it is possible to record data for the four antibiotics tested by lab equipment:oxacillin, vancomycin, mupirocin and sulfamethoxazole/trimethoprim, all variables of type "Legal Value Field", with options Resistant, Sensitive and Non-Tested.

The construction of the database ended in January 2012, and after its installation in a computer of the NICC, data from the first month of the year were released in the system by a resident nurse. In March 2012, the secretary and a doctor of service were trained for their use, and only in the first six months of 2012, more than 500 results of cultures were stored, which will enable a wide-ranging analysis of the nosocomial infection profile in the unit.

RESULTS AND DISCUSSION

The construction of the database required the resident nurse to carry out an activity with the multi professional team, while enabling the practical development of articulation of ideas and resolution of conflicts. The need to program the database with accurate information demanded studies of institutional protocols and scientific papers, significantly increasing the theoretical knowledge of the resident. Due to the fact that innovative idea within the hospital, the implementation of the program of analysis of the data generated by the NICC had wide repercussions, favoring the visibility of technical and scientific activity of the resident nurse, in addition to contributing to the increased autonomy of this professional in training unit. We emphasize that the systematic use of the database program and the practical examination of cultures of microorganisms by professionals of the NICC enable the improvement of knowledge about the information presented in the context of hospital infection and the development of more effective actions to reduce hospital infection rates.

CONCLUSION

Although the Training Program in Service Template Nursing Residence has a grid of orientation activities, the nurse resident who participated in this activity concluded that we should not keep us restricted to the minimum requirements, but we are available to new challenges and contribute to the improvement and growth of the service as well. It's a way to get a contribution to the institution that served as training for practical technical improvement.

The perception of the needs of each unit of training and a pro-active attitude to submit proposals for solutions, in addition to the provision for the implementation of innovative activities can be a differential for the nurse residents.

REFERENCES

1. Santos AMRSA, Cabrali LAF, Britoi DS, Madeirai MZA, Silva MEDC, Martins MCC. As representações sociais da infecção hospitalar elaboradas por profissionais de enfermagem. Rev Bras Enferm 2008 jul/ago; 61(4): 441-6.

2. Pereira MS, Sousa ACS, Tipple AFV, Prado MA. A infecção hospitalar e suas implicações para o cuidar da enfermagem. Texto Contexto Enferm 2005 abr/jun; 14(2):250-7.

3. Aguiar BGC, Moura VLF, Sória DAC. Especialização nos moldes de residência em enfermagem Rev Bras Enferm 2004 set/out; 57(5): 555-9.

4. Aguiar BGC, organizadora. Guia de orientações para o enfermeiro residente: Curso de Pós-Graduação (Especialização), sob a Forma de Treinamento em Serviço (Residência) para Enfermeiros (Residência em Enfermagem). Brasília(DF): Ministério da Saúde; 2005.

5. Gil, AC. Como elaborar projetos de pesquisa. 4ª ed. São Paulo(SP): Atlas; 2002.

6. Centers for Disease Control and Prevention (CDC), Division of Public Health Surveillance and Informatics (DPHSI). What Is Epi Info™? [Citado 20 mar 2013]. Disponível em: UTL: http://www.cdc.gov/epiinfo.

7. Clinical and Laboratory Standards Institute (CLSI), [Citado 20 mar 2013]. Disponível http:// www.clsi.org/standards-development/

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