



USE OF TECHNOLOGIES IN INTRAVENOUS THERAPY BY INTENSIVES NURSING STAFF

USO DE TECNOLOGIAS NA TERAPIA INTRAVENOSA PELA EQUIPE DE ENFERMAGEM INTENSIVISTA

USE DE LAS TECNOLOGÍAS EN TERAPIA INTRAVENOSA POR EL PERSONAL DE ENFERMERÍA INTENSIVA

Ana Paula Amorim Moreira¹, Cristina Lavoyer Escudeiro², Barbara Pompeu Christovam³, Zenith Rosa Silvino⁴

ABSTRACT

Objective: to identify the technologies available for use in Intravenous Therapy (TIV) continuous central intensive care unit. **Method:** descriptive study of qualitative approach, carried out with 32 professional nursing staff through non-participant observation guided by screenplay based on the international standards of the *Joint Commission International*. The research project of this study was approved by the Ethics Committee under No CAAE 0250.0.000.258-10. **Results:** were grouped into structure, process and Result in use of TIV, noting: lack of monitoring records of clinical engineering works; training with practical simulations and tests documented; poor management practices in preparing the TIVs technologies; emergency drugs unavailable, not monitored and no security. **Conclusions:** the management of health technologies focused on organization of work allows the nurse to establish priorities for its practice, minimize waste with cost savings, prevents the occurrence of (re) work, and mainly strengthens the health care quality. **Descriptors:** Biomedical Technology; Intensive Care Units; Intravenous Infusions; Nursing.

RESUMO

Objetivo: identificar as tecnologias disponíveis para uso na terapia intravenosa central contínua na Unidade de Terapia Intensiva. **Método:** estudo descritivo de abordagem qualitativa, realizado com 32 profissionais da equipe de enfermagem, por meio de observação não participante, norteada por roteiro com base nos padrões internacionais da *Joint Commission International*. O estudo teve o projeto aprovado pelo Comitê de Ética em Pesquisa sob o nº CAAE 0250.0.000.258-10. **Resultados:** foram agrupados em Estrutura, Processo e Resultado na utilização da terapia intravenosa, constatando-se: inexistência de monitoramento dos registros dos trabalhos pela engenharia clínica; de treinamentos com simulações práticas e testes documentados; más práticas de manejo das tecnologias no preparo das terapias intravenosas; medicamentos de emergência indisponíveis, não monitorados e sem segurança. **Conclusão:** o gerenciamento das tecnologias em saúde visa a organização do trabalho permitindo ao enfermeiro estabelecer prioridades durante sua prática, minimiza desperdícios com redução de custos, evita a ocorrência do (re)trabalho e principalmente fortalece a qualidade assistencial. **Descritores:** Tecnologia biomédica; Unidades de Terapia Intensiva; Infusões intravenosas; Enfermagem.

RESUMEN

Objetivo: identificar las tecnologías que están disponibles para su uso en la central de terapia intravenosa continua intensivos (TIV) cuidado unidad. **Método:** estudio descriptivo de enfoque cualitativo, llevado a cabo con el personal de enfermería con 32 profesionales a través de la observación del participante basado en los estándares internacionales de la *Joint Commission International*. El diseño de investigación de este estudio fue aprobado por el Comité de Ética bajo el número CAAE 0250.0.000.258-10. Resultados: Se agruparon en la estructura, proceso y resultado en el uso de TIV, observando: falta de control de registros de obras de ingeniería clínicas; formación con prácticas simulaciones y pruebas documentadas; prácticas de mala gestión en la preparación de las tecnologías de TIVs; emergencias, drogas disponibles no controladas y sin seguridad. **Conclusiones:** la gestión de las tecnologías de la salud que se centró en la organización del trabajo permite a la enfermera a establecer prioridades para su práctica, minimizar residuos con ahorros de costos, previene la aparición de (re) trabajo y principalmente fortalece la calidad asistencial. **Descriptor:** Tecnología Biomédica; Unidades de Cuidados Intensivos; Infusiones Intravenosas; Enfermería.

¹Master's degree in nursing. Intensive care specialist. Antonio Pedro University Hospital nurse. Niterói (RJ), Brazil. Email: moreira.ana78@gmail.com. Address: Rua Vereador Duke road No. 109 fit 408-Santa Rosa/Niterói-RJ. Phone: (21) 99495508; ²PhD in nursing. Assistant Professor of EE/UFF, Niterói (Rio de Janeiro), Brazil. For Guidance. E mail: cristinalescudeiro@gmail.com; ³PhD in nursing. Assistant Professor of EE/UFF, Niterói (Rio de Janeiro), Brazil. E mail: babypompeu@gmail.com; ⁴PhD in nursing. Professor of EE/UFF, Niterói (Rio de Janeiro), Brazil. E mail: zenithrosa@terra.com.br;

INTRODUCTION

Currently, intravenous therapy (TIV) is considered worldwide as an important therapeutic resource, it is a common practice in the everyday life of nursing professionals, is a complex therapy that can be accomplished in several ways: Rocade, via continuous or intermittent, and is used in all age groups of patients are adults, children, newborns or seniors, regardless of economic social class and cultural level.¹ in this investigation, addressed the use of technologies in core and continuous TIVs for the nursing staff in the intensive care unit.

The TIV continuous central arose upon the needs imposed by some patients, such as those who have anatomical problems in peripheral venous network or, in cases of prolonged therapy (over a week), total parenteral nutrition administration, infusion of amphetamines medications, highly annoying and central venous pressure monitoring.² the method of continuous infusion is indicated in cases where there is need to maintain constant serum levels and where sudden interruption of the infusion unlikely.³

The existence in Brazil of health products companies contributes to the quality and safety of professionals, patients and processes in health care facilities as well as nursing care fosters efficient and safe while the TIV with various technologies, such as: equipment, connectors, valves, filters, perfusores, peripheral and central catheters.^{2,4}

The use of technologies in the TIV outweighs the theoretical and technical character of the instrumental actions that permeate nursing care practice in the intensive care unit nurses, requiring the adoption of expressive actions, i.e. actions of relational, ethical and aesthetic character with the patient, family and staff in nursing care management.⁵⁻⁶ in this context, the technology should be seen as a way to meet and relates to the ethical domain, since its use always involves choices with respect to the purpose of its use, the interests that will serve, to the desires that will satisfy, to the lasting status as middle or end of the process of care.⁷

In this sense, the actions of management of care carried out by nurses in TIV should encompass the development of control measures and prevention of damages that could be caused by this therapy. However, we have observed in many health services the availability of several technological

innovations that can help the nursing staff and patients for the provision of care in TIV, however, they do not use it or when it is used inappropriately.

For the purpose for practicing the TIV, health-care professionals involved in the process, should be able and willing to identify elements that bring risks of causing complications in order to prioritize immediate intervention measures.

Each technological advancement is accompanied by increased risk of infections, it becomes increasingly sophisticated. The most common reasons of fluid contamination related to input ports are: absence of disinfecting the connections and guns at the time of the operating system; needles used to breathe in case of glass bottles; barrier breaks at the time of the opening of ampoules, bottles and some points of the equipment.⁴ the challenge is to ensure that the benefits of new technologies expose patients to additional risks when they are hospitalized.

The management of health technologies is discussed by the national health surveillance agency (ANVISA) as the set of procedures designed and put into practice from technical-scientific basis, taking into account standards and laws to ensure effectiveness, efficiency, quality and above all, security for users⁸. With the management of health technologies focused on the practice of the TIVs, will bring benefits to the institution, to the health care professional in all areas and to the patient.

Given the above, this research aimed to identify the technologies available for use on the TIV continuous central intensive care unit (ICU) and verify that the use of these technologies by the nursing staff in care for patients on continuous Central TIVs in ICU are the standards of evaluation of *Joint Commission International*.

METHOD

Qualitative research, descriptive type. The scenario was the intensive care unit (ICU) of a large teaching Hospital situated in the municipality of Niterói-Rio de Janeiro. The study subjects were professional, of which 32 09 nurses, nursing and technical 22 01 nursing assistant.

The technique used for collecting data was the non-observation of the use of technologies for the ongoing Central TIVs guided by a screenplay based on international standards for management and use of medicines (MMU), prevention and control of infections (PCI), and safety management (FMS) from *Joint Commission International* and the three

concepts that underlie the conceptual framework formulated by Donabedian⁹⁻¹⁰, structure, process and result, that guide the evaluation of the quality of health services. The main issues of note were built on the basis of the guidelines for the prevention of primary infection of the bloodstream by ANVISA.¹¹ observations are recorded through photographs and field journaling.

Data collection occurred from April to May 2011, totaling 56 hours of observation and complies with the ethical-legal principles, with approval of the research by the ethics on Research Committee under the No.: 0250.0.000.258-10 CAAE.

The data were categorized based on the analysis of results; according to the analysis of Content of Bardin.¹² we opted to use multireference analysis for discussion of the results.

RESULTS

The results were organized into three categories according to the components proposed by Donabedian⁹ qualitative assessment methodology of health services: structure, process and results; which are presented didactically separated, but in practice, they interact with each other.

The criteria used in the evaluation of Management patterns and use of Medicines (MMU), prevention and control of infections (PCI) and management and security of the premises (FMS) were carried out systematically (conducted more than ten times in the observation period), performed poorly (held less than ten times in the observation period) and (the default was not held in the reference period).

• Structure to use central intravenous continuous therapies

The study of the structure-related characteristics fundamentally evaluates resources that employ in healthcare and consider measures relating to the administrative organization, description of the characteristics of the health care team available, regarding their appropriateness with regulations; profile of professionals employed, its type, preparation and experience.⁹

The following technologies were identified to be used in continuous Central TIVs: device for fractionation and dilution, bacteriological filters and/or particles, transparent films for dressings in the insertion sites, central venous catheters mono and double lumen *needle-free* valves with positive pressure, 2 or 4-way

Extenders, cannulas, volumetric infusion pumps, equipment dedicated to infusion pumps, micro equipment drops with Chambers graduated, gravitational equipment, bottles of 500 solutions, 250 and 100 ml, syringes, needles and gravitational drops macro gear.

For evaluation of the structure available for intravenous therapies use continuous plants was observed the pattern of JCI and Safety Management (FMS), as it pertains to categories leadership and planning, security and protection, medical equipment and education of professionals. Another pattern evaluated over structure was Prevention and infection control (PCI) in isolation procedures, technical barriers and hand hygiene and education of professionals on infection control program.

In the category leadership and planning, FMS1 standards investigates whether the institution is in conformity with the relevant laws and regulations, and the requirements arising from inspections of the installations, and the FMS2 if the institution develops and maintains a written plan that describes the risk management process for patients, families, visitors and professionals. Both were classified as not done. Already the default FMS3 that questions whether there is one or more skilled professionals overseeing the planning and implementation of the program to manage the risks of environment of care, was classified as held precariously.

In the category security and protection, the default FMS4 investigates if the institution plans and implements a program to provide a safe and secure physical environment and was classified as held, as was observed being 15 times from last year. In the category medical equipment, the standard FMS8 questions whether the institution plans and program a program to inspect, test and maintain medical equipment and document the results, this pattern was considered as unrealized, because in spite of the institution have a Commission for Standardization of consumables and clinical engineering service, responsible for preventive and corrective maintenance, there is no systematic program planning and monitoring of medical equipment and health products. What if it showed was that the institution has a system for collection of products/equipment.

Regarding the Education category of professionals, the default FMS11 checks whether the institution educates and trains all professionals regarding their roles in promoting safe and effective care facilities, which was classified as held precariously.

Because the institution provides training to operate and maintain the medical equipment's and systems utilities, however, as the training are not required, professionals do not perform for various reasons: lack of interest, lack of opportunity to leave the workplace, among others.

On prevention and control of infections (PCI) categories:

(1) Isolation procedures PCI8 checks if the institution offers barrier precautions and isolation procedures to protect patients, visitors and professionals, against communicable diseases and protects immunosuppressed patients against infections which are particularly susceptible, what was classified as held;

(2) Technique of barrier and hand hygiene PCI9 questions whether gloves, masks, eye masks and other protective equipment, SOAP and disinfectants are available and are properly used when necessary. This pattern was considered accomplished, because the sector has the materials described above, however, there was the photographic record of 120 situations where no professional held hand washing before the preparation of medication only after their installation;

(3) Educating professionals about the PCI11 program checks whether the institution provides education about prevention and infection control practitioners, doctors, patients and family members and to other care providers when indicated by his involvement in care, which also was considered accomplished. It should be noted that the institution has a hospital infection control Committee (CCIH) working in the ICU, however, what has been observed is that professionals do not follow the recommendations given.

• The process of using central intravenous continuous therapies

The processes are geared to the description of the activities of the health service and the evaluation is focused mainly for analysis of professional competence in the treatment of health problems, that is, what is done to the patient, related to their disease or complication. Compares the procedures performed with the established standards by health professionals.⁹ in the assessment of the dossier on the use of intravenous therapies continuous plants were observed patterns of JCI management and use of Medicines (MMU), and the prevention and control of infections (PCI).

Were evaluated the following categories of management pattern and use of medicines (MMU):

(1) Organization and management MMU1 that checks whether the use of medicines in the institution is in compliance with applicable laws and regulations and is organized to meet the needs of the patient, which was classified as partially accomplished, because although there is a pharmacist who oversees the hospital pharmacy service were found free samples of medications available for use;

(2) Selection and acquisition MMU2 questions whether the institution maintains an adequate selection of medicines stored or readily available for prescription or request. This was considered as carried out partially, because there is no supervision of the list and the use of medications in the institution, but there was a facility for professionals in obtaining readily stocked or not medications not available normally in the institution and in times when the pharmacy is closed;

(3) Stock MMU3 investigates whether the medicines are stored appropriately and safely, which has been classified as not held because there was 22 times the drugs stored in the industry including the emergency room not available, monitored and safely and, 17 times the presentation of a drawer labeled "excess medications", which portrays the implementation of a system of collection of medicines by the institution;

(4) Prescribing and transcription MMU4 verify that the prescription, requisition and transcription are guided by policies and procedures, which was considered as performed poorly because it was observed only 03 times the proper use by the medical staff of standardized printed by the institution, and also showed, that the medical team does not record in the record list of medications in use by the patient for knowledge of all health team;

(5) Preparation and dispensing MMU5 questions whether the medications are prepared and dispensed in place clean and safe. This pattern has been classified as not done being observed on several occasions that the medication is not reviewed for relevance and then in the next, the same duty is discontinued, in addition there is an integrated system between medical/pharmacy/nursing for improvement on every process in the administration of medications. There was the photographic record 39 times at the place of preparation and dispensing of medications of the ICU

which was messy, with excess medications in boxes and drawers available for custody;

(6) MMU6 administration verifies if the institution identifies qualified professionals and authorized to administer medicines at the institution in the study, if all medical and nursing staff, teachers and students and the latter only under the supervision of teaching staff responsible and/or by the student's professional (nurse or doctor) are qualified to administer medicines. This pattern was classified as directed and it was observed that, primarily the night shifts do not have the habit to review the prescription before administering medication to certify that it is correct. In addition, the verbal request is still a reality very frequent in the ICU.

On prevention and control of infections (PCI) were evaluated in the following categories:

(1) Leadership and coordination of the program, the standards PCI1 evaluates whether one or more professionals oversee all activities for the prevention and control of infection, if this professional is qualified in practices for the prevention and control of infection through education, training, experience or certification; Already on PCI2, assesses whether there is a mechanism designed to coordinate all activities for the prevention and control of infection, which involves doctors, nurses and other professionals, and whether it is appropriate to the size and complexity of the institution. The PCI3 verifies that the program for the prevention and control of infections is based on current scientific knowledge, the accepted guidelines for practice, applicable laws and regulations and the standards of hygiene and cleanliness; and PCI4 verifies that the leaders of the institution provide adequate resources to support the program for the prevention and control of infection. In this category all patterns were considered.

(2) Focus on program PCI5 investigates if the institution develops and implements a comprehensive program to reduce the risks of infections associated with care, for patients and health professionals; PCI6 evaluates if the institution uses a risk-based approach to establish the focus of the programmed on the prevention and reduction of healthcare-associated infections; and PCI7 if the institution identifies the procedures and processes associated with the risk of infection and implements strategies to reduce this risk. These standards were also considered.

• The result of the use of intravenous continuous power therapies

Outcome assessment describes the State of health of the individual or of the population as a result or not with health services. Important considering that the outcomes are due to many factors, but one must consider the closest in terms of overall care assessment.⁹ in this component were evaluated Management standards and use of Medicines (MMU), and the prevention and control of infections (PCI).

On the Management pattern and use of Medicines (MMU) MMU7 monitoring category evaluates whether the effects of medications on patients are monitored, what was considered accomplished, because the medication errors, including near-crashes are reported through a process and time defined by the institution. As regards the prevention and infection control standard (PCI), the integration of the program with improving the quality of patient PCI10 questions whether the process of infection prevention and control is integrated into the overall program of the institution for quality improvement and patient safety, and it was assessed as performed poorly, because despite the CCIH track infection risks - These taxes and their trends, and communicate the results to industry leaders, often there is an efficient communication between shifts.

DISCUSSION

JCI points in standard FMS8 the importance of planning and implementing a programmed to inspect, test and maintain medical equipment and document the results, however, what has been observed, is that there is a clinical engineering service is notified when there is in the industry, a product and/or equipment showing malfunction and they collect this technology contemplating partially this pattern. It was not observed the existence of a more rigorous monitoring of records and results of controls for implementing future targets for clinical engineering.

Another aspect to be highlighted concerns the Committee of Standardization of the institution that is responsible for systematizing the entire process from product testing, targeting for professionals in practice for the issuance of technical advice, through the standardization process until the actual purchase of the product. Thus, the Commission for Standardization of materials from this scenario, the technical advice that validate and document the deployment of new technologies, offering a range of technological

innovations for use in intravenous therapy continuous plants.

However, it was observed that even with the products in the warehouse's central hospital, many times, they were not available for use in the field, doing improved need to perform certain procedures. Although in some situations, be forced to improvise due to lack of suitable materials to carry out activities, they should continue considering and respecting the good practices in the preparation of medications without neglecting the ethical principles, microbiological and pharmacological.¹¹

For the use of the technologies available for the institution it is necessary that the professionals have training and the JCI stresses the importance of the institution to educate and train all professionals regarding their roles in promoting safe and effective care facilities. However, what has been observed is that although the institution offer training to operate and maintain medical equipment and other technologies, there is no training with practical simulations and documented tests. In addition, the training is not a requirement, what causes the pros, sometimes leaves, and does not undertake such training, resulting in underutilization of available technology to use.

A matter of paramount importance was the unpreparedness/neglect or inattention of some professionals and the achievement of basic principles related to aseptic technique during the preparation and the premises of the TIVs in critical patients. Due to the complexity and risks involved in staging procedures of parenteral solutions, especially when added to other medicine (s), the preparation should take place in an area of exclusive use and for this purpose the Commission for infection control in Health Services should follow the recommendations for: disinfection and hygiene of the hands, surfaces, use of personal protective equipment (Ppe) and disinfection of ampoules, bottles, adding points for medicines and infusion lines connections.¹¹⁻¹³ But was not what we prove, having 120 photographic records of bad management practices of health technologies during the preparation of the TIVs.

JCI points out that the institution must develop and implement a comprehensive program to reduce the risks of infections associated with care, for patients and health professionals, which was observed in the studied scenario through the CCIH. With regard to the availability and proper use when

required, gloves, masks, eye masks and other protective equipment, SOAP and disinfectants, was conducted partly because, despite all the EPIs available by the institution for use, the pros are still resistant to use them during the preparation of the TIVs, even being told about the necessity and importance of the use of Ppe.

It is not a matter of misinformation, because the institution provides education about prevention and infection control practitioners, doctors, patients and family members and to other care providers when indicated for his involvement in the care. Although there is still resistance related to the use of PPE, we can still observe that some professionals preserve the concern to carry out disinfection of the connections between the lumen of central venous catheter and catheter infusion pump to install the solution on a patient.

To follow the whole process from the preparation of the TIVs until the administration of solutions in critical patients might show that the workload by on duty does not facilitate the preparation and the Organization of the same bed. Valve gear were and catheter lumens with the presence of blood in the *primings*, which can raise the risk of infections, however, according to the JCI in standard PC17, the institution identifies these procedures and processes associated with the risk of infection and implements strategies to reduce this risk.¹⁰⁻¹¹

Although these issues related to the Organization of the beds have not yet been covered in its entirety, was observed the presence of one or more skilled professionals overseeing the planning and implementation of the program to manage the risks of the environment of care.

The record is another issue addressed by JCI. During the administration of solutions, signs and symptoms of complications must be communicated to the physician responsible for the patient and registered on the same record and log book.¹¹⁻¹³ the nurse has the responsibility to ensure that all occurrences and patient-related data and its processing are recorded correctly, ensuring the availability of information necessary for the evaluation of the patient, treatment effectiveness and tracking in case of adverse events.¹³

The prescription, requisition and transcript should be guided by policies and procedures, which was not observed in the studied scenario, because the institution does not define the elements of a complete recipe or

prescription and the types of requests considered acceptable. Even during the observational process, the environment in which it is carried out the preparation of medications was also described and compared to the JCI standards identifying which emergency medications are not available, monitored and safely.

During the observation period, it was found that the professionals don't have a concern with respect to the Organization of the seabed and therefore with the interaction and drug precipitation that might occur. However, there is a monitoring on the part of professionals about the effects of drugs on patients as the standard MMU7 of JCI.

CONCLUSIONS

It was identified that the pros are using health technologies available for use on the TIVs, however, often have difficulties in handling them by not having knowledge about the technology, as well as extracts of these technologies which they have best to offer to optimize the professional time and qualify the carefully rendered. However, what causes oddity is that the institution educates and trains all professionals regarding their roles in promoting safe and effective care facilities, including joint training, continuing education, Commission for standardization and suppliers of new technologies.

The management of health technologies available for the nursing care in the work organization is aimed at the TIVs allowing nurses set priorities during your practice, minimizes waste with cost savings, prevents the occurrence of (re) work, and mainly strengthens the quality care as a premise and not because of the work. All of these issues permeate our greatest good security-the customer.

REFERENCES

1. Dopico LS, Tinoco FO. [Recommendations for the use of saline solution 0,9% in peripheral venous catheters]. *Enfermerie Global* [Internet]. 2007 [cited 2012 July 23];6(11):1-9. Available from: <http://revistas.um.es/eglobal/article/view/427/513>.
2. Jesus VC, Secoli SR. [Complications Regarding Peripherally Inserted Central Venous Catheters (PICC)]. *Cienc Cuid Saúde* [Internet]. 2007 Apr/June [cited 2012 July 23];6(2):252-60. Available from: <http://periodicos.uem.br/ojs/index.php/CiencCuidSaude/article/view/4174/2762>.
3. Banton JBC, O'Kelley SD. *Terapia Intravenosa*. Rio de Janeiro: Guanabara Koogan, 2005.
4. Carrara D. *INS Brasil - Diretrizes Práticas para Terapia Intravenosa*. São Paulo; 2008.
5. Christovam BP, Porto IS, Oliveira DC. [Nursing care management in hospital settings: the building of a construct]. *Rev Esc Enferm USP* [Internet]. 2012 [cited 2012 July 23];46(3):734-41. Available from: <http://www.scielo.br/pdf/reeusp/v46n3/28.pdf>.
6. Silva RC, Ferreira MA. [Technology in an intensive care unit: delineation of a figure-type of the nurse]. *Acta paul enferm* [Internet]. 2011 [cited 2012 Jul 23];24(5):617-623. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-21002011000500004&lng=pt.
7. Crozeta K, Stocco JGD, Labronici LM, Meier MJ. [Interface between ethics and technological nursing concepts]. *Acta paul enferm* [Internet]. 2010 [cited 2012 May 22];23(2):239-43. Available from: <http://www.scielo.br/pdf/ape/v23n2/14.pdf>.
8. Melo RD. Gerenciamento de tecnologias em saúde em estabelecimentos de saúde. *Diário Oficial da União*, jan; seção 1 p. 79. Brasília; 2010.
9. Donabedian A. [Evaluating the Quality of Medical Care]. *Milbank Quarterly* [Internet]. 2005 [cited 2012 July 23];83(4):691-729. Available from: <http://onlinelibrary.wiley.com/doi/10.1111/j.1468-0009.2005.00397.x/pdf>.
10. Consórcio Brasileiro de Acreditação de Sistemas e Serviços de Saúde. *Padrões de Acreditação da Joint Commission International para Hospitais*. Rio de Janeiro: CBA; 2010.
11. Brasil. Ministério da Saúde. Agência Nacional de Vigilância Sanitária. Gerência Geral de Tecnologia em Serviços. Unidade de Investigação e Prevenção das Infecções e dos Efeitos Adversos. Brasília (DF): Ministério da Saúde; 2010.
12. Bardin L. *Análise de Conteúdo*. 4a ed. Lisboa/Portugal: Edições 70; 2009.
13. Brasil. Ministério da Saúde. Agência Nacional de Vigilância Sanitária. Unidade de Tecnovigilância. Gerência Geral de Tecnologia de Produtos para a Saúde. *Cartilha de Notificações em Tecnovigilância*. Brasília (DF): Agência Nacional de Vigilância Sanitária; 2003. 30 p.

Sources of funding: No

Conflict of interest: No

Date of first submission: 2012/02/09

Last received: 2012/11/16

Accepted: 2012/11/17

Publishing: 2012/12/01

Corresponding Address

Ana Paula Amorim Moreira

Rua Vereador Duque Estrada, 109/408 – Santa

Rosa

CEP: 24240-210 – Niterói (RJ), Brazil