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RESEARCH

Indicadores de qualidade na assistência de terapia intravenosa em um hospital universitário: uma contribuição da enfermagem

Quality indicators in support of intravenous therapy in a university hospital: a contribution of nursing

Indicadores de calidad en apoyo de la terapia intravenosa en un hospital universitario: una
contribución de la enfermería

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ABSTRACT

Objectives: to understand the indicators of quality of care for intravenous therapy in the neonatal intensive care unit of a university hospital. **Method:** a non-experimental descriptive study with a quantitative approach in the NICU of a university hospital, through a systematic survey on the protocol of intravenous care: peripheral venous access, PICC and central venous catheter. Excel and presented in tables - statistical treatment, where the data were pooled and processed in Microsoft Office program was conducted. The study was approved by the CEP HUAP/UFF under Protocol 01660412.9.0000.5243. **Results:** in the data analysis, the results showed a greater need for technical training and maintenance of venous access catheter peripheral, PICC, and umbilical catheter. **Conclusion:** so, the health professional should facilitate and promote patient safety for the sake of your well being and quality of life, avoiding the risks and adverse effects. **Descriptors:** Intensive care units, Patient safety, Nursing care, Nursing.

RESUMO

Objetivos: compreender os indicadores de qualidade da assistência de terapia intravenosa na unidade de terapia intensiva neonatal de um hospital universitário. **Método:** estudo descritivo não experimental, com abordagem quantitativa na UTI Neonatal de um Hospital Universitário, por intermédio de um questionário sistematizado sobre o protocolo da assistência intravenosa: acesso venoso periférico, PICC e cateter umbilical. Foi realizado tratamento estatístico, onde os dados foram agrupados e processados no programa Microsoft Office - Excel e apresentados através de tabelas. O estudo obteve a aprovação do CEP do HUAP/UFF sob Protocolo nº 01660412.9.0000.5243. **Resultados:** na análise dos dados, os resultados mostraram uma maior necessidade de capacitação técnica e manutenção dos acessos do cateter venosos periférico, PICC, E cateter umbilical. **Conclusão:** assim, o profissional de saúde deve facilitar e promover a segurança do paciente em prol do seu bem estar e qualidade de vida, evitando os riscos e efeitos adversos. **Descritores:** Unidades de terapia intensiva, Segurança do paciente, Cuidados de enfermagem, Enfermagem.

RESUMEN

Objetivos: conocer los indicadores de calidad de la atención para la terapia intravenosa en la unidad de cuidados intensivos neonatales de un hospital universitario. **Método:** se realizó un estudio descriptivo no experimental con un enfoque cuantitativo en la UCIN de un hospital universitario, a través de un estudio sistemático sobre el protocolo de atención por vía intravenosa: el acceso venoso periférico, PICC y el catéter venoso central. Excel y se presenta en las tablas - Se llevó a cabo un tratamiento estadístico, donde se reunieron y se procesaron en el programa de Microsoft Office a los datos. El estudio fue aprobado por el CEP Huap/UFF en virtud del protocolo 01660412.9.0000.5243. **Resultados:** en el análisis de los datos, los resultados mostraron una mayor necesidad de capacitación técnica y de mantenimiento de acceso del catéter venoso catéter periférico, PICC, y umbilical. **Conclusión:** así, el profesional de la salud debe facilitar y promover la seguridad del paciente en aras de su bienestar y calidad de vida, evitando los riesgos y efectos adversos. **Descriptor:** Unidades de cuidados intensivos, Seguridad del paciente, Atención de enfermería, Enfermería.

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INTRODUCTION

Among the various procedures that are performed in the Neonatal Intensive Care Unit, most notably the installation of intravenous therapy, which comprise technologies that contribute to the reduction of neonatal mortality, and promoting the fourth millennium development goal of the United Nations (UN) for the reduction of mortality, and focusing the quality of health care for children. However, the health care professional, particularly nursing should be trained in intravenous therapy care to neonate in order to collaborate with the quality of service, because the nursing care to the newborn in the Neonatal Intensive Care Unit has been evident in recent studies by configure fundamental interventions health recovery and well-being of newborns.¹

The assistance to be offered to the neonate search through the care offered, eliminate the aggravations in the same development ensuring a survival with quality, as well as several recovery systems affected by prematurity, the creation and maintenance of links with family and the cure of disease.²

The guiding challenge to the practice is in the direction of the handle, it detonates a need beyond the maintenance of life, because it allows the creation and strengthening of family ties and the health team. The practice of care imposes the need to examine the practice of health professionals seeking quality care.³ In this way, the quality of care has been discussed among health professionals and many challenges derive from in order to meet demands efficiently and effectively in the search for a service of excellent quality.

In this sense, quality is a set of attributes that includes the level of professional excellence, efficient use of resources, minimal risk and high degree of user satisfaction, considering essentially the existing social values. The pursuit of quality in the health service has been developed in programs such as hospital accreditation, ISO certification, integrated management system in hospital organization charts of accounts, audits, risk management, among others.⁴

A neonatal nurse plays a role of paramount importance, since coordinate assistance and remains close to the newborn for 24 hours. In addition to reporting the observations recorded by the newborn and relates directly to the family, parents and grandparents. All these activities require professional nursing a scientific technical knowledge, and balance for interventions in work processes and quality care with minimal aggravation.

Among the various care conducted by nursing in NICU, are intravenous therapy assistance, which aims to improve the picture of the newborn, because due to immaturity, may require drug support for maintenance of your life.

In the course of this job will be evaluated the quality indicators of the installation and maintenance of: peripheral venous access; Peripherally inserted Central catheter (PICC); umbilical catheter.

Indicators of quality of nursing care in a neonatal unit are those related to the application of knowledge and technology, in the development of techniques in the care that result in minimization or elimination of changes in newborns admitted to the unit. And that result in minimal or no sequel in the future. Ensuring not only survival, but survival with quality.

The indicators are another contribution to health institutions bother to improve its performance with customers. Administer quality refers to the commitment to offer a good product or service to customers or users. In the case of a health service, the ideal would be to offer a service that the desired effect, were according to the expectations of users, service providers, technicians of the service managers, funders and even the suppliers of materials and equipment, enter other privileged actors.⁵

In the foregoing, this study aimed to: Understand the indicators of quality of care of intravenous therapy in the neonatal intensive care unit of a university hospital.

METHOD

Non-experimental descriptive study, with quantitative approach to analyze the indicators of quality in nursing provided the newborn Neonatal intensive care unit (NICU) at the University Hospital Antônio Pedro (HUAP), linked the Fluminense Federal University, located in the municipality of Niteroi, the metropolitan region II in the State of Rio de Janeiro, Brazil.

The study population was composed of 76 infants admitted to the NICU during the period December 2012 to April 2013 assisted by 10 nurses in the NICU at the University Hospital Antônio Pedro.

Were used and quality indicators patient safety National Agency of sanitary surveillance (ANVISA - 2013) as the type of assistance used, installation and removal of peripheral venous access; installation and removal of the PICC; installation and removal of the umbilical catheter, to evaluate the quality of care of intravenous therapy performed during the caution, performed by nurses in nursing work processes in the Neonatal Unit at the University Hospital Antônio Pedro/UFF. To calculate the number of required sample was used the formula for discrete finite population variables, as follows in Figure 1 below:

Figure 1: discrete variable formula of finite population

$$n = \frac{z^2 p \cdot q \cdot N}{d^2 (N - 1) + z^2 \cdot p \cdot q}$$

Was used for the calculation of the sample a confidence level of 95%, and then the sampling error of 5%. The smaller the number of the population, the greater the number of my sample. The prevalence was 50% weighting factor since it ensures the highest possible sample size. Considering that the total number is 105, facilities for nursing work processes in the neonatal unit, and that the same was distributed according to the type of assistance, the minimum sample of 95.

For data collection was constructed a questionnaire with questions about objective systematic protocol assistance during the development of nursing work processes, the assistance of intravenous therapy: peripheral venous access; PICC, umbilical catheter.

The information was collected through the completion of the questionnaire by the nurse. Each neonate had its individual questionnaire. After the entry of each newborn who needed intravenous therapy for peripheral venous access; PICC, umbilical catheter was performed the completion of questionnaires, these are incorporated into a database, where they are organized according to the purpose of the research. Each questionnaire was only closed after high newborn or after it does not need more intensive assistance.

Variables considered during data collection were the type of assistance given (peripheral venous access; PICC, umbilical catheter) installation and removal of peripheral venous access; facilities versus PICC installation attempt; reason for withdrawal of the PICC; installation and removal of the umbilical catheter. All considered critical factors for quality assistance.

To analyze the data a daily survey was conducted in the book statistics of NICU/HUAP with a total of 76 hospitalizations during the pre-set period. Despite the number of 76 hospitalizations won't be this amount used, since the interest is the process of assistance of intravenous therapy.

For the statistical treatment data were grouped into a database and processed in the program Microsoft Office-Excel/Windows, and presented through tables, and organized by group of variables depending on the goals of the study.

The quality was evaluated on the basis of the adequacy of the practice within the safety standards, according to international protocols of quality of the World Health Organization (WHO) where for a suitable assistance, and quality need to be security, without adverse events, errors and failures.⁷

The investigation was conducted after the appreciation and approval of the Research Ethics Committee of the Faculty of Medicine of HUAP/UFF being approved as also predicts the resolution nº 466/12 of the National Health Council, under Protocol 01660412.9.0000.5243.

RESULTS AND DISCUSSION

Following the presentation of the results, the following are the data on intravenous therapy guidelines pertaining to the procedure.

For the installation of intravenous therapy uses several access, depending on the need presented at the moment. Peripheral venous access consists of placing an intravenous device (catheter out type of needle made of Teflon®) into a peripheral vein for the infusion of drugs and fluids. This procedure is performed by nurses or nursing technicians, and adverse events: phlebitis and/or fluid extravasation and infiltration into the extravascular space, which may cause damage to venous network.⁸

Complications such as phlebitis, infiltration and extravasation are described as adverse events related to the use of peripheral intravenous catheters. Complications can be attributed to a number of factors such as the type of catheter selected, preparation of the insertion site, the type of infusion, the technique of insertion, the residence time of the catheter, the type of dressing and the insertion site of the catheter.⁹

The installation of intravascular catheters is one of the most frequent interventions carried out in RN admitted to NICU, whose medical condition is decisive in the choice of therapy and intravenous catheter type best suited to treatment.

It was possible to observe the installation of seventy-two peripheral venous access in thirty-one infants, averaging 2,3 plants per infant and 3,0 puncture attempts by RN (Figure 2):

Figure 2- Facilities peripheral venous access

<i>RN</i>	31	<i>Average</i>
Facilities	72	2,3
Attempts of puncture	95	3,0

The results provide evidence that the repeated attempts of puncture contributed to newborn exposure to pain, setting improper assistance. It's not too much to remember that during the period of stay in the NICU, the newborn is subjected to procedures and interventions that cause pain, and that painful experiences during this period of development of the neurological system can lead to consequences in the tolerance level and perception of pain in adulthood.^{10,11}

It was noted, too, that the grounds of peripheral venous catheter withdrawal were: infiltration, end of statement and PICC installation (Figure 3):

Figure 3 - Reasons for withdrawal from the peripheral venous access

<i>RN</i>	31	%
Infiltration	38	53%
Finish of Statement	19	26%
Installation PICC	15	21%

The infiltration was the primary reason for withdrawal of the peripheral venous access (53%), which leads to infer that one or more factors in the process of installation and/or maintenance of peripheral venous access contributed to this outcome.

In General, the infiltration of the peripheral venous access can arise from poor peripheral perfusion, inadequate visualization of venous infusion site, lack of frequent puncture site observation and delay in stopping the infusion before the first signs of irritation at the puncture site. If not noted, among the reasons for withdrawal, the accidental removal of the catheter, which indicates that the setting of this device is being performed properly.¹¹

For the treatment of intravenous puncture post infiltration literature indicates, the use of hyaluronidase, when the extravasation of solution and electrolytes is for parenteral nutrition, potassium, calcium, glucose 10% or above and antibiotics. Other nursing care that can be applied in case of infiltration is to raise the Member for a period of 24-48 hours, which improves venous return, promotes the absorption and decreases venous edema. Through the recognition of drug extravasation was urged, the infusion should be stopped immediately and depending on the drug can be applied on ice vesicant affected region to prevent the disperse solution.¹²

Central venous catheterization is widely used in patients with hemodynamic instability, and the incidence of complications from this procedure varies depending on the type of catheter used, the frequency of manipulations, the length of stay, and even personal factors. Figure 4 focuses on successful installations of peripherally inserted Central Catheter (PICC), compared with attempts to correct realization of the procedure.

Table 3 - Plant vs. attempted installation of PICC and reason for withdrawal

<i>RN</i>	38	Average
Facilities	52	1,3
Attempts of Puncture	83	2,1
<i>RN</i>	38	%
Infiltration	6	12%
Finish of Statement	27	52%
Wrong positioning	9	13%
Obstruction/fracture	3	17%

The data identified that were installed fifty-two (52) peripherally inserted Central Catheter-PICC in thirty-eight (38) newborns, averaging 1,3 installations for newborn, and that were made eighty-three (83) puncture attempts in these patients, with an average of 2,1 attempts for newborn.

Currently, you can't think in a patient under the care of long-term intravenous therapy without using some kind of central line, mostly in intensive care. There is ample discussion, dissemination and practice this procedure by health professionals, however technical failures have been persisting the installation and maintenance of the central line.¹³

From observation of these results, it is possible to point out that due to the unsuccessful attempts of installing the catheter, the RN was exposed to adverse events such as pain and even infection from catheter related bloodstream.^{11,14} So it is essential to consider the importance of performing this procedure correctly, since the occurrence of bloodstream infection related to vascular catheters in pediatric patients has a density of 1,7 to 2,4 per thousand infections/catheters/day installed.¹⁴

On the reasons of withdrawal of peripherally inserted Central Catheter, it was observed that the main reason was the end of the statement (52%), while the other reasons (infiltration, malpositioning, obstruction/fracture) accounted for 42% of the grounds for withdrawal of the catheter. The reasons cited are still a high percentage, which shows that one or more factors in the process of installing and maintaining the catheter interfere in this output, as shown in Figure 4.

The National Patient Safety Program directs it takes to prevent and reduce the incidence of adverse events related to health care in health services, since they cause patient injury and harm associated with health care, resulting from processes or structures of care.^{2,15}

Thereby, health professionals should be trained and abused in their actions of care with your newborn, and should promote patient safety with regard to maintenance of equipment errors. So, likewise, empower technical professionals, because for the most part, are responsible for the maintenance of equipment, and of paramount importance for patient safety.

The umbilical catheter is an invasive procedure whose purposes are fluid infusion, invasive blood pressure monitoring, arterial blood gases, cardiac intervention, drug infusion and blood exchanges, among others. The installation of umbilical catheter is common and essential in the care of infants admitted to NICU requiring continuous infusion of solutions and drugs. However, it is important to remember that this procedure of emergency character, and so should not be chosen for routine access at risk of the complications of using this route. Figure 5 demonstrates the amount of installed catheters in newborns admitted to the NICU.

Figure 5 - Facilities and grounds for withdrawal of umbilical catheter

<i>RN</i>	22	%
Facilities	22	100%
Installation for PICC	20	92%
Wrong Positioning	-	-
Finish of Statement	1	4%
Obit	1	4%

The installation of umbilical catheterization should be one of the alternatives for drug infusion to the newborn neonatal NICU, however, should not be the first choice for the completion of the procedure. Regarding the facilities it was observed that there was no error in the attempt, being 22 facilities, which were performed according to the technique, and in the absence of failures of execution of the procedure is essential for the safety of the newborn and the prevention of infections and traumas.

The catheters must be kept *pérvios* through infusion of fluids or saline or heparinized solution. Heparinized solution has been avoided due to its association with fungal infection. All care must be taken to avoid excessive infusion of sodium in extreme premature newborn solutions.²

The evaluation of nursing procedures in the neonatal NICU for the prevention of hospital-acquired infections is of extreme importance, as the careful maintenance of umbilical catheterization. Thus, the performance of nursing before the clinical picture of the newborn contributes to your safety.^{16,17}

The installation of PICC (in 92% of cases) was the main reason of umbilical catheter withdrawal, followed by the end of the statement and by the death of the RN (4% each), which points to a proper maintenance of the catheter by nursing staff, and a good integration of the multidisciplinary team with regard to the installation of umbilical catheter, since usually this catheter is installed by the doctor (neonatologist) with the purpose to preserve the peripheral vessels for subsequent insertion the PICC nurse.^{14,17}

Thereby, the safety of the newborn neonatal NICU must be one of the scope of public policies for patient safety, which aim to avoid risks to your health and promote their well-being and quality of life. Thus, in order for this goal to be achieved is necessary scientific and technical improvement of health professionals in neonatal health.

CONCLUSION

By analyzing the indicators and correlate them with the practices, taking into account the data collected, shows a deficit when it comes to quality, mainly because it doesn't always meet the gold standard, which represents the best possible quality in order to preserve the safety of the newborn.

When there is a commitment to offer assistance, it should be kept in mind that, minimally, must be supplied with quality, and for this to occur, there needs to be security during the care provided, which means that there can be no damages or avoidable adverse events arising from this assistance.

In intravenous therapy, nursing actions are aimed at maintaining a venous access secure, which means permeability with minimal risk of developing local and systemic infections, this is because when the newborn is exposed to multiple peripheral puncture and/or facilities of central catheters, the permeability is compromised and the risk of developing increased infections.

The poll numbers point to the need for improvement of work processes of nursing staff in installation and maintenance of peripheral venous access and central catheters, with training of all staff through ongoing education programs, according to current protocols. These protocols should contain standards, description of the correct usage of the technology used in the NICU, routines, procedures and information required for adequate assistance and execution of quality, and also alerts you to the need for protocols and techniques and the creation of other, more updated, for assistance and procedures.

Must be taken into account, the number of professional nursing staff working in the ICU as determinant for the installation and maintenance of venous access, since in the course of work shifts, it is essential to carry out evaluations of both constants places of installation of access, and the connections and the operation of equipment such as continuous infusion pump.

Thus there is a need to resize the quantitative personnel set to work in the ICU, so that the essential requisites of quality are met.

Given the above, and in order to reach the best quality afforded by nursing staff at the neonatal NICU, it is essential to consider: the need to update the nursing professionals focused on ventilatory assistance procedures and intravenous therapy, for both being permanent education programs in connection with internal and external to the institution; the effective participation of professionals in the multidisciplinary team in the choice of materials and equipment used in the NICU and the resizing of the nursing staff of this unit, in order to avoid the physical and emotional wear and tear due to work overload.

These are measures that can contribute decisively to the improvement of care and integral health of qualified premature babies admitted to the NICU, noting security conditions envisaged by current legislation.

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