Computerized system for managing nursing care indicators at Hospital São Paulo

SISTEMA INFORMATIZADO PARA GERENCIAMENTO DE INDICADORES DA ASSISTÊNCIA DE ENFERMAGEM DO HOSPITAL SÃO PAULO

SISTEMA INFORMATIZADO PARA GERENCIAMIENTO DE INDICADORES DE ATENCIÓN DE ENFERMERÍA DEL HOSPITAL SÃO PAULO

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ABSTRACT

Indicators are tools that permit to define parameters that will be used to make comparisons between a result and its expected value, as well as to add a value of judgement in this regard. The purpose of this study is to describe the experience of a group of nurses in the development of a computerized system to manage nursing care indicators at Hospital São Paulo. Four stages were used to implement the indicator management system: developing a nursing care indicator handbook; performing a manually registered pilot test; developing the computerized system; and performing the pilot test of the computerized system in eleven units at the hospital.

RESUMO

Os indicadores são instrumentos que possibilitam definir parâmetros que serão utilizados para realizar comparações e agregar juízo de valor frente ao encontrado e ao ideal estabelecido. Este estudo tem como objetivo descrever a experiência de um grupo de enfermeiras na criação do sistema informatizado desenvolvido no Hospital São Paulo para o gerenciamento de indicadores da assistência de enfermagem. A implantação deste sistema para o gerenciamento dos indicadores foi dividida em quatro etapas: desenvolvimento do manual de indicadores da assistência de enfermagem; realização de teste piloto registrado manualmente; desenvolvimento do sistema informatizado; implementação de estudo piloto do sistema informatizado em onze unidades do hospital.

RESUMEN

Los indicadores son instrumentos que posibilitan definir parámetros que serán utilizados para realizar comparaciones y agregar juicio de valor frente a lo encontrado y al ideal establecido. Se objetivó describir la experiencia de un grupo de enfermeras en la implementación del sistema informatizado desarrollado en el Hospital San Pablo para el gerenciamiento de indicadores de atención de enfermería. Tal implantación para gerenciamiento de indicadores se dividió en cuatro etapas: desarrollo del manual de indicadores de atención de enfermería, realización de prueba piloto registrada manualmente, desarrollo de sistema informático e implementación de estudio piloto de sistema informático en once unidades del hospital.

DESCRIPTORS
Indicators of Health Services
Quality Indicators, Health Care
Information technology
Nursing assessment

DESCRITORES
Indicadores de Serviços
Indicadores de Qualidade em Assistência à Saúde
Tecnologia da informação
Avaliação em enfermagem

DESCRIPTORES
Indicadores de Servicios
Indicadores de Calidad de la Atención de Salud
Tecnología de la información
Evaluación en enfermería

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INTRODUCTION

Nurses as well as managers working in the health field, have the responsibility to manage their work or unit, showing the results obtained through indicators[1]. Indicators are instruments used to set parameters and make comparisons as well as to add value judgments to outcomes compared to what was initially idealized. For that, collection and systematization of data should be well planned[2]. Additionally, convenient information obtained at the right moment can favor the administration of services and decision-making by conferring on it a lower degree of uncertainty.

Improved quality care is considered a broad, dynamic and exhaustive process of the continuous identification of intervenient factors in the nursing team's work process. It requires nurses to implement actions and develop instruments that permit them to systematically evaluate the levels of quality of care delivery[3].

Brazilian studies have considered the development and validation of nursing indicators as in the case of the Support for Hospital Management Center subgroup of the Hospital Quality Program (SHMC/HQP)[4-5]. SHMC is maintained by the Paulista Medical Association and Regional Council of Medicine in the state of São Paulo. In the beginning of the 1990s it created a service to assess the quality of care delivered to users of hospitals in the state of São Paulo, Brazil[6-7]. Since then, this research center has mobilized managers of hospital facilities to implement and consolidate measures to promote the quality of health services.

The use of new methods to improve nursing services coupled with a considerable collection of information regarding both care delivery and administrative services related to hospital nursing corroborated to the use of computer technology[4].

Information as a way to manage, administrate, organize, classify, monitor and obtain relevant information in real-time made the access to nursing indicators more dynamic and productive[8]. The efficiency of computerized systems in the health field is seen in the literature and in the practical results of hospital facilities that have become global benchmarks for using such resources[9].

In this context, the authors of this study report the importance of computerized nursing indicators. They make effective contributions to the collection, storage and analysis of data, as well as intuitive, end user-friendly access. This system is currently in its implementation phase and is designed to facilitate systematic measurement and promote interventions to improve the quality of nursing care[10].

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The development and applicability of quality indicators is closely related to the motivation and satisfaction of professionals, which in turn reflect on the care delivered to the users of health services[11].

Valid information should be used in the evaluation processes because only with the application of validated measures can one avoid the risk of distorting the team's behavior, which consequently may discourage nursing professionals[12].

From this perspective, the Nursing Board of the São Paulo Hospital at the Federal University of São Paulo (UNIFESP) has implemented new methods and modern technology to create and implement nursing care indicators as a way to manage care provided in this institution.

Based on the four indicators established by SHMC, six specific indicators were developed and adapted to the context of the São Paulo Hospital.

OBJECTIVE

This study describes the stages of the development of the Nursing Indicators Computerized System at the São Paulo Hospital.

DEVELOPMENT OF THE COMPUTERIZED SYSTEM

In addition to proposing improvements through results, the Nursing Indicators Computerized System was developed at the São Paulo Hospital (NICS-SPH) to rapidly and efficiently collect, manage and evaluate data. This university hospital has 742 beds, is a referral service of high complexity and 95% of its services are provided to users of the Unified Health System (SUS).

After approval was obtained from the Research Ethics Committee at the São Paulo Hospital, the NICS-SPH was developed between January 2005 and June 2008. The development process involved faculty members from the Nursing Department and professionals from the Information Technology Department at UNIFESP, in addition to nurses from the hospital's nursing board.

The development of the NICS-SPH was divided into four stages:

1. Development of the Nursing Indicators Manual: faculty members of the Nursing Department at UNIFESP and nurses from the hospital developed this manual based on the SHMC's[7] manual and on the experience of nurses through the use of focus groups.

2. A pilot test was performed in records described in forms developed by the nursing group and tested in 11 units of the hospital between March and April, 2006.

3. Development of the SHMC: Faculty members and nurses from the Improvement of Processes of Nursing Care – Quality of Nursing Care Group at the São Paulo Hospital and systems analysts from the Information Technology Department at UNIFESP developed and tested the NICS-SPH from July 2007 to May 2008.

4. Implementation of the NICS-SPH pilot test: professionals were trained to use the system in the hospital's Computer Laboratory. With a workload of 4h/nurse, the training program was administered in June 2008 to 60 nurses from all the shifts of the ten hospitalization units in the hospital.

NICS-SPH was developed with the programming language for databases known as PHP – Hypertext Preprocessor and under the Oracle Corporation 10g system platform to manage databases. It was integrated into the hospital's Hospitalization of Patients System with access through the computers from the hospital's units.

The NICS-SPH contains the indicators that directly involve adverse events that may occur during care procedures performed by the nursing team: Unplanned Extubation, Hypothermia, Skin Lesions, Loss of Urinary Catheter, Loss of Central Venous Catheter, Loss of Peripheral Venous Catheter, Loss of Drains, Loss of Gastrointestinal Tract Catheter, Patient Falls, and Pressure Ulcers.

The NICS-SPH also issues reports that enable the identification of adverse events by patient, historical series by unit, and incidence of falls and pressure ulcers with identification and classification of risk (Figures 1, 2, 3 and 4).
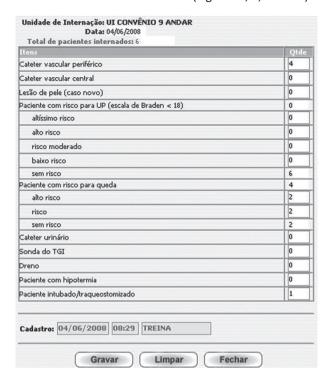
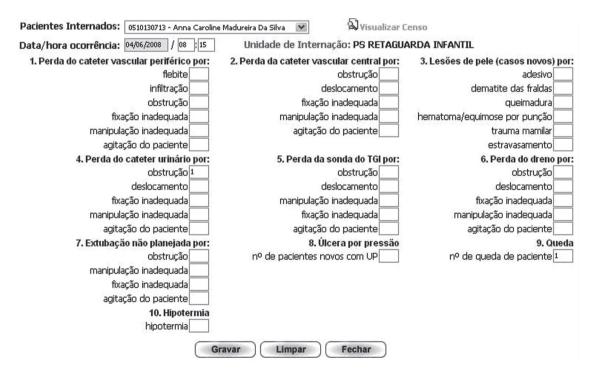**Figure 1** – The NICS-SPH screen: Data related to patients by hospitalization unit

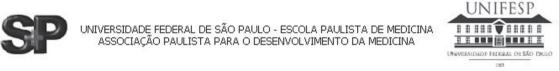**Figure 2** – The NICS-SPH screen: Report of occurrences per patient

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Figure 3 – NICS-SPH screen: Report of occurrences of falls

Figure 4 – NICS-SPH screen: Report of Nursing Care Indicators

CONCLUSION

The Nursing Indicators Computerized System of the São Paulo Hospital brings many benefits and stands out in the storage of data relevant to nursing care processes and making them available for the evaluation of nursing care results. Such information can be consulted in real-time and printed whenever necessary.

These resources can be used, due to the developments achieved in the computer field, through a user-friendly, interactive database, with an intuitive interface and is attractive from a pedagogical point of view. The System provides nurses a modern work tool capable of measuring and contributing to the quality of their work.

However, its programming process was a challenge in terms of development, given the lack of computerized models that provided a database free of operational errors and that reflected the context of the hospital facility.

Further studies are needed to evaluate and verify the efficiency of this system, analyze its use by the nursing team and sensitize the nursing team in relation to the importance of using indicators in their work process in order to contribute to the continuous improvement of care delivered to patients.

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