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IMPLEMENTATION OF AN ONLINE INDICATOR PANEL FOR PATIENT SAFETY

Implementação de um painel de indicadores on-line para segurança do paciente

Implementación de un panel de indicadores on-line para la seguridad del paciente

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ABSTRACT

Objective: To present the process of implementing a patient safety indicators panel (PSIP) for benchmarking in a network of Brazilian federal university hospitals (BFUH) managed by a public company. **Synthesis of data:** Description of the experience of creating an electronic tool, responsible for thematic patient safety, which took place between January 2016 and December 2018. The construction of the PSIP followed the following steps: definition of 62 health indicators; presentation, qualification, and standardization of the data to be collected; registration of BFUH managers on the web platform; and feeding the system, with data input by the 39 BFUH. The implementation of the PSIP prioritized 23 indicators used by accrediting institutions and recommended by national documents, distributed among process (13%) and result (87%) indicators. The results were the involvement of the 39 BFUHs, the exchange of experiences, the sharing of information, and the institutionalization of the Management in Sight Program, which provides opportunities for the continuous monitoring of these indicators in the institution to improve the quality of health services. The experience brought immense learning, allowing those involved to develop skills during the process. The process of implementing a culture of continuous evaluation stands out as difficulty and the availability of the actors involved in adhering to this proposal as ease. **Conclusion:** The panel of patient safety indicators presents itself as an innovative resource in monitoring the processes and results of the implementation of the Patient Safety Centers, bringing an important characteristic of quality management systems: transparency in the management and dissemination of results.

Descriptors: Patient Safety; Quality Management; Quality Indicators, Health Care; Hospital Care; Health Services.

RESUMO

Objetivo: *Apresentar o processo de implementação de um painel de indicadores de segurança do paciente (PISP) para benchmarking em uma rede de hospitais universitários federais (HUF) brasileiros administrados por uma empresa pública.* ***Síntese dos dados:*** *Descrição de experiência de criação de ferramenta eletrônica, responsável pela temática segurança do paciente, ocorrida entre janeiro de 2016 e dezembro de 2018. A construção do PISP seguiu as seguintes etapas: definição de 62 indicadores de saúde; apresentação, qualificação e uniformização dos dados a serem coletados; cadastro dos responsáveis dos HUF na plataforma web; e alimentação do sistema, com a inserção dos dados pelos 39 HUF. A implantação do PSIP priorizou 23 indicadores utilizados por instituições acreditadoras e recomendados por documentos nacionais, distribuídos entre indicadores de processo (13%) e de resultado (87%). Os resultados foram o envolvimento dos 39 HUF, a troca de experiências, o compartilhamento de informações e a institucionalização do Programa Gestão à Vista, que oportuniza o monitoramento contínuo desses indicadores na instituição para o aprimoramento da qualidade dos serviços de saúde. A experiência trouxe*

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imenso aprendizado, proporcionando aos envolvidos desenvolver habilidades durante o processo. Destacam-se como dificuldade o processo de implantação de uma cultura de avaliação contínua e como facilidade a disponibilidade dos atores envolvidos na adesão dessa proposta. ***Conclusão****: O painel de indicadores de segurança do paciente apresenta-se como recurso inovador no monitoramento de processos e resultados da implantação dos Núcleos de Segurança do Paciente, trazendo uma característica importante de sistemas de gestão da qualidade: transparência na gestão e divulgação de resultados.*

Descritores: *Segurança do Paciente; Gestão da Qualidade; Indicadores de Qualidade em Assistência à Saúde; Assistência Hospitalar; Serviços de Saúde.*

RESUMEN

Objetivo: *Presentar el proceso de implementación de un panel de indicadores de seguridad del enfermo (PISE) para benchmarking en una red de hospitales universitarios federales (HUF) brasileños administrados por una empresa pública.* ***Síntesis de los datos:*** *Descripción de la experiencia de creación de la herramienta electrónica responsable por la temática seguridad del enfermo que se dio entre enero de 2016 y diciembre de 2018. La construcción del PISE siguió las etapas a continuación: definición de 62 indicadores de salud; presentación, cualificación y uniformización de los datos a recoger; registro de los responsables de los HUF en la plataforma web; y alimentación del sistema con la inserción de los datos de los 39 HUF. La implantación del PISE ha priorizado 23 indicadores utilizados por las instituciones acreditadoras y recomendadas por documentos nacionales distribuidos entre los indicadores de proceso (13%) y de resultado (87%). Los resultados fueron el envolvimiento de los 39 HUF, el cambio de experiencias, el compartir de informaciones y la institucionalización del Programa Gestión a la Vista que ofrece la oportunidad del monitoreo continuo de los indicadores en la institución para el enriquecimiento de la calidad de los servicios de salud. La experiencia trajo mucho aprendizaje promocionando a los involucrados el desarrollo de habilidades durante el proceso. Se destaca como dificultad el proceso de implantación de una cultura de evaluación continua y como facilidad la disponibilidad de los actores involucrados en la adhesión a esa propuesta.* ***Conclusión****: El panel de indicadores de seguridad se presenta como recurso innovador para el monitoreo de procesos y resultados de la implantación de los Núcleos de Seguridad del Enfermo con una característica importante de los sistemas de gestión de la calidad: la transparencia de la gestión y la divulgación de los resultados.*

Descriptores: *Seguridad del Paciente; Gestión de Calidad; Indicadores de Calidad de la Atención de Salud; Atención Hospitalaria; Servicios de Salud.*

INTRODUCTION

The level of quality of the care processes has become an increasing concern, as it seeks to guarantee effective and safe care[1], being currently seen as the objective in several health systems worldwide to ensure the providing care appropriately, aiming at patient safety. However, the improvement and development of new care technologies in several areas, such as equipment, and the creation of protocols aimed at assistance still present numerous risks associated with health care, being more evident in the hospital environment[2-4].

In 1999, the Institute of Medicine released the report To err is human, which presents negative results of medical and hospital treatments in the United States. Since then, actions and studies have been intensified for patient safety worldwide, providing visibility and, consequently, an increase in the production of studies focused on the theme[5-9].

In Brazil, the Ministry of Health instituted the National Patient Safety Program (*Programa Nacional de Segurança do Paciente - PNSP*) in 2013. In the same year, the Collegiate Board Resolution - RDC No. 36 was published, which established actions for patient safety in health services, public or private, covering those who carry out teaching and research actions. Among the proposed interventions, the duty of the directors to establish the Patient Safety Nucleus (*Núcleo de Segurança do Paciente - NSP*) and to develop, monitor and evaluate the Patient Safety Plan (PSP) in Health Services stands out[10].

Each NSP must develop its PSP and, in its plot, the methods for implementing protocols established by the Ministry of Health must be present[5]. In 2013, the Ministry of Health, together with the National Health Surveillance Agency (*Agência Nacional de Vigilância Sanitária - ANVISA*), the Oswaldo Cruz Foundation (Fiocruz) and in partnership with the Minas Gerais State Hospital Foundation (*Fundação Hospitalar do Estado de Minas Gerais - FHEMIG*), released six basic protocols aimed at the priority areas: patient identification; prevention of pressure ulcers; prescription safety; medication use and administration; safe surgery; hand hygiene practice in health services and fall prevention[10]. These protocols serve as guidelines for care practices and should be used in the development of indicators for quality medication[10].

The National Hospital Care Policy (*Política Nacional de Atenção Hospitalar - PNHOSP*), also launched in 2013, conceptualizes hospitals as being multifaceted organizations, aimed at providing care and assistance based on

the demographic and epidemiological profile of the Health Care Network (*Rede de Atenção á Saúde - RAS*), also including, in its guidelines, important points such as universality, equity, integrality, and social control, which constitute key points for health promotion in hospital services[11].

PNHOSP also suggests the implementation of an Internal Regulation Nucleus (*Núcleo Interno de Regula*ção - *NIR*), which should be responsible for connecting with the Regulation Centers of the municipalities and states to establish a profile of complexity and assistance, typifying the service under the SUS and making it possible to direct the offer of vacancies to carry out procedures and services[12].

Given this scenario, a public company, responsible for the management of 39 BFUH, constituted, in 2014, a Quality Management System (QMS), designed to support the implantation of NSP and the elaboration and monitoring of PSP. In 2016, this service launched the Patient Safety Indicators Panel (PSIP), to monitor and evaluate the results related to patient safety in the BFUH, since the indicators are summary measures capable of pointing out relevant information about the patient performance of health institutions[13].

Discussing health promotion through patient safety is increasingly necessary. Given the above, this article aims to present the process of implementing a panel of patient safety indicators (PSIP) for benchmarking in a network of Brazilian federal university hospitals (BFUH) managed by a public company.

DATA SYNTHESIS

This is an experience report of the implementation of a PSIP, carried out between January 2016 and December 2018, coordinated by the QMS, the headquarters of a public company that is responsible for the patient's safety of the 39 federal university hospitals distributed in all five regions of Brazil.

It should be noted that, in 2016, the PSIP was inserted in a formal study of the Professional Master's Degree in Quality Management in Health Services (*Programa de Pós Graduação QualiSaúde - PPG*) from the Federal University of Rio Grande do Norte (UFRN) by a professional from the QMS team. This is a quality improvement study, almost experimental, of the before and after type, to assess the impact of improvement cycles on the rate of compliance with the dichotomous criteria designed to assess adherence and data completion by hospitals in the PSIP. The analysis of data filling was not presented in this report.

The network's 39 BFUHs were invited to participate in all stages of the construction of the Patient Safety Indicators Panel. In each of them, at least one videoconference was held between the company's headquarters and the set of hospitals. The tool was implemented to allow that all 39 BFUHs inserted in this study could access it simultaneously. However, the effective use of PSIP, although strongly recommended, was allowed to each of them, as well as the registration and data insertion.

The construction of the PSIP had five stages: 1) Definition of the list of indicators; 2) Definition of the form of data presentation; 3) Qualification and standardization of data; 4) Registration of BFUH managers on the web platform, and 5) Data insertion by BFUH. All of these steps involved the participation of all hospitals involved in this study and the service of the company responsible for quality management.

Altogether, the PSIP gathered 62 indicators, being 77% (n = 48) of them of result, indicators that revealed the level of success obtained, that is, if what was desired was achieved during the care process[14], and 23% (n = 14) of the process, indicators that were intrinsically linked to doing, such as guidelines and protocols, that is, they guided or recommended the implementation of treatments[15], from which 42% (n = 26) were of automatic collection, being obtained from data included in Vigihosp (the company's software for managing health incidents), and 58% (n = 36) were from the manual collection, whose data were included by the BFUH.

The study was approved by the Research Ethics Committee of the University Hospital Onofre Lopes of UFRN, with Opinion No. 2,247,171, according to the principles that regulate research with human beings[16].

The implementation of PSIP started with the definition of the list of indicators that would comprise it, which took place in the first semester of 2016. The selection of indicators was carried out by technical analysis of national and international literature[17], made by the service team at the company's headquarters responsible for quality management. The selected indicators went through public consultation among the hospitals that make up the network. For the construction of adequate indicators, sufficient information must be available for their analysis, avoiding bias in understanding and interpretation, ensuring that they are adequate to what is intended to be measured and ensuring that they reflect the analyzed reality, in order to reflect the timing of its collection[18].

The indicators sent for public consultation were selected from those described in the reference document for the National Patient Safety Program, encompassing: patient identification, safe surgery, pressure injury, hand hygiene,

prevention of falls, diagnostic criteria for healthcare-related infection, health management of patient safety in healthcare services, and investigation of adverse events and assessment[19].

To choose the indicators, the following criteria were used: the result of the indicator with the greatest impact on quality in health and patient safety; the possibility of data collection because of the limitations offered by information systems present in hospitals, and the possibility of data collection considering the complexity level of all the teams involved in each of the hospitals.

The data used in the preparation of this article included records from the QMS, consultations with public institutional documents and data present in the virtual tool, comprising activities developed from the elaboration of the panel to its institutionalization, presented according to the temporal sequence of the facts.

The process of implementing the panel was initiated by 23 indicators, shown in Chart 1, as these are indicators present in national standards and recommendations[20-22] and because they are commonly used by accrediting institutions. Among the 23 indicators, only 13% (n = 3) are process indicators, the rest (87%; n = 20) result indicators.

Chart I - Manual filling indicators of the Patient Safety Indicators Panel, Brasília, Brasil, 2017.

Manual fill indicators
Process indicators
Safe surgery checklist adherence rate
Percentage of hand hygiene adherence performed by health professionals
Proportion of patients with standardized bracelets among patients seen at health institutions
Result indicators
Number of surgeries performed on the wrong patient
Number of wrong procedures.
Number of surgical procedures performed in the wrong place.
Rate of surgical site infection in clean surgeries.
Number of adverse events due to failures in patient identification.
Incidence of pressure injury.
Institutional mortality rate.
Incidence density of pneumonia associated with mechanical ventilation in patients admitted to the neonatal intensive care unit (ICU).
Falls rate.
Incidence density of urinary tract infection associated with delayed bladder catheter in patients admitted to an adult ICU.
Incidence density of urinary tract infection associated with delayed bladder catheter in patients admitted to a pediatric ICU.
Incidence density of primary laboratory bloodstream infection with microbiological confirmation, in patients using a central venous catheter admitted to an adult ICU.
Incidence density of primary laboratory bloodstream infection with microbiological confirmation, in patients using a central venous catheter admitted to a pediatric ICU.
Incidence density of primary laboratory bloodstream infection with microbiological confirmation in patients using a central venous catheter admitted to a neonatal ICU.
Incidence density of pneumonia associated with mechanical ventilation in patients admitted to an adult ICU.
Incidence density of primary clinical bloodstream infection without laboratory confirmation in patients using a central venous catheter admitted to an adult ICU.
Incidence density of primary clinical bloodstream infection without laboratory confirmation in patients using a central venous catheter admitted to a pediatric ICU.
Incidence density of primary clinical bloodstream infection without laboratory confirmation in patients using a central venous catheter admitted to a neonatal ICU.
Incidence density of pneumonia associated with mechanical ventilation in patients admitted to a pediatric ICU.
Number of never events

Source: Patient Safety Indicators Panel, 2016

Health quality has three basic components: structure, process, and result, which make it more organized and equipped. Compliance with these components implies sufficient human and material resources (structure), well-executed transactions (whether in actions related to patients or suppliers (process)) and good health care effects (result)[23].

The second stage was characterized by the definition on how to presentation the data, that is, the graphics that would be displayed for better understanding by the target audience, composed of directors and employees of the hospital management company. The presentation method, through graphics, is noticeably more didactic and enables a better understanding of the information. It also allows a better understanding of the comparability and identification of possible goals to be achieved, which is a crucial factor for the successful implementation of such a tool[24].

The qualification and standardization of the data constituted the third stage when each indicator received a qualification form, gathered in a single document later released by the QMS. In the fourth stage, there was the registration of those responsible for the BFUH on the web platform in which the PSIP is inserted. The fifth stage, data entry by the BFUH, took place in July 2016 and, with that, the use of the panel started by the BFUH.

From this stage on, semiannual evaluations were carried out, mediated by the study of the professional master's degree, in which hospitals' adherence to the panel was assessed. Adherence to the panel was considered when the hospital entered data from one or more indicators. The first assessment took place in October 2016, the second, in April 2017, and the third, in September 2017.

The data for each hospital entered in the Patient Safety Indicators Panel are presented in bar graphs, by indicator. The hospital observes its results compared to the other BFUH but does not identify the other institutions (Figure 1). It is possible to follow the historical series of the BFUH of the indicators in line graphs when selecting the hospital in the bar graph (Figure 2).

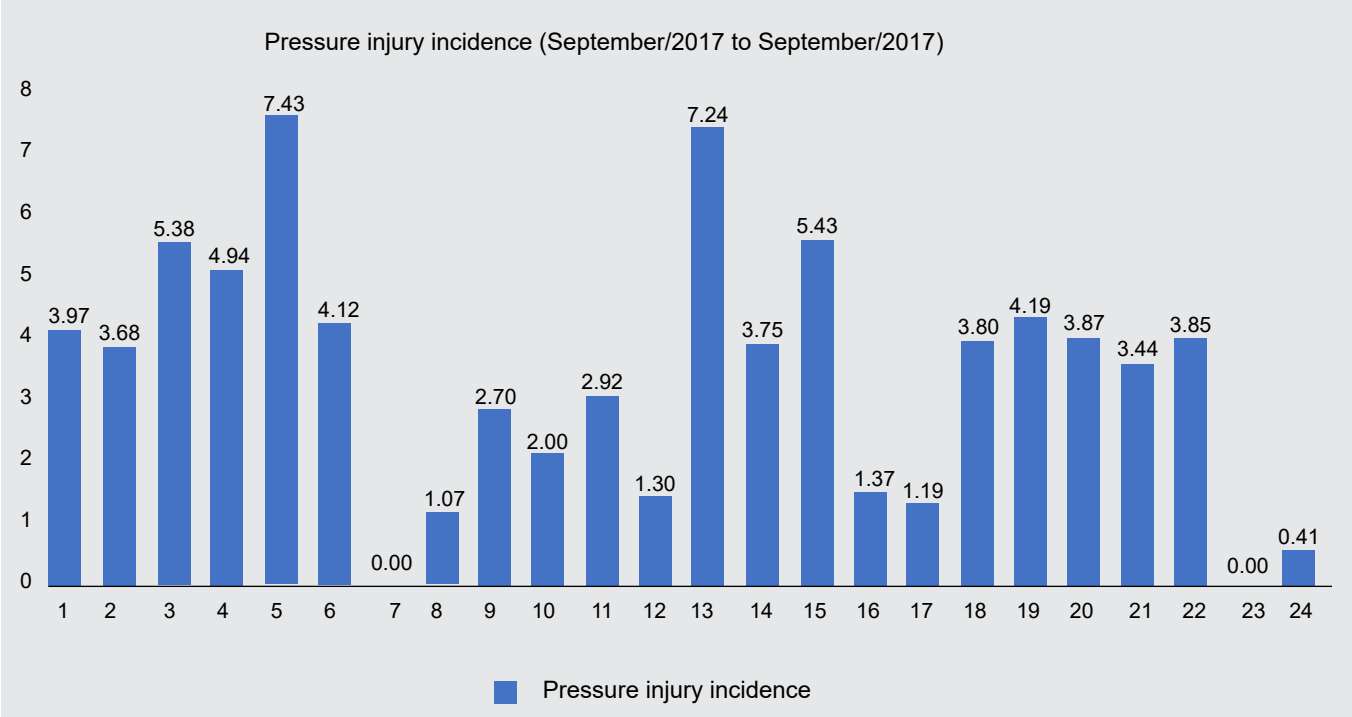

Figure 1 - Visualization of pressure injury incidence in the Patient Safety Indicators Panel
Source: Patient Safety Indicators Panel, 2017
* The data shown in the figure are merely illustrative based on the Panel interface

In April 2018, PSIP was institutionalized by the company as a monitoring and evaluation tool, with the launch of the "Management Program in Sight", determining the use of the app for all network BFUHs.

In Brazil, the use of information systems to interpret data that reflect public health results is still incipient, with weaknesses in the use of information generated by health surveillance and its application in healthcare[25]. A study with nurses showed that they had an incomplete and fragmented understanding of the use and importance of using indicators and few used their results to implement improvements in the sectors[26].

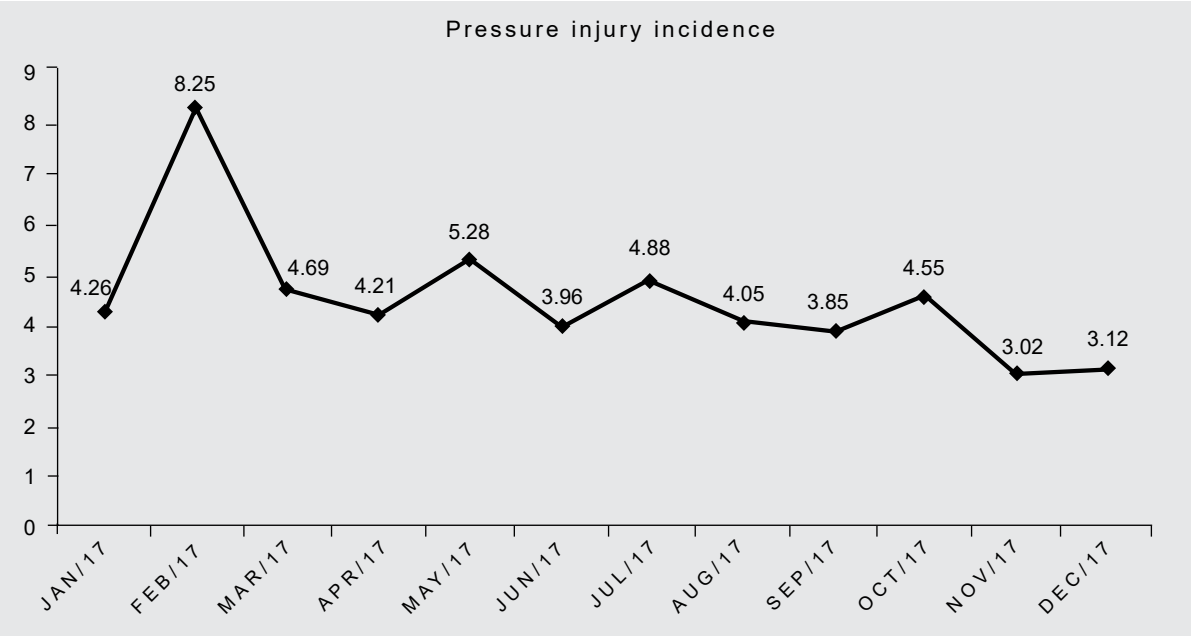

Figure 2 - Line graph visualization of the pressure injury incidence indicator in the Patient Safety Indicators Panel. Monitoring of historical series, by hospital.
Source: Patient Safety Indicators Panel, 2017
* The data presented in the figure are merely illustrative based on the PISP interface

From the above, the need for a strategy of "acculturation" of the evaluation in these health institutions becomes evident[27], to qualify decision making, since a well-chosen set of indicators can serve as practical support for choices in hospitals, favoring risk management and the identification of the most critical areas[20,28].

The implantation and/or implementation of a patient safety culture makes it possible to identify areas that have problems and make it possible to evaluate the critical points and plan the best way to act, encouraging the institution to seek solutions based on evidence in an effective way[29,30]. The literature points out that the number of deaths due to adverse health events has been growing exponentially, showing the need to invest in strategies that enable the reduction of new cases[31].

The monitoring and evaluation of indicators are also able to contribute to the fight against convenience since it makes public and keeps the true situation of the institutions and the health system registered[25,32]. These data, made available and evaluated on a network, can be the raw material for the formulation of programs and the definition of priorities in greater conformity with the reality of Brazilian public hospitals, especially teaching hospitals.

It is assumed that the institutionalization of PSIP favors adherence, since, until then, it was only a recommendation of good practice by the QMS, and not an institutional policy of the company. The Sight Management Program was a significant advance achieved by the QMS since it can consolidate the culture of decision-making based on evidence, that is, management by results. It should be noted that the implementation of an online panel favors the quality of the notification, avoiding common mistakes such as the wrong choice of the notification form, difficulty in understanding the filling in by erasures and / or the non-filling of relevant information[33].

The literature highlights the importance of carrying out improvement cycles in health services, especially when they encompass strategic parts such as organizational culture and innovation, with emphasis on involvement and the human capacity to generate significant transformations[34,35].

Despite using well-known and widely discussed indicators worldwide[20-22], the referred PSIP stands out for having managed to group them considering the needs observed in all stages of their construction and, mainly, for their large-scale distribution, being used in all 39 BFUH managed by the company. Its use, in addition to ensuring the monitoring of the quality of the services offered, also strengthens and encourages the good culture of patient safety existing in hospitals.

Although the evaluation mechanisms of health services are as old as these services, the culture of evaluation, still incipient in Brazil, comes up against the will of some managers, who do not want the technical-scientific and economic logic to be dominant in decision-making processes, to the detriment of other logics, such as individual professional knowledge[36].

To overcome this challenge, the culture of evaluation must be established in the monitoring planning of all Brazilian public institutions. The selection of the set of indicators must follow the specific needs and priorities of each location; the availability of information systems and data sources should be examined, and the resources allocated in this activity must be sufficient[18].

The organizational climate is a key element in the development of a culture of evaluation, and it is necessary to investigate the factors that are linked to the behavior of the teams and the leadership style itself[37].

Besides, institutionalizing the evaluation requires that the monitoring and evaluation process be understood as intrinsic to the management of activities. For this to happen, it is essential to qualify technical capacity, at the different levels of performance. The knowledge improvement of the human resources involved must cover the strategic, tactical and operational levels of hospitals and the company[17].

It is noticed that the drivers of the National Patient Safety Program need to reinforce the importance of monitoring patient safety indicators in health facilities. This information can show the advances made in the quality of care, relating it to the actions of the program. Intensive monitoring, with the sending of feedback to services, can contribute to this stimulus.

The Patient Safety Indicators Panel can offer managers, specifically in the areas of quality in health and patient safety, facilities in data management, allowing them to improve their activities. Besides, it allows indirect communication between hospitals, integrating information from the network and allowing the headquarters to work in a coordinated and integrated way.

During the two years of using the tool, it was noticed that the communication between the headquarters service and the BFUH was essential for them to complete the data in the virtual app. The actions have always sought to encourage managers, demonstrating the advantages of instrumentalizing their acts with information, breaking the paradigm that monitoring and evaluation could generate some type of punishment for the services involved.

The main limitation of this work is related to the public company in which it was developed, which makes it difficult to compare the results obtained with that of similar institutions. Besides, it is relevant to explain that the development of a PSIP powered by hospitals was an unprecedented initiative in the company. The purpose of this action was to encourage the management of federal hospitals to reflect on the quality of the information provided.

The level of management where the service is in which it was developed can also be considered as a limiting factor. Quality management must be transversal to every institution[38], however, interventions were limited to the tactical and operational levels of hospitals. Only after the institutionalization of the Management Program in Sight was there an institutional recommendation to use the PSIP.

New studies can be developed to observe how hospitals adhered to the use of the tool, showing relevant aspects regarding the methodology used for the construction and implementation of the PSIP.

The use of the benchmarking technique was important to verify opportunities for improvement, understanding that the technique aims at comparative evaluation without judging values or results achieved[39]. In this way, it allowed the participants to establish which hospitals were achieving the most significant results and to share the successful experience with others. The experience of implementing this PSIP proved to be immense learning. It enabled those involved to develop different skills during this process, instigating them to seek solutions to everyday problems, in addition to allowing them to glimpse the importance of thinking about health promotion strategies on a large scale, without losing the holistic view and the need to evaluate and intervene in health services.

Finally, the adequacy and importance of developing this instrument under a Professional Master's Degree in Quality Management in Health Services (PPG QualiSaúde), whose main purpose is to qualify the employee/student, enriching their place of work with the academic precepts and advances observed in its object of study, putting into practice the teaching-service integration in the training and continuing education of SUS professionals were highlighted.

CONCLUSION

The construction of the Patient Safety Indicators Panel (PSIP) was extremely relevant for health professionals to favor the exchange of experiences and the sharing of information. The stages of construction of the panel presented themselves as rich moments of interaction and collaborative work, directly contributing to the expansion of knowledge and the promotion of teamwork.

PSIP is an innovative tool in the production of information on quality in health and patient safety, in which important hospitals participate in the SUS and for the training of health professionals in Brazil. Its data favor the exchange of experiences, the optimization of resources and the enhancement of results, especially concerning the adequacy of

the network and its infrastructure, the quality and effectiveness of care, the continuity of assistance and the guarantee of the non-occurrence of preventable adverse events.

In this way, the creation of PSIP favors the dissemination of information on health indicators among the professionals of the services involved, enabling the services to be improved. Besides, its construction brings to the network of federal university hospitals greater accountability with the improvement of quality for more transparent and safer health practice.

CONFLICTS OF INTEREST

All authors report no conflicts of interest.

CONTRIBUTIONS

All authors participated in the elaboration, execution and construction of the process of building and writing the experience report.

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