Reduction in the incidence of pressure injury in a general icu in a private hospital

RESUMO | Objetivo: avaliar retrospectivamente a incidência de lesão por pressão (LP) em uma UTI Geral em 2018, após aplicação da ciência de melhoria no Hospital Santa Teresa, Petrópolis, RJ. Método: estudo retrospectivo, descritivo e exploratório de natureza quantitativa, com dados de março a dezembro de 2018, sobre a incidência de LP e adesão as medidas implantadas após aplicação ciência da melhoria na UTI Geral São Judas Tadeu no Hospital Santa Teresa, Petrópolis, RJ. Resultados: identificadas 104 lesões em 59 pacientes e uma incidência de LP de 7,33%. A região sacra foi a mais acometida (27,03%). 50% das LP foram de estágio 2. 38,46% das lesões foram relacionadas a dispositivos médicos. A adesão ao bundle de cuidados ficou em 71,16% e a Escala de Braden em 4 horas em 89,4%. Conclusão: estudo demonstra uma menor incidência de LP comparada com os valores nacionais, melhoria significativa no processo de identificação dos estadiamentos, avaliação do risco e notificações das LP.
Descritores: Lesão por pressão; Melhoria de qualidade; Incidência.

ABSTRACT | Objective: to retrospectively evaluate the incidence of pressure injury (PI) in a General ICU in 2018, after application of improvement science at Hospital Santa Teresa, Petrópolis, RJ. Method: a retrospective, descriptive and exploratory study of a quantitative nature, with data from March to December 2018, on the incidence of PI and adherence to measures implemented after scientific application of improvement in the São Judas Tadeu General ICU at Hospital Santa Teresa, Petrópolis, RJ. Results: 104 lesions were identified in 59 patients and an incidence of PI of 7.33%. The sacral region was the most affected (27.03%). 50% of PI were stage 2. 38.46% of injuries were related to medical devices. Adherence to the care bundle was 71.16% and the 4-hour Braden Scale was 89.4%. Conclusion: study demonstrates a lower incidence of PI compared to national values, significant improvement in the process of identifying staging, risk assessment and reporting of PI.
Keywords: Pressure ulcer; Quality improvement; Incidence.

RESUMEN | Objetivo: evaluar retrospectivamente la incidencia de lesión por presión (LP) en una UTI General en 2018, después de la aplicación de la ciencia de la mejora en el Hospital Santa Teresa, Petrópolis, RJ. Método: estudio retrospectivo, descriptivo y exploratorio de naturaleza cuantitativa, con datos de marzo a diciembre de 2018, sobre la incidencia de LP y la adhesión a las medidas implementadas después de la aplicación científica de la mejora en la UTI General São Judas Tadeu del Hospital Santa Teresa, Petrópolis, RJ. Resultados: se identificaron 104 lesiones en 59 pacientes y una incidencia de LP del 7,33%. La región sacra fue la más afectada (27,03%). El 50% de las LP fueron estadio 2. El 38,46% de las lesiones estuvieron relacionadas con dispositivos médicos. La adherencia al paquete de atención fue del 71,16% y la Escala de Braden de 4 horas fue del 89,4%. Conclusión: el estudio demuestra una menor incidencia de LP en comparación con los valores nacionales, una mejora significativa en el proceso de identificación de etapas, evaluación de riesgos y notificación de LP.
Palabras claves: Ulcera por pression; Mejoramiento de la calidad; Incidencia.

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INTRODUCTION

Currently, pressure injuries (PI) are adverse events that have become very common in hospitals, especially among the most vulnerable patients, that is, children, the elderly and people hospitalized in Intensive Care Units (ICU). Araújo, in his 2019 systematic review, showed studies that considered PI as a serious public health problem and that treatment costs are higher compared to prevention. In the United States of America, the annual cost of treating PI in approximately 2.5 million patients is estimated at approximately 11 billion dollars. [1]

The prevention of PI has been identified as a quality indicator, not only of the health service but also of the Nursing care in the ICU. Patients who are hospitalized in an Intensive Care Unit often already have a high risk of developing PI and are more vulnerable to various types of skin changes. [2]

Despite the modernization of health care, the incidence and prevalence of PI

in ICU remain high. The incidence increases proportionally to the combination of risk factors, including advanced age, bed rest, clinical complications and use of vasoactive drugs. A study carried out in 22 ICUs from 15 hospitals in Belo Horizonte identified the occurrence of one PI per patient, resulting in a value of 35.2%. [2] The international literature describes an incidence of 3.8% to 12.4% in intensive care settings. [3]

In addition to the cost generated during hospital stay, PIs can bring additional expenses after hospital discharge. However, the biggest and worst impact on the life of the patient and their families is the damage, which can often limit the individual to perform their practice at work, social and personal life. [1]

The Improvement Model has gained projection in recent years, as it works on the technical component of the intervention, the implementation strategy and the context in which the intervention is carried out. It combines small-scale testing associated with performing longitudinal measurements. The PDSA cycle (PLAN--DO-STUDY-ACT), proposed by Deming in 1993, is a strategy to obtain learning and knowledge through small-scale tests. In 1994, some of his students combined the PDSA cycles with three specific questions for the construction and application of knowledge, which gave rise to the Improvement Model. They are: a) what are we trying to accomplish?; b) how will we know if a change is an improvement? and c) what changes can we make that will result in improvement? [4-5]

The use of indicators helps in the process of continuous improvement of care and decision-making about care actions, such as good care practices. [6]

ICUs have a higher risk of developing PI due to the profile of treated patients. Hospital Santa Teresa/Rede Santa Catarina, located in the mountainous region of the state of Rio de Janeiro, had an incidence of PI in one of its ICUs of 2.07%. With the hypothesis that this value does not match the reality of the sector, in 2018, an intervention was carried out using the improvement model, in order to improve the identification and reduce PI rates in this unit. For this purpose, a multidisciplinary group was formed, composed of a nurse specialist in pressure injuries, a surgeon, an ICU nurse, a nutritionist, a physiotherapist and two specialists in continuous improvement.

The objective of this article is to describe the results obtained after the intervention performed.

METHOD

This is a retrospective, descriptive and exploratory study of a quantitative nature, with the objective of presenting the incidence of PI in the year 2018 in an ICU, after interventions performed.

The strategy followed a process of analysis of the main problems observed in professional practice and their causes, literature reviews through the guidelines of the European Pressure Ulcer Advisory Panel (EPUAP) and Institute for Healthcare Improvement (IHI), on pressure injury prevention and its main follow-up indicators.

The group discussions culminated in a guiding diagram, where 6 primary drivers were described (identification of PI risk; skin inspection; moisture control; nutrition and hydration; minimizing pressure; education) and respective ideas for change. The group also defined the process of measuring the indicators to evaluate the proposed interventions. In addition, they performed weekly huddles, multiprofessional bedside visits, monthly meetings, and patient, caregiver, and family education strategies.

Data were collected, through a structured instrument, referring to the PI and adherence to the measures implemented, through follow-up worksheets of the Commission of Dressings and SoulMV hospital system. The unit studied has 21 beds with a predominance of care for patients in general practice, surgery, trauma, neurology, orthopedics. The inclusion criteria for the data used in this research referred to the PI developed in this General ICU between March and December 2018.

The following information was used: incidence of pre-intervention pressure injuries (in the 10 months prior to project implementation), number of monthly pressure injuries, monthly number of patients and monthly adherence to the package of preventive measures implemented (bundle).

Adherence to preventive measures was assessed through evidence of completion of the Braden scale within the first 4 hours of admission and compliance with the care bundle items. Bundle items were: skin inspection, Braden risk reassessment, nutrition adequacy, humidity control status, whether the current decubitus change follows the informative clock with the decubitus description and the use of support surfaces.

The quantifiable data were treated to generate percentages and averages, in order to be analyzed and discussed in the light of the literature. To calculate the incidence, the cumulative incidence formula was used: Number of individuals developed lesions in a period / total number of individuals in the period X 100.

This research was approved by a Research Ethics Committee via Plataforma Brasil under CAAE nº 52316521.6.0000.5245 and opinion nº 5.113.390 of November 2021.

RESULTS

The incidence of PI was 2.07% in the 10 months prior to implementation. During the study period, a total of 104 lesions were identified, with an average incidence of PI of 7.33%, these lesions affected a total of 59 patients.

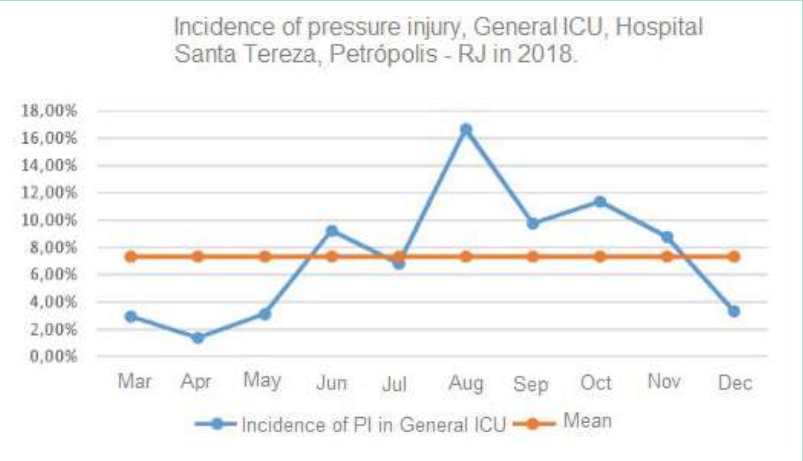
When stratifying the incidence of PIs developed in the period by their staging, we found a higher occurrence of stage 2 lesions (50.0% - n = 52) and stage 1 lesions (37.5% - n = 39). We observed that

38.46% of the incidence were PI related to medical devices. Of the recorded PIs, 9.61% (n = 10) had progression to stage 3 or 4 lesions. Regarding the location of the reported lesions, the five most frequent were in the Sacra region - 23.07% (n = 24); Calcanes - 11.53% (n = 12); Gluteal/Intergluteal - 11.53% (n = 12); Chirodactyls - 10.57% (n = 11) and Nasal Fins - 7.69% (n = 8).

When observing the PIs related to medical devices, we found the following devices as aggravating factors: Oximeter - 27.50% (n = 11); Nasoenteral catheter - 20.0% (n = 8); Diaper - 15.0% (n = 6); Orotracheal tube fixator - 12.5% (n = 5); Cervical collar - 10.0% (n = 4); Indwelling urinary catheter - 7.5% (n = 3); Non-invasive pressure cuff - 5.0% (n = 2); and Containment - 2.5% (n = 1).

Regarding the compliance of the preventive measures instituted in the improvement project, we observed that the performance of the risk assessment, through the Braden scale, in the first 4 hours, had an average adherence in the period of 89.40%. While adherence to the care bundle had an average adherence of 71.16%.

Graph 1 - Incidence of Pressure Injury in General ICU, Hospital Santa Teresa, Petrópolis, RJ in 2018.



Source: The authors, 2022.

Table 1 – Stratification of Pressure Injuries in General ICU, Hospital Santa Teresa, Petrópolis, RJ in 2018.

Anatomical Location	Staging				Total		No. of PI Related to Devices	Progression to PI 3/4
	1	2	TP	NE	n	%		
Sacral	6	15	1	2	24	23,07	0	5
Calcaneus	3	6	2	1	12	11,53	0	0
Glutes / Interglutes	3	8	1	0	12	11,53	2	4
Fingers	5	0	0	6	11	10,57	11	0
Nasal fins	2	6	0	0	8	7,69	8	0
Chest	2	3	0	0	5	4,8	0	0
Occipital	4	1	0	0	5	4,8	1	1
Face/Lips	3	2	0	0	5	4,8	5	0
UL	2	2	0	0	4	3,84	2	0
Trochanter	2	1	0	0	3	2,88	0	0
Ear Pavilion	1	2	0	0	3	2,88	0	0
Penis/Glans	0	3	0	0	3	2,88	3	0
Cervical	2	1	0	0	3	2,88	3	0
Inguinal	1	1	0	0	2	1,92	2	0
Isqueo	1	1	0	0	2	1,92	2	0
LL	2	0	0	0	2	1,92	1	0
Total	39	52	4	9	104	99,9	40	10

Source: The authors, 2022.

DISCUSSION

PIs are considered adverse events, with about 95% of them being a preventable event. The Improvement Science project took actions to reduce the number of injuries and increase the team's adherence to preventive measures, creating measurements to evaluate the effectiveness of actions at the São Judas Tadeu General ICU.

National studies on the incidence of ICU injuries estimate PI values between 23.1% and 62.5%. The pre-implantation value of 2.07% is questionable, as there was no uniformity in PI identification and a very low volume of notifications. In the period studied in the General ICU, the average resulted in a value of 7.33%, showing no improvement compared to the initial value, yet it presented a reduc-

tion of 68.2% in the lowest value of Brazilian rates. [2]

When analyzing the incidence values in isolation, we observed a significant increase in the values between June and November 2018. This result can be associated with a maturation of the team in the quality and in the increase of identification and notifications of PI when changing the focus of the treatment for the prevention and identification. There was training throughout the project to standardize the knowledge of the teams. Despite this, underreporting is an important factor to be highlighted, which may have had previous occurrences and at the beginning of the project implementation. Underreporting can be associated with the lack of knowledge about the identification of injuries, the non-importance of PI by the teams, fear of reprisals for the notifications, among others. The project sought to demystify all these points, bringing the importance of correct identification, notifications and adherence to preventive measures.

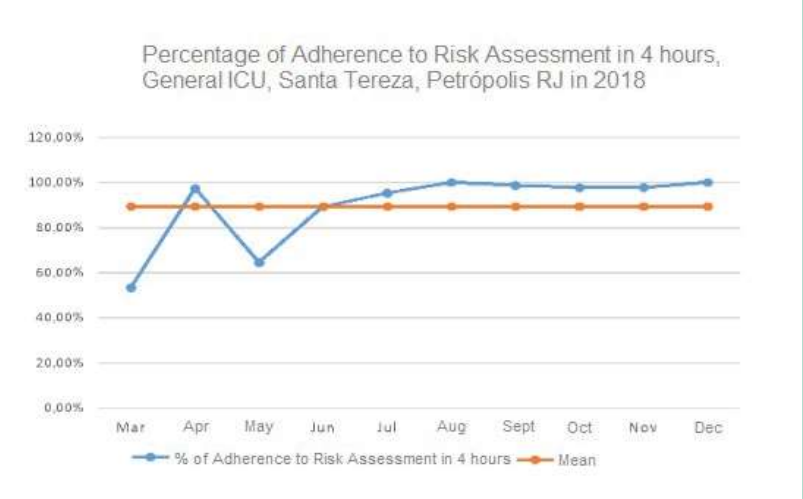
Evaluating the classification, stage 1 (non-blanchable hyperemia to digitopression) and stage 2 (partial-thickness skin breakdown with exposure of the dermis) lesions had a higher number of occurrences. These PI predominate in 90.0% of the cases in the American scenario and are described as worrisome due to their rapid onset and clinical evolution, with emphasis on the difficulty of assertive diagnosis in cases of stage 1 lesions that can delay preventive measures. [2, 7-8]

Another discussion factor was that 9.61% of the PI found in the General ICU progressed to stages 3 and 4. These classifications are considered Never Events (events that should never occur in health services) by Anvisa due to their severe tissue involvement and potential for complications. According to Anvisa's 2017 Technical Note, 72.6% of never event notifications were related to stage 3 injuries and 22% to stage 4 PIs.

In a study on PI in a university ICU, the combined incidence of these injuries was 20.83%. The result of the General ICU was below the values mentioned above. This demonstrates that despite the occurrences, there is a concern to keep them low. [8-9]

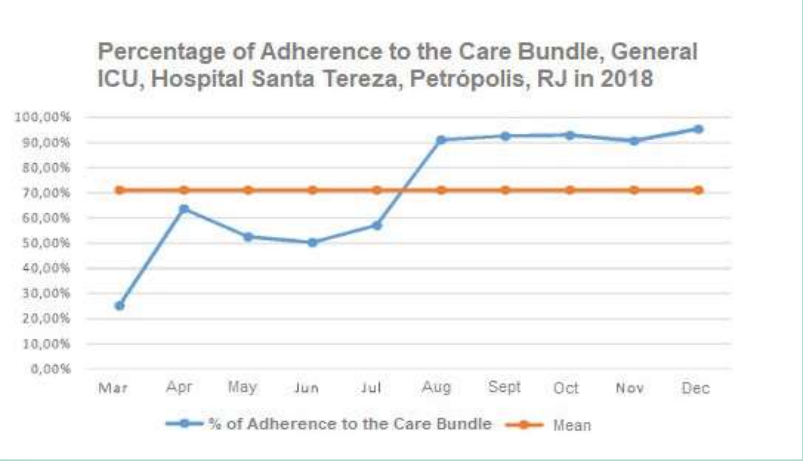
Data on location are also in line with studies that show the highest occurrences of PI in sacral, calcaneal and trochanter regions. In our study, the sacral region, calcaneus and gluteal/interglueal showed the highest incidence. Studies show that the concentration in these places is due to the fact that they are some of the highest pressure points in the dorsal position. [2,7] This brings a point of alert, as we can say that patients end up staying in this position for a long time, which would signal a failure in the repositioning/mobilization of the patient, which is driven by the risk of PI assessed by the Braden scale

Graph 2 – Percentage of Adherence to Risk Assessment in 4 hours.



Source: The authors, 2022.

Graph 3 – Percentage of Adherence to the Care Bundle.



Source: The authors, 2022.

and should not exceed 4 hours.

The number of PIs related to devices accounted for 38.46% (n = 40) of the injuries described in the period, with the fingers and nasal fins being the most affected. The most relevant types of devices were pulse oximeters, nasoenteral catheters and diapers. The appearance of these lesions may be related to prolonged use, ineffective fixation by the team and the device design itself, which lead to increased pressure on the skin. In an American study, it was evidenced that 34.5% of injuries occur due to the use of medical devices and patients who use them are more likely to develop injuries compared to those without the use of devices during hospitalization. [10]

The general adherence during the period when the Braden scale was performed in the first 4 hours was 89.0%. EPUAP, NPUAP, PPPIA and IHI [10,11] recommend that the initial assessment should be performed early on admission so that preventive care can be instituted soon. In bundle compliance, we found a value of 71.16% in the period. Although values fluctuate over the months, the data becomes more stable from July to December 2018 with adherence above 90%. However, a question would be: in these months that had a higher incidence of injuries, the opposite should have occurred due to the increase in adherence to preventive measures. Even so, a point to be considered is that the high incidence value may be a reflection of the improvement in the identification of staging and notifications of lesions.

CONCLUSION

The study showed a number of device-related injuries above the values in the international literature, which brings an urgency to think about actions to reduce these incidences of PI, since the patient in the ICU is more likely to use them. Despite greater adherence to preventive measures, a significant reduction in the incidence of PI was not observed, possibly due to underreporting and lower accuracy of assessments before the intervention.

Even so, the project demonstrated a lower PI incidence value compared to national values, 2 significant improvements in the process of identification of staging, risk assessment and notification of PI.

After presenting satisfactory results and a consolidated work model, based on discussion, multidisciplinary integration and scientific knowledge, the project to improve PI prevention was expanded to the other intensive care units in 2019 and remains until today.

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