

A Corporate Model for the Prevention and Monitoring of Neonatal and Pediatric Skin Injuries: A Four-Year Quality Improvement Study

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Abstract

Introduction. Neonatal and pediatric patients present an increased risk of skin injuries due to their immature skin barrier and frequent exposure to medical devices. To improve prevention, monitoring, and standardization of care, the Azienda USL Toscana Centro (AUTC), one of the largest healthcare organizations in Italy, implemented a corporate pediatric wound care model supported by a multidisciplinary working group.

Methods. This descriptive retrospective observational study was conducted within an institutional Quality Improvement framework. Aggregated anonymized data were collected annually from 2021 to 2024 across Neonatal Intensive Care Units (NICUs), Neonatology units, and Pediatric wards. Nurse representatives, coordinated by a pediatric wound care specialist from the corporate Wound Care Team, reviewed medical records to identify pressure injuries (PIs), medical device-related pressure injuries (MDRPIs), and incontinence-associated dermatitis (IAD). Total admissions and injury frequencies were reported for each setting.

Results. Over the four-year period, 12,818 admissions were recorded (mean 3,204.5 per year). The mean incidence of PIs was 0.47%, while IAD incidence averaged 5.13%, with higher rates observed in NICUs. Between 2021 and 2024, 149 healthcare professionals (nurses, physicians, and midwives) completed seven editions of a dedicated pediatric wound care

training program. The pediatric wound care working group expanded from 6 to 9 nurses and 1 physician, meeting quarterly to review surveillance data, discuss clinical challenges, and update procedures. In 2024, the corporate procedure for the prevention and treatment of neonatal and pediatric skin injuries was revised, and an inter-organizational pathway for the management of minor pediatric burns was jointly developed with Meyer IRCCS Children's Hospital.

Discussion and conclusions. The corporate wound care model supported consistent monitoring, widespread training, and standardized preventive practices across AUTC. The very low incidence of PIs and the stable burden of IAD indicate positive organizational impact, highlighting the value of sustained multidisciplinary engagement in pediatric skin injury prevention.

Keyword: Pediatric Skin Injuries, Quality Improvement, Pressure Injuries, Incontinence-Associated Dermatitis, Neonatal Intensive Care Units

Introduction

Skin injuries in neonatal and pediatric care represent a significant clinical challenge, as the skin of patients in developmental age exhibits anatomical and physiological characteristics that increase its vulnerability. In newborns, the stratum corneum is thinner and composed of fewer cellular layers, resulting in greater permeability and a higher risk of infection. The neutral pH, weak dermo-epidermal junctions, and reduced cellular cohesion further predispose infants to friction injuries and skin stripping. Additionally, conditions such as hypoalbuminemia and immature vascular structures significantly increase the risk of developing pressure injuries.^{1,2}

International literature confirms that the prevalence of pressure injuries (PIs), incontinence-associated dermatitis (IAD), and medical device-related pressure injuries (MDRPIs) in the pediatric population is substantial and displays epidemiological characteristics that differ from those of adults. A recent systematic review and meta-analysis reported an overall PIs prevalence of 7.8% and a cumulative incidence of 3.9%, corresponding to an incidence rate of 8.2 per 1000 patient-days. For MDRPIs, the reported prevalence was 7% and the cumulative incidence 5%, with an incidence rate of 6.7 per 1000 patient-days. The most commonly affected anatomical sites included the face (29.1%), ankle/

foot (20.1%), and head (15.7%), while the devices most frequently associated with these injuries were external monitoring devices, respiratory devices, and fixation/support systems.³

In light of this evidence, the management of skin injuries in patients of developmental age requires dedicated approaches focused not only on treatment, but also on prevention. Such approaches must account for increased skin fragility, limited tissue reserves, and the need to ensure the highest possible safety for this vulnerable population.^{4,5}

The Azienda USL Toscana Centro (AUTC), one of the largest and most complex healthcare organizations in Italy, offers an ideal context for implementing a structured model for prevention and monitoring of pediatric skin injuries. The organization includes 13 hospitals, 6 maternity wards, 2 level II Neonatal Intensive Care Units (NICUs), 6 Neonatal Pathology Units, and 5 pediatric wards, for a total of over 2,900 annual admissions.⁶

In 2017, AUTC introduced a corporate procedure for the prevention and treatment of pediatric and neonatal skin injuries, developed according to the best available evidence and regional recommendations. The implementation of this procedure requires adequately trained professionals, consistent monitoring, and regularly updated operational tools. For this reason, a corporate working group was established, composed of nurses representing all neonatal and pediatric units and coordinated by

a member of the Wound Care Team with specific expertise in pediatric wound care.⁷

Over the years, this group has strengthened an organizational network aimed at standardizing care pathways, promoting continuous staff education, monitoring the incidence of PIs, MDRPIs, and IAD, and updating corporate procedures in line with emerging evidence. The group's activities have also fostered increasing synergy with Meyer Children's Hospital IRCCS, resulting in the development of a shared care pathway for the management of minor pediatric burns.⁸

Within this context, the present study aims to describe the incidence and temporal trends of PIs, MDRPIs, and IAD in the pediatric and neonatal units of AUTC from 2021 to 2024, through the analysis of aggregated data derived from routine corporate monitoring. Secondary objectives include assessing adherence to the corporate procedure, evaluating the impact of ongoing staff training, and describing the organizational development of the pediatric wound care working group.

Methods

Study Design

This study adopts a descriptive retrospective observational design embedded within a broader Quality Improvement (QI) initiative aimed at enhancing the prevention, monitoring, and management of skin injuries in neonatal and pediatric patients across the AUTC. The methodological framework is aligned with the SQUIRE 2.0 guidelines¹⁰ for reporting quality improvement initiatives and integrates relevant elements from the RECORD extension of the STROBE statement¹¹, which is specifically tailored for research based on routinely collected data.

The study relies exclusively on aggregated, anonymized information derived from institutional monitoring processes. No individual-level clinical or demographic variables were collected, and no tracing of patient identities was possible.

Setting

The project was conducted across the neonatal and pediatric care settings within AUTC, a large and complex regional healthcare organization that includes multiple hospitals and services. These comprise NICUs, Neonatal Pathology Units, and Pediatric Wards distributed

throughout the territory.

To support the implementation of wound care procedures and the monitoring system, a Pediatric Wound Care Working Group was established in 2020. This group includes at least one trained representative nurse from each pediatric and neonatal unit, coordinated by a member of the corporate Wound Care Team (WCT) with specific expertise in pediatric wound care. The working group is responsible for supervising surveillance processes, promoting adherence to the corporate procedure, and facilitating continuous education among healthcare professionals involved in pediatric and neonatal wound care.

Data Sources and Collection Procedures

Data used in this study originated from routine institutional monitoring. Every six months, the designated nurse representative of each unit reviewed the medical records of all discharged patients to identify newly developed skin injuries, including PIs, MDRPIs, IAD.

These events were documented using a standardized reporting form that also included the total number of admissions for each unit during the same period. All data were aggregated at the unit level, ensuring complete anonymization. No patient-level variables – such as gestational age, comorbidities, or length of stay – were collected.

The six-monthly reports were submitted to the WCT coordinator, who compiled them into an annual dataset and subsequently into a consolidated dataset for the four-year study period (2021–2024). This dataset included aggregated numbers of admissions and the corresponding number of PIs, MDRPIs, and IAD cases across NICU, Neonatology, and Pediatric units. The structure of the dataset allowed for the comparison of trends across different care settings with varying patient acuity and clinical characteristics.

Period of Analysis

The analysis covered the period from January 1, 2021, to December 31, 2024. During these four years, the monitoring system registered a total of 12,818 admissions across the neonatal and pediatric settings included in this study. All data produced during this period were incorporated into the final analysis.

Outcome Measures

The primary outcomes of interest consisted of the frequency and proportion of PIs, MDRPIs, and IAD observed within each neonatal and pediatric care setting, as well as the overall and setting-specific temporal trends across the four-year observation period.

Secondary outcomes included the evaluation of Quality Improvement indicators, such as the expansion and evolution of the Pediatric Wound Care Working Group, participation in corporate training activities, and the updates implemented in clinical procedures and care pathways during the study period.

Data Analysis

Data analysis was entirely descriptive, reflecting the aggregated nature of the dataset and the QI-oriented purpose of the monitoring activity. Annual frequencies and percentages were calculated for each type of injury, and temporal trends were examined by comparing data across the four years of observation. Tables and graphical representations were generated using Microsoft Excel®, which provided an adequate platform for organizing and visualizing the aggregated data.

No inferential statistical tests or multivariate analyses were performed, as the study design and the nature of the available data did not allow for hypothesis testing or analytical modeling.

Data Quality and Limitations

Several limitations are intrinsic to institutional monitoring systems based on routinely collected data. Differences in documentation practices across hospitals, inconsistencies in form completion, and variability in medical record archiving may introduce discrepancies or missing data. These issues may influence the completeness or precision of the aggregated dataset. Nevertheless, these limitations do not compromise the descriptive intent of the study, which is primarily focused on identifying organizational trends and monitoring the evolution of wound care practices over time.

Ethical Considerations

Ethical approval was not required for this study. The project was conducted as part of an institutional Quality Improvement (QI) initiative aimed at monitoring and enhancing the prevention and management of pediatric and neonatal skin injuries within the AUTC. The data analyzed were fully anonymized and aggregated

at the unit level, without any direct or indirect identifiers that could allow the identification of individual patients.

The use of routinely collected, non-identifiable data for organizational monitoring was authorized by the AUTC Health Directorate and is in accordance with national regulations on QI activities. Since no identifiable information was processed, individual informed consent was not required.

According to the European General Data Protection Regulation (EU GDPR 2016/679), anonymized data fall outside the scope of data protection legislation, as specified in Recital 26, which states that the regulation does not apply to information that does not relate to an identified or identifiable natural person.¹²

Results

PIs incidence and prevalence

Between 2021 and 2024, a total of 12,818 neonatal and pediatric patients were hospitalized across AUTC facilities. During this period, the routine monitoring system identified 53 cases of pressure injuries (including both PIs and MDRPIs) and 575 cases of incontinence-associated dermatitis (IAD).

When examined by care setting, skin injuries were markedly more frequent in the NICU compared with Neonatology and Pediatrics. This pattern is clinically coherent, as NICU patients are predominantly premature or medically complex infants with immature skin barrier function, higher exposure to medical devices, and typically longer hospital stays – all factors that increase the risk of both device-related and moisture-associated skin damage.

A comprehensive summary of the distribution of injuries across the different care settings is presented in Figure 1, which reports, year by year, the number of PIs, MDRPIs, and IAD cases, together with their proportional incidence within NICU, Neonatology, and Pediatric wards.

When these data are considered in aggregate over the four-year period, as shown in Figure 2, a clear pattern emerges, with the NICU consistently displaying the highest prevalence for all categories of skin injuries.

The temporal behavior of these conditions is illustrated in Figure 3, which traces the percentage trends of PIs, MDRPIs, and IAD between 2021 and 2024, allowing for a visual comparison of how their incidence has evolved across settings over time.

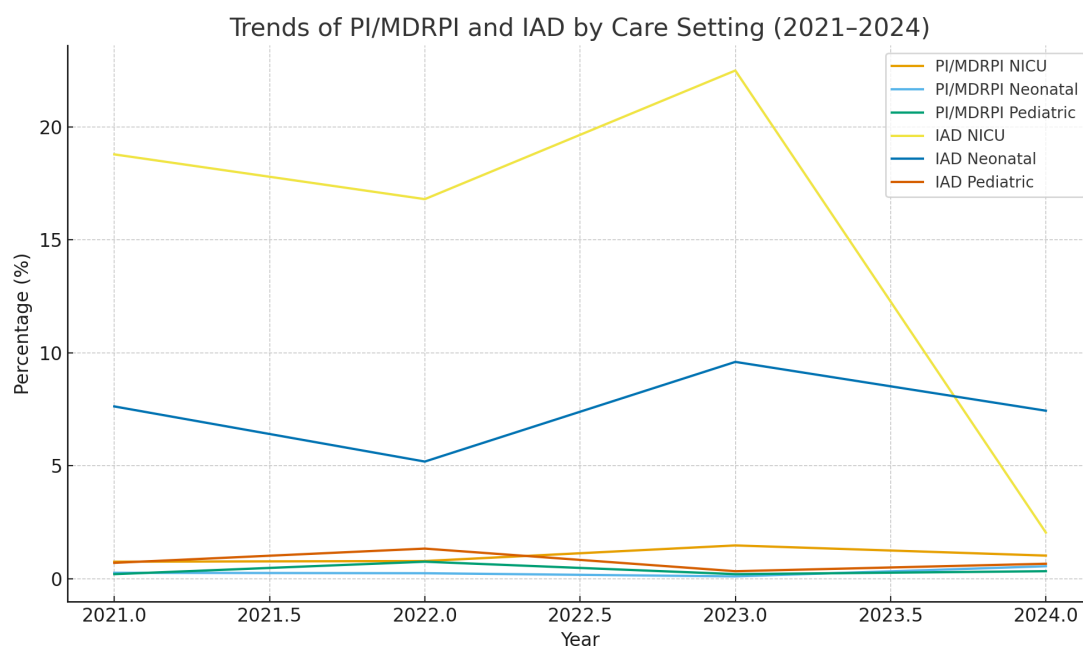


Figure 1. Trends in the percentage of pressure injuries (PIs), medical device–related pressure injuries (MDRPIs), and incontinence-associated dermatitis (IAD) across NICU, Neonatology, and Pediatric units from 2021 to 2024. The figure shows the four-year evolution of skin injury rates in the Azienda USL Toscana Centro (AUTC). PI/MDRPI rates remained consistently low (<0.6%) in all settings, with minimal annual variation, indicating stable and effective preventive measures. In contrast, IAD prevalence was substantially higher—especially in the NICU, where it ranged from ~16% to 22% before declining in 2024. Neonatology showed intermediate IAD values, while Pediatric units maintained low rates. The graph underscores distinct epidemiological patterns across settings and highlights the greater vulnerability of NICU patients due to clinical complexity, device exposure, and longer hospitalization.

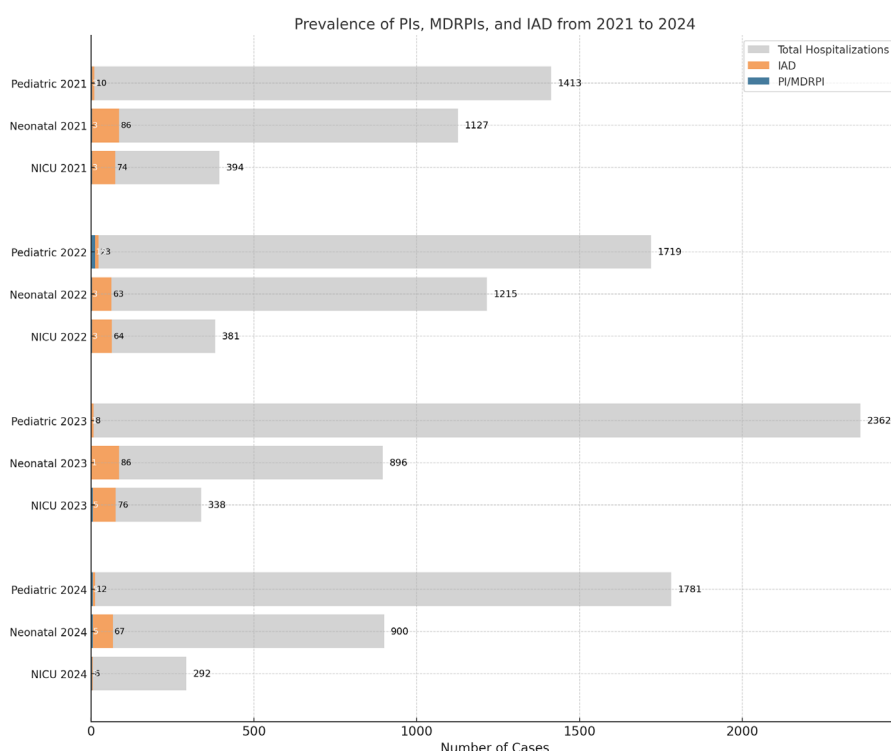


Figure 2. Prevalence of pressure injuries (PIs), medical device–related pressure injuries (MDRPIs), and incontinence-associated dermatitis (IAD) across NICU, Neonatal, and Pediatric units from 2021 to 2024. The figure displays, for each year and setting, total hospitalizations and the corresponding number and percentage of PIs/MDRPIs and IAD. PI/MDRPI prevalence remained below 0.6% across all settings and years, indicating stable and effective prevention. IAD prevalence was consistently higher, particularly in NICUs, with peak rates in 2021–2023, reflecting the vulnerability of premature and critically ill neonates. The visualization underscores inter-setting differences and temporal patterns of skin injury within the Azienda USL Toscana Centro (AUTC).

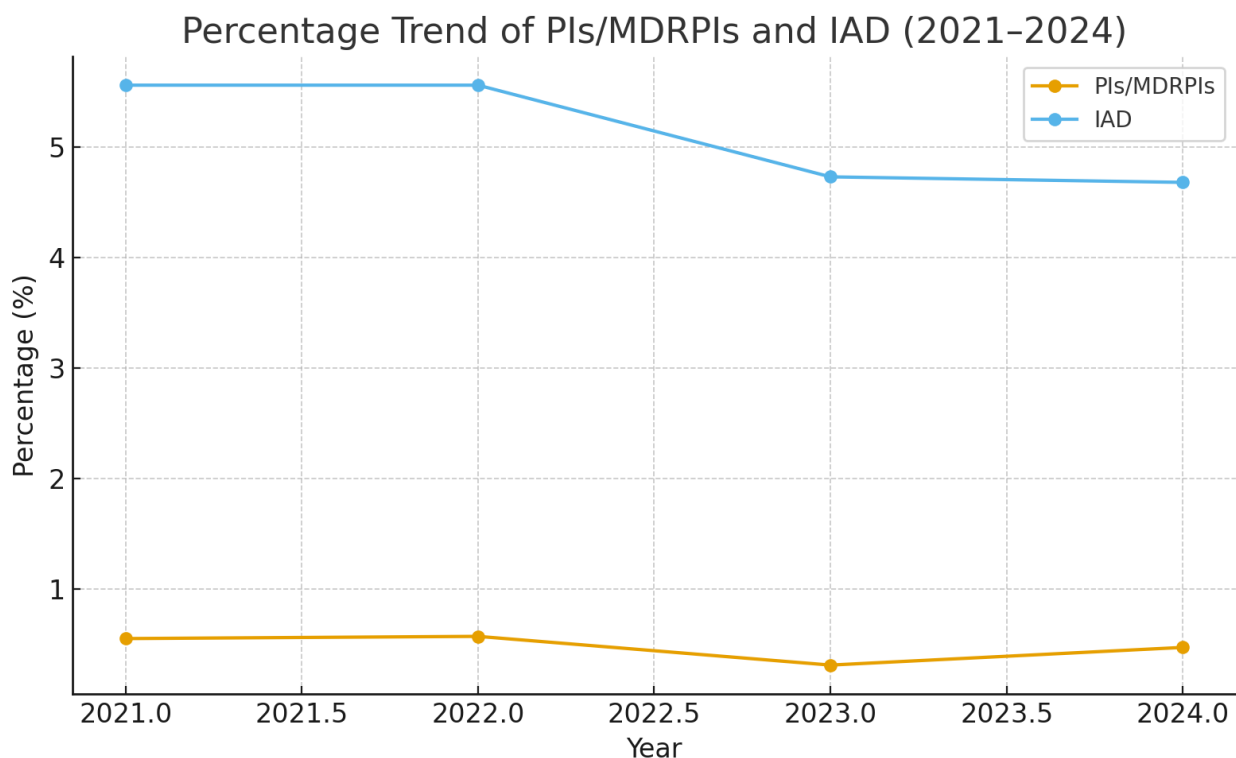


Figure 3. Percentage trend of pressure injuries (PIs), medical device–related pressure injuries (MDRPIs), and incontinence-associated dermatitis (IAD) from 2021 to 2024. The figure shows the annual percentages of PIs/MDRPIs and IAD across all neonatal and pediatric settings of the AUTC. Pressure injuries remained consistently below 1% with minimal year-to-year variation, while IAD percentages were higher but fluctuated modestly between ~4.6% and 5.6%. Overall, the trends indicate a stable burden of device- and moisture-associated skin injuries, with persistently low PI rates and limited variability in IAD.

Staff training

From 2021 to 2024, 149 healthcare professionals—including nurses, physicians, and midwives—participated in seven editions of the corporate training program on pediatric and neonatal wound care. The curriculum included pediatric risk assessment and related scales, characteristics of developing skin, principles of wound bed preparation, and the prevention and management of PIs, MDRPIs, IAD, burns, and traumatic injuries.

This training initiative contributed to strengthening the clinical competencies of staff members and supported the implementation of standardized preventive measures across all units.

Evolution of the Pediatric wound care working group

During the study period, the Pediatric Wound Care Working Group expanded from six nurses to nine nurses and one physician, reflecting an increasing institutional commitment to pediatric

wound care. The group met quarterly to conduct training activities, analyze monitoring data, discuss challenges, and propose updates to clinical pathways and procedures.

One of the key outcomes of this collaborative work was the revision of the corporate procedure for the prevention and treatment of pediatric and neonatal skin injuries, finalized in 2024 and aligned with the most recent scientific evidence.

Additionally, a shared care pathway for the management of minor pediatric burns was jointly developed between AUTC and Meyer Children's Hospital IRCCS. This inter-organizational protocol ensures uniform management across emergency departments and continuity of care between hospital and community services.

Another important initiative was the creation of an informational guide on neonatal and pediatric skin injuries, distributed to healthcare professionals across all units. After an initial implementation phase, a staff feedback survey was conducted, and the guide was revised

accordingly. The updated version is currently in use.

Discussion

This four-year descriptive quality improvement project, conducted across neonatal and pediatric settings within the AUTC, shows consistently low rates of PIs, MDRPIs, and a moderate but stable burden of IAD. Overall, PI/MDRPI incidence remained below 1% in all years and care settings, with mean values around 0.5%, whereas IAD incidence averaged just above 5%, with higher figures observed in NICU and lower in pediatric wards.

These findings suggest that a structured organizational model, based on a corporate pediatric wound care working group, routine surveillance of skin injuries, and standardized procedures, can support effective prevention of device- and pressure-related lesions, while highlighting IAD as a persistent challenge requiring ongoing attention, especially in highly complex neonatal patients.

Our results are best interpreted in the context of current epidemiological evidence. The prevalence and incidence of pediatric hospital-acquired pressure injuries reported in the literature are substantially higher than those observed in AUTC. The systematic review and meta-analysis by Şimşek et al. found a pooled prevalence of HAPIs of 7.8%, a cumulative incidence of 3.9%, and an incidence rate of 8.2 per 1000 patient-days, with MDRPIs showing similarly relevant rates (prevalence 7%, incidence 5%, incidence rate 6.7 per 1000 patient-days).³

Similarly, recent pediatric studies focusing on MDRPIs in tertiary children's hospitals and pediatric intensive care units report non-negligible rates of medical device-related damage, often ranging from 6-27% of children exposed to devices, underscoring the magnitude of the problem and its close link to complex care, prolonged device use, and critical illness.¹³⁻¹⁶

When compared with these data, the PI/MDRPI rates observed in our setting appear distinctly lower. Several factors may contribute to this difference: 1) Case-mix and organizational characteristics, because the AUTC network includes multiple neonatal and pediatric wards but not all highly specialized units (for example, long-term pediatric rehabilitation), potentially resulting in a lower baseline risk profile than

in some meta-analyzed cohorts;³ 2) Preventive focus and early device management, in which the corporate procedure emphasizes systematic risk assessment, proactive use of protective dressings, and regular device repositioning, which are known to reduce HAPIs and MDRPIs in pediatric populations;^{16,17} 3) Measurement approach: our surveillance is based on aggregated, routinely collected data rather than prospective daily skin assessments, which may under-detect very early or minimal lesions.^{13,18} This methodological aspect may partly contribute to lower observed rates.¹⁹

In contrast, IAD emerged as a more frequent condition, especially in NICU, aligning with recent evidence that moisture-associated skin damage and diaper dermatitis are highly prevalent in hospitalized neonates. Balaguer-López et al. reported a cumulative incidence of IAD of around 30-35% and an incidence rate of roughly 2-3 cases per 100 neonatal patient-days in Spanish neonatal units. Similar work in pediatric settings confirms that IAD represents the most common subtype of MASD, often exceeding other forms such as peristomal or periwound MASD.^{20,21}

Although our IAD incidence appears lower than the highest rates reported internationally, particularly in high-risk neonatal cohorts, the consistent presence of IAD across years and settings confirms that moisture-related damage remains a critical area for prevention. This is especially relevant in premature and medically complex infants, in whom immature skin barrier function, frequent stooling, and the use of diapers and perianal devices combine to increase MASD risk.^{20,21}

Overall, the comparison with the literature suggests that the organizational model implemented in AUTC may be particularly effective in controlling PIs and MDRPIs, while IAD continues to represent a more pervasive and multifactorial challenge that is less amenable to complete elimination, even in the presence of robust preventive policies.^{3,19,22}

A key feature of this project is the corporate Pediatric Wound Care Working Group, which connects all neonatal and pediatric units and is coordinated by a member of the Wound Care Team with specific pediatric expertise. Over the study period, this group expanded from six to nine nurse representatives and one physician, and it oversaw the implementation of surveillance, the interpretation of data, and the

iterative updating of procedures.²³

In parallel, 149 healthcare professionals (nurses, physicians, and midwives) attended seven editions of a dedicated training program on neonatal and pediatric wound care. The curriculum covered risk assessment, skin development, wound bed preparation, and the prevention and management of PIs, MDRPIs, IAD, burns, and traumatic injuries. This widespread educational effort likely contributed to the uniform adoption of preventive measures and consistent documentation practices across the different hospitals.²⁴

The project also had important inter-organizational implications, fostering synergy between AUTC and Meyer Children's Hospital IRCCS. The development of a shared care pathway for the management of minor pediatric burns, and the dissemination of an informational guide on neonatal and pediatric skin injuries, further highlight how corporate-level initiatives can translate monitoring data into concrete changes in clinical pathways and tools.

These elements are fully consistent with current recommendations for quality improvement activities, which emphasize the integration of data monitoring, interprofessional collaboration, and continuous education as essential drivers of sustained improvement in patient safety and skin integrity.

Study limitations

This study has several limitations that should be considered when interpreting the findings. First, it relies on aggregated, routinely collected data, without access to patient-level variables such as gestational age, comorbidities, nutritional status, ventilation type, or length of stay. This prevents adjustment for case-mix and does not allow for an analysis of risk factors or confounding variables.

Second, documentation practices and medical record archiving differ among hospitals within the AUTC network. Despite the use of standardized reporting forms, variability in completeness and accuracy of records may have led to underreporting or misclassification of certain events. This is an intrinsic limitation of institutional monitoring systems that do not rely on prospective, continuous bedside assessments.

Third, the absence of detailed information on patient-days of exposure for each setting precluded the calculation of incidence density rates (for example, per 1000 patient-days), which

are commonly used in epidemiological studies and meta-analyses of pediatric pressure injuries and MASD.

Finally, given the focus on hospitalized patients in NICU, Neonatology, and Pediatrics, the study does not capture injuries that may occur in short-stay observation units, emergency departments, or community settings, potentially underestimating the full burden of skin injuries across the continuum of care.

Future perspectives

Building on the experience gained during this four-year period, several avenues for further development can be identified. At the organizational level, the consolidation of a multidisciplinary corporate team involving nurses, physicians, and midwives may strengthen leadership, facilitate clinical decision-making, and promote shared accountability for outcomes related to skin integrity.

From a monitoring perspective, extending the surveillance system to short-stay units, emergency departments, and community settings would provide a more comprehensive view of the epidemiology of pediatric skin injuries and allow early identification of high-risk pathways, such as the transition from hospital to home care.

Future initiatives could also include: the development and validation of setting-specific risk assessment tools for neonatal and pediatric populations, particularly in NICU; the integration of more granular data (for example, device types, duration of exposure, diapering practices, skin care products) to better understand determinants of IAD and MASD; the design of intervention studies evaluating the impact of specific preventive strategies (for example, barrier products, advanced dressings, care bundles) on PI, MDRPI, and IAD rates in this population.

Conclusions

In summary, this quality improvement initiative demonstrates that a corporate pediatric wound care model, grounded in routine monitoring, standardized procedures, and ongoing staff education, can maintain very low rates of pressure injuries and MDRPIs while managing a persistent but stable burden of IAD, particularly in high-risk neonatal settings.

The establishment and progressive

strengthening of a pediatric wound care network across AUTC – and its collaboration with a specialized children’s hospital – illustrate how organizational strategies can translate evidence into practice and foster a culture of prevention. Future work should focus on refining surveillance systems, expanding multidisciplinary engagement, and testing targeted interventions to further reduce the burden of pediatric skin injuries and ensure safe, equitable care for all neonatal and pediatric patients within the network.

References

1. Bargas-Munárriz M., Bermúdez-Pérez M., Martínez-Alonso A.M., García-Molina P., Orts-Cortés M.I. Prevention of pressure injuries in critically ill children: A preliminary evaluation. *Journal of Tissue Viability*. 2020;29(4):310–318. <https://doi.org/10.1016/j.jtv.2020.08.005>
2. Neonatal and Pediatric Wound Care, G. Ciprandi editor, Minerva Medica
3. Şimşek E., Demir A.S., Semerci R., Karadağ A. The incidence and prevalence of medical device-related pressure injuries in pediatric patients: Systematic review and meta-analysis. *Journal of Pediatric Nursing*. 2023. <https://doi.org/10.1016/j.pedn.2023.06.019>
4. Baharestani MM. An overview of neonatal and pediatric wound care knowledge and considerations. *Ostomy Wound Manage*. 2007 Jun;53(6):34-6, 38, 40, passim.
5. Delmore B, Deppisch M, Sylvia C, Luna-Anderson C, Nie AM. Pressure Injuries in the Pediatric Population: A National Pressure Ulcer Advisory Panel White Paper. *Adv Skin Wound Care*. 2019 Sep;32(9):394-408. doi: 10.1097/01.ASW.0000577124.58253.66
6. Azienda USL Toscana centro [Internet]. Firenze: *USL Toscana centro*; [cited 2025 Nov 27]. Available from: <https://www.uslcentro.toscana.it/>
7. Mlambo M, Silén C, McGrath C. Lifelong learning and nurses' continuing professional development, a metasynthesis of the literature. *BMC Nurs*. 2021;20(1):62. <https://doi.org/10.1186/s12912-021-00579-2>
8. Family and community nursing: overview of practice in Europe. Conti A, Albanesi B, Busca E, Martini L, Costa C, Campagna S. *Assist Inferm Ric*. 2021 Jul-Sep;40(3):131-136. <https://doi.org/10.1702/3694.36821>.
9. Moore Z., Dowsett C., Smith G., Atkin L., Bain M., Lahmann N.A., Schultz G.S., Swanson T., Vowden P., Weir D., Zmuda A., Jaimes H. TIME CDST: An updated tool to address the current challenges in wound care. *Journal of Wound Care*. 2019;28(3):154–161. <https://doi.org/10.12968/jowc.2019.28.3.154>
10. Ogrinc G, Davies L, Goodman D, Batalden P, Davidoff F, Stevens D. SQUIRE 2.0 (Standards for QUality Improvement Reporting Excellence): revised publication guidelines from a detailed consensus process. *BMJ Qual Saf*. 2016 Dec;25(12):986-992. <https://doi.org/10.1136/bmjqs-2015-004411>.
11. Cuschieri S. The STROBE guidelines. *Saudi Journal of Anaesthesia*. 2019;13(Suppl 1):S31–S34. https://doi.org/10.4103/sja.SJA_543_18.
12. Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016. Available from: <https://eur-lex.europa.eu/eli/reg/2016/679/oj/eng> (last accessed: 2024-11-02)
13. Başbakkal Z, Yılmaz HB, Gümüş M, Belli M, Erçelik ZE. Medical device-related pressure in-juries in paediatric patients: An incidence study in a children's hospital. *J Clin Nurs*. 2024;33(7):2633-2639. <https://doi.org/10.1111/jocn.16973>
14. Nicolosi B, et al. Predictive Performance of Device-Neonatal Skin Risk Assessment Scale to Evaluating Pressure Injuries Risk in the Neonates: An Observational Multicenter Study. *J Clin Nurs*. 2025 May. <https://doi.org/10.1111/jocn.17825>.
15. Nicolosi B, Parente E, Marilli I, Prisco R, Gregorini M, Ciofi D. Investigation of the prevalence of skin injuries in hospitalized newborns and main reports: an observational, cross-sectional, monocentric pilot study. *Interdisciplinary Journal of Nursing and Health*. 2024;3(1):63–70. <https://doi.org/10.36253/if-2412>
16. Nicolosi B, Gregorini M, Granai V, Maffeo M, Buccione E, Longobucco Y, Bamonte C, Stringi D, Idrizaj S, Fontani I, Parente E, Ciofi D. Risk Factors for Skin Injuries in Hospitalized Children: a Retrospective Study. *Interdisciplinary Journal of Nursing and Health*. 2024;3(4):277–285. <https://doi.org/10.36253/if-3159>
17. Stellar JJ, Hasbani NR, Kulik LA, et al. Medical Device-Related Pressure Injuries in Infants and Children. *J Wound Ostomy Continence Nurs*. 2020;47(5):459-469. <https://doi.org/10.1097/WON.0000000000000683>
18. Delmore B, Deppisch M, Sylvia C, Luna-Anderson C, Nie AM. Pressure Injuries in the Pediatric Population: A National Pressure Ulcer Advisory Panel White Paper. *Adv Skin Wound Care*. 2019;32(9):394-408. <https://doi.org/10.1097/01.ASW.0000577124.58253.66>
19. Sainz-Rozas PB, Gros-Turpin A, Balaguer-López E, Mora Morillo IM, De Frutos Pecharroman J, González García L, Cañadas DC, Cánovas Barcelona M, Fàbregas Mitjans M, García-Molina P. Prevention Decalogue for Dependency-Related Skin Lesions in Neonates: a Consensus-Based Delphi Study. *Int J Wound Res*. 2025;1(1):33–45. <https://doi.org/10.64115/ijwr-2025-2>
20. Balaguer-López E, Estañ-Capell J, Rodríguez Dolz MC, Barberá Ventura MC, Ruescas López M, García-Molina P. Incidence of incontinence-associated dermatitis in hospitalised neonates. Adaptation and validation of a severity scale. *An Pediatr (Engl Ed)*. 2024;100(6):420-427. <https://doi.org/10.1016/j.anpede.2024.04.015>
21. Nicolosi B, Parente E, Petronici A, Fioravanti L, Cavalieri S, Nobile V, Reggiardo G, Coletta R, Moroni M, Ciprandi G. Moisture-associated skin damage and its management in neonatal and infant populations: a retrospective study in Italy. *J Wound Care*. 2025;34(9):732–738. <https://doi.org/10.12968/jowc.2025.0178>
22. Baharestani MM, Ratliff CR. Pediatric pressure ulcers: a systematic review. *J Wound Ostomy Continence Nurs*. 2007;34(4):411–420. <https://doi.org/10.1097/01.WON.0000281643.35669.1a>.

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23. Moore Z, Dowsett C, Smith G, et al. TIME CDST: an updated tool to address the current challenges in wound care. *J Wound Care*. 2019;28(3):154-161. <https://doi.org/10.12968/jowc.2019.28.3.154>
 24. Cavalieri S, Costa A, Buratti S, Moscatelli A, Scelsi S. Effective preventive strategies for pressure injuries in neonatal and pediatric intensive care: analysis of an implemented pathway. *Int J Wound Res*. 2025;1(1):13-18. <https://doi.org/10.64115/ijwr-2025-5>.