

Experience of the vulnology team during COVID-19 period

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ABSTRACT

The Coronavirus pandemic (COVID-19) significantly increased the hospitalisation of patients mainly due to respiratory complications, especially in intensive care units. During the first wave, COVID-19 patients had more Hospital-Acquired Pressure Injury (HAPI) than non-COVID-19 patients. The fragility of these patients, the manoeuvres required for their respiratory support and the use of numerous medical devices are the main reasons for the high risk of loss of skin integrity. The onset of skin lesions has consequences in terms of increased hospitalisation, care costs and, not least, a negative impact on the quality of life of patients. In light of these premises, the nursing vulnology team of the HUB Mauriziano Hospital in Turin, during the pandemic period, planned and carried out an intervention for the prevention/treatment of skin lesions and to support healthcare workers involved in caring for COVID-19 patients in the hospital wards. The activity was carried out during the period from 30/10/2020 to 30/04/2021. A total of 679 patients were enrolled in the study. In 361 patients (53.2%) only preventive activities were performed, 343 (95%) of these patients did not develop any injuries. Age, length of hospital stay and Braden score were the most relevant factors in patients with HAPI. In 318 (46.8%) patients, in addition to preventive interventions, treatment of pre-existing skin injuries was carried out, in this sample in 28 (8.8%) of the cases there was a worsening of the skin lesions. Finally, almost all of the practitioners, 113 out of 118 (96%), recognised the usefulness of the support of specialists in Wound Care by completing an online questionnaire.

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Key words: pressure ulcers; multidisciplinary team; prevention; wound care; expert wound care nurse.

Conflict of interest: the authors declare no conflict of interest.

Ethical approval and consent to participation: not applicable.

Availability of data and materials: all data analysed in this study are available in this article.

Consent to publication: patients have given their consent to the publication of the data in this article.

Received: 2 June 2023.
Accepted: 25 July 2023.

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Licensee PAGEPress, Italy
Italian Journal of Wound Care 2023; 7(3):102
doi:10.4081/ijwc.2023.102

Introduction

The development of a Pressure Ulcer (PU) is a complex phenomenon. A PU is defined, according to the third and latest (2019) edition of the International Guidelines for the 'Prevention and Treatment of Pressure Ulcers/Injuries', as 'localised damage to the skin and/or underlying tissue, resulting from pressure or pressure in combination with shear forces; involving damage to cutaneous soft tissues including epithelial, dermal and subcutaneous tissues, such as fat or muscle. PU are caused by prolonged mechanical deformation of soft tissues between internal rigid anatomical structures (bones, cartilage, tendons) and external rigid support surfaces (e.g. mattresses or seats), or contact with medical and other devices (e.g. common objects 'lost' in bed such as mobile phones)'.¹

The most important risk factors include immobility and reduced perfusion, which are also the characteristics of most patients with COVID-19 as they often have several comorbidities that may involve allurement and skin fragility.²

In the treatment of COVID-19 patients, the extensive use of medical devices was one of the reasons for the increased risk of skin lesions.³

Device-Related Pressure Ulcers (DRPU) and are defined as 'injuries resulting from the use of devices de-

signed and applied for diagnostic or therapeutic purposes’.

The resulting pressure injury generally conforms to the design or shape of the device’.⁴

DRPUs have a negative impact on the patient by causing additional morbidity and reducing quality of life, can produce visible scars and permanent hair loss. In addition, consideration must be given to the fact that ventilation can often induce a ‘forced position’ that may expose patients to the risk of developing PUs.

In clinical practice, prone ventilation is indicated for patients with severe acute respiratory distress syndrome, but international data suggest that up to 57% of bedridden patients in the prone position develop PU.⁵

Another of the factors present in these patients is diarrhoea, one of the common symptoms (3-30%) of COVID-19 which may contribute to the appearance of sacral ulcers and incontinence-associated dermatitis (IAD) and, in cases of PU’s patients, increases the risk of faecal contamination.⁶

In light of the above, the importance of preventing the occurrence of PU, DRPU, Moisture-Associated Skin Damage (MASD) and IAD in this patient population and the appropriate management of COVID-19 patients with lesions is evident.

The core elements of PU and DRPU prevention include risk assessment, skin assessment, care planning, care delivery and documentation.

In 2018, at the HUB Mauriziano di Torino, the multi-professional and multidisciplinary Vulnology Centre was deliberated, of which the nursing team is an integral part and constitutes the operational arm, to respond in a timely and appropriate manner to the needs of the patient with skin lesions, to spread the culture of prevention in the field of pressure injuries and to promote best practices in the field of vulnology.

The Vulnology Team (VT), in this context, implemented an intervention aimed at maintaining the skin integrity of COVID-19 patients, a challenge that necessarily had to be taken into account, given the potential consequences related to the occurrence of skin injuries.⁷

The VT activity was aimed at preventing and treating PUs, expanding the knowledge of practitioners and supporting the procurement and reorganisation of medication material in these services.

The aim of this study is to describe the VT intervention in terms of prevention and treatment of PUs in patients with COVID-19 and the support for the healthcare professionals involved.

Materials and Methods

Type of study: prospective descriptive

All patients over 18 years of age admitted to the COVID-19 patient care services were included as they were

considered to be at risk for the development of injuries and, for this reason, underwent assessment/treatment by the TV.

The study was conducted during the period from 30/10/2020 to 30/04/2021.

The VT intervention included: i) total body skin inspection through Visual Skin Assessment - visual assessment of the head-foot skin; ii) identification of patients and anatomical areas most at risk. The risk of developing PU was identified by means of the Braden scale (included in the nursing acceptance of the computerised electronic medical record); iii) preventive interventions; iv) treatment interventions; v) taking care of the most complex patients with a need for clinical/nutritional assessment and more frequent (<1 week) reassessment. The risk of malnutrition was calculated using the Malnutrition Screening Tool; vi) documentation and planning of interventions; vii) assessment and documentation of outcomes. Assessment of PUs evolution was carried out through the use of the Pressure Ulcer Scale for Healing Tool 3.0 and the International Pressure Injury Classification System according to NPUAP/ EPUAP.

A weekly intervention schedule (spread over 5 days) was carried out in order to ensure full coverage of all wards dedicated to the care of COVID-19 patients, thus ensuring a weekly reassessment of patients already taken care of as required by the Guidelines.⁸

The primary outcome of interest was the incidence of PUs development. The secondary outcomes were the severity and anatomical location of the PUs that developed.

The following variables were collected: age, gender, type of intervention carried out, ward, type and location of skin injuries incurred during observation, Braden risk scale, length of stay.

The data were collected from the reports in the computerised electronic medical record in use in the company and stored anonymously on an Excel spreadsheet.

At the end of the study, a questionnaire was administered to the health workers of the departments involved to assess the degree of satisfaction and perceived usefulness of the VT activity via the Google Forms app.

The questionnaire consisted of 6 questions of which 4 were multiple-choice and 2 open-ended.

The first two investigated the role and service of the respondent, the next ones concerned the degree of satisfaction with the VT intervention and its organisation with reference to the areas in which support was provided. The last question left room for comments, criticism and suggestions.

Results

During the study period 679 patients were enrolled, of whom 305 were female (45%) with a mean age of 73.5 (range 18-99). The mean hospital stay was 18.8 days

(range 1-80) The mean Braden scale value was 15.1 (range 9-23).

1310 care activities were carried out, of which 692 (52.8%) were preventive. In 318 (46.8%) patients, in addition to preventive interventions, treatment of pre-exist-

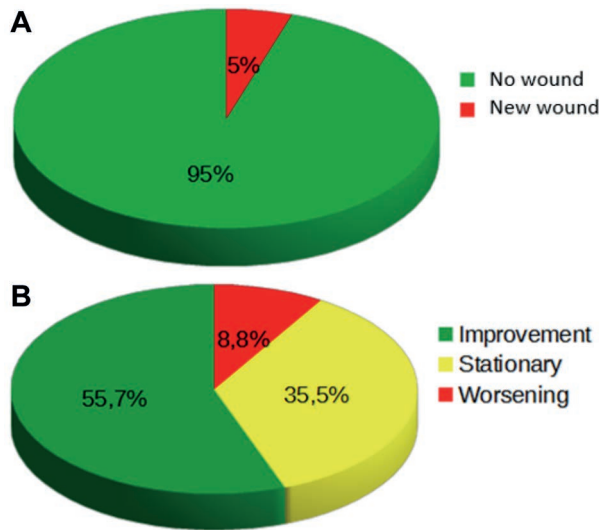


Figure 1. A) Outcomes of preventive interventions. B) Outcomes of treatment interventions.

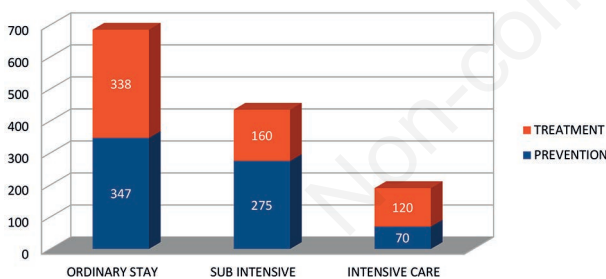


Figure 2. Care activities performed during the period 30/10/20-30/04/21 divided by intensity of care.

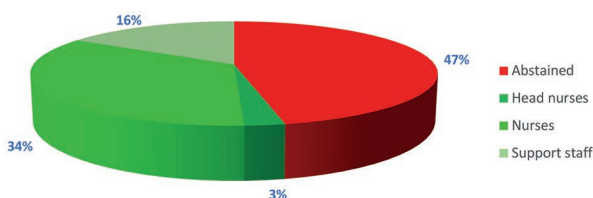


Figure 3. Questionnaire participants.

ing lesions was carried out, in this sample in 28 (8.8%) of the cases there was a worsening of the lesions (Figure 1).

The activities carried out, broken down by care areas, are described in Figure 2.

In 361 patients (53.2%) only preventive activities were carried out (head/foot skin check, checking presence and correct positioning of anti-decubitus devices, skin hydration, application of products for the prevention of IAD, placement of advanced dressings for preventive purposes, etc.), 343 (95%) of these patients did not develop any skin lesions (Figure 1). Skin lesions that developed (in 18 patients) had sites and stage as described in Table 1.

The mean age of patients with acquired injuries was 78.3 years (range 59-94), the mean hospital stay was 26.3 days (range 4-50), the mean Braden was 12.3 (range 9-16).

No IAD were detected in the sample of patients involved in the study. A total of 203 deaths occurred during the observation period (30%).

The questionnaire evaluating the VT activity was sent to 221 health workers. 53% (118 participants) completed the questionnaire in full. The number of participants was as follows: 6 coordinators, 76 nurses, 36 Health Carer (Figure 3).

The validity of the VT support was recognised by almost all professionals (96%). The remaining 4% rated the VT intervention as not very useful (3%) to not useful (1%) (Figure 4).

Discussion

The COVID-19 pandemic made several aspects of healthcare delivery very difficult, including the prevention of conditions such as hospital-acquired pressure injuries. The occurrence of PUs in this population was particularly high⁹⁻¹⁷ due to the use of devices, the char-

Table 1. Locations and stage of skin injuries that occurred (in 18 patients).

Skin injuries seat	PUs stage	
Heel	2	I 8
Sacrum	6	II 10
Back	1	
Front	1	
Nose	1	
Ear	1	
Elbow	3	
Urinary meatus	1	
Mammella	1	
Axillary cable	1	
TOT	18	
Submammary MASD	2	

MASD, moisture-associated skin damage.

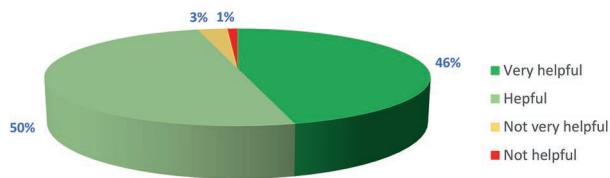


Figure 4. Degree of satisfaction and perceived usefulness of health workers.

acteristics of the condition along with the associated symptoms and the practices required for treatment such as pronation.

The rate of PUs in patients admitted to hospitals in different countries varies from 3% to 53%.¹³

The results of our study are encouraging compared to what has been described by other authors, who put the incidence of PUs at 60% (12 out of 20 patients) following preventive intervention in this sample of COVID-19 patients.⁹

The most common site of injury in the sample of patients involved in the study was the sacrum, in line with some literature data.¹⁰⁻¹³

The PU that occurred were stage I (8 PUs) and stage II (10 PUs)¹², no PU of greater severity were observed; other authors describe the occurrence of PU of greater severity.^{9,12,14}

Importantly, in the cohort of patients with HAPI, the mean age and mean length of hospital stay were higher than the total sample, and the Braden score was also lower. This is confirmed by the literature, which shows that age, length of hospital stay and Braden score are very relevant factors in the risk of developing PU.¹³

Two MASD developed at the level of the submammary folds.

Preventive and educational action towards caregivers has probably prevented the occurrence of IAD, which is 26.2 to 64% in critically ill patients (which is higher than in other in-patients) and 2.18 times higher in those aged ≥ 60 years than in those aged < 60 years.¹⁵ This result needs further study.

The intervention (including field training to ward colleagues) of nurses specialised in Wound Care produced valid results on the prevention and treatment of PU, DPRU, IAD and MASD in a high-risk patient population.

These results are particularly significant given the high mortality rate of these patients (30%, equally distributed between treated patients and those who were only given preventive interventions) as the worsening of clinical conditions is scientifically associated with the appearance /worsening of skin lesions, particularly Pressure Ulcers.¹⁶

Future studies should evaluate the impact of care provided by specialist wound care nurses on patient quality of

life and health care costs. Nurse managers should promote the implementation of clinical care pathways for chronic wounds delivered by specialist nurses to improve patient clinical outcomes and reduce hospital admissions.¹⁷

The limitations of this study are to be found in the absence of a control group (as a reference point), and the participants were not classified according to disease severity (COVID-19) and clinical characteristics.

Detection and staging of PUs are experienced by nurses as complex tasks; PUs have a negative impact not only on patients, but also on carers and the healthcare facilities providing care. Nurses caring for patients with PUs may experience a greater commitment to their care and experience frustration at the occurrence of skin lesions and the slowdown in patient recovery.¹⁸

Conclusions

In the emergency situation, the presence of the team proved to be a valuable support, but the long-term goal is to promote the greater degree of autonomy of inpatient wards nurses in terms of preventing PU, DPRU, IAD and MASD.

Education associated with pressure injuries is crucial. Most nurses in hospitals or home care services, who care for the elderly or chronically ill patients, lack such training.¹⁹

The prevention of PU, DPRU and IAD should not be left solely to nurses specialising in Wound Care but should involve all nurses caring for inpatients through the implementation of, for example, university education in this regard and specific procedures/protocols. Further, higher quality studies are needed to assess the extent to which structured preventive action can reduce the incidence of the problem.

Prevention support in at-risk patients within the various hospital services is translated into VT projects in the most at-risk inpatient areas where monitoring is carried out through periodic point prevalence surveys.

The high gradability of the VT action is the result of a long and daily awareness-raising and collaboration with colleagues involved in assistance who felt supported at such a critical time as the pandemic.

Future studies should focus on demonstrating the short- and long-term effects of educational interventions to ensure proper management and care of PU patients.

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