

## NURSE'S ACTIVITY IN NEGATIVE-PRESSURE WOUND THERAPY IN PATIENT WITH A LARGE INJURY

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### ABSTRACT

This study aims to know the nurse's activity in the negative-pressure wound therapy of patient with a large lesion. This is a single case study which was developed in a general hospital of medium size, in the interior of Rio Grande do Sul, Brazil. The data collection was done through consultation of records and the images were documented in medical records, and semi-structured interviews were conducted with professionals of the interdisciplinary team who were directly involved with the case, it occurred in the year 2016. The corpus of the analysis resulted in three categories: João's case; articulation of the nurse's actions with the interdisciplinary team in favor of care; negative-pressure wound therapy. The nurse's role is strategic in the promotion of skin care in negative-pressure wound therapy, capable of sensitizing, stimulating and articulating the team for the accomplishment of an integrated, safe and quality work to the injured person.

**Keywords:** Nursing. Wounds and Injuries. Therapeutics. Skin. Wound Healing.

### INTRODUCTION

The skin is the largest organ of the human body and represents the primary defense system<sup>(1)</sup>. In the case of lesions, the application of dressing associated, or not, with other treatments, such as medication, may shorten healing time, prevent complications and refer healing to wounded persons<sup>(2)</sup>. There is no single product used in the dressing during the treatment of the lesion. There is, however, a variety of specific articles for toppings with different application techniques at different stages of treatment in order to prevent complex infections, decrease the amount of exudate, hamper the bacterial growth process and stimulate blood flow and growth of granulation tissue<sup>(3)</sup>.

When considering the different stages of skin healing, it is the responsibility of health professionals, especially nurses, to promote adequate tissue reconstruction, as well as clarification about each type of injury, the different stages of healing, and adequate therapy, knowledge regarding the indication and conduct in the different evolutionary aspects of the lesion, for the decision by a better technique and/or products<sup>(4-5)</sup>.

It is highlighted that lesions that are difficult to treat have been increasingly receiving the attention of nurses directly involved in their care, aiming to reduce not only the healing time of the lesion, but also the inflammation and pain

resulting from their manipulation in the tending to the comfort of the affected person.

The Resolution COFEN 501/2015 regulates the attributions of the Nursing team in wound care, based on four distinct stages<sup>(6)</sup>. Thus, the nurse has attributions in the care of legally established injuries, passing the nursing consultation, prescription and dressing, coordination and supervision of the nursing team in the prevention and care of wounds, among other specific assignments, as long as there is an institutional protocol<sup>(6)</sup>.

This article discusses the performance of a nurse in a case of wounded patient due to traumatic injury caused by traffic accident, with loss of soft parts and severe vascular injury, leading to urgent amputation of the right upper and lower limbs, later submitted to the technique of negative-pressure dressing on the stump lesion of the right lower limb. The nurse who implemented the dressing by negative-pressure had indication, since she understood that there was a need for advanced skin healing, based on the Nursing Process and in compliance with the provisions of the Federal Nursing Council Resolution (COFEN) nº 358/2009 and the principles of the Policy National System of Patient Safety, of the Brazilian Unified Health System<sup>(6)</sup>.

The technique of negative-pressure dressing, also known as vacuum dressing, consists in the application of sterile foam in the wound bed, followed by the installation

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of a polyurethane film on the hydrophobic sponge, which generates a system sealed and connected by a tube to a programmable vacuum pump. The use of negative-pressure as treatment of lesions was proposed in 1997 by Argenta and Morykwasa, due to the difficulty in obtaining good healing results in lesions of great extent<sup>(2)</sup>. In them, a controlled negative-pressure is applied between 50 and 125 mmHG, continuously or in cycles, the exudate is drained to a reservoir for volume control. The action of the vacuum network produces negative-pressure in the applied dressing and injury, which promotes the drainage of the fluid from the lesion, with reduction of the exudate and edema, elevates the level of the blood flow in the place and, consequently, accelerates the formation of the tissue of granulation<sup>(7-8)</sup>, considered to be a breakthrough therapy in the management of lesions<sup>(9)</sup>.

The case study problematizes "how does the nurse act in skin care of the patient with a large lesion by applying the negative-pressure as therapy?" In the expectation of finding answers to this question and in view of the importance of appreciating the subject, it was aimed to know the nurse's performance in the negative-pressure wound therapy in the patient with a large lesion.

## METHODOLOGY

The single case study<sup>(10)</sup> is characterized as an empirical investigation on a complex contemporary phenomenon. It is justifiable if the case is a rare or exclusive event or if it serves a revealing purpose, as the case of nurses who act in negative-pressure wound therapy. The case studied occurred in a general medium-sized hospital in the interior of the state of Rio Grande do Sul, highlighting the differentiated care of patients with skin lesions and the commitment to continue the therapy, even after hospital discharge, preventing relapses or recurrent hospitalizations due to worsening of the lesions.

The hospital has an outpatient clinic for skin lesions, a service specializing in the treatment of chronic and traumatic injuries. In this outpatient clinic, a regional reference for attention to injuries, care is provided by scheduled appointments and includes an interdisciplinary team in skin care, composed of a nurse, a physician and two nursing technicians. Patients who are followed at the outpatient clinic may be hospitalized, referenced from basic care, or come from different points of health care, with indication of complex dressings.

The data were obtained through a semi-structured interview and medical records, in May and June of 2016. For the collection of the primary data, the semi-structured interview was used with the application of a script of open and closed questions about sociodemographic data of the

patients, and the information from the nurse's practice on the application of negative-pressure wound therapy was explored, investigating professional competencies in the care of a patient with a large lesion.

The eligibility criteria for the sample included nurses or the interdisciplinary team of skin lesions from the participating institution in the case, and who knew about the nurses' performance in this context, and they should be present during the period of data collection and be working for more than a year at the hospital. This period was considered as a minimum time necessary to adapt the professional to the work routines in negative-pressure wound therapy and to the work team.

The selection of the participants was intentional: the participation of the interdisciplinary team from the skin lesion outpatient clinic and the hospital was intended. The only nurse and physician in the outpatient clinic were admitted to the study, being references in the installation of a negative-pressure dressing on lesions in the institution, as well as another nurse in the hospital, directly involved with the care of the patient researched. They read and signed the Informed Consent Term (ICT), remaining one copy with the researcher and another with the interviewees.

The interviews were conducted individually, during the work shift of the professionals and in a reserved room, so as not to expose the professionals, in order to preserve the secrecy and confidentiality of information, with duration of approximately 60 minutes. They were recorded in audio tape and later transcribed in full, and stored in a safe place, in the institution of origin of the researchers, where they will remain stored in the next five years. To preserve the anonymity of the research participants, it was decided to code them with the letter "E", followed by the numbering 1 to 2.

The secondary data deals with records contained in medical records that are related to the patient and comprise injury care processes and photographic documentation.

To the patient studied, we attributed the fictitious name João, who was also informed about the purpose and ethical issues involved in the research and also signed the ICT.

The empirical material resulting from the interviews and evaluation of the lesion through clinical examination and photographic records was submitted to the analysis, covering three stages: pre-analysis, material exploration and interpretation of the data obtained. From this process, the analysis resulted in three categories: João's case; articulation of the nurse's actions with the interdisciplinary team of the ambulatory of skin lesions in favor of the care; and negative-pressure wound therapy.

Regarding ethical aspects, the recommendations contained in Resolution 466/12 of the National Health

Council (11) were followed, and the study was approved by the Research Ethics Committee of the Integrated Regional University of Alto Uruguay and the Missions under CAAE 57640116.1.0000.5354.

## RESULTS

The only case in this study concerns LRS, who was given the fictitious name João, a 27-year-old man, single, living with relatives and residing in rural areas with basic sanitation, he has complete high school education, worked as a farmer and suffered traumatic injury in traffic accident with loss of soft parts and severe vascular injury in the upper and lower right limbs. The narrative that follows is based on the records in João's medical records and the information of E1 and E2, participants of the study, with the purpose of transporting them to the center of this problematization from the own paraphrased of the researchers about the hospital experience that occurred in 2016, configuring a path for teaching and learning about nurses' performance in the application of negative-pressure dressing::

João was admitted to the emergency room of a medium-sized hospital in a municipality near the rural area where he resided

on 01/05/2016, since he had been affected by a serious traffic accident and was referred to the Surgical Center for emergency orthopedic and vascular surgery by severe polytrauma. On admission to the Surgical Center he was calm, lucid, oriented and verbalizing. Vision, hearing and smell without change. At the physical examination, he presented lesions in the occipital region and in the upper right and lower right limbs. There was great loss of soft tissues and severe vascular injury, requiring the urgent amputation of the upper and lower right limbs. After the surgical procedure, João was referred to the intensive care unit, where he remained for five days. Upon discharge from the unit, he was transferred to the surgical hospitalization unit for continuity of care. In this period, he presented a serious depression and weight loss, with the need of follow-up by psychiatrist, psychologist and nutritionist. Regarding the lesion of the right lower limb, João presented an open wound due to second intention, caused by friction in potentially contaminated material and various debris, which became infected with purulent secretion and tissue necrosis. On the twelfth day of hospitalization, without significant improvement of the wound and use of conventional dressing, the interdisciplinary team of the skin lesions outpatient clinic is started. (*Data that were compiled from medical records*)



**Figure 1.** Images of right lower limb stump lesion prior to the implementation of negative-pressure dressing.

**Source:** Images of May 18, 2016, that were taken from the medical record.

The images shown in figure 1 show the stump of the right lower limb amputated, before the implementation of the negative-pressure dressing on the lesion of João.

### Articulation of the nurse's actions with the interdisciplinary team for care

On the 12th day of hospital admission, when the interdisciplinary team of the skin lesion outpatient clinic was activated, the interviewees highlighted the role of the nurse to decide on the treatment of the negative-pressure dressing with the team doctor:

The patient reported severe pain when handling the lesion of the right lower limb. In the lesion, there were large numbers of

necrotic and deep areas, besides draining a large volume of purulent secretion with a foul smell. This was discussed with the doctor prior to the installation of the dressing. (E1)

The potential for the wound to become infected was high. Considering the stage of the wound, its healing depended on a dynamic, orderly and gradual repair for the restoration of the integrality of the skin. Everyone had to be very attentive, especially the hospital nurse, in the exchange of dressings performed by the outpatient nurse, to keep us informed. And this exchange happened in fact. (E2)

The images shown in figure 2 were captured immediately after the surgical debridement performed jointly by the nurse and the doctor and record how the right lower limb stump injury was amputated.



**Figure 2.** Images of the lesion after debridement to initiate negative-pressure dressing therapy.

**Source:** Images of May 25, 2016, taken from medical records.

### Negative-pressure wound therapy

There are medical records made by the nurse about the

installation of the first dressing by negative pressure. Figure 3 shows the image of the first dressing performed in João's stump.



**Figure 3.** Image of negative pressure dressing on stump of right lower limb.

**Source:** Image of May 25, 2016, taken from the medical record.

The procedure was performed under sterile conditions, in a surgical room of the hospital, by the nurse, with application of a polyurethane sponge that covered the entire extension of the lesion, sealed with a transparent film. The cover was connected to the pump reservoir by means of a suction tube of the exudate at a pressure of 50 to 125 mmHG. There were changes of dressing by nursing every 72 hours. Figure 3 shows the image of the first dressing performed in João's stump.

The photographic collection of Figure 4, related to the evolution of the lesion during dressing change, shows how the vacuum and the increase of vascularization due to the negative-pressure stimulated the growth of the granulation tissue and the healing of the lesion, considering the nurses' performance in the care of João's injury.

Regarding the conditions under which the decisions were taken to install the negative-pressure wound therapy,

the participation of nurses was highlighted:

The nurse who works with wounds should always seek technical and theoretical training to have autonomy in the treatment of wounds. With knowledge and practice, it is possible to show that this works! This way you will gain space and respect from other professionals. [...] On vacuum dressing, I seek guidance and study the best way to do it. In the first dressing performed with the traditional technique, without negative-pressure, the patient was in the room and was crying. That's when we decided to take him to Cento Surgical. And then we can succeed in treating the wound. With this, the patient can be transferred to perform grafting. (E1)

Vacuum dressing was the best option to take care of the injury. It was inexpensive and could be done here at the hospital outpatient clinic. We prepare the area to be grafted. Vacuum dressing accelerated the granulation



process, reduced local edema, and further detachment of the edges. We were successful with the therapy proposed, which brought comfort to the patient, reducing the exchange of dressings and eliminating the bad smell, as the exudate drained directly through the connector to the

reservoir. (E1)

I do not know of another dressing that prepares the bed of the wound properly and in so little time for the grafting, as it happened with this patient. (E2)



**Figure 4.** Evolution of wound healing after nursing dressings.

**Source:** Images from 20 and 27 of May and 3 of June of 2016, extracted from the medical record.

The João's medical records refer to a day in care in the emergency room and surgical center, five days in intensive care unit and 37 days of hospitalization in a surgical

hospitalization unit. João was discharged from hospital after 43 days. Figure 5 shows the evolution of healing of the skin obtained after grafting.



**Figure 5.** Image of results obtained after skin grafting.

**Fonte:** Images from July 31, 2016 taken from the medical record.

The hospital's purchasing department was consulted to obtain cost-related data on materials used for negative-pressure dressing. In July 2016, a total of R\$ 194.80 was reported per procedure performed: transparent film, R\$ 82.00; sterile foam, R\$ 60.00; nasogastric tube, R\$ 0.80; and continuous aspiration kit, R\$ 52.00. On the other hand, the cost of the industrial negative-pressure dressing had been budgeted institutionally for a minimum value of R\$ 1,100.00 for acquisition in the kit format, including vacuum pump, connectors, tubes, adhesive films, reservoirs and filters.

## DISCUSSION

The case of João turns out to be an unparalleled opportunity for the rescue and deepening of the nurse's role in skin care with regard to the negative-pressure wound therapy of a patient with a large lesion and its applicability in praxis. It should be emphasized that the nurse was responsible for the planning, organization, execution and continuous evaluation of the management of João's lesion, aiming at a safe and quality care, joining and expanding the

strategies of systematization of the skin care, evaluation of the injury and indication of the best therapy and recovery<sup>(5)</sup>.

In the same way, the images allow visualizing different stages of the lesion evolution from the period before the installation of the negative-pressure dressing by the nurse until the discharge of João for definitive treatment with skin grafting.

It is emphasized that in the hospital admission of João, the consulting of skin lesions by the interdisciplinary team was requested, aiming at suggestions of conducts and handling of his lesion. In this context, the nurses' performance was determinant and brought a significant theoretical and assistance contribution to those situations that required systematization of care, clarifications or that reported to the prevention of more severe situations<sup>(5)</sup>. Certainly a professional challenge, not only in terms of professional skills to care for the injury or to strengthen the quality of João's care, but also aiming at reducing days of hospitalization, pain involved in injury care and quality of life.

The documentation in medical records stood out as an essential practice for nurses, having clinical and legal importance and constituting an important communication tool among nursing and health professionals. In skin care, it is up to the nurse and staff to make records that reflect patient care in a clear, complete and reliable way, in order to ensure continuity, safety and quality of care<sup>(6,12-13)</sup>.

Considering the records consulted, it was verified that prior to the implantation of the curative therapy by negative pressure, the debridement of the lesion was performed for allowing the regeneration of the underlying healthy tissue. Surgical debridement is indicated prior to the installation of the dressing because it offers different benefits: removing necrotic, devitalized or contaminated tissue; minimizing the number of microorganisms, toxins or other residues that inhibit healing; decreasing the excessive exudation of the lesion<sup>(15)</sup>. In the context of the care performed, the debridement counted on the participation of the nurse, besides the doctor.

This is another aspect of the nurse's role, which is the articulation of João's care with the professionals of the interdisciplinary team, promoting care in a collective work characterized by cooperation, complicity and solidarity among professionals<sup>(16)</sup>.

In Brazil, autolytic, surgical, chemical and mechanical debridements are regulated to be performed by nurses<sup>(6)</sup>. In the case of João, the surgical debridement of the lesion in the stump was performed in a surgical center. The patient's record of all the care actions performed is a competency attributed to the nurse<sup>(6,15)</sup>. The practice of debridement gained important significance in this study because it was

an intervention in a large lesion that required nursing care of greater technical complexity. Therefore, the records on the care of the nurse to João, which is documented descriptively and with photographic records that allow the evolution of the lesion to be visualized, were recorded, which was consented to in a proper form<sup>(6)</sup>.

The articulating role of the nurse was seized from the records and in the speeches of the interviewees from the first dressing installed in a surgical room. In regard to João's effective care and safety, after the debridement of the lesion, the nurse acted not only in the dressing, but also with a member of the team of skin lesions from the outpatient clinic in order to articulate the team's performance for a more qualified care. In the case of extensive lesions, or in stage IV, there is a need to perform the dressing in a surgical center. In lesions whose area of necrosis is not very extensive, it can be performed at the bedside or in the outpatient setting, since local analgesia is generally not necessary, since the necrotic tissue is devoid of painful sensation<sup>(6)</sup>.

In view of the results obtained from the case of João, the use of negative-pressure wound therapy favored improvement of pain, management of the exudate of the lesion, acceleration of the cicatricial wound process, reduction of unpleasant odors and pain complaints. Negative pressure dressing, despite the seemingly simple aspect and function as a protective mantle of the stump, contemplates physiological aspects important to skin integrity: protection, immunity and thermoregulation<sup>(17)</sup>. This therapy is worldwide studied and most clinical trials show the effectiveness of dressing in the care of superficial wounds. However, research on its benefits in wounds with extensive soft tissue losses, when associated with local infections, such as João's injury, are relatively recent<sup>(8)</sup>.

The images allow us to verify that the option for the negative-pressure dressing in João's injury potentiated the retraction of the lesion size, improved the local conditions with healthy granulation, aiming at the definitive treatment of the stump with skin grafting, attributed relevance to the therapy and the performance of the nurse in this treatment. It is certainly a complex care due to the various technical procedures that are essential to its performance and due to the diversity of manifestations, such as drainage of the wound secretions, reduction of local edema and bacterial load of the wound, and formation of granulation tissue by angiogenic stimulation<sup>(7,8)</sup>, which requires professional knowledge and preparation for nurses to systematize care and to offer services<sup>(6)</sup>.

Caring for the skin is a dynamic, complex process and requires specific knowledge of the nurse and her articulation with the team in praxis. It must be taken into

account that wounds evolve rapidly and it is a matter of constantly building knowledge<sup>(18)</sup>, and nurses must keep updated with advances in the area. So, the nurse mediated the care trajectory jointly with the team of skin lesions, which integrates, as well as with the other nursing professionals and the health of the hospital during the hospital stay, aiming at the reestablishment of health.

The nurse's safety in applying the negative pressure dressing appeared with clinical judgment and knowledge of the skin<sup>(6,18)</sup>. She considered João's medical history, assessed the injury, brought objective information about the injury, developed care planning with treatment strategies, implemented appropriate therapy, worked as a team, and concomitantly performed the nursing records on record. In addition, the professionals interviewed recognize the participation of nurses as fundamental in the continuity of care, given the commitment and competence in promoting collaborative efforts to safe and quality care.

Negative pressure dressing is comfortable for the patient, reduces pain in the wound between dressing changes, reduces the discomfort of bad smell, accelerates the production of granulation tissue, and helps to approach the edges of the lesion.

There was no concern in investigating the time distribution of the nurse at each dressing change, but the option for the therapy reduced the time spent by the nursing in the accomplishment of these technical procedures when compared to the traditional dressings. However, nurses' performance was notorious in the development of this therapy, exercised with autonomy and knowledge, without exceeding the limits of their exercise.

After 37 days of hospitalization at the surgical hospitalization unit, but for 25 days with the negative-pressure dressing on his injury, João was discharged from hospital. His lesion had a suitable bed for cutaneous grafting in the stump. João was transferred to a hospital in the region for the surgical procedure and, after grafting, returned to do the dressings with the nurse from the outpatient skin lesions clinic of the hospital where he was initially hospitalized.

João's counterreferred return to the hospital outpatient clinic was due to the fact that he did not have the conditions to perform the post-grafting dressings at home or in the basic health unit because of its complexity and also to avoid contamination of grafting. There, the dressings were performed by the nurse and monitored by the interdisciplinary team of skin lesions every 48 hours. The constant and meticulous care given to João was showing results that ratified, every day, the importance of the negative pressure dressing on the healing of his lesion and the importance of the nurse's performance in this therapy.

It is also emphasized that when all the benefits of the use of the negative pressure therapy applied by the nurse in the injury of João, in comparison with the conventional dressings, the cost-effectiveness relation is manifested with the adoption of the vacuum dressing as it presents a reduction in the healing time of the lesion, greater comfort for the patient and because it rarely presents complications<sup>(19)</sup>.

## CONCLUSION

This unique case study brings important contributions to the knowledge of the nurses' performance in the area of Dermatological Nursing, especially regarding the responsibility to proceed to the best therapeutic choice to the systemic picture that involves the management of an injury. The application of the negative-pressure dressing has proved to be clinically efficient as a therapy in an extensive stump lesion, as it promoted the growth of granulation tissue and the promotion of wound healing due to the high vascularization exerted by the vacuum, benefits demonstrated in this study in a period of 25 days. This is also due to the professional knowledge and preparation of nurses in the skin care, besides having a determinant role in the care and to be an indispensable component of the interdisciplinary team in the installation and monitoring of the negative-pressure wound therapy in patients with skin lesions with great extension. The advantage of the comfort that this therapy brought to João, due to the reduction of the dressing changes with every 72 hours, had repercussions on less time spent by the nursing in the direct care to the patient and in hospitalization time. In this meander, the presence of the nurse was established as strategic in the promotion of skin care in negative-pressure wound therapy, capable of sensitizing, stimulating and articulating the team to work integrated with the patient.

The study presents restrictions regarding the generalization of the results and composition of the study participants. However, this did not make it difficult to deepen the knowledge about the application of the negative-pressure dressing in its singularity, given that the records evaluated in the chart prove the evolutionary path of skin healing, a result also detailed in the interviews. As for the case of João, it is unique and does not allow generalization of results. Despite shedding light on the subject, the participation of nurses in similar studies is still incipient; thus, further research can be carried out with the inclusion of other cases to expand the analysis and discussion.

It is clear the need to insert teaching activities on the negative-pressure wound therapy in the skin care in the technical, undergraduate and postgraduate courses in

nursing, since it is an expanding area and with great possibility of market of work for nurses and staff. Negative-pressure dressing is a treatment of great therapeutic potential that needs to be better known and practiced by the

nurse in the health services, so that more people with injuries can access it, providing greater chances of healing of the lesions of great extension.

## ATUAÇÃO DO ENFERMEIRO NA TERAPÊUTICA POR PRESSÃO NEGATIVA A PACIENTE COM LESÃO DE GRANDE EXTENSÃO

### RESUMO

O objetivo do estudo foi conhecer a atuação do enfermeiro na terapêutica por pressão negativa a paciente com lesão de grande extensão. Trata-se de estudo de caso único desenvolvido em um hospital geral de médio porte, interior do estado do Rio Grande do Sul, Brasil. A coleta de dados deu-se por meio de consulta a registros e imagens documentados em prontuário e entrevista semiestruturada realizada com profissionais da equipe interdisciplinar, diretamente envolvidos com o caso, ocorrido no ano de 2016. Do corpus da análise resultaram três categorias: o caso João; articulação das ações do enfermeiro com a equipe interdisciplinar em prol do cuidado; a terapêutica por pressão negativa. A atuação do enfermeiro configura-se como estratégica na promoção do cuidado da pele na terapêutica por pressão negativa, capaz de sensibilizar, estimular e articular a equipe para a efetivação de um trabalho integrado, seguro e de qualidade à pessoa com lesão.

**Palavras-chave:** Curativos. Enfermagem. Ferimentos e lesões. Terapêutica. Pele. Cicatrização.

## ACTUACIÓN DEL ENFERMERO EN LA TERAPÉUTICA POR PRESIÓN NEGATIVA A PACIENTE CON LESIÓN DE GRAN EXTENSIÓN

### RESUMEN

El objetivo del estudio fue conocer la actuación del enfermero en la terapéutica por presión negativa a paciente con lesión de gran extensión. Se trata de estudio de caso único desarrollado en un hospital general de medio porte, interior del estado de Rio Grande do Sul, Brasil. La recolección de datos ocurrió por medio de consulta a registros e imágenes documentadas en registros médicos y entrevista semiestruturada realizada con profesionales del equipo interdisciplinario, directamente involucrados con el caso, en el año de 2016. Del corpus del análisis resultaron tres categorías: el caso João; combinación de las acciones del enfermero con el equipo interdisciplinario en pro del cuidado; la terapêutica por presión negativa. La actuación del enfermero se configura como estratégica en la promoción del cuidado a la piel en la terapêutica por presión negativa, capaz de sensibilizar, estimular y articular al equipo para el cumplimiento de un trabajo integrado, seguro y de calidad a la persona con lesión.

**Palabras clave:** Vendajes. Enfermería. Heridas y lesiones. Terapêutica. Piel. Cicatrización.

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