CONSTRUCTION AND INTERNAL RELIABILITY OF AN ALGORITHM FOR CHOICE CLEANING AND TOPICAL THERAPY ON WOUNDS

CONSTRUÇÃO E CONFIABILIDADE INTERNA DE UM ALGORITMO PARA ESCOLHA DA LIMPEZA E TERAPIA TÓPICA EM FERIDAS

CONSTRUCCIÓN Y CONFIABILIDAD INTERNA DE UN ALGORITMO PARA ELECCIÓN DE LA LIMPIEZA Y TERAPIA TÓPICA EN HERIDAS

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ABSTRACT

Objective: to describe the construction and validation of an algorithm with indications of procedures for cleaning and topical wound therapy. **Method:** this is an analytical, prospective, descriptive study supported by literature review. For the construction of the algorithm, a research was carried out with Health Sciences databases. Thirty health professionals participated as judges in the validation of the algorithm, responding to a questionnaire via e-mail. **Results:** the judges considered that the algorithm presents information capable of supporting the decision of the professional in the choice of the wound cleaning technique and the therapy. The statistical analysis showed that the issues related to the construction and validation of the algorithm presented excellent reliability, with Cronbach's alpha of 0.962. **Conclusion:** The validated version of the algorithm based on the literature and validated by health professionals showed statistical reliability for the indication of cleanliness and topical wound therapy. **Descriptors:** Algorithms; Nursing Assessment; Wound Healing; Wounds and Injuries; Nursing Care.

RESUMO

Objetivo: descrever a construção e validação de um algoritmo com indicações de procedimentos para a limpeza e terapia tópica de feridas. **Método:** estudo analítico, prospectivo, descritivo com respaldo de revisão da literatura. Para a construção do algoritmo, foi realizada uma pesquisa nas bases de dados das Ciências da Saúde. Trinta profissionais de saúde participaram como juízes na validação do algoritmo, respondendo a um questionário via e-mail. **Resultados:** os juízes consideraram que o algoritmo apresenta informações capazes de apoiar a decisão do profissional na escolha da técnica de limpeza da ferida e na conduta terapêutica. A análise estatística mostrou que as questões relacionadas à construção e validação do algoritmo apresentavam excelente confiabilidade, com alfa de Cronbach de 0,962. **Conclusão:** a versão validada do algoritmo construído com base na literatura e validado por profissionais de saúde mostrou confiabilidade estatística para a indicação da limpeza e da terapia tópica em feridas. **Descritores:** Algoritmos; Avaliação em Enfermagem; Cicatrização; Ferimentos e Lesões; Cuidados de Enfermagem; Protocolo clínico.

RESUMEN

Objetivo: describir la construcción y validación de un algoritmo con indicaciones de procedimientos para la limpieza y terapia tópica de heridas. **Método:** estudio analítico, prospectivo, descriptivo con respaldo de revisión de la literatura. Para la construcción del algoritmo, fue realizada una investigación junto a bases de datos de las Ciencias de la Salud. Treinta profesionales de salud participaron como jueces en la validación del algoritmo, respondiendo a un cuestionario vía e-mail. **Resultados:** los jueces consideraron que el algoritmo presenta informaciones capaces de apoyar la decisión del profesional en la elección de la técnica de limpieza de la herida y en la conducta terapéutica. El análisis estadístico mostró que las preguntas relacionadas a la construcción y validación del algoritmo presentaban excelente confiabilidad, con alfa de Cronbach de 0,962. **Conclusión:** la versión validada del algoritmo construido con base en la literatura y validado por profesionales de salud mostró confiabilidad estadística para la indicación de la limpieza y de la terapia tópica en heridas. **Descriptores:** Algoritmos; Evaluación en Enfermería; Cicatrización de Heridas; Heridas y Lesiones; Atención de Enfermería.

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INTRODUCTION

The skin is the largest organ of the body, indispensable for human life and fundamental for the perfect physiological functioning of the organism. Like any other organ, it is subject to suffer aggressions originating from intrinsic and extrinsic pathological factors that will cause the development of alterations in its constitution, such as dermatological, wound and other diseases, which can lead to the person's functional incapacity and quality alteration of life.¹

The wound is any interruption in the continuity of a corporeal tissue, to a greater or lesser extent, caused mainly by trauma or triggered by a clinical condition. It can be classified as acute and easy to heal or chronic when it exceeds six weeks to heal. Wounds affect people in general, regardless of gender, age, ethnicity or socioeconomic status, resulting in a high rate of people with changes in skin integrity. This aggravation is considered a public health problem due to the psychological, emotional, social and economic impact on the patient, and with high and increasing costs to the health system.²⁻⁵

The process of treating wound patients begins with the evaluation and documentation of wounds, always remembering that each patient and each wound is unique, and this step must occur before the planning and implementation of the therapeutic interventions.^{4,6} When performing a treatment plan, the professional must be able to assess the wound and indicate effective coverage that promotes an optimal environment to stimulate the wound healing process. The therapeutic planning depends on the complete anamnesis of the individual, as well as regular evaluations of systemic factors and the location of the wound.⁶⁻⁷

The professional must evaluate the wound for the healing process to occur in an adequate and orderly manner, identifying all the inflammatory agents, which must be removed from the wound bed by cleaning the wound. After this procedure, the professional should choose the ideal cover to keep the wet environment in the wound.⁸

Healing is optimized and the decrease in potential for infection occurs when all necrotic tissues, exudates and metabolic remnants of the lesion are removed. The cleaning process involves the careful choice of both the solution and the method to perform it, considering the benefits to the patient regarding the minimization of trauma from the wound.⁹⁻¹⁰

The healing process requires the topical treatment of the lesion and demands the use of coverage, besides to cleaning. By occluding an injury, a physical barrier is formed between the injured bed and the external environment, ensuring some of the ideal factors for rapid healing, such as humidity and temperature. The choice of coverage for wound treatment should consider the ability of the wound to prevent infection.⁹⁻¹⁰

Healing through the wet medium has the following advantages when compared to the dry medium: to prevent dehydration of the tissue leading to the death of the granulation tissue; facilitate the removal of necrotic tissue and fibrin; serving as a protective barrier against microorganisms; promote pain reduction; avoid excessive fluid loss; and prevent traumas in the exchange of dressing.^{6,11}

Topical therapies are one of the ways of treating wounds and their choice depends on intrinsic and extrinsic factors. The treatment of cutaneous lesions is dynamic and depends on the evolution of the phases of the healing process. Currently, numerous dressing options are available in the market. The financial resources of the patient and/or the health unit, the need to continue the use of the coverage, including home visits, and the evaluation of benefits and costs are some of the aspects to be considered when choosing the type of dressing, which must be appropriate to the nature, location and size of the wound. Although there is a wide variety of dressing, a single type of dressing does not meet the requirements to be applied to all types of skin wounds.¹²

The nurse, as a multidisciplinary member of the health team and leader of the team, is responsible for managing the care provided to the patients in the care and the team. This professional plays a key role in wound assessment and choice of coverage. From the careful decision making, the best coverage options will be chosen, considering the effectiveness of the treatment and the best cost-benefit ratio. This management and the decisions adopted must be based on clinical practice guided by evidence, protocols, algorithms, and others. Evidence-based clinical practice contributes to decision-making through scientific evidence that enables treatment and management recommendations.¹²

In health, algorithms are instruments that give a complete view of the care process and function as maps, serving as a guide for decision making, especially when they are complex.¹³

In this study, it opted for the development of an algorithm because it is a simple, direct and easily accessible instrument, besides being a primordial instrument for the management of the quality of nursing care, standing out as an important means in the organization of processes. Algorithms are graphical maps, used to better visualize the components and processes of a problem. Clinical algorithms indicate the correct steps in the evolution of a specific subject in patient care and have been developed to take care, guide clinical decisions, and treat acute and chronic wounds. They are the result of validated studies and research-based recommendations for clinical practice.¹²⁻⁴

The relevance of this study is based on the fact that the correct indication of the coverage of injuries is of great importance for the patient, the professional and the institution. For the patient, when the professional uses the algorithm as a guide to evaluate, perform the wound cleaning and indicate the coverage, it will promote the healing of the injury, reducing the hospitalization time, and reduce the risk of infection. Regarding the professional, he will be providing quality, systematized, individualized care and with continuity of treatment. For the institution, the professional will be offering quality care and reducing the cost of treatment, both in the hospital stay and outpatient care.

OBJECTIVE

- To develop and validate an algorithm for indication of cleaning and dressing of acute and chronic wounds.

METHOD

This is an analytical, prospective, descriptive study supported by a review of the literature, carried out at the Samuel Libânio Clinical Hospital of the University of Vale do Sapucaí, at the Basic Health Unit of Nossa Senhora de Fátima in the city of Borda da Mata, at the Emergency care Monsignor Pedro Cintra de Borda da Mata, in the Center for Nursing Care and Teaching (NAEENF), and also had the participation of post-graduate nurses in stomatherapy and dermatology, registered at the Brazilian Society of Stomatherapy (SOBEST) and the Brazilian Association of Nursing in Dermatology (SOBENDE), after the authorization of those responsible for these services and approval by the Research Ethics Committee of the Faculty of Health Sciences, “Dr. José Antônio Garcia Coutinho”, under opinion number 1,239,391.

The study sample consisted of 30 nurses (judges) with experience in evaluating and treating patients with wounds. The inclusion criteria were to be 23 years old or older, to be a certificate holder of an undergraduate nursing course and to have at least 12 months of experience in caring for wound patients. The criterion of non-inclusion was professionals with experience in wound treatment of fewer than 12 months.

For the construction of the algorithm, a research was carried out in the databases of Health Sciences, including the Cochrane Library, Scientific Electronic Library Online (SciELO), Latin American and Caribbean Literature in Health Sciences (LILACS), Medical Literature Analysis and Retrieval System Online / US National Library of Medicine (MEDLINE), International Nursing Index (INI) and Cumulative Index to Nursing and Allied Health Literature (CINAHL), as well as the search for books and theses of the area published in the last ten years, using descriptors such as algorithms; evaluation; wound healing; dressing, wound dressing, debridement, and nursing care.

After extensive research in indexed national and international journals and reading the abstracts, articles describing the cleansing technique, the type of debridement, the sclerotomy, the types of techniques used in the debridement of the wound, and the coverage used to treat wounds were selected. This survey helped to obtain data for the construction of the algorithm. The instrument should provide information capable of supporting professionals in the most appropriate choice of the type of cleansing, debridement, and coverage for each type of tissue. The algorithm was developed in four steps.

The first step involved hand hygiene, which, according to ANVISA,¹⁵ it involves the removal of dirt from the hands, removal of the microbiota surface and reduction of the permanent microbiota of the skin, by friction with water and soap/antiseptic antiseptic, or with glycerinated alcohol solution (alcohol gel), for a minimum time required and specific technique.

The second step included the orientation of the professional regarding the types and techniques of cleaning for each type of tissue present in the wound and products used in cleaning. The purpose of wound cleaning is to prevent the development of infection and the removal of bacteria, debris, and devitalized tissue.

The third step sought to standardize procedures and guide the health professional in a systematized manner through well-defined instructions on the technique of debridement and types of product used in the debridement for each type of tissue. The debridement aims to reduce the bacterial load of the wound to prevent infections and facilitate the visualization and evaluation of the lesion.

The fourth step brought together proposals for wound treatment. In this step, the algorithm presents the best therapeutic behavior, according to the type of tissue and exudate present in the lesion to promote the wet environment, debridement of devitalized tissues and stimulate wound healing and epithelialization. The therapies proposed to use the types of coverage standardized by the institution.

The algorithm was validated by 30 nurses (judges) with experience in the area. The judges evaluated the content, graphical presentation, readability, instructional sequence, vocabulary, types of cleansing techniques for granulation and devitalized tissues, with or without exudate, types of debridement, therapeutic conduits for tissue cleansing of granulation and devitalized, types of coverage and indication of the coverage.

The alternatives of response were great, good, fair and poor, providing space for comments and/or suggestions. A minimum percentage of 70% of positive responses was established so the algorithm was considered applicable in nursing practice. The algorithm and the evaluation questionnaire were sent to the judges by e-mail. All the professionals who agreed to participate in the study signed the informed consent form.

The data obtained were tabulated electronically through the Microsoft Excel program (Microsoft Office Excel, Redwood, WA, USA). Statistical analysis was performed with the Statistical Package for Social Sciences (SPSS) for Windows (SPSS Inc., Chicago, IL, USA). For all statistical tests, the significance level of 5% ($p < 0.05$) and Cronbach's alpha coefficient ($\alpha > 0.7$) were considered.

RESULTS

The algorithm for choice of cleaning and topical therapy was constructed based on the review of the national and international literature and validated by nurses with experience in the area.

A total of 30 nurses participated in the validation of the algorithm. Most of the participants were female ($n = 19$, 63%), between 31 and 50 years old ($n = 21$, 70%), 3 (10%) were between 20 and 30 years, 10 (33%) between 31 and 40 years, 11 (37%) between 41 and 50 years, and 6 (20%) between 51 and 60 years, and had 11 to 30 years of training ($n = 22$, 73%). 3 (10%) with 1 to 5 years, 7 (23%) with 6 to 10 years, 9 (30%) with 11 to 20 years, 6 (20%) with 21 to 30 years, and 5 with 31 to 40 years of training.

Figure 1 shows how the articles were selected. The search in the databases and virtual libraries resulted in the selection of 19 articles, 2 books, 3 master's dissertations and 1 practical guide, which served as the basis for the construction of the algorithm.

The items related to the algorithm for the choice of cleaning and topical wound therapy and the evaluations of the judges per item are presented in Table 1. The items that received the maximum points in the “optimal” concept (n = 20, 66.6%) were “readability” and a description of “therapeutic treatment in the wound with presence of granulation tissue without exudate”, followed by (n = 19; 63.3%) “graphical presentation”, “instructional sequence” of the algorithm, and descriptions

of “therapeutic treatment in the wound with presence of sphincter tissue”, and “therapeutic treatment in the wound with presence of necrotic tissue”. All items were predominantly “great” and “good” (range, 96.7% to 83.3% of the evaluations). The item that received the lowest score (n = 25; 83.3% of the “great” and “good” concepts combined) was the indication of “instrumental debridement”, which was judged “regular” by 3 judges and “bad” by 2 judges (Table 1).

Table 1. Items of the algorithm for cleaning and topical wound therapy and evaluation of the judges. Pouso Alegre (MG), Brazil, 2017.

Items	Evaluations		Great		Good		Regular		Bad	
	n	%	n	%	n	%	n	%	n	%
Graphic presentation	19	63.3	10	33.3	1	3.3	0	0	0	0
Ease of reading	20	66.7	9	30.0	0	0	1	3.3	1	3.3
Instructional sequence	19	63.3	10	33.3	1	3.3	0	0	0	0
Vocabulary used	16	53.3	12	40.0	1	3.3	1	3.3	1	3.3
Content update	14	46.7	13	43.3	0	0	3	10.0	3	10.0
Cleaning techniques for devitalized tissue without exudate	16	53.3	11	36.7	3	10.0	0	0	0	0
Cleaning Techniques for Viable Granulation Fabric	18	60.0	11	36.7	0	0	1	3.3	1	3.3
Cleaning techniques for granulation tissue with exudate	17	56.7	12	40.0	0	0	1	3.3	1	3.3
Cleaning techniques for non-viable granulation fabric	14	46.7	15	50.0	0	0	1	3.4	1	3.4
Smear cleaning for devitalized tissue	13	43.3	16	53.3	0	0	1	3.3	1	3.3
Instrumental debridement	14	46.7	11	36.7	2	6.7	3	10.0	3	10.0
Instrumental debridement and scarotomy	18	60.0	9	30.0	2	6.7	1	3.3	1	3.3
"Jet" cleaning for granulation fabric	16	53.3	12	40.0	0	0	1	3.3	1	3.3
Therapeutic behavior in sore wounds	19	63.3	10	33.3	0	0	1	3.3	1	3.3
Therapeutic conduct in wounds with necrotic tissue	19	63.3	9	30.0	0	0	1	3.3	1	3.3
Therapeutic conduct in wounds with granulation tissue without exudate	20	66.7	9	30.0	0	0	1	3.3	1	3.3
Therapeutic wound behavior with granulation tissue with exudate	13	43.3	16	53.3	0	0	1	3.3	1	3.3

The judges considered that the algorithm presents information capable of supporting the decision of the professional in the choice of the cleaning technique according to the

type of tissue present in the wound, as well as the therapeutic conduct to promote wound healing, with statistical significance in all questions (Table 2).

Table 2. Judges' opinion on the ability of the algorithm to support the choice of cleaning technique and coverage.

The algorithm contains enough information to support decisions regarding:	n	%	Valor p
Cleaning wounds with devitalized tissue			
Yes	29	96.7	0.001*
No	1	3.3	
Total	30	100	
To clean wounds with granulation tissue.			
Yes	30	100	0.001*
No	0	0	
Total	30	100	
By choosing the type of cover for sore wounds			
Yes	30	100	0.001*
No	0	0	
Total	30	100	
The choice of the type of cover for wounds with necrotic tissue			
Yes	29	96.7	0.001*
No	1	3.34	
Total	30	100	
The choice of the type of wound cover with granulation tissue without exudate			
Yes	29	96.7	0.001*
No	1	3.34	
Total	30	100	
The choice of the type of wound cover with granulation tissue with exudate			
Yes	30	100	0.001*
No	0	0	
Total	30	100	

Chi-square test of Pearson's independence. * Significance level $p < 0.05$

The items related to the construction and validation of the algorithm presented excellent internal consistency and statistical

reliability, with Cronbach's alpha total of 0.962 (Table 3).

Table 3. Internal consistency of the items of the algorithm for choice of cleaning and topical wound therapy.

Items	Average if the item is deleted	Variance if the item is deleted	Correlation item- algorithm if the item is deleted	Cronbach alpha if the item is deleted
Cronbach's total alpha = 0,962				
Graphic presentation	81.44	0.704	0.910	0.960*
Ease of reading	81.37	0.795	1.00	0.960*
Instructional sequence	81.44	0.821	1.00	0.959*
Vocabulary used	81.58	0.686	1.00	0.962*
Content update	81.72	0.745	0.855	0.961*
Cleaning techniques for devitalized tissue without exudate	81.62	0.722	1.00	0.961*
Cleaning Techniques for Viable Granulation Fabric	81.44	0.739	1.00	0.960*
Cleaning techniques for granulation tissue with exudate	81.48	0.750	1.00	0.960*
Cleaning techniques for non-viable granulation fabric	81.58	0.650	0.981	0.961*
"Smear" cleaning for devitalized tissue	81.48	0.818	1.00	0.960*
Instrumental debridement	81.58	0.70	1.00	0.964*
Instrumental debridement and scarotomy	81.51	0.698	1.00	0.961*
"Gush" cleaning for granulation fabric	81.55	0.629	1.00	0.962*
Therapeutic behavior in sore wounds	81.41	0.787	1.00	0.960*
Therapeutic conduct in wounds with necrotic tissue	81.48	0.647	0.977	0.961*
Therapeutic conduct in wounds with granulation tissue without exudate	81.37	0.803	1.00	0.960*
Therapeutic wound behavior with granulation tissue with exudate	81.62	0.649	1.00	0.962*

* Cronbach's alpha coefficient, significance level> 0.7.

The algorithm resulting from the study is shown in Figure 2 and the products indicated

for wound coverage with the respective exchange times are listed in Table 4.

Figure 2. Algorithm for the choice of cleaning and topical wound therapy. Pouso Alegre (MG), Brazil, 2017.

Table 4. Products indicated for the dressing of wounds and times of exchange. Pouso Alegre (MG), Brazil, 2017.	
Product*	Dressing change time
Essential Fatty Acid (AGE)	Every 24 hours.
Calcium Alginate	24 hours - infected wounds; 48 hours - clean wounds with bleeding; when saturate - clean wounds or severe exudation
Activated carbon with silver	In up to 7 days - depending on the amount of exudation or saturation of the dressing, change before.
Hydrocolloid	From 1 to 7 days, depending on the amount of exudation
Hydrofibra with or without silver	You can stay up to 14 days or switch when clinically indicated
Hydrogel with or without alginate	From 1 to 3 days, depending on the amount of exudation
Hydropolymers with or without silver	At most every 7 days or change the dressing whenever fluid is present on the edges of the foam cushion.
Papain 2%, 4%, 6%, 10%	At most every 24 hours
Silver Sulfadiazine - When Burns	At most every 12 hours or when the secondary coverage is saturated

* The types of products used should be those standardized by the institution. The algorithm can be adapted for use by a specific institution.

DISCUSSION

Most of the participants were female, between 31 and 50 years old and with a training period ranging from 6 to 30 years, consistent with other studies in the literature.^{10,12-13,16-20}

The nurse is the best qualified professional to lead programs for the prevention and treatment of patients with injuries because they spend part of their time with the patient, evaluating the skin changes that influence the risk of development and evolution of wounds, besides managing the care.²¹⁻²² The practice of caring for people with wounds is a specialty within nursing, recognized by SOBENDE and SOBEST. It is a challenge that requires specific knowledge, skills and holistic approach, as well as the search for up-to-date information and new care strategies.²³

Wound treatment needs advanced intervention, centered on a holistic approach, and evidence-based. Technological innovations favor the improvement of patient care. This acquisition of knowledge begins during the formal qualification in the undergraduate courses and continues in the post-graduation, constituting a primordial factor for the feasibility of the care, both in the prevention as in the treatment of wounds.²⁴⁻⁵

Acute and chronic wounds present a great challenge for the multidisciplinary health team, as it is up to these professionals to review their concepts and procedures related to evaluation, injury prevention, choice of coverage and the technique used for cleaning, and many employed since antiquity and which must be updated regularly. This update should be based on guidelines, protocols, standards, and algorithms.²⁶⁻²⁷

The algorithm, which has been validated by nurses, offers the professional descriptions, steps, and information to choose the correct wound cleaning technique, according to the type of tissue and exudate, and propose the ideal topical therapy for wound healing. When using this algorithm, the professional will be providing a quality and safe assistance, without damages to the health of the patient.

The items were evaluated by the judges, all of whom received predominantly the concepts "great" and "good" and presented excellent internal consistency and statistical reliability, with Cronbach's alpha total of 0.962.

In health, algorithms are simple, direct and easy-to-access tools, as well as primordial

tools for quality management, standing out as an important means of organizing processes. These instruments give a complete view of the care process, support professionals in providing quality care and decision making, especially when these are complex, and provide patient safety. It is important that the instrument be validated by professionals in the area of knowledge of the subject.^{14,21,28}

Caregivers should seek new knowledge regarding the healing phase, the factors that interfere with wound healing, and the innovative technologies used in prevention and treatment, always with the objective of improving the quality of life of these individuals through choice of coverage that promotes healing quickly, reducing risks and damages, complications and suffering, and improving the cost-benefit of treatment.²⁹⁻³¹

The algorithm for choice of cleaning and topical wound therapy initially proposes wound analysis to define the cleaning technique and the type of debridement or product most indicated, according to the type of tissue and exudate present in the lesion. The jet cleaning technique was suggested for lesions with presence of granulation tissue, using a 20 ml syringe and 40x12 needle filled with 0.9% saline solution, heated to 37°C. For wounds with infeasible granulation and devitalized tissue with or without exudate, it was suggested to clean with 0.9% saline solution, heated to 37°C and with the smear technique and chlorhexidine antiseptic solution.

Algorithms are an excellent strategy for the standardization of activities because they are organized in a way that synthesizes large operations or processes into a finite set of well-defined instructions that can be performed systematically. Its presentation is very simple, direct and easy to access, allowing a complete view of the entire care process, factors that make them important tools for managing the quality of services. Because they are excellent means of organizing work, they serve as a guide for making decisions, especially the more complex ones.¹²⁻³

Cleaning contributes to visual inspection of the wound bed, allowing evaluation of the types of tissue and exudate present in the lesion. Cleaning is part of topical treatment and aims to prevent the development of infection. Bacteria are not able to invade a healthy tissue unless they can adhere to it, which favors infection. The cleaning technique should remove the bacteria from the wound bed without requiring the use of antiseptic. Saline or tap water applied with

proper pressure over the wound bed or cleaning may be sufficient to remove debris and loose devitalized tissue in the bed of the lesion. In Brazil, a 20 ml syringe coupled to a 40x12 (12 gauge 12 g) needle is used which generates an irrigation pressure of 9 psi, sufficient to remove materials adhered to the wound bed.³²

The treatment of chronic wounds is specific due to several correlated factors and local complications, such as ischemia, the presence of necrotic tissue, exudate and high bacterial loads, which hinder the healing process and prolong the inflammatory phase. Thus, it is important that the professional is aware of the wound healing stages, the factors that interfere with the healing process, types of debridement, techniques, and products available in the market for wound cleaning and innovative technologies for the treatment of the injury. With this knowledge, the professional will be able to monitor the general conditions of the patient and the wound in a systematized way, since cleaning and debridement are essential for the professional to be able to indicate the ideal product that keeps the wet environment in the wound and that will promote its healing.³³⁻⁴

Debridement treats the removal of non-viable tissue present in the wound and is part of the autolytic and physiological process of wound healing under normal and adequate conditions. Neutrophils and macrophages act in the inflammatory phase, digesting and removing cellular debris. The natural process of debridement may become insufficient in the face of the accumulation of devitalized tissue. The increase in phagocytic cells slows down the healing process. Therefore, debridement is an essential component of topical therapy to be successful, reducing bacterial load in order to prevent infections, and interrupting the chronic wound cycle at the molecular level.³⁴

The debridement and therapeutic agents chose during the preparation of the algorithm were: papain in the concentrations of 4%, 6% and 10%, hydrogel, calcium alginate with silver or without silver, activated carbon with silver, polyurethane foam with or without silver, hydrofibra with silver, and essential fatty acid.

Papain comes from papaya fruit latex (*Carica papaya*) and it is a complex mixture of proteolytic enzymes and peroxidases that promote the proteolysis of devitalized tissue.³⁵⁻³⁶ Besides to being used as a debrindant, papain has an anti-inflammatory action, acting on the contraction and junction

of the wound edges, able to be used in several healing stages and in different concentrations, depending on the type of wound tissue. Currently, a concentration of 2% of papain is used for granulation tissue; 4 to 6% in the presence of liquefaction necrosis, and 8 to 10% in coagulation necrosis.³⁶⁻⁷

The hydrogel consists of a gel with a consistent texture, formed by a network of interconnected hydrophilic polymers, and composed of 20% to 96% water. It maintains the moisture of the lesion, avoiding dehydration of nerve endings and reducing pain, and promotes tissue autolysis.³⁴

Studies have shown that in addition to essential fatty acids, soy lecithin and vitamins A and E also contribute to the tissue repair process. Vitamins A and E have antioxidant properties and protect the cell membrane from attack by free radicals. Soy lecithin, besides being a protective agent, providing the maintenance of the hydration of the tissues and helping in the healing process of the skin.³⁷⁻⁹

The choice of coverage is related to the ability of the product to maintain the wound in a physiological environment conducive to the healing process. According to the guidelines of the *Wound, Ostomy and Continence Nurses Society* (WOCN),⁴⁰ the bed of the wound should be kept moist and the moisture of the edge should be controlled to avoid maceration of the tissue. This condition favors the migration of the cells to the lesion bed, contributing to the formation of repair and re-epithelization tissue.⁴⁰ Indicating the ideal coverage that promotes wound healing is a very difficult task, since it involves several subjective factors, such as the professional's knowledge, which is usually variable and sometimes has conflicting aspects. The use of instruments facilitates the work of health professionals, standardizes the wound evaluation procedure, and assists in the choice of treatment.^{2,4,6,30,33-4,41}

When prescribing a coverage, professionals need to make decisions based on knowledge of the skin anatomy, principles of tissue repair physiology, and factors that interfere with it. These professionals should be aware of the types of wounds and the various forms of treatment existing, and be able to observe the tissue loss, the clinical aspect of the lesion, its location, and size, the presence of exudate, the skin surrounding the wound, signs of infection.^{3-4,6,30}

Therefore, it is necessary to establish conducts aimed at reducing complications caused by a poor indication of the coverage, through the elaboration and implementation

of clinical guidelines, protocols, and algorithms associated with knowledge, technology, and innovation of clinical practice based on scientific evidence.

This study has as future perspective the construction of an application and the validation of the same, for the purposes of topical treatment in acute and easy healing or chronic wounds. The use of algorithms for the effectiveness of topical therapies is valid as it provides the practitioner with options for the application of various resources in the management of patient care.

CONCLUSION

The algorithm constructed after reviewing the literature and in the validated version showed statistical reliability for indication of cleaning and topical treatment of wounds.

Evidence-based good clinical practice helps both the patient and staff and the institution to benefit and achieve their treatment and healing goals. The steps described in this work were efficient and the items addressed in the algorithm obtained excellent concepts in the evaluation and validation by professional nurses with experience in treating patients with wounds, showing that the applicability of the algorithm was not only validated but also effective.

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