Knowledge development and research utilization in evidence-based wound care
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Chapter 11

General discussion
GENERAL DISCUSSION

The care for patients with wounds excels in variation. It is often argued that this is due to the large variation in wound types, but this does not mince the matter. A huge variation appears to exist in available dressing products, opinions among doctors and nurses, and levels of wound education. More specifically, many treatment options are known for donor site wounds after split-skin grafting. Therefore, in this thesis we investigated (1) the extent of treatment variation; (2) the niches in available evidence; and (3) strategies to decrease this variation in the care for donor site wounds. In this chapter our findings are discussed and recommendations for the future are suggested.

Extent of treatment variation

Standard wounds, such as donor site wounds, are likely to be treated in a rather standard fashion. However, in the Netherlands we encountered a large variation in the dressing materials currently in use to cover donor site wounds (Chapter 2). This variation is unwanted and needs to be explored and addressed. The large variability suggests a potential for research and quality improvement. It emphasizes the need to generate new scientific knowledge and identify new sources to improve the quality of wound care, especially for the donor site wound. Besides, treatment variation was not solely found regarding donor site wounds as we also detected this variation for other indications, e.g. open partial-thickness burns and infected open wounds (Chapter 9).

Best available evidence

A possible explanation for the treatment variation found is the lack of evidence and guidelines. We investigated the available evidence on the effectiveness of six commercially available dressings to treat patients with donor site wounds after split-skin grafting. After scrutinizing the available RCTs, hydrocolloid and films appeared to be promising dressing materials for the treatment of patients with donor site wounds. However, the trials found had several methodological flaws (Chapter 4).

Therefore, we decided to generate more solid evidence and conducted a well-designed RCT to investigate which dressing would be best to support a quick and uneventful healing of donor site wounds (Chapter 5-7). This trial focused on six dressing materials, including five commonly used dressings (i.e., alginates, films, gauzes, hydrofibers and silicones, as discussed in Chapter 2, as well as hydrocolloids (Chapter 4). The results of this RCT showed that hydrocolloid dressings lead to a 7-day, i.e. a 30%, shorter healing time than the other materials, whereas the use of gauze dressings was found to increase the risk of infection. The effectiveness of hydrocolloids has been corroborated by previous, mostly non-clinical studies showing that hydrocolloids improve re-epithelialization, increase collagen synthesis and...
ultimately lead to better healing rates\(^1\text{-}^5\). Notably, hydrocolloids were less popular in daily practice (Chapter 2); possibly due to the more frequent dressing changes required because of its low fluid absorption capacity and subsequent wound leakage\(^1\). Another reason for the seemingly reluctant attitude towards hydrocolloids by caregivers may be the fact that new, promising wound care techniques such as negative pressure wound therapy, receive more attention in promotion campaigns. Hydrocolloids were introduced over 40 years ago and may nowadays be considered as a less appealing dressing material\(^6\). This also suggests that manufacturers have other interests besides the available evidence when defining the indications for their products.

The results of this trial, with regard to wound healing as well as other patient-relevant outcomes (e.g. infection rates, pain, and scarring) should facilitate an evidence-based treatment choice not only for, but also with, future patients. Patient preferences should be particularly taken into account, keeping in mind that the patients and their caregivers weigh the various characteristics of a scar differently (Chapter 8). For patients, itching and relief appeared to be the most important characteristics, whereas skin pliability and pigmentation had the largest impact on their judgment for caregivers.

**Strategies to decrease variation**

**Guidelines**

A first step to decrease variation should involve the results of our study about the effectiveness of dressings for donor site wounds being incorporated into a national guideline on ‘acute wounds’\(^7\). Currently, an interdisciplinary working group is developing a national guideline that endorses a standardized and evidence-based approach to wound care for acute wounds. Grants of the Association of Surgeons of the Netherlands and the Netherlands Organization for Health Research and Development made this possible. The best available evidence will be translated into specific recommendations for clinical practice. This initiative acts upon our finding that the availability of systematic reviews on local care for acute wounds did not result in more awareness and use of the evidence by caregivers and stakeholders in the Netherlands (Chapter 9).

**Validated tools to classify donor site wounds**

Wound classification tools are designed to assist clinical judgment and to get insight into the progression of wound healing in a uniform way. The widely used Red-Yellow-Black (RYB) scheme is validated for chronic and acute wounds\(^8\text{-}^{11}\) and, therefore, suggested to be useful in classifying donor site wounds. However, we demonstrated that this scheme does not lead to more uniformity in the assessment of these wounds, perhaps because the variation in the appearance of donor site wounds is too small to
make a proper distinction based on the RYB-scheme (Chapter 3). In the absence of a suitable classification scheme, best practice to reduce any variation in care would be direct inter-professional communication based on in vivo judgments.

**Uniform set of competencies for specialized wound care nurses**

The last initiative we undertook in this thesis to decrease variation in care was to create a uniform set of core competencies for specialized wound care nurses (Chapter 10). This was because uniform education for those working as wound care nurses is lacking, while a wide range of nursing titles (e.g., “advanced wound care nurses”, “tissue viability nurses”, “wound consultants”, or “wound experts”) are being used within and among various countries. Our results showed that the more general competencies, i.e. related to professional knowledge and expertise, ethical integrity, and patient commitment, were considered to be essential. More specific competencies, like teaching ability and research utilization, may discern specialized wound care nurses. Conversely, research activities (e.g. performing and publishing research) were considered less relevant. This contrasts with the recently developed job profile for registered nurses in the Netherlands, which states that nurses should assist in research activities, and even more in contrast with the profile of nurse specialists. They are expected to perform and publish scientific research as well.

Overall, the compiled set of core competencies is helpful to map the educational outcomes that are expected from specialized wound care nurses. Moreover, it may standardize the definition and position of such specialized nurses in clinical practice, which is pivotal in the recognition of wound care as a large, multidisciplinary area within healthcare.

**Considerations**

In this thesis, we addressed possible solutions to reduce the variation in care of donor site wounds. The implementation process is beyond the scope of this thesis, but we hope that the dissemination of our results will invoke quality improvement actions by specialized wound care nurses, educators and managers. It is unethical to administer ineffective treatments or to withhold from patients the best available evidence-based treatments (e.g. the use of gauze rather than hydrocolloid to treat donor site wounds). Furthermore, to keep patient care up-to-date, unremitting research in the wound care field is necessary to report the advantages and disadvantages of emerging technologies.

**Methodological strengths and limitations**

The methodological strengths and limitations of each of the individual studies included in this thesis have been discussed in previous chapters. In general, this thesis has
two main strengths. First, we were able to demonstrate that it is possible to conduct rigorous scientific research that offers strong evidence for the effectiveness of wound care interventions. This was in spite of the common reluctance to perform large trials because of heterogeneity in wound etiologies, treatment regimens, and relevant outcomes\textsuperscript{14,15}. Second, we were able to show that there is sufficient evidence that helps reduce treatment variation in patients with donor site wounds. In addition, we not focused only on treatment options, but also on other important aspects of wound care (e.g. communication tools, agreement among patients and caregivers, classification tools, and professional competence).

On the other hand, some limitations should be taken into account when interpreting our results. First, we carried out two national surveys, two inter-observer studies, and an international Delphi study in which we used convenience and purposive samples. We strived to include representative samples of the professionals involved in wound care, who all contributed voluntarily to these studies. It is possible that these participants were more positive towards wound care research and research utilization. Furthermore, in the “Rembrandt trial” we included the required number of patients, based on a \textit{a priori} sample size calculation given a presumed clinically relevant difference. Consequently, this trial offers evidence for the effectiveness of a specific dressing type within a group of six materials. Other occlusive or semi-occlusive dressings, such as foam dressings, might have similar healing effects, but these dressings were not included in this trial based on existing evidence (\textit{Chapter 4}) and a national inventory (\textit{Chapter 2}) showing a lower eligibility. Unfortunately, no accurate data were available on costs, which play a substantial part in the economic considerations when deciding on wound treatment. Furthermore, patient preferences were not assessed, but should be considered if one wants to make evidence-based decisions. A more qualitative approach is useful to get insight into patient preferences. Finally, in the “Rembrandt trial, a wide range of both university and nonacademic hospitals across the Netherlands participated, which improves the generalizability and implementation of our results\textsuperscript{16}.

Further perspectives
Given the expected future developments (e.g. an ageing population, care reimbursement issues, and intense marketing by dressing manufactures) costs of wound care can only increase. Therefore, innovative ways should be thought out to make wound care more affordable while improving the quality of care. To realize this, further progress should be made to reduce variation and to close the gap between research and practice. Given the limited availability of high-quality evidence, more research on the effectiveness of wound treatments is obviously needed. Besides, additional studies are needed to investigate the influence of patients’ lifestyle on
wound healing, the influence of wounds on quality of life, patients’ preferences regarding wound dressings characteristics, and return-to-work issues.

Moreover, we should not solely focus on research, but also on the implementation of already available evidence in clinical practice (e.g. in hospitals and outpatient clinics). Therefore, caregivers and policy makers should become more familiar with the most effective way to support evidence-based care at an organizational level\(^\text{17}\), and to combine an evidence-based approach with quality improvement (QI) projects\(^\text{18-20}\). These two different approaches have similar overall goals, but focus on different parts of the problem\(^\text{20}\). Whereas evidence-based practice focuses more on ‘doing the right things’ based on the best available evidence, QI focuses more on ‘doing the things right’; i.e. making it possible to perform the proposed action in an efficient way\(^\text{20}\). Furthermore, factors that trigger health care professionals to make a mind-change towards evidence-based practice, and to stimulate them to implement scientific evidence in daily practice, should be investigated. Although the ability to assist in scientific research is not a core competence of wound care nurses, we experienced that many of them are enthusiastic to be involved. This may be facilitated by a rather new and promising development in wound care, namely (nurse-led) wound expertise centers (WECs). WECs may play an important role to focus on, and improve, quality of wound care. The ongoing national interdisciplinary initiative to develop a new guideline for treating wounds with an acute etiology can support this\(^\text{7}\).

In conclusion, we see many opportunities and challenges for evidence-based wound care. Quite a feat, but well worth the challenge!
REFERENCES


