

## ***The Wound Care Pathway – an evidence-based and step-by-step approach towards wound healing***

Chronic wounds are challenging for patients to live with, complex for healthcare professionals to manage and expensive for society to treat. A group of wound care experts developed a practical and evidence-based clinical pathway for managing chronic wounds. Utilising a modified Delphi process, this consensus-based project involved nearly 2,500 frontline healthcare professionals across six continents. The project's foundational premise was that the goal of wound care, regardless of diagnosis or cause, must always be to heal the wound\*. *The Wound Care Pathway* was formally ratified by 96 wound care specialists and non-specialists and provides practical, evidence-based guidance on how to assess, treat and monitor wound care patients, and create an optimal healing environment that leads to fewer days with wounds.

\*The exception to this rule is in the case of palliative patients and in non-healing wounds, such as wounds with insufficient vasculature.

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Chronic wounds have devastating consequences for patients, challenge healthcare professionals (HCPs) and are a major public health issue, contributing significant costs to both health care systems and society (Posnett and Franks, 2008; Frykberg and Banks, 2015; Guest et al, 2015, 2020; Järbrink et al, 2017; Malone et al, 2017; Olsson et al, 2019; Martinengo et al, 2019; Sen et al, 2019). There were an estimated 3.8 million patients with a wound being managed by the UK's National Health Service in 2017/18 at a cost of £8.3 billion (Guest et al, 2020). In the US, it is estimated that chronic wounds affected 6.5 million patients at an annual cost of over US\$28 billion (Sen et al, 2019). While the burden of chronic wounds is well documented, many frontline HCPs still find assessing and treating chronic wounds a challenge (Patel et al, 2008; Sen et al, 2009; Frykberg and Banks, 2015; Keast et al, 2020).

A group of wound care experts, comprised of physicians, nurses and researchers, undertook a process to develop an international consensus on a systematic approach to healing chronic

wounds. The objective was to take the complex research evidence and translate it into simple and practical treatment guidance, while creating a new mental model for HCPs that focuses on wound healing, rather than wound treatment.

Mental models are deeply ingrained assumptions and generalisations that influence our understanding and actions (Senge, 1990). They are built over time, based on our experiences, education and assumptions (Schaeken et al, 2007; Johnson-Laird, 2010).

The purpose of the project was to change current mental models by improving the way we think about wound care and healing and the patients' involvement in both. The intent was to develop a critical thinking pathway that would help HCPs focus on the healing variables and change the paradigm from covering wounds to actively healing wounds.

The project began in 2019 using a modified Delphi consensus-building process, combining research and experiential evidence from healthcare specialists and non-specialists. The goal was to develop an evidence-based

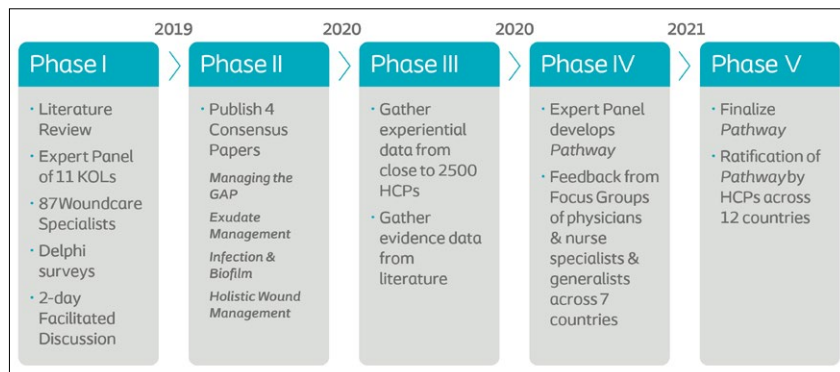


Figure 1. The Wound Care Pathway process and methodology.

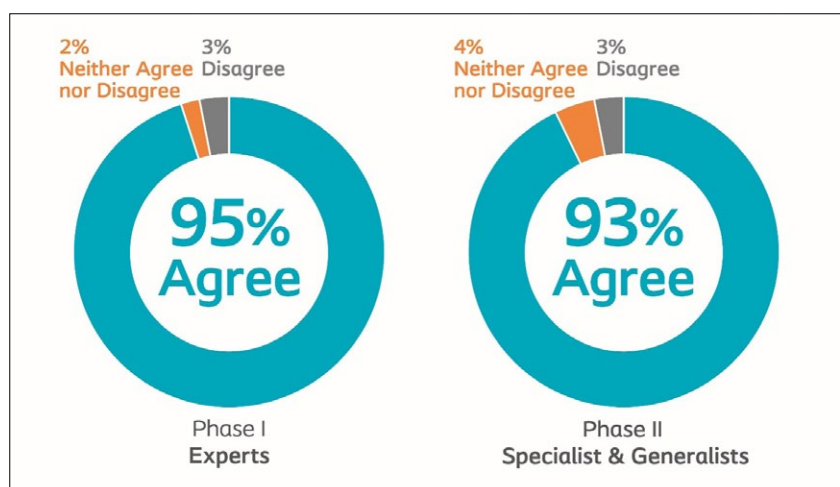


Figure 3. Percentage of participants who agreed that the goal of chronic wound care should be to heal the wound.

simplified pathway to take patients from presentation with a chronic wound through to healing and beyond, to prevent reoccurrence. The large-scale consensus process culminated in a practical and evidence-based approach to wound management called *The Wound Care Pathway*, which was ratified in 2021 by wound care specialists and non-specialists in 12 countries. The pathway was developed over 2.5 years and was informed by literature reviews, surveys, virtual and in-person facilitated discussions, focus groups, and meetings and involved close to 2,500 HCPs across six continents. *The Wound Care Pathway* provides a step-by-step approach to healing chronic wounds that is both evidence-based and practical.

### Methodology

This project was broken into five phases [Figure 1] and was governed by an expert panel of 11 wound care specialists from around the world. Using a modified Delphi technique, the process combined the experiential knowledge of experts and general practitioners with research

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evidence obtained through literature reviews (Bain and Hansen, 2020). The strength of the process was in the robustness of the evidence gathering, the inclusivity of experts, specialists and non-specialists and the global nature of the consensus reached.

Phase I developed evidence-based consensus recommendations on treating and healing chronic wounds with 87 wound care specialists from 19 countries (Keast et al, 2020).

Phase II involved publishing the consensus and presenting at international conferences, including the European Wound Management Association (EWMA) meetings and symposiums, and discussing how to use the consensus recommendations to impact patient outcomes (Keast et al, 2020; Dowsett et al, 2020; Swanson et al, 2020; Ruettimann Liberato de Moura et al, 2020).

Phase III took the consensus recommendations to non-specialists and gathered experiential data on healing chronic wounds.

In Phase IV, the expert panel examined the data and research evidence that had been gathered and developed *The Wound Care Pathway*. This was tested with focus groups of specialists and non-specialist physicians and nurses across five continents.

Phase V utilised the feedback from the focus groups, along with input from design experts and behavioural scientists to finalise



Figure 4. Holistic Patient & Holistic Wound Assessment Guidance.

the pathway. Finally, *The Wound Care Pathway* was presented to experts, specialists and non-specialist HCPs in 12 countries who ratified the document.

Measurable change can only be achieved when all members of the care team work together, and in partnership with the patient, with the singular goal of healing the wound. Throughout the development process for *The Wound Care Pathway* [Figure 2], the expert panel involved not only wound care physicians and nurse specialists, but also dermatologists, surgeons, pharmacists, physical and occupational therapists, dietitians, podiatrists, home care assistants and healthcare administrators. This depth and breadth of experience and input, from participants around the world, ensures that perspectives of the whole care team are considered and that those closest to the issue were included in the development, a best practice identified by many in the health quality improvement field (Jones et al, 2021).

### **The Wound Care Pathway**

Best practice guidance is nothing if it is not used (Patton, 1997). This is reinforced by the many examples of evidence-based medical practice changes that fail to be implemented and, therefore, do not result in improved patient outcomes (Grol and Wensing, 2005).

Guest et al (2015; 2020) noted that lack of diagnosis of wound aetiology and unwarranted variation in coherent treatment planning often results in failure to apply evidence-based practices by HCPs. In their 2017/18 study of the UK population, they found 25% of wound care patients lacked a recorded differential diagnosis of their wound, making it very difficult for HCPs to follow evidence-based practice in caring for wounds (Guest et al, 2020). They noted that non-wound specialist HCPs experienced difficulties applying evidence-based practices, finding that dressing types were continually switched at successive dressing changes, with fewer than 1% of patients being given the same dressing for their wound, and with an average of eight different dressing types being prescribed per patient over the study period.

*The Wound Care Pathway* was developed to achieve the following objectives:

- Improve standards of care leading to fewer days with wounds.
- Decrease inconsistencies of care, wound care costs and the time HCPs spend dealing with chronic wounds.
- Provide evidence-based practice guidance to improve patient outcomes and quality of life.
- Provide clear, concise guidance to help HCPs implement best practice wound care at the bedside.

The purpose was to develop a practical and evidence-based approach for wound management that will guide HCP decision-making when dealing with chronic wounds. It provides a step-by-step approach to assessing and managing chronic wounds, developed by HCPs for HCPs. *The Wound Care Pathway* offers guidance and solutions to the challenges often seen with chronic wounds and helps HCPs understand, communicate and prevent/minimise risk factors that impede healing.

During Phases I and II of the process, the 2,300 experts, specialists and non-specialists who were surveyed agreed that the goal of chronic wound care (except for palliative patients), regardless of diagnosis or cause, should be to heal the wound [Figure 3]. They also agreed that in cases of non-healable wounds, such as palliative wounds or wounds with inadequate vasculature, *The Wound Care Pathway* principles still apply.

Chronic wounds are defined as wounds that have not healed in 30 days, despite best practice intervention, or are not expected to heal within 4–6 weeks, regardless of their aetiology (Sen et al, 2009; Frykberg and Banks, 2015; Keast et al, 2020; Olsson et al, 2020). While *The Wound Care Pathway* focuses on chronic wounds,

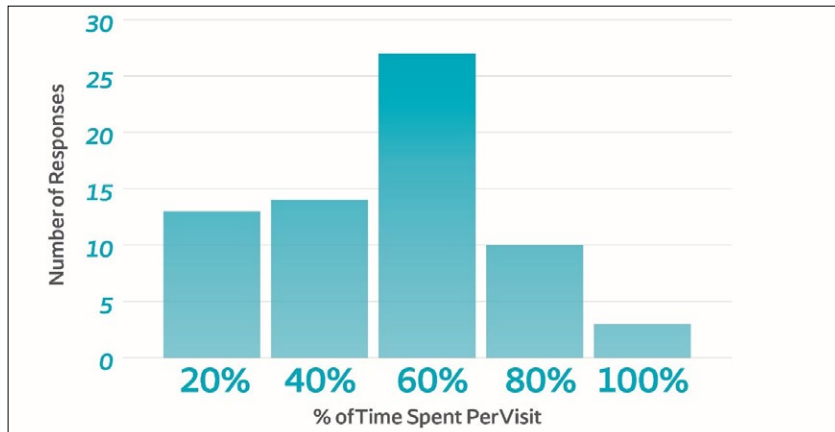


Figure 5. Percentage of time spent on patient education per visit.

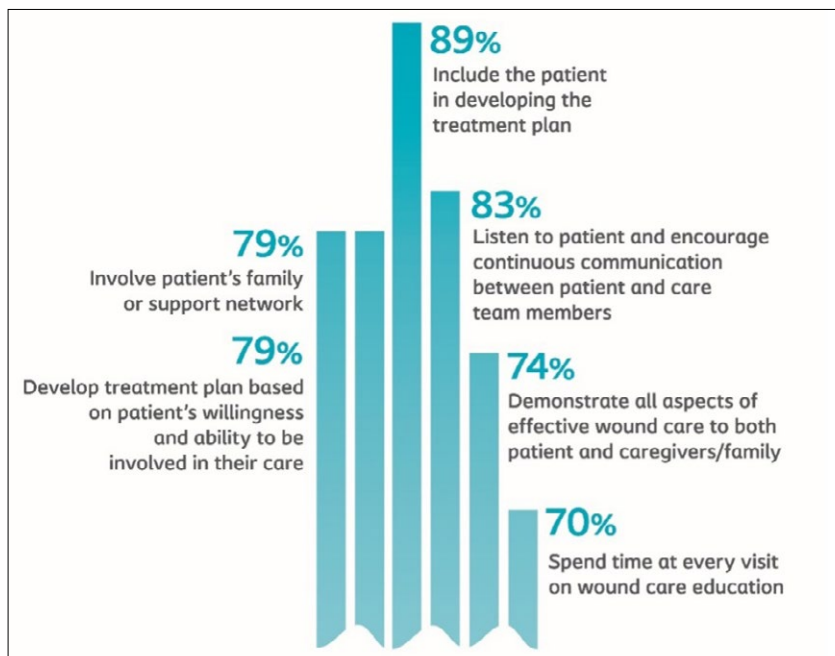


Figure 6. Best practices to improve patient adherence.

participants agreed that acute wounds can turn into chronic wounds if the correct wound treatment pathway is not followed.

Consensus was reached that the wound should be assessed on initial presentation and at each dressing change, and that both a holistic assessment of the patient and of the wound should be conducted every 4 weeks, to monitor healing progression.

Step 1 in *The Wound Care Pathway* provides guidance on conducting a holistic patient assessment and a holistic wound assessment [Figure 4], reminding the reader that the wound is on a patient, the patient is in their environment and the environment is part of a healthcare system (Ousey and Cook, 2011, 2012; Cornforth, 2013; Brown, 2015; Dowsett et al, 2015, 2016; Wounds UK, 2018; Ruettimann Liberato de Moura et al, 2020; World Union

of Wound Healing Societies [WUWHS], 2019, 2020a; Murray and Van der Vyver, 2021).

Step 2 focuses on developing a treatment plan based on evidence and the results of the holistic patient and wound assessments. The aim of the treatment plan is to:

- Treat the underlying cause/aetiology of the wound.
- Manage existing comorbidities.
- Ensure effective wound bed preparation and management.
- Wound dressing management.

*The Wound Care Pathway* also emphasises that the treatment plan must always take into account the patient's care environment, ability to engage in self-care and their personal preferences (EWMA, 2008; Ruettimann Liberato de Moura et al, 2020; WUWHS, 2020b).

At each phase of the project, participants emphasised the importance of including the patient in the decision-making process and discussed best practices in patient engagement and education. When asked how much time is spent on patient self-care education, the wound care specialists indicated they spend an average of 46% ( $\pm$  a standard deviation of 21) of each patient visit on education [Figure 5].

When asked what the best ways are to promote patient adherence to their wound care plan, respondents emphasised the importance of including the patient and caregivers in the development of the treatment plan, listening to the patient and encouraging continuous communication between the patient and all members of the care team [Figure 6].

Research shows that engaging patients in their care planning, including them in decision-making and offering continuous education on effective self-care and prevention is the best way to increase patient concordance (Stewart, 2001; Brown, 2004; Bale and Jones, 2006; EWMA, 2008; Wounds International, 2012; Ousey and Atkin, 2013; Gethin et al, 2020; Ruettimann Liberato de Moura et al, 2020; WUWHS, 2020b). The Wound Care Pathway offers guidance on how to involve and educate patients, caregivers and family members.

Managing and treating chronic wounds is about preventing complications and promoting wound healing, using basic standards of care based on the aetiology of the wound (EWMA, 2008; Benbow and Stevens, 2010; Romanelli and Weir, 2010; Keast et al, 2014; Swanson et al, 2014, 2015; Lindholm and Searle, 2016; Dowsett et al, 2020; Guest et al, 2020; Holloway et al, 2020; Keast et al, 2020; Mahmoudi and Gould, 2020; Swanson et al, 2020; WUWHS, 2020c).

## When to refer to a specialist

Referral or consultation with a wound care specialist is advised if:

- the treatment plan was established and followed but the wound shows **no signs of healing progression within 14 days**
- the **wound area has decreased less than 20% within 4 weeks**
- the **wound size, odour, pain or exudate increase or the wound condition deteriorates**
- **detrimental biofilm or local infection is suspected**, and aggressive cleansing or debridement are indicated, but are outside of your scope of practice
- there is an **overall decline in the patient's health and wellbeing**.



Figure 7. When to refer to a specialist.

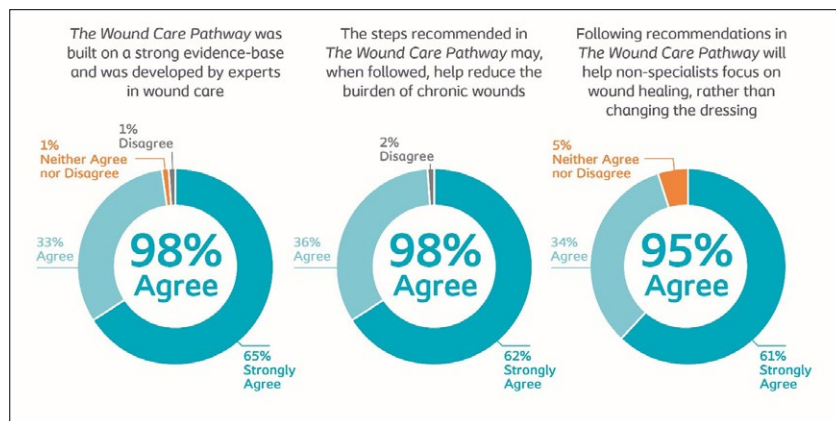


Figure 8. Ratification data.

Participants in the consensus process agreed that managing a chronic wound starts with:

1. Treating the underlying causes and control of comorbidities;
2. Wound tissue management (cleansing and debridement)
3. Managing the gap between the wound bed and the dressing to:
  - a. Manage exudate
  - b. Prevent/treat infection

Step 3 of explains the purpose of each stage of the treatment process and provides guidance on how to cleanse the wound, debride the wound, manage exudate and prevent and treat wound infection and biofilm development. *The Wound Care Pathway* recommends:

- Assessing wound bioburden at every dressing change using the International Wound Infection Institute (2016) Wound Infection Continuum.
- Therapeutic cleansing of the wound and periwound skin at every dressing change, both before and after debridement, using saline or clean potable water and consider using a surfactant, antiseptic or antimicrobial

agent if infection or biofilm are suspected.

- Debridement at every dressing change to remove devitalised or non-viable tissue, bacteria and contaminants.
- Managing exudate by managing the gap between the wound bed and the dressing.
- Using a dressing with antimicrobial properties for local, spreading, or systemic infections.
- Use of systemic antibiotics appropriate for the type and level of spreading or systemic infections.
- Promoting a consistently clean environment through hand washing, antiseptic use, and ongoing patient education.

Step 4 provides guidance on choosing a dressing. Participants agreed that the most appropriate dressing choice should always:

- Remove excess exudate from the wound bed, absorbing the exudate and retaining it in the dressing.
- Protect the wound edge and periwound skin
- maintain a moist healing environment
- Provide confidence and security to the patient
- Be comfortable for the patient and easy to perform self-care.

*The Wound Care Pathway* recommends using a dressing that conforms to the wound bed, that vertically absorbs and retains exudate to avoid leakage and protect the wound edge and periwound skin and is in keeping with the expectations and needs of the patient (socio-economic constraints, physical limitations, lifestyle, etc).

The final step of *The Wound Care Pathway* provides guidance on monitoring the patient and the wound progression and recommends a basic assessment of the wound at every dressing change using a validated assessment tool, such as the Triangle of Wound Assessment (Dowsett et al, 2019). Deterioration in the wound or the patient's overall wellbeing should trigger a re-assessment and where indicated an automatic referral to a wound care specialist. A detailed list of when consultation with, or referral to, a wound care specialist is also included [Figure 7].

### Ratification

Between April and June 2021, *The Wound Care Pathway* was presented to the expert panel and groups of wound care specialists and non-specialists in Australia, Brazil, China, France, Italy, Spain and the UK. Of the 96 HCPs who were presented *The Wound Care Pathway*:

- 98% strongly agreed or agreed that the document was built on a strong evidence

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base and was developed by experts in the field.

- 98% strongly agreed or agreed that the steps recommended may, when followed, help reduce the burden of chronic wounds.
- 95% strongly agreed or agreed that following the recommendations will help non-specialists focus on healing the wound, rather than changing the dressing [Figure 8].

### Conclusion

*The Wound Care Pathway* was developed to provide a practical evidence-based step-by-step approach towards wound healing. Based on the input from nearly 2,500 experts, specialists and non-specialist HCPs around the globe, *The Wound Care Pathway* takes complex research evidence and translates it into a step-by-step guide on how to heal chronic wounds. This simple and practical document offers solutions to challenges and guidance on preventing complications and promoting healing, changing the paradigm away from covering wounds to actively healing wounds and beyond healing to prevention of re-occurrence.

Improving the quality of chronic wound care and patient outcomes by focusing on wound healing can help reduce the burden of chronic wounds for patients, society, health care systems and HCPs. The systematic, evidence-based approach documented in *The Wound Care Pathway* will help achieve the goal of fewer days with wounds, a measurable improvement that can be quantified. WINT

### Conflict of Interest

*All authors have at one time acted as consultant experts for Coloplast. No Coloplast products were discussed or referenced in the development of the Pathway. Survey respondents received no remuneration for their participation.*

*Sponsored by Coloplast.*

### Ethics

*Ethics approval was not required for this research as no patient information was collected, reviewed or utilised. No identifiable information in any form was collected or utilised for this project.*

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