

Advancing Wound Hygiene as a standard protocol for hard-to-heal wounds in Australia and New Zealand: Findings from an international meeting

This report presents the findings of an expert panel meeting convened in Sydney, Australia, in February 2026, bringing together an interdisciplinary group of nurse practitioners, clinical nurse consultants, a podiatrist-researcher and wound care specialists from Australia and New Zealand (ANZ). Building on the outcomes of the APAC and Turkey Wound Hygiene Council (Nair et al, 2025), the panel aimed to develop a contextually relevant strategy for adopting Wound Hygiene as a standard approach to managing hard-to-heal wounds across the ANZ region.

Wound Hygiene is a simple, evidence-based protocol developed by an international panel of wound care specialists to support the healing of hard-to-heal wounds by addressing one of the most significant local barriers to healing: biofilm. A wound is considered hard-to-heal when it does not progress through the expected phases of wound repair despite appropriate standard care (Bishop, 2021). Wound Hygiene is designed to work for every patient, in every care setting (Murphy et al, 2019; 2020; 2022). Just as daily personal hygiene practices like washing hands and brushing teeth maintain health, consistent application of Wound Hygiene helps maintain an optimal wound environment and prevents

the healing stagnation associated with biofilm. The protocol consists of four steps performed consecutively and consistently at each patient visit (Figure 1; Murphy et al, 2019; 2020; 2022):

1. **Cleanse** the wound and surrounding skin
2. **Debride** the wound to remove debris and devitalised tissue, and disrupt biofilm
3. **Refashion** wound edges to ensure the skin edges align with the wound bed
4. **Dress** the wound with biofilm-targeted therapies to support healing and prevent recurrence.

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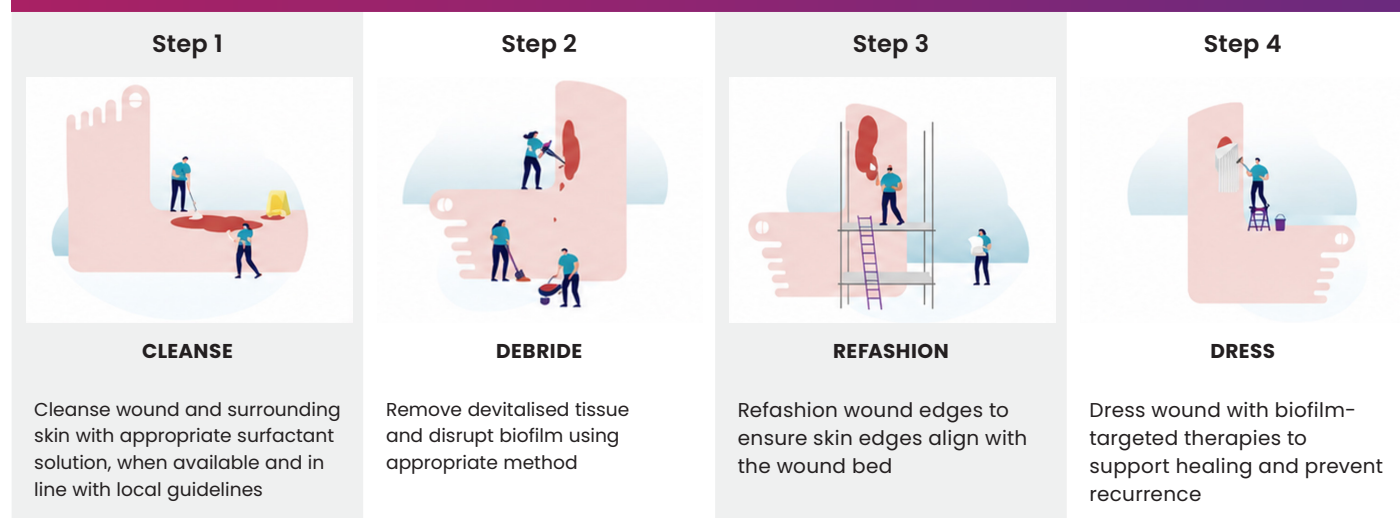
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Figure 1. The Wound Hygiene protocol – four steps performed at every episode of care.



Performed consecutively and consistently at each patient visit.
Every wound, every clinician, every care setting.

the supplement *Advancing Wound Hygiene as a standard protocol for hard-to-heal wounds in APAC and Turkey. Findings from an international meeting* (Nair et al, 2025). While the earlier meeting drew on a broad regional perspective, the Australia and New Zealand (ANZ) Council was designed to address the clinical, educational and system-level realities of ANZ.

Despite sharing many of the challenges encountered internationally, these two countries have distinctive healthcare structures, workforce compositions and regulatory environments that fundamentally shape how Wound Hygiene can be most effectively implemented.

ANZ occupies a unique and important position within the APAC region. Both countries have long been at the forefront of wound care globally, with clinical expertise and research output that are internationally recognised and disproportionate to their population sizes. Hard-to-heal wounds cost the Australian healthcare system an estimated US\$2.85 billion annually (Norman et al, 2016).

ANZ wound care practice aligns closely with developments in Europe, the United Kingdom, the United States and Canada, and the panel expressed a strong ambition for ANZ to serve as a benchmark for Wound Hygiene adoption across the APAC region and globally.

Background and context to Wound Hygiene

Wound Hygiene is more than a framework. It represents a shift in thinking – a change in mindset, not just a protocol. It extends the principles of wound bed preparation by focusing on consistently applying the basics for every wound, from day one. By translating established principles into everyday clinical practice, Wound Hygiene encourages earlier intervention, reduces variation in care and empowers nurses

at every level to act with confidence before wounds become more complex.

Wound Hygiene first gained international traction in 2020 with the publication of the inaugural international consensus document (Murphy et al, 2020). Since then, a growing body of publications and real-world evidence has demonstrated both the feasibility and clinical impact of the protocol across diverse healthcare settings. In 2022, its application was further consolidated through integration into a proactive wound healing strategy (Murphy et al, 2022).

Real-world evidence published in 2024 demonstrated the impact of structured Wound Hygiene implementation across six European countries and 669 patients: wounds that were static or deteriorating fell from 66% to just 5%, with 94% showing improvement or complete healing (Torkington-Stokes et al, 2024).

Wound Hygiene is not intended to replace or conflict with established wound management approaches such as T.I.M.E. (Schultz et al, 2003), T.I.M.E.R.S. (Atkin et al, 2019), Wound Balance (Wounds International, 2023) or M.O.I.S.T. (Dissemond et al, 2022). Rather, it complements these approaches by providing a practical, repeatable routine that reinforces their principles and can be integrated readily into daily care workflows at every level of the clinical workforce [Table 1].

The overarching goal of the ANZ Council was to ensure that Wound Hygiene is performed at every episode of care, across all settings and by all clinicians, from nurse practitioners and clinical nurse consultants to enrolled nurses, community podiatrists and personal care assistants (PCAs), and that ANZ actively contributes to the global evidence base supporting this transition.

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Table 1. Wound Hygiene in context: relationship to established frameworks.		
Framework	Core focus	Relationship to Wound Hygiene
T.I.M.E.	Tissue, Infection/inflammation, Moisture imbalance, Edge of wound	Wound Hygiene provides the practical, repeatable routine that reinforces T.I.M.E. principles
T.I.M.E.R.S.	As above plus Repair and Regenerate, Social factors	Wound Hygiene integrates into the tissue and infection management components
Wound Balance	Balance wound, patient and care setting-related barriers to healing	Wound Hygiene complements by providing structured biofilm-targeting steps
M.O.I.S.T.	Moisture balance, Oxygen, Infection control, Support, Tissue management	Wound Hygiene reinforces the Tissue management and infection control components
Wound Hygiene	Cleanse → Debride → Refashion → Dress at every episode of care	Provides the practical, scalable daily routine that underpins all frameworks above

Biofilm and the rationale for Wound Hygiene

At the core of Wound Hygiene is the management of biofilm, widely recognised as a primary local barrier to healing in hard-to-heal wounds (Almuhanna, 2025). Biofilm is a self-produced matrix of extracellular substances consisting of communities of microorganisms, and has been consistently implicated as a significant barrier to wound healing (Metcalf and Bowler, 2013; Malone et al, 2017). Biofilms delay healing by maintaining a persistent inflammatory state, increasing proteases (e.g. matrix metalloproteinases [MMPs] and elastase) and reactive oxygen species that damage healthy tissue and growth factors, reducing oxygen availability within the wound, and protecting microorganisms from host immune responses and antimicrobial therapies. These mechanisms create a wound environment that favours chronicity and impairs progression through the normal phases of healing (World Union of Wound Healing Societies, 2015). Prevalence estimates in hard-to-heal wounds range from 60% to 100%, with the true figure likely approaching the upper end of this range (Bjarnsholt et al, 2017; Malone et al, 2017; Almuhanna, 2025). The cyclical nature of biofilm re-formation, rapidly re-establishing after disruption, is precisely what makes the repetitive, routine application of Wound Hygiene so important as a clinical strategy.

Understanding of biofilm science continues to evolve. Researchers are now examining biofilm not only as a structural entity but as a component of a broader wound microenvironment, encompassing pH, oxygenation and other interacting factors

(Bjarnsholt et al, 2026). Nevertheless, the clinical practice response, mechanical disruption, cleansing and maintenance debridement, has remained fundamentally consistent, and Wound Hygiene encapsulates this evidence-based approach in a structured, scalable protocol that retains its relevance irrespective of how understanding of biofilm pathogenesis continues to develop.

Familiarity with biofilm science is not consistent across the ANZ clinical workforce, and this variability presents both a challenge and an opportunity. In specialist wound care settings, the relationship between biofilm and delayed healing is well understood and already guides practice. Across the broader nursing and podiatry workforce, particularly in community and aged care contexts, significant scope exists to strengthen this understanding. The panel agreed that clear, consistent messaging – “biofilm is what makes most wounds hard-to-heal or is indicative of an infectious microenvironment, and Wound Hygiene is how we address it” – is fundamental to driving this understanding and translating it into consistent clinical action.

While addressing biofilm is an essential component of wound bed preparation, it represents only one aspect of comprehensive wound management, which also requires optimisation of key systemic and patient-centred factors such as nutrition, perfusion, oxygenation, pain and oedema. Wound Hygiene specifically targets the local wound environment and should therefore be considered alongside these broader determinants of healing.

Box 1. Understanding the link between biofilm and Wound Hygiene across the ANZ clinical workforce.

The following observations reflect how understanding varies across care settings and where the greatest opportunities for targeted education lie:

- **In specialist wound care settings**, the relationship between biofilm and the need for systematic Wound Hygiene steps is well understood and is already guiding practice
- **In hospital settings**, awareness of biofilm and its significance is increasing, but understanding and confidence in recognising and managing biofilm varies among clinicians
- **In community settings**, understanding is strongest where specialist support and education are readily accessible, highlighting the value of ongoing expert-to-generalist knowledge transfer
- **In aged care**, there is considerable appetite among motivated carers and nurses to improve their Wound Hygiene practice
- **In podiatry**, while debridement is a core clinical competency, integrating all four steps of the Wound Hygiene protocol alongside existing offloading and vascular management practices represents an important opportunity to optimise outcomes.

Across all settings, consistent and straightforward messaging about the biofilm–Wound Hygiene relationship is the foundation for practice improvement at every level of the workforce. However, education alone is insufficient; implementation requires the time, resources and organisational support needed to translate understanding into consistent clinical practice.

Where hard-to-heal wounds are treated in ANZ

The management of hard-to-heal wounds in ANZ spans multiple settings and disciplines, including general practitioners, nurse practitioners, medical specialists, podiatrists, community pharmacists and allied health professionals, including orthotists (Norman et al, 2016). A recurring theme throughout the meeting was the central role of community-based wound care.

Unlike some healthcare systems, where wound management is largely delivered through hospital outpatient or specialist clinics, most care in ANZ is provided in the community through general practice, community nursing, allied health services and Aboriginal health services (Norman et al, 2016; Barakat-Johnson et al, 2025). This means community and aged care clinicians are key to embedding Wound Hygiene into everyday practice.

Community nurses across both countries frequently manage hard-to-heal wound presentations across geographically dispersed populations, often with considerable clinical autonomy. When that autonomy is supported by strong foundational knowledge and clear protocols, it becomes a powerful enabler of consistent Wound Hygiene practice. Variation in access to specialist support and continuing education across regions inevitably influences awareness and implementation, and this must be addressed through targeted educational strategies that reach clinicians where they work.

Aged care facilities represent a high-burden care environment and a high-leverage opportunity for Wound Hygiene implementation. The aged care workforce is large, diverse and in daily contact with residents with wounds; however, access to specialist wound care input varies significantly.

New Zealand's Accident Compensation Corporation (ACC) funding model was noted as a structural feature of the New Zealand system that shapes wound care pathways. Understanding and working within this funding context, including supporting earlier specialist referral where clinically indicated, is part of the broader system-level opportunity to promote timely and effective Wound Hygiene across the care continuum.

These features of the ANZ healthcare landscape underscore the importance of a Wound Hygiene approach that is genuinely scalable – one that can be effectively implemented not only by specialist wound care nurses but by the full spectrum of clinicians and carers who interact with wounds daily. See **Box 2** for key principles for effective Wound Hygiene education in ANZ.

Challenges and opportunities for implementation

Moving from a dressing-centric approach

The panel reflected on a widely recognised pattern in wound care practice which is the tendency to prioritise dressing selection over wound bed preparation. While advanced dressings have an important role in wound management, their effectiveness depends on the consistent application of the cleanse-debride-refashion steps that precede dressing application. When these preparatory steps are not routinely performed, even the most appropriate dressing is unlikely to achieve its full clinical potential.

This pattern is not unique to ANZ; it was similarly identified in the APAC and Turkey meeting (Nair et al, 2025) and reflects the need to shift the clinical frame from “dressing a wound” to “preparing the wound

Box 2. Key principles for effective Wound Hygiene education in ANZ.

- ✓ Frame education as ‘good wound care’ or ‘advanced wound management’, rather than ‘fundamental’ care, to maximise engagement
- ✓ Embed formal credentials (e.g. certificates, CPD points, portfolio evidence) to incentivise participation
- ✓ Tailor content and delivery to the care setting. Aged care, community and hospital settings require different approaches
- ✓ Include all levels of the clinical workforce, personal care assistants, enrolled nurses and registered nurses, not only specialists
- ✓ Incorporate patient and family education as a core component, enabling self-care and consumer advocacy
- ✓ Emphasise practical, hands-on learning with repetition of core messages, rather than one-off lectures
- ✓ Build in follow-up, mentorship and ongoing reinforcement to support skill retention and habit formation
- ✓ Use digital tools and social media to reach clinicians unable to attend in-person sessions.

environment for healing.” The panel saw significant opportunity in the Wound Hygiene protocol’s ability to provide this framework: a simple, memorable sequence of steps that positions active wound bed preparation as the foundation of every dressing change, regardless of setting or skill level.

Many clinicians are already performing elements of Wound Hygiene intuitively, without necessarily recognising these steps as components of a defined protocol. Formalising and naming these practices, and making explicit their rationale in biofilm management, offers a practical route to consistency without requiring clinicians to adopt an entirely unfamiliar clinical approach.

Wound care documentation presents a related opportunity. Where wound care records capture Wound Hygiene steps explicitly alongside wound measurements and healing trajectories, clinicians can observe the direct impact of their practice over time, and accountability becomes embedded in the care process. The sharing of objective wound measurement data with both clinicians and patients generates genuine clinical engagement, creates a shared understanding of progress and provides a powerful motivator for sustained adherence to the protocol.

Building confidence in wound assessment and debridement

A significant opportunity for the ANZ region lies in strengthening confidence and competence in wound assessment and the full spectrum of debridement methods across the broader clinical workforce. Debridement has historically been perceived in some settings as a specialist-only skill, reflecting an association with sharp and surgical techniques. In practice, however, debridement encompasses a range of methods including autolytic, enzymatic, mechanical and monofilament-based approaches, many of which are less invasive, broadly accessible and well within the competence of generalist nurses when appropriately supported and educated (Madhok et al, 2013; Mayer et al, 2024).

Clinicians who understand not only how to perform each step of the protocol, but why it is required, demonstrate consistently greater confidence and clinical consistency. The mental shift from “debridement as an advanced intervention” to “wound bed preparation as a fundamental aspect of every wound encounter” is one that practical, evidence-informed education is well placed to support.

Addressing time and workflow constraints

The panel acknowledged that time pressures

in community and aged care settings are a real and ongoing challenge. Community nurses in ANZ typically have a limited window per patient visit (Khalil et al, 2016; Moore et al, 2022), time that must cover assessment, wound care, documentation and travel. In this context, effective Wound Hygiene implementation is not about adding steps to an already demanding workflow, but about reframing how existing clinical time is used.

The panel discussed several practical approaches that have shown promise. Clear wound care plans that specify Wound Hygiene steps explicitly, rather than simply recording the dressing product, help clinicians understand what is expected and why, reducing decision-making time and supporting consistency. Education that is practical, brief and directly applicable to clinicians’ day-to-day realities is more likely to translate into sustained behaviour change than lecture-based programmes. Simple, memorable tools for wound assessment and decision-making can support clinicians to complete thorough, efficient assessments within time-limited visits.

Digital wound measurement tools were highlighted as an important enabler in this context. When clinicians can quickly and objectively capture wound measurements, and patients can see their healing progress represented visually, the investment of time in thorough Wound Hygiene is immediately reinforced. Standardised, consistent documentation also enables clinicians to monitor trajectories over time, supporting earlier identification of wounds that are not responding and prompting timely review or referral.

Generating evidence to support Wound Hygiene in ANZ

For Wound Hygiene to consolidate its place as a standard of care in ANZ, the panel emphasised the importance of generating robust, locally relevant real-world evidence. The 2024 European real-world evidence programme provides a compelling proof of concept, demonstrating that structured implementation of the Wound Hygiene protocol, supported by education and systematic data collection, produces significant and consistent improvements in healing outcomes across diverse clinical settings (Torkington-Stokes et al, 2024). The panel expressed strong enthusiasm for building a comparable evidence base in ANZ.

Digital wound measurement tools, including photographic measurement systems and wound imaging technology, were identified as key enablers of consistent, objective data capture. These tools not only improve the

quality of documentation but also actively engage patients in their own care. When patients can see a graph showing week-on-week improvement in wound area, their engagement with the protocol increases substantially, creating a positive feedback loop that supports adherence and healing.

Education and training models

Reaching the full clinical workforce

Education was consistently identified as the most powerful lever for embedding Wound Hygiene as a routine standard of care across ANZ. Achieving Wound Hygiene at every episode of care, however, requires an educational reach that extends well beyond the specialist community, encompassing community nurses, aged care nurses, enrolled nurses, podiatrists, PCAs and family carers who may have had limited or no prior exposure to Wound Hygiene principles.

Framing matters considerably in determining educational uptake. Programmes positioned as 'good wound care' or 'evidence-based wound management' attract broader participation than those labelled as covering 'basic' wound care, even when the content is substantively the same. This reflects a genuine appetite among clinicians for professional development that feels clinically significant and career-relevant. Wound Hygiene education, when presented as a contemporary standard of care supported by an international evidence base, meets this aspiration.

Across all settings, the panel emphasised that effective education combines clear conceptual understanding, particularly the link between biofilm and the rationale for each Wound Hygiene step, with practical, hands-on skill development. Repeated exposure to core messages is important, as embedding understanding requires time and reinforcement. One-off training sessions are rarely sufficient on their own; ongoing mentorship, peer learning and continued professional development support sustained behaviour change in a way that isolated training events are unable to do.

Patient and carer education as a foundation of Wound Hygiene

The panel identified patient and family education as a particularly valuable and often underutilised component of a comprehensive Wound Hygiene implementation strategy. Panellists shared examples of empowering patients to perform Wound Hygiene steps themselves between clinical visits, using surfactant solutions, debriding agents and monofilament tools, with positive results. Patients who understand and participate in their

own Wound Hygiene not only experience better outcomes but become active advocates for consistent practice among all the clinicians and carers who support them.

Objective wound measurement data plays an important role in supporting this engagement. When patients can see their wound reducing in size week on week, the motivation to adhere to the protocol becomes intrinsic rather than externally driven.

Quantitative measurement also creates a shared language between patients, carers and clinicians, making goals explicit and progress visible in a way that supports collaborative decision-making and early escalation when healing trajectories are not as expected.

Stakeholder engagement and building the case for change

The panel highlighted the challenge of engaging stakeholders who do not themselves provide direct wound care including facility managers, directors of nursing, procurement officers, funders and policymakers, but whose decisions profoundly influence whether Wound Hygiene can be implemented at scale. There was broad agreement that clinical advocacy alone is insufficient; the case for Wound Hygiene must be made in the language and metrics that matter to each stakeholder group.

For aged care facility managers, the most relevant metrics are those with direct regulatory and operational implications, including compliance with national care standards (Aged Care Quality and Safety Commission, 2025), infection rates, pressure injury incidence, incontinence-associated dermatitis rates and hospitalisation frequency. Framing Wound Hygiene as a contributor to meeting aged care accreditation standards, rather than as a specialist clinical intervention, is likely to be a more effective entry point for conversations with facility leadership.

For procurement officers and healthcare executives, the economic argument is powerful but requires evidence. If consistent Wound Hygiene practice reduces the duration of wound chronicity, decreases the volume and complexity of advanced dressings used and reduces infection-related hospitalisations, the cost savings may be significant. However, these benefits must be demonstrated through credible, locally relevant data. This reinforces the importance of the quality improvement initiatives discussed earlier; without clear evidence of return on investment, securing resources for implementation remains challenging.

Government procurement processes were identified as a particular systemic challenge

Table 2. ANZ Wound Hygiene Council – key priorities

Priority area	Description
Quality improvement programmes	Initiate structured, multi-site QI projects to generate real-world evidence on the clinical and economic impact of systematic Wound Hygiene implementation across ANZ
Credentialling pathways (Australia)	Explore a university-accredited conservative sharp wound debridement course in Australia, modelled on New Zealand's successful approach, to expand the capable clinical workforce
Education reform	Develop multi-modal, setting-specific programmes targeting the full workforce spectrum, from PCAs in aged care to specialist nurse practitioners, with formal credentials to incentivise participation
Digital innovation	Expand digital wound measurement tools in community and aged care settings to enable consistent data capture, patient engagement and monitoring of healing trajectories
Stakeholder advocacy	Coordinated engagement with facility managers, procurement bodies, government funders and policymakers to embed WH into care standards, funding frameworks and procurement processes
Cultural integration	Develop culturally safe Wound Hygiene education resources accessible across the diverse community and aged care workforce in ANZ, including internationally trained clinicians and Aboriginal health workers, to ensure equitable support across all settings of wound care delivery
ANZ regional leadership	Position ANZ as regional and global benchmarks for Wound Hygiene implementation, building on the region's established international reputation in wound care research and clinical practice

in Australia. Clinician perspectives are often underrepresented in procurement decisions for wound care products and dressings, with the result that products may be adopted that do not optimally support Wound Hygiene practice. Building stronger mechanisms for clinical input into procurement, potentially through professional societies such as the Australian Wound and Skin Alliance or the New Zealand Wound Care Society, is an important advocacy priority.

Future directions

The inaugural ANZ Wound Hygiene Council aims to make Wound Hygiene second nature: as habitual and unquestioned as dental hygiene, with routine tooth brushing, or hand hygiene. This ambition should apply across every care episode, in every setting, and to every clinician who interacts with a wound. See **Table 2** for the key priorities that will help realise this ambition.

Looking further ahead, the panel expressed hope that the work of the ANZ Wound Hygiene Council could inspire and inform similar initiatives in other APAC countries, contributing to a coordinated regional approach to Wound Hygiene standardisation.

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