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Wound Hygiene: The basics, The Impact And A New Surgical Consensus Document

Presenters: Dr. Christine Murphy PhD RN BSc(Hons) Tissue Viability, MClSc(WH), PhD, NSWOC, WOCC(C)

Wound Hygiene – A Proactive Way to Treat Wounds

Wounds that have failed to respond as expected to evidence-based standard of care are commonly known as 'chronic wounds'. These wounds were thought to be 'stuck' in the inflammatory phase of healing. A more appropriate way to describe these types of wounds is 'hard-to-heal wounds'. One potential cause of hard-to-heal wound is granulitis – a hyperinflammatory state of the granulation tissue in the wound bed. This is analogous to gingivitis of the gum. Granulitis and gingivitis are both caused by bacteria biofilm, the preferred way of living for bacteria. Biofilm is a key reason why wounds stall or fail to close. Biofilm microbiome is heterogenous. It changes according to one's health and is different for everyone. For example, underlying factors like ischemia affects the environment and biofilm can take advantage of this and stalls healing.

Wound Hygiene is a four-step protocol to proactively address biofilm which delays healing. It is consistent and repetitive. It decontaminates, optimizes and prepares the wound environment for proper healing. The Wound Hygiene Protocol (WHP) includes:

1. Cleansing (of the wound and surrounding skin)
2. Debridement of the wound bed (i.e., initial debridement, if necessary, as well as maintenance debridement)
3. Refashioning (the wound edge)
4. Dressing (the wound with biofilm-targeted management (or anti-biofilm therapies) and prevention).

The four-step Wound Hygiene protocol can be applied by all clinicians regardless of scope by adapting to match level of skill and professional competency. Despite wound cleansing and debridement and refashioning of the wound edge, biofilm can re-form rapidly. Application of antimicrobial, especially antibiofilm, agents after biofilm has been physically disrupted can help tackle the residual biofilm and suppress re-formation. The dressing chosen must be able to:

1. Kill biofilm bacteria
2. Dismantle the protective extrapolymeric substance (EPS) layer

3. Repel biofilm re-formation
4. Absorb and retain exudate to protect peri-wound skin.

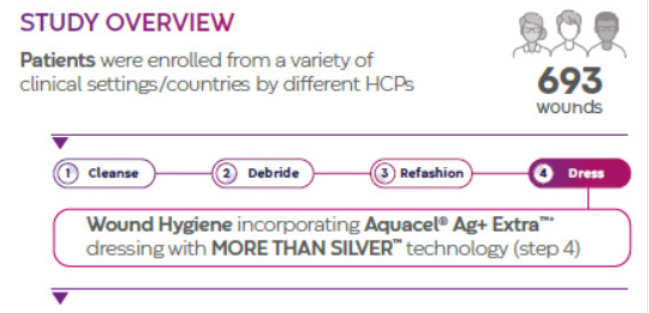
Real World Analysis Of The Wound Hygiene Protocol[1]

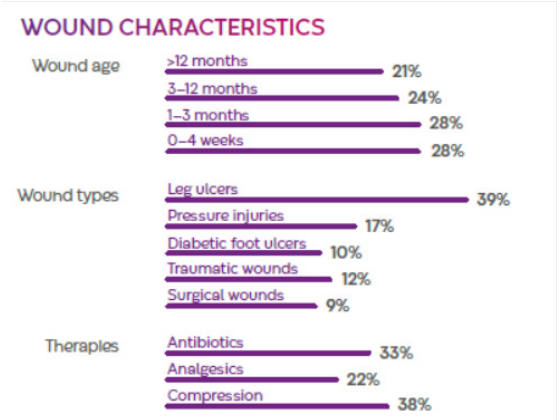
In 2024, Torkington-Stokes et al. published a prospective, real-world analysis of hard-to-heal wounds managed with the Wound Hygiene protocol (WHP). Aquacel® Ag+ dressing was incorporated as part of the WHP. The protocol was initiated through a structured education programme.

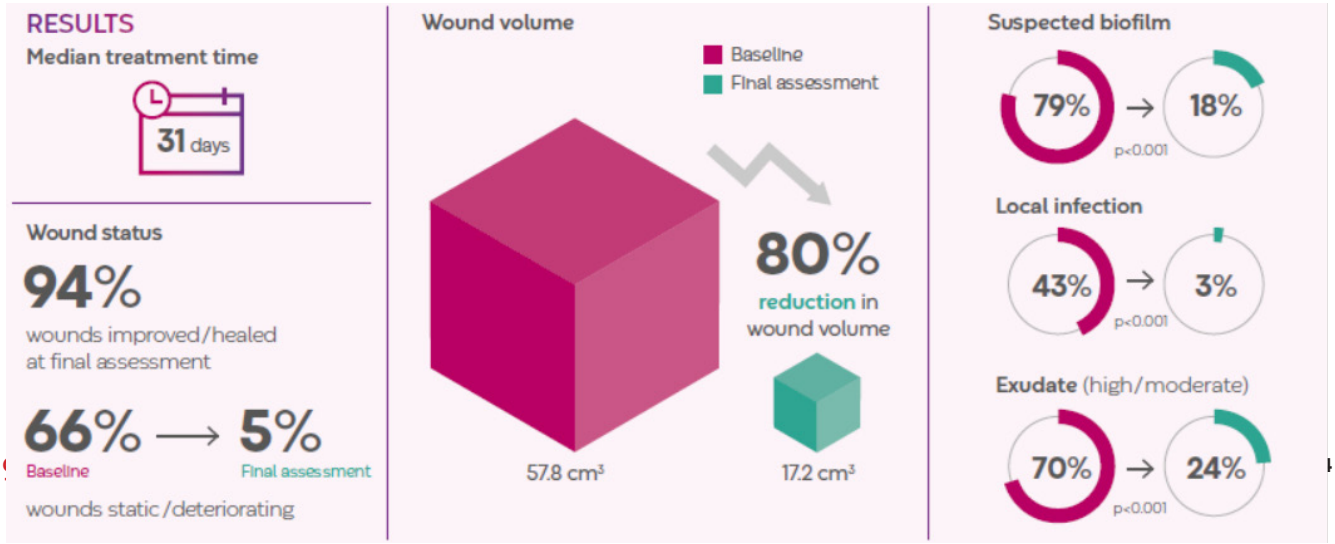
A total of 693 wounds in 669 patients from Spain, Italy, the UK, Poland, the Netherlands and Portugal were included in the study. Venous leg ulcers (VLUs) and pressure injuries (PIs) were the most common wounds. Twenty-one percent of the wounds have a duration greater than 12 months. Thirty-three percent of the patients were receiving antibiotic treatments. The predominant setting of the study was in community and home care settings. The study demonstrated that WHP successfully treated hard-to-heal wounds by addressing key barriers to wound healing. WHP was associated with a reduction of mean wound volume, suspected biofilm, local infection and exudate. At baseline, 66% of wounds were either static or deteriorating. This decreased to 5% at final assessment; 94% of the wounds showed improvement or have healed. Almost all of the clinicians involved (98.8%) responded that they would continue to adopt WHP as part of their wound care practice.

The Impact Of Surgical Site Infections[2]

Surgical site infections (SSIs) are a leading cause of postoperative morbidity and mortality. A study by G. Dobson in 2020 showed that of 310 million annual surgeries worldwide, 15% had serious postoperative morbidity. SSIs can lead to further complications, including but not limited to, stalled or reversed wound healing, wound dehiscence and system sepsis. SSIs place a significant burden on the health care system – they can cost up to three to four times the surgical procedures themselves. More importantly, SSIs can negatively affect the patient's quality of life.



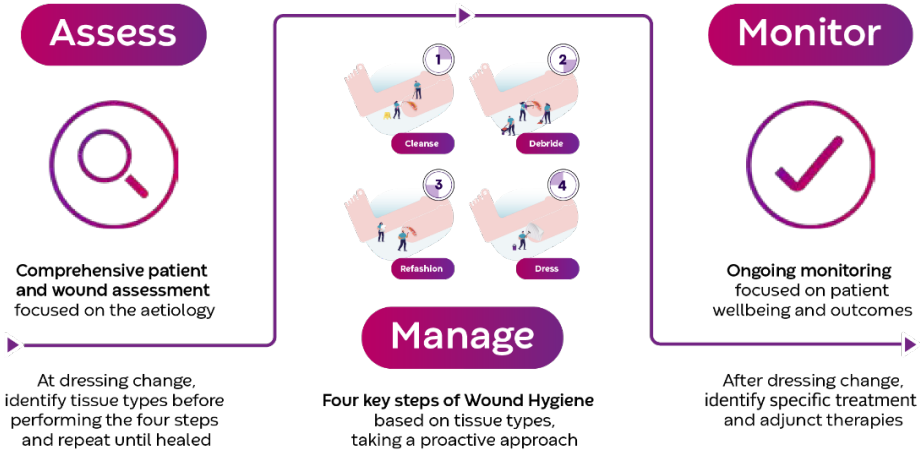


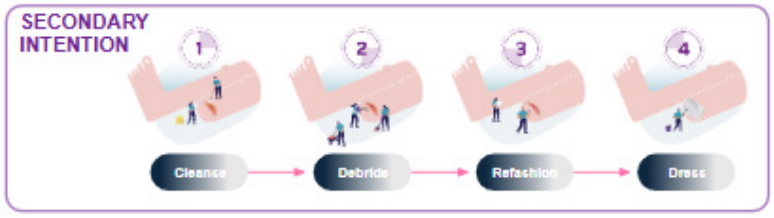


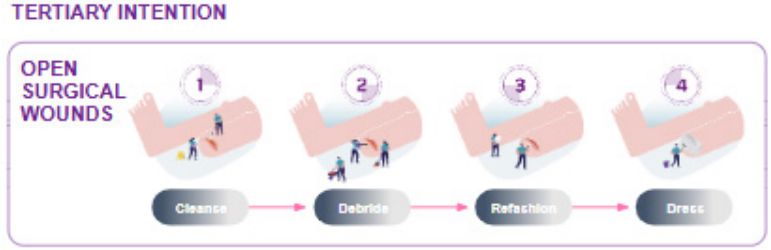
A Proactive Healing Strategy For Tackling Biofilm-Based Surgical Site Complications: Wound Hygiene Surgical[3]

Surgical wounds normally progress along an expected trajectory of healing. However, healing can be impaired by a variety of complicating incidents. SSIs behave very similarly to hard-to-heal wounds. The preoperative risk factors for surgical wound complications, including SSIs and dehiscence (See Table), closely overlap those of hard-to-heal wounds. Similar to hard-to-heal wounds, surgical wounds can be complicated by biofilm impairing healing and causing infections. Surgical complications and delayed healing can have significant impact on the health system (e.g., lengthen hospital stay, increase care human resource and cost) and the patient's quality of life. Therefore, a proactive approach should be undertaken to overcome the barriers of healing for SSIs, such as the presence of biofilm.

The Wound Hygiene Protocol (WHP) was developed for use in any setting, it is also suitable in a surgical context. A surgery specific version of the WHP is Wound Hygiene Surgical. It is a modified , patient-centric approach to wound hygiene. The first phase, "Assess", is to perform a comprehensive patient and wound assessment. The original four-step WHP is situated within the second phase, "Manage". "Monitor" is the last phase – ongoing monitoring should focus on patient well-being and outcomes.







Surgical Wound Management And Wound Hygiene

Primary intention:

Definition:

- When the wound edges of a surgical incision are brought together (approximated) and remained close throughout the healing process

Application of Wound Hygiene Protocol:

- Focus on preventing any planktonic bacteria in the closed incision from seeding and resulting in biofilm formation
- Implement Step 1 (cleanse) and Step 4 (dress) of the WHP

Secondary intention:

Definition:

- When dermal edges are not fully approximated, leaving the wound open

Application of Wound Hygiene Protocol

- Open wounds resulting from SSI or dehisce should be managed with all four steps of the WHP (cleanse, debride, refashion, dress)

Tertiary healing (i.e., delayed primary closure):

Definition: Deliberately leaving a wound open

before surgically approximating it at a later date
Application of Wound Hygiene Protocol:

- Implement Steps 1 to 4 of the WHP
- Refashioning should include the entire wound bed, including healthy tissue, and not just the wound edges

Dr. Christine Murphy PhD RN BSc(Hons) Tissue Viability, MClSc(WH), PhD, NSWOC, WOCC(C) is a Registered Nurse and Nurse Specialized in Wound, Ostomy & Continence (NSWOC) with Canadian Nurses' Association certification. Originally from Gloucester, England, Dr. Murphy makes her home in Ottawa and is the proud mother of 3. She currently works at The Ottawa Hospital, with specialty in complex surgical and vascular surgery wounds. Additionally, Dr. Murphy is an educator and mentor for health professionals interested in complex wound management.

References

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