



WHY WOUNDS FAIL TO HEAL SIMPLIFIED

This Simplified Guide is intended to cover some of the common signs of failure to heal with possible causes and interventions.

For optimal wound healing, there must be adequate supplies of nutrients and oxygen in the body for cell metabolism and effective waste product removal.

LEARNING OUTCOMES

- ✓ Some of the common signs of failure to heal
- ✓ Possible causes
- ✓ Interventions

There are several reasons why wounds fail to heal; these can be classified as intrinsic and extrinsic. A holistic assessment of the patient must be performed, as healing is a systemic process, and factors affecting the patient can affect wound healing.

INTRINSIC FACTORS



(Peate & Glenrose, 2015; Driscoll, 2010)

AGE

The elderly may experience increased time-to-heal and a fragile structure of healed wounds. This is believed to be due to the slowing of metabolism and changes in skin structure.

PSYCHOLOGICAL

High levels of emotional stress, negative thoughts and anxiety can impact physiology and influence health outcomes, ultimately affecting wound healing. Poor mental health, such as self-harming,

can also contribute to wounds failing to heal.

NUTRITIONAL STATUS

Healing wounds, especially full-thickness wounds, require an adequate supply of nutrients. Wounds require calories from carbohydrates, fats, proteins, vitamins, minerals and an adequate fluid intake. Calories fuel cellular activity, and if in short supply, the body will utilise stored fat and protein for energy.

LIFESTYLE

Extrinsic factors such as smoking, alcohol and drug use have an intrinsic effect on the physiology of a wound and can delay healing.

BODY BUILD

Body build can affect the delivery and availability of oxygen and nutrition at the wound site. Underweight individuals may lack the necessary energy and protein reserves to provide sufficient raw materials for proliferative wound healing. Bony prominences, lacking padding, are vulnerable to pressure due to reduced blood flow at the wound site. Poor nutrition and reduced mobility of overweight individuals can increase the risk of wound dehiscence, hernias and infection.

MEDICATION

Medications can affect wound healing, such as steroids, anti-inflammatory drugs, chemotherapy drugs and immunosuppressants.

COMORBIDITIES

Wound healing can be complex, and comorbidities can interfere, for example:

- ▶ **Diabetes** - uncontrolled glycaemic levels, or hyperglycaemia, can disrupt wound healing by altering the inflammatory response, decreasing white blood cell function and increasing infection risk. Additionally, it can affect blood flow to the wound due to occlusive arterial disease, as well as affect other body systems involved in the healing process.
- ▶ **Venous insufficiency** - an impaired venous system can cause oedema and tissue hypoxia. This can impede tissue repair, resulting in an increased infection risk.
- ▶ **Arterial insufficiency** - blood flow to the tissues is essential for wound healing; inadequate perfusion reduces delivery of necessary oxygen and nutrients, delaying healing and raising the risk of infection.
- ▶ **Immunological disorders** - can impede the body's inflammatory response required for healing, increasing the risk of infection.
- ▶ **Sensory and autonomic neuropathy** - cutaneous nerves produce substances essential for the healing process. Their limited production can impact the healing process and lead to further deterioration.

EXTRINSIC FACTORS



(Peate & Glenrose, 2015; Driscoll, 2010)

MECHANICAL STRESS

Factors include pressure, shear and friction.

DEBRIS

Debris such as necrotic tissue or foreign material, must be removed from the wound site to allow the wound to progress from the inflammatory stage to the proliferative stage of healing.

WOUND CARE SKILL AND TECHNIQUE

A common reason wounds fail to heal is down to the wound care technique of the health care professional. This refers to the potential use of an incorrect dressing, not following clean wound procedures (aseptic techniques), leaving a dressing in place for too long and trauma upon dressing removal.

TEMPERATURE

Temperature controls the rate of chemical and enzymatic processes occurring within the wound and the metabolism of cells and tissue engaged in the repair process.

INFECTION

Infection at the wound site will ensure that the healing process remains in the inflammatory phase.

DESICCATION AND MACERATION

Desiccation (drying out) of the wound surface removes the physiological fluids that support wound healing activity. Maceration resulting from prolonged exposure to moisture, may occur from incontinence, sweat accumulation or excess exudate. Maceration can lead to enlargement of the wound, increased susceptibility to mechanical forces and infection.

CHEMICAL STRESS

Chemical stress is often applied to the wound through the use of antiseptics and cleansing agents. Routine, prolonged use of iodine, peroxide, chlorhexidine, alcohol and acetic acid has been shown to damage cells and tissue involved in wound repair.

WOUND DRESSING

The use of an inappropriate dressing that maintains an adverse wound healing environment can cause trauma and result in delayed healing.

SIGNS OF DELAYED WOUND HEALING

SIGN	CAUSES	INTERVENTION
Wound bed too dry	<ul style="list-style-type: none"> ▶ Inadequate hydration ▶ Exposure of tissues/cells to air ▶ Ischaemia/arterial disease 	<ul style="list-style-type: none"> ▶ Add moisture or use a dressing that retains moisture, such as a film, hydrocolloid or hydrogel dressing ▶ Vascular referral
No change in size or depth	<ul style="list-style-type: none"> ▶ Pressure or trauma to the area ▶ Poor nutrition, circulation, or inadequate hydration ▶ Poor control of disease processes e.g. diabetes ▶ Inadequate pain control ▶ Infection (biofilms may not have visible signs or symptoms) 	<ul style="list-style-type: none"> ▶ Reassess the patient for local or systemic problems that may impair healing and intervene as necessary ▶ Address infection if present
Increase in size or depth	<ul style="list-style-type: none"> ▶ Ischaemia due to excess pressure or poor circulation ▶ Infection 	<ul style="list-style-type: none"> ▶ Poor circulation may not be able to be resolved, but consider adding warmth to area ▶ Address possible infection
Rolled skin edges	<ul style="list-style-type: none"> ▶ Wound bed too dry 	<ul style="list-style-type: none"> ▶ Rehydrate the wound

SIGNS OF DELAYED WOUND HEALING

SIGN	CAUSES	INTERVENTION
Necrosis	▶ Ischaemia	▶ Consider debridement following a vascular assessment
Maceration	▶ Excess moisture	▶ Protect the skin with a liquid barrier ▶ Use a more absorptive dressing
Increase in drainage or change in drainage colour from clear to purulent	▶ Debridement ▶ Infection	▶ If caused by debridement, no intervention is necessary as change of colour is expected with the breakdown of dead tissue ▶ If debridement is not the cause, assess the wound for infection
Tunnelling	▶ Pressure over bony prominences ▶ Foreign body ▶ Deep infection	▶ Protect the area from pressure ▶ Irrigate and inspect the tunnel for foreign material ▶ Take a swab for infection
Wound edges: red with increased skin temperature, tenderness and induration	▶ Inflammation due to excess pressure or infection ▶ Contact dermatitis ▶ Allergy to dressing	▶ Protect the area from pressure ▶ If pressure relief doesn't resolve inflammation, topical antimicrobial may be indicated ▶ Consider topical steroid
Undermining or ecchymosis (loose or bruised skin edges)	▶ Excess shearing force to the area	▶ Protect the area

(Adapted from Vuolo, 2009)

Carrying out an initial assessment for recognising hard-to-heal wounds

1. Carry out an initial assessment
2. Record patient and wound descriptors, comorbidities and resource requirements

Wound:
Duration
Location
Size and shape
Wound bed
Margins
Exudate
Odour
Pain
Periwound skin

General/systemic:
Comorbidities
Medication
Social Health
Regional:
Perfusion
Function
Deformity

Are there any resources, skills or concordance issues that may affect the outcome?

Resource/skills:
Equipment
Dressings
Access to specialist skills

Concordance:
Mental state
Pain
Intolerance

Are there any systemic or regional issues (ischaemia, paralysis or deformity) that may affect the outcome?

Are there any wound related issues that may affect the outcome?

Inflammation	Wound location	Tendon/bone exposed
Infection	Exudate, pain, odour	Prosthesis
Ischaemia	Necrosis/slough	Undermining

YES

NO

Hard-to-heal wound
Consider need for advanced products and/or refer for specialist care option

Establish treatment goals, timelines and methods of care targeting issues identified and record review period

MEASURE OUTCOMES

- ▶ Has treatment plan been followed?
- ▶ Has treatment been effective and reduced symptoms?
- ▶ Have treatment goals been reached?
- ▶ Has the wound reduced in size and/or has there been an improvement in the wound bed, margin or periwound skin?

YES

NO

Does anything suggest that this wound is not healing/will not heal, i.e. is it hard to heal?



Simplifying the
Complexities of
Wound Care



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