

STANDARD 3: WOUND ASSESSMENT

A comprehensive, ongoing assessment of the individual, their wound and the healing environment is performed and used to develop an individualised wound prevention and management plan.

Rationale

Clinical decision making is underpinned by comprehensive initial and ongoing assessments of intrinsic and extrinsic factors that influence the risk of wounding and the ability of a wound to heal. A comprehensive assessment of the individual, their wound/wound risk and the healing environment is required to develop an individualised wound prevention and management plan, and to monitor outcomes and effectiveness of the individualised plan.

Criteria for wound care practitioners

To meet the criteria for the *Wound Assessment Standard*, the wound care practitioner:

3.1. Conducts a comprehensive and ongoing assessment of the individual.

Evidence Criteria

3.1.1. Regularly assesses the individual's general health and wellbeing related to risk of wounding and/or wound healing, which may include:¹⁻¹¹

- Reason for presentation.
- Cultural sensitivities, language and need for interpreter service.
- Health literacy, socioeconomic status and wound-related knowledge.
- Health history and co-morbidities that impact wound healing.
- Age and specific age-related changes.
- Vital signs.
- Previous wound history, management and outcomes.
- Previous relevant diagnostics and investigations.
- Prescription and over-the-counter medications (including vitamin supplements), recreational/social drug use, skin and wound products, and alternative preparations (e.g. homeopathic medication).
- Sensitivities and known allergies.
- Perceptions, preferences, goals, concerns and self-care ability.
- Capacity to heal.¹²⁻¹⁵

3.1.2. Screens or refers for nutritional risk assessment,^{6, 7, 16, 17} which may include:

- Quantity, quality and nutritional content of food and fluid intake.¹⁶
- Weight status, including weight history (e.g. weight loss \geq 5% in 30 days or \geq 10% in 180 days).¹⁶
- Anthropometric assessment, including:^{1, 16}
 - Height.

- Waist circumference.
 - Waist to hip ratio.
 - Objective estimates of subcutaneous fat (e.g., body mass index) and skeletal muscle stores.
 - Formulas such as the Harris-Benedict equation to measure and evaluate basal metabolic rate or basal energy expenditure.¹⁶
 - Hair and skin changes.
 - Ability to eat, including any assistance or diet requirements.¹⁶
 - Additional specific biochemical tests (e.g., albumin, transferrin, zinc or vitamins).¹⁶
- 3.1.3. Conducts or refers for cognitive and psychosocial assessments, which may include:^{4, 8, 9, 18}
- Cognitive screening.
 - Psychological screening.
 - Wellbeing, quality of life, social and wound impact assessment.

3.2. Conducts a comprehensive and ongoing assessment of the individual's risk of wounding.

Evidence Criteria

- 3.2.1. Performs skin and wound-related risk assessments as appropriate to the individual. These may include:^{6, 7, 10, 16, 19, 20}
- Assessment of risk for:
 - Pressure injuries.
 - Falls.
 - Skin tears.
 - Incontinence-associated skin damage.
 - Skin and hair infestations.
 - Infection.
 - Skin cancer.
 - A skin assessment, that includes:^{7, 16, 21-23}
 - Skin integrity (observation of rashes, lesions, wounds and dryness).
 - Skin colour (observation and palpation or use of transparent disc press methods to assess blanching of erythema).
 - Skin texture (palpation).
 - Skin temperature (palpation).
 - Skin care/hygiene practices.
 - A lower leg vascular assessment that includes:^{1, 3, 6, 8, 9, 16, 22, 24-34}
 - Vascular history.
 - Limb temperature.
 - Skin colour changes.
 - Palpation of pulses.
 - Leg and foot size and shape.
 - Signs of venous insufficiency (e.g., oedema, hyperpigmentation, varicose eczema, atrophie blanche).

- Signs of arterial insufficiency (e.g., cold, leg numbness or weakness, cramping).
- Mobility and ankle movement.
- Ankle brachial pressure index (ABPI) using hand held Doppler and/or toe brachial pressure index (TBPI) or absolute toe pressures to evaluate arterial insufficiency.³⁴⁻³⁶
- Photoplethysmography to determine venous refill time.
- Transcutaneous oxygen pressure to evaluate local tissue perfusion.³⁴
- Referral for appropriate investigations and imaging.
- A high risk, neurological foot assessment that includes:^{1, 3, 11, 16, 24, 26, 27, 29, 37, 38}
 - Palpation of the foot to assess for bounding foot pulses and increased skin temperature indicative of autonomic neuropathy.^{35, 36}
 - Observation for callus, wounds, xerosis, foot deformity and joint mobility.
 - Assessing for peripheral sensory neuropathy using a 10g or 5.07 Semmes-Weinstein monofilament to evaluate sensation and a 128 Hz tuning fork or biothesiometer to assess vibration perception.
 - Assessing for peripheral motor neuropathy using a patella hammer to evaluate patella and Achilles' reflexes and muscle weakness.
 - Referral for appropriate investigations and imaging.

3.3. Conducts and documents a comprehensive and ongoing assessment of the individual's wound.

Evidence Criteria

3.3.1. Performs and documents a comprehensive initial wound assessment, for example:^{1, 8, 10, 11, 14, 16, 22, 26, 29, 39-41}

- Type of wound (e.g., leg ulcer, pressure injury).
- Aetiology and original mechanism of wounding (e.g., venous insufficiency, pressure).
- Duration of wounding.
- Anatomical location.
- Measurement of wound dimensions, for example:^{8, 12, 16, 29}
 - Length, width and depth measured at the longest and deepest parts of the wound using a ruler or planimetry device.
 - Wound area measured by wound circumference tracing and planimetry.
 - Wound volume measured using sterile fluid or filler inserted into the wound.
 - Probing to determine any undermined edges or sinus tracking.
- Clinical characteristics of the wound bed (e.g., agranulation, granulation, hypergranulation epithelialisation, slough, necrosis/eschar, exposed bone or tendon, foreign body, fistula).
- Wound edge characteristics (e.g., level, raised, rolled, undermined, colour)
- Peri-wound and surrounding skin characteristics (e.g., erythema, oedema, induration, maceration, desiccation, dermatitis/eczema, callus, hyperkeratosis, changes in pigmentation, urticaria, temperature).

- Exudate characteristics, including:^{10, 42, 43}
 - Type (e.g., serous, haemoserous, sanguineous, seropurulent, purulent).
 - Consistency (e.g., thick, thin).
 - Amount.
 - Malodour.
 - Phase of wound healing (e.g., haemostasis, inflammation, reconstruction, maturation/remodelling).^{12, 44}
 - Signs and symptoms of inflammation or infection.^{1, 3, 17, 24, 26, 37, 38, 43}
 - Clinical signs and symptoms of inflammation or infection.
 - Extent of infection (e.g., local infection, spreading infection, systemic infection).
 - Investigations (e.g., wound culture).
- 3.3.2. Classifies wounds based on aetiology using a validated tool for that wound type, where such a tool exists (e.g., pressure injuries, burns, skin tears, venous leg ulcers, diabetic foot ulcers).^{1, 8, 9, 16, 26, 40, 41, 45-47}

3.4. Conducts a comprehensive and ongoing assessment of the individual's wound-related pain.

Evidence Criteria

- 3.4.1. Conducts and documents initial and ongoing assessments of wound pain, which consider both verbal and non-verbal cues and include assessment of:^{1, 6, 8, 14, 16, 19, 24, 26}
- Aetiology and presentation, for example:
 - Non-cyclic wound pain (e.g. associated with suture removal or debridement).
 - Cyclic wound pain (e.g. associated with change of wound dressings).
 - Chronic wound pain (e.g. not related to intervention).
 - Characteristics of pain, using a valid and reliable pain assessment tool and including:
 - Location, including any radiating or referred pain.
 - Character of the wound-related pain (e.g. burning, itching, stabbing, shooting).
 - Intensity of the wound-related pain.
 - Duration of wound-related pain.
 - Factors that contribute to wound-related pain (e.g. repositioning).
 - Factors that relieve wound-related pain (e.g. warmth, quiet, positioning).
 - Impact of pain on quality of life and well-being.

3.5. Uses valid, reliable and appropriate tools and/or frameworks when undertaking wound-related assessments.

Evidence Criteria

- 3.5.1. Selects a valid and reliable tool and/or framework appropriate to the individual for undertaking assessments (when available), for example:^{1, 2, 6, 8-11, 13, 16, 19, 20, 22-24, 48-52}

- Risk assessment tools (e.g., Braden Scale, Norton Scale, Waterlow Score, Braden-Q Scale, Glamorgan Scale).
- Wound assessment tools/frameworks (e.g. Pressure Ulcer Scale for Healing [PUSH]©, Bates-Jensen Wound Assessment Tool© [BWAT], Photographic Wound Assessment Tool© [PWAT], TIMES, Rule of Nines, Artz's criteria, PEDIS).
- Nutrition screening and assessment tools (e.g., Nutrition Risk Screening (NRS) 2002, Short Nutrition Assessment Questionnaire (SNAQ) Mini Nutritional Assessment® [MNA], Malnutrition Universal Screening Tool [MUST]).
- Cognitive screening tools (e.g., Mini Mental State Examination© [MMSE], Modified Mini Mental State Examination [3MS], Cognitive Abilities Screening Instrument).
- Psychological screening tools (e.g., Hospital Anxiety and Depression Scale, Beck Depression Inventory©, Hamilton Rating Scale for Anxiety [HAM-A]).
- Wellbeing and quality of life (QOL) assessment tools (e.g., Short Form 36™, World Health Organisation Quality of Life, Cardiff Wound Impact Schedule, VEINES-QOL, Chronic Venous Insufficiency QOL Questionnaire, Wound-QoL).
- Pain assessment tools (e.g., Numerical Rating Scale, Visual Analogue Scale, Wong-Baker FACES® pain rating scale, Verbal Rating Scale).

3.5.2. Uses a consistent assessment method to undertake repeat assessments to enable outcome monitoring over time.^{6, 16, 19}

3.6. Refers for appropriate diagnostic investigations when indicated (e.g., to attain a definitive diagnosis or to identify reasons for delayed wound healing) and documents the outcomes.

Evidence Criteria

3.6.1. Requests biochemical analysis when indicated, for example:^{1, 11, 16}

- Blood glucose and HbA1c.
- Haemoglobin.
- Plasma albumin.
- Lipids.
- Urea and electrolytes.
- Rheumatoid factor.
- Auto antibodies.
- White cell count.
- Erythrocyte sedimentation rate.
- C-reactive protein.
- Liver function tests.

3.6.2. Requests microbiology when indicated, for example:^{1, 6, 16, 37, 38, 43}

- Wound swab for semi-quantitative and quantitative organisms.^{43, 53, 54}
- Needle aspiration for quantitative organisms.
- Wound/bone biopsy for quantitative organisms.^{17, 43}
- Blood cultures to evaluate systemic infection.¹¹
- Skin and nail scrapings for culture and microscopy.

- 3.6.3. Requests histopathology when indicated, for example:^{1, 11, 29, 47}
- Wound biopsy to identify pathological changes.
- 3.6.4. Requests diagnostic imaging and testing when indicated, for example:^{1, 11, 16, 31, 32, 37}
- Doppler or colour duplex ultrasound to evaluate venous and arterial disease.
 - Photoplethysmography to evaluate venous disease.
 - Angiography to evaluate arterial disease.
 - Laser Doppler flowmetry or video microscopy to evaluate burn depths.⁵⁰
 - Plain x-ray (e.g., fracture, gas gangrene and osteomyelitis).
 - Magnetic resonance imaging or position emission tomography (e.g., osteomyelitis).⁵⁵
 - Bone scan (e.g., osteomyelitis if magnetic resonance imaging is contraindicated).
 - Computed tomography (e.g., soft tissue infection).
 - Sinogram and fistulagram to identify wound tracking.

3.7. Identifies factors in the individual's healing environment that could impact on wound healing.

Evidence Criteria

- 3.7.1. Assesses the safety of the environment for the individual, family carers and the multidisciplinary team.
- 3.7.2. Assesses the environment for risks to wound contamination or spread of infection.
- 3.7.3. Assesses the individual's lifestyle and identifies factors that may impact on wound healing or risk of wounding.
- 3.7.4. Assesses environmental factors that may influence wound healing (e.g., temperature, humidity).
- 3.7.5. Establishes privacy and security of the environment.

3.8. Establishes goals of care with the individual, their family carers and the multidisciplinary team.

Evidence Criteria

- 3.8.1. Works with the individual, their family carers and the multidisciplinary team when establishing goals of care.^{6, 8, 16, 22}
- 3.8.2. Establishes and documents goals that are relevant to wound care.^{6, 8, 16, 41}
- 3.8.3. Addresses optimisation of healing and the individual's capacity to heal when establishing goals of care.^{8, 14, 16, 40}
- 3.8.4. Addresses conservative/palliative wound care when establishing goals of care.^{16, 56, 57}

3.9. Monitors and documents wound status, wound healing progress and effectiveness of the wound care plan.

Evidence Criteria

- 3.9.1. Regularly screens for new wounds.⁶
- 3.9.2. Monitors wound healing outcome measures (e.g., complete healing, wound size/dimensions, percent of wound healing over time, infection status, etc.).^{6, 16, 19, 24, 40}
- 3.9.3. Monitors patient related outcome measures (e.g., pain, quality of life, activities of daily living etc.).^{19, 24}
- 3.9.4. Reviews and revises the wound care plan consistent with the changing status of the wound.^{16, 19, 24, 40}

Criteria for wound service providers

To meet the criteria for the *Wound Assessment Standard*, the wound service provider:

3.10. Promotes a system of care that is consistent with individuals receiving a comprehensive clinical assessment.Evidence Criteria

- 3.10.1. Develops and regularly reviews policies and procedures to guide assessment of the individual and their wound or risk of wounding.^{3, 16}
- 3.10.2. Provides access to wound assessment tools, documentation systems, equipment and technology that is maintained according to manufacturers' directions.^{8, 16, 30}
- 3.10.3. Identifies and supports those responsible for assessment of the individual and their wound or risk of wounding.^{3, 16, 30}
- 3.10.4. Establishes and maintains collaborations and referral systems to promote access to interdisciplinary assessment and laboratory and diagnostic testing.³

Related resources

Australian Wound Management Association and New Zealand Wound Care Society. (2012). Australia and New Zealand Clinical Practice Guideline for Prevention and Management of Venous Leg Ulcers. Cambridge Media: Osborne Park, WA	EBG
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Lipsky, B.A., Senneville, E., Abbas, Z., Aragón-Sánchez, J. Diggle, M., Embil, J.M., Kono, S., Lavery, L.A., Malone, M., van Asten, S.A., Urbancic-Rovan, V., Peters, E.J.G., on behalf of	EBG

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World Union of Wound Healing Societies. (2016). Florence Congress, Position Document. Local Management in Diabetic Foot Ulcer. <i>Wounds International</i> : London.	P
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Wounds UK. (2018). Best Practice Statement: Improving Holistic Assessment of Chronic Wounds. <i>Wounds UK</i> : London.	C
Wounds UK. (2019). Best Practice Statement: Ankle Brachial Pressure Index (ABPI) in Practice. <i>Wounds UK</i> : London.	C

Background and Context

A comprehensive and holistic assessment of the individual, their wound and the wound healing environment is an integral component of wound prevention and management. Assessment and diagnosis underpin decision-making, care planning and ongoing evaluation.

Assessing the individual, the wound and the healing environment

A comprehensive assessment of the individual acknowledges the contribution of a large range of intrinsic factors that influence both the risk of developing a wound and the ability of the individual to heal. Comorbidities, nutrition status, vascular status and infection all influence skin and tissue health and reparative processes. They require appropriate investigation to inform the development of a wound prevention and/or management plan that will address underlying factors that influence the risk of wounding and/or ability to heal.¹⁻¹¹

It is widely acknowledged that in addition to the physical factors that influence the healing, the cognitive and psychosocial status of the individual are important contributory factors to healing, wellbeing and quality of life for those who live with, or at risk of, a wound. Ascertaining the health literacy level, communication skills and cognitive ability of the individual relating to their general health and wound prevention and management is crucial in engaging the individual in both the assessment process and in ongoing decision making and care skills. Assessment of multidimensional factors, including the individual's social support and engagement, psychological health and quality of life provides context to that person's resources, abilities to engage in potential interventions and additional assistance they may require to prevent or manage wounds.^{1, 8, 9, 18}

Initial and ongoing wound assessment is critical to promotion of healing. Certain characteristics of the wound can provide key indicators to the multidisciplinary team as to the wound's changing status and the success or otherwise of a management plan. Accurate and well-documented assessment allows wound care practitioners to identify early, covert signs of infection (e.g., hypergranulation, friable granulating tissue, wound breakdown or epithelial

bridging).^{3, 16, 17, 24, 37, 43} and act accordingly. Regular documentation of the wound's dimension, appearance and characteristics allows monitoring of healing progress, which can provide an indication of effectiveness of treatment or suggest potential complications that are hindering normal wound healing (e.g., biofilm).

The surrounding environment is crucial to wound healing, and strategies the multidisciplinary team might implement when managing the wound and in promotion of healing in general. Attention to the risk of infection from the environment (e.g., from air borne contaminants, unclean surfaces or equipment, ventilation or water sources) is most critical when the wound is exposed. Environmental factors can influence the concordance of individuals with prevention and management interventions, for example, in a warm or humid environment, compression stockings or bulky wound dressings may impact on the individual's comfort.¹ Assessment of the local environment in community settings may provide indicators to factors that could influence healing (e.g. non-hygienic conditions, access to equipment, storage and waste facilities, presence of pets).⁵⁸⁻⁶¹

Assessment and measurement tools

The way in which a health assessment is conducted can influence the reliability and relevance of the information that is collected. Best practice suggests that where possible, wound care practitioners use assessment tools that have been scientifically validated to guide a clinical assessment. Validity refers to the ability of an assessment tool or test to measure the factor that it purports to be assessing. Reliability of an assessment tool or test refers to the ability of the assessment strategy to produce the same result if it is administered repeatedly to the same individual.^{62, 63}

Reliability and validity are important considerations because strong psychometric qualities of the assessment tool ensure the diagnoses arising from the assessment are based on accurate information. If the tools used to conduct an assessment have strong validity and reliability there can be greater certainty that the assessment is measuring the characteristics as purported, and that any changes in the assessment results are not random.^{62, 63}

Selection of assessment tools should be individualised. Many assessment tools are developed for specific populations, and may not be valid and reliable for measuring the same criteria in a different population.⁶² For example, a tool designed to measure severity of pain that has been developed for adults, may not have strong psychometric qualities if it is used to measure pain in children or adults with cognitive impairment. Where possible, assessment strategies should be selected based on psychometric qualities, the individual's characteristics (e.g., age, cognitive status, health status and health literacy), the appropriateness of the items on the tool to that individual, the individual's and wound care practitioner's preferences, resources available and local policies and procedures.

Emerging and advanced wound assessment and measurement techniques

Advanced wound measurement technologies (e.g., digital photography, digital software planimetry, 3D wound mapping) are becoming ubiquitous in well-resourced areas.²⁴

Contemporary wound assessment has been aided by techniques that allow for more detailed evaluation of skin and tissue characteristics.²⁴ Recent research has explored the use of physical markers (e.g., skin and tissue moisture, wound and tissue temperature, and pressure), biochemical markers (e.g., pH and odour) and molecular markers (e.g., proteases, DNA of

micro-organisms, RNA, genes and their function).^{8, 29, 64-68} A range of digital technologies are becoming available to undertake advanced wound assessment, with a varying but rapidly advancing volume of evidence supporting their use. It is important that the multidisciplinary team selects technology that is scientifically demonstrated to provide accurate assessment, and that wound care practitioners receive education in training to ensure advanced wound evaluation strategies are implemented accurately.

Goals of care

Developing goals of care collaboratively with the individual and their family carers is intrinsic to successful wound prevention and management. Goals of care should be specific, measurable, attainable, relevant and time bound. They should consider the individual's specific circumstances and the resources available. Goals that are measurable and time bound can be tracked and reviewed to determine the efficacy of interventions and review the management plan.^{8, 69}

In individuals for whom ability to heal is significantly compromised (e.g., palliative care, inadequately perfused wounds, distal gangrene), conservative wound management is an option.^{8, 15, 56, 70} Management of symptoms that concern the individual (e.g., pain and odour) and prevention of further skin breakdown are appropriate interventions for maintenance of non-healing wounds.⁸ Aggressive sharp debridement is not appropriate in palliative care or for wounds without the ability to heal.⁵⁶

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