Advanced Wound Assessment

Jan Rice
Director
Jan Rice WoundCareServices
woundconsultant8@gmail.com
Difference between basic, fundamental and advanced?

• Basic/fundamental--Serving as, or being an essential part of, a foundation or basis; basic; underlying:
• Advanced---Highly developed or complex
• I am going to take you through what I believe every fully trained nurse should know and you can decide what is basic/fundamental and what perhaps is more complex and so advanced
Before I commence however..

Q: Are there tools to assist in assessment?
A: yes there are a number of tools that have been tested to validate whether they are successful in predicting which wounds are healing, can heal or may be classified as non-healable
Wound assessment tools and nurses’ needs: an evaluation study was conducted to identify if there was a tool which would meet all the identified known criteria.

“No tool was identified which fulfilled all the criteria, but two (the Applied Wound Management tool and the National Wound Assessment Form) met the most criteria of the optimal tool and were therefore considered to best meet nurses’ needs in wound assessment.”
The two wound assessment tools were

• Applied Wound Management (AWM) Gray et al. 2009
• National Wound Assessment Form (NWAF) Fletcher 2010
Why have a systematic assessment?

• The challenging nature of wound healing has led to calls for practitioners worldwide to adopt a holistic and systematic approach to wound care
• This should involve initial and ongoing wound assessments and has several purposes
• Specifically, it provides baseline information against which progress can be monitored, enables goal setting and the correct selection of dressings
• Poor assessment can lead to inappropriate wound management, possible slow to heal wounds, a waste of resources and significant patient concerns
According to Turner, nurses should ask three questions following their assessment of a wound:

- First, ‘at what stage is this wound?’
- Second, ‘what do I want this wound to do next?’
- Third, ‘how can I achieve this objective without damaging healthy tissue?’

- Ashton and Price found that nurses lack knowledge of wound management and feel unprepared to carry out wound care, particularly when newly qualified.
- This is a sentiment I would support—something needs to change in our university education to support nurses at the coalface.
Before you go too much further you have to know what is normal to know what is abnormal.
H.E.I.D.I
a mnemonic for holistic wound assessment

• H- history, medical, surgical, pharmacological, social
• E- examination- total body and wound
• I- investigations, to be attended and reviewed
• Diagnosis-then follow an accepted pathway
• I- intervention, plan of care
Medical

– Evidence suggests those with chronic diseases such as diabetes, rheumatoid and cardiovascular diseases may have slow to heal wounds unless these chronic conditions are well managed.

– Perhaps if you reflect on someone you have nursed with a chronic wound you may find that they too suffered from a chronic underlying medical condition in which you can see the link between slow healing and their disease.
Surgical

• In reviewing the past operations you are attempting to link the cause for some of these surgeries with the wound and its chronicity—having had one toe amputated due to an ischaemic slow healing ulcer may now indicate that the disease is affecting the other toes should the wound be located on the foot—and so a referral back to the vascular surgeon may be more appropriate than worrying about what dressing to use.
Medications

• Yes - there are known positive and negative effects of all medications
  – Ask your pharmacist if any of the medication the patient is taking have known deleterious effects to wound healing
  – Chemotherapeutic medication is one such example—and the pathway to delay is quite obvious—these medications delay rapidly multiplying cells –such as those you may wish to have in a wound that is healing
Medications, drug formulations known to delay healing

- Anticoagulants
- Antihistamines
- Antimicrobials (some)
- Aspirin
- Azathioprine
- B-aminoproprionitrile (BAPN)
- Povidone-iodine
- Chemotherapeutic agents
- Chlorhexidine
- Colchicine
- Cyclosporine
- Dakin’s solution (sodium hypochlorite 0.25%)
- Chemotherapeutic agents
- Chlorhexidine
- Colchicine
- Cyclosporine
- Dakin’s solution (sodium hypochlorite 0.25%)

- Phenytoin
- Glucocorticoids
- Immunosuppressive agents
- Lathyrogens
- Nonsteroidal anti-inflammatory agents
- Papaverine
- Penicillamine
- Phenylbutazone
- Quinoline sulfate
- Retinoids
- Thiphenamil hydrochloride

Other histories......

- Nutritional intake, dietary habits
- Social
- Financial
- Psychiatric

www.ewma.org

www.woundsinternational.com
Wound history

• Apart from the histories previously mentioned we must not forget we need to know all about the wound itself
  – How did it commence?
  – When did it first appear?
  – What has been done to date?
  – How much pain is experienced?
  – Has the patient ever had slow to heal wounds before and if so what was done?
Examination

• Start big and work your way into the actual wound area
  – Look at the patient as a whole-what is your first impression?
  – Does the side the wound is located on look the same as the opposite side apart from the wound?
  – Can you see other things that may also be involved in the slow to heal concept-dry skin etc?
Wound Examination

• There are many mnemonics also used here – one popular one is T.I.M.E

• Tissue

• Infection or Inflammation

• Moisture - balance

• Edge or presence of Epithelialisation
Descriptors used to describe tissue within the wound

- Necrotic -eschar—dead tissue, generally black or brown-dry
- Necrotic -slough—dead cells beginning to separate and break down—generally yellow, light brown
- Granulation—perfused connective tissue growing from the base of the wound, generally beefy red
- Hypergranulation—excessive proliferation of granulation tissue usually raised, jelly like, bleeds easily
- Epithelial—the “top coat” of cells on the newly formed connective tissue, usually pale pink, mauve
Dry hard black-almost no erythema, nil odour, ‘quiet’ DO NOT HYDRATE!!! Keep dry

Soft, boggy, offensive black often with peri wound maceration—have someone debride but usually after a few days of antibiotics-if you debride without antibiotic coverage there is often uncontrolled bleeding
Infected wounds

These wounds have thick purulent exudate often brown/red in colour or green — requires **systemic antibiotic** therapy, exudate control and safe **topical therapy**
Yellow (sloughy) wounds

The drier yellow/brown tissue if not able to be debrided requires rehydration to assist autolytic debridement

The moist creamy yellow wet tissue requires an antimicrobial that will help to manage exudate
Clinicians must however be able to identify other yellow tissue.....

- Tendon
- Bone-creamy / white
- Fat / Subcutaneous tissue
Healthy red (granulating)

This tissue should be almost level with the perimeter of the wound and not bleed easily when cleansed.

This tissue requires some moisture but not too much and it requires a dressing that will protect.
Poor quality granulation tissue

• Can present as pale tissue with irregular tissue and copious exudate and non healing edges
• This tissue often requires an antimicrobial, very good cleansing and exudate management and peri wound protection
Hypergranulation tissue

- Bleeds easily and raised above side edges of wound
- May also present as loose ‘bubbles’ of tissue within deeper wounds
- Sometimes described as ‘Jelly like’ tissue
- Flattens when pressed for short length of time
  - The aim here is to control exudate, apply direct pressure and consider antimicrobials
Pink (epithelialising) tissue

• This represents the wound in the final stages of healing, it may be transparent and pearly pink
• Young epithelium wrinkles when pressed and has a matt finish appearance with minimal exudate
- requires some hydration and protection, particularly against friction and shear
Examining the tissue type within the wound
Examining the tissue type within the wound

Epithelium and slough
Examining the tissue type within the wound

Tenacious slough
Examining the tissue type within the wound

Tendon
Examining the tissue type within the wound

Multiple tissue types but the edge indicates healing has begun
In planning the treatment the clinician must also consider the depth of wound

- For pressure injuries use the pressure injury classification tools, other will be described according to the burn classifications of superficial, partial, thickness, deep partial and full thickness
- Determining depth will influence product choice
Wound exudate assessment is perhaps the final side of the triangle in product selection.

Exudate is often described as nil, minimal, moderate and heavy, but in reality these are very subjective and determined by product selection.

Naturally the type of exudate needs also to be considered.
Descriptors used to describe the tissue surrounding the wound—the peri wound

- Macerated—over hydrated keratin, usually white
- Dry
- Blistered
- Eczema
- Oedematous
- Inflamed
Wound exudate assessment

- Dry-nil exudate
- Minimal exudate
- Moderate exudate
- Heavily exuding

- Remember this a very subjective area unless you are actually collecting and measuring the drainage

This excellent document is available from your Convatec Representative or from [www.woundsinternational.com](http://www.woundsinternational.com)
Many more wound factors to Examine

• Type of exudate
• Odour
• Pain
• Depth and/or presence of undermining or tunneling
• Size-smaller or larger and the relevance of both of these to the wound
Investigations

- Wound swab
- Wound tissue biopsy
- Xray
- Bone scan
- MRI
- Sinugram
- Hand held Doppler for calculating ABPI
- Arterial or venous duplex scan
The swab is the most practical and widely available method for obtaining wound specimen culture. However, the validity of the traditional swab specimen has been questioned, since it fails to capture the level of bacteria beneath the highly colonized wound surface. Recently, it was demonstrated that swab specimens obtained using Levine's technique and processed in the laboratory using quantitative procedures provided a reasonably accurate culture compared with that of wound tissue specimens processed in the same manner.
The Levine method

• Swab specimens are collected by rotating a swab culture over a 1 cm$^2$ area of the wound with sufficient pressure to extract fluid from within the wound tissue

• The swab specimen needs to be taken from an area over viable wound tissue that has previously been cleansed with warm sterile saline
D-Diagnosis
Well this is an ulcer on the leg BUT is there something else going on???

Yes- this is Calciphylaxis
Ulcers on legs can be caused by..

- Chronic venous hypertension - CVI
- Ischemia-arterial disease/occlusion
- A mixture of both these problems
- Skin cancers
- Auto-immune inflammatory conditions
- Factitious/iatrogenic
Diagnosis

• Wound aetiology
• Healing progression against known trajectories
• Contributing factors
• EG “infected trauma wound in a patient with poorly controlled diabetes and poor nutrition.”
**Intervention**

- Correcting aetiology
- Addressing contributing factors
- Preventative strategies

“better control of diabetes, manage infection with appropriate antibiotics and debride wound of necrotic tissue, use appropriate topical antimicrobial dressings and educate patient”
So there you have it...

- H-history
- E-examination
- I-investigations
- D-diagnosis
- I-intervention
Perhaps there is more......

HEIDI the Swiss milk maid –
MILKS COWS
• **Manage the wound**—a wound is a significant event in a patient's life so do not just brush it off.

• **Investigate** when not heading in the right direction.

• **Look for external factors** perhaps not yet considered in the context.

• **Kill infection**—not just slow it down.

• **Swab again** if in doubt of first sample.
• Consult with others—sometimes external ‘sees the obvious’
• Observe the patients overall behavior—some patients use wounds as a ‘crutch’
• Weigh up all the factors influencing healing-this may not be healable
• Systematic approaches lead to key areas to concentrate on
Braden Wound Assessment Tool

• The BWAT contains 13 items that assess wound size, depth, edges, undermining, necrotic tissue type, amount of necrotic, granulation and epithelialization tissue, exudate type and amount, surrounding skin colour, oedema, and induration. These are rated using a modified Likert scale; a score of 1 indicates the healthiest and 5 indicates the most unhealthy attribute for each characteristic. In 2001, the PSST was revised and renamed the Bates-Jensen Wound Assessment Tool to reflect the global use of the tool with wound types beyond pressure ulcers.
<table>
<thead>
<tr>
<th>Table 1. Bates-Jensen Wound Assessment Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Size</strong></td>
</tr>
<tr>
<td>1 = Length x width &lt; 4 sq cm</td>
</tr>
<tr>
<td>2 = Length x width 4 – &lt;1 6 sq cm</td>
</tr>
<tr>
<td>3 = Length x width 16.1 &lt; 36 sq cm</td>
</tr>
<tr>
<td>4 = Length x width 36.1 &lt; 80 sq cm</td>
</tr>
<tr>
<td>5 = Length x width &gt; 80 sq cm</td>
</tr>
<tr>
<td><strong>2. Depth</strong></td>
</tr>
<tr>
<td>1 = Non-blanchable erythema on intact skin</td>
</tr>
<tr>
<td>2 = Partial-thickness skin loss involving epidermis and or dermis</td>
</tr>
<tr>
<td>3 = Full-thickness skin loss involving damage or necrosis of subcutaneous tissue; may extend down to but not through underlying fascia; and/or mixed partial and full-thickness and/or tissue layers obscured by granulation tissue</td>
</tr>
<tr>
<td>4 = Obscured by necrosis</td>
</tr>
<tr>
<td>5 = Full-thickness skin loss with extensive destruction, tissue necrosis or damage to muscle, bone, or supporting structures</td>
</tr>
<tr>
<td><strong>3. Edges</strong></td>
</tr>
<tr>
<td>1 = Indistinct, diffuse, not clearly visible</td>
</tr>
<tr>
<td>2 = Distinct, outline clearly visible, attached even with wound base</td>
</tr>
<tr>
<td>3 = Well-defined, not attached to wound base</td>
</tr>
<tr>
<td>4 = Well-defined, not attached to base, rolled under, thickened</td>
</tr>
<tr>
<td>5 = Well-defined, fibrotic, scarred or hyperkeratotic</td>
</tr>
<tr>
<td><strong>4. Undermining</strong></td>
</tr>
<tr>
<td>1 = None present</td>
</tr>
<tr>
<td>2 = Undermining &lt; 2 cm in any area</td>
</tr>
<tr>
<td>3 = Undermining 2-4 cm involving 50% wound margins</td>
</tr>
<tr>
<td>4 = Undermining 2-4 involving &gt; 50% wound margins</td>
</tr>
<tr>
<td>5 = Undermining &gt; 4 cm or tunneling in any area</td>
</tr>
<tr>
<td><strong>5. Necrotic tissue type</strong></td>
</tr>
<tr>
<td>1 = None visible</td>
</tr>
<tr>
<td>2 = White/grey nonviable tissue and/or nonadherent yellow slough</td>
</tr>
<tr>
<td>3 = Loosely adherent yellow slough</td>
</tr>
<tr>
<td>4 = Adherent, soft, black eschar</td>
</tr>
<tr>
<td>5 = Firmly adherent, hard, black eschar</td>
</tr>
<tr>
<td><strong>6. Necrotic tissue amount</strong></td>
</tr>
<tr>
<td>1 = None visible</td>
</tr>
<tr>
<td>2 = &lt; 25% of would bed covered</td>
</tr>
<tr>
<td>3 = 25% to 50% of wound covered</td>
</tr>
<tr>
<td>4 = &gt; 50% and &lt; 75% of wound covered</td>
</tr>
<tr>
<td>5 = 75% to 100% of wound covered</td>
</tr>
<tr>
<td><strong>7. Exudate type</strong></td>
</tr>
<tr>
<td>1 = None</td>
</tr>
<tr>
<td>2 = Bloody</td>
</tr>
<tr>
<td>3 = Serosanguineous; thin, watery, pale red/pink</td>
</tr>
<tr>
<td>4 = Serous; thin, watery, clear</td>
</tr>
<tr>
<td>5 = Purulent; thin or thick, opaque, tan/yellow, with or without odor</td>
</tr>
<tr>
<td><strong>8. Exudate amount</strong></td>
</tr>
<tr>
<td>1 = None, dry wound</td>
</tr>
<tr>
<td>2 = Scant, wound moist but no observable exudate</td>
</tr>
<tr>
<td>3 = Small</td>
</tr>
<tr>
<td>4 = Moderate</td>
</tr>
<tr>
<td>5 = Large</td>
</tr>
<tr>
<td><strong>9. Skin color surrounding wound</strong></td>
</tr>
<tr>
<td>1 = Pink or normal for ethnic group</td>
</tr>
<tr>
<td>2 = Bright red and/or blanches to touch</td>
</tr>
<tr>
<td>3 = White or grey pallor or hypopigmented</td>
</tr>
<tr>
<td>4 = Dark red or purple and/or nonblanchable</td>
</tr>
<tr>
<td>5 = Black or hyperpigmented</td>
</tr>
</tbody>
</table>
Assessing if progress is being made is often done by..............

- Calculating size change
- Tissue type progresses from necrotic to healthy granulation or epithelium
- Exudate volume decreases
- Pain settles/ subsides
- Peri-wound condition appears normal
- Malodour disappears
• Assessment of wound healing: validity, reliability and sensitivity of available instruments
• Pillen H, Miller M, Thomas J, Puckridge P, Sandison S & Spark JI
• None were found to satisfy all requirements...
National Wound Conference

State of Play
Australian Wound Management Association
National Conference 2016
Melbourne Convention Centre
9-12 November 2016