In TIME wounds will heal

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Overview

• Introduction and overview
• Acute versus chronic and classification of wounds
• Risk Assessment
• History
• Examination
  - wound bed preparation (TIME)
• Investigation
• Diagnosis
• Intervention
• Summary
Acute Wounds

- Trauma
- Surgery
- Abrasions
- Surgical incisions
- Tears
- Penetrating injuries
- Burns

➢ Short healing times
➢ Pass through stages of healing in timely manner
➢ Healing often by primary intention

Chronic Wounds

- Leg ulcers
- Pressure ulcers
- Diabetic foot ulcers
- Malignant wounds

- Healing is delayed by intrinsic/extrinsic factors
- May become ‘stuck’ in inflammatory or proliferative stages of wound healing
- Healing by secondary intention

All wounds have the potential to become chronic if the treatment regime is incorrect or inappropriate (p.14)

Where to start?

- Past history?
- Wound bed?
- Evidence based practice?
- Look at risks?
“Examine the whole patient. Treat the cause and patient-centred concerns before the hole in the patient”  


Wound Assessment Mnemonic

• H History
• E Examination
• I Investigations
• D Diagnosis
• I Intervention
Key Message

Wound Prevention is through Management of Risk
Risk Assessment

Social habits
Infection
Mobility
Bed mobility <
Sleeps in chair
Deformed joints
Breathing problems
Mental State
Motivation

Loss of sensation

Neuropathy
Epidural
Nutrition
Swelling
Pain
Trauma
LOC
Ageing
Skin
Drugs
Evaluating Risk

• Use of Risk Assessment Tools; Timely; Standardisation

• Use of Clinical Judgment

• Action and Documentation

• Skin Assessment by 8/24 on admission
• University of Texas
• PUSH Tool
Wound Assessment – History
(Risk assessment and factors affecting wound healing)

• Medical
• Surgical
• Pharmacological
• Social
• History of Wound
Wound Assessment –
Medical History

• Advanced age
• Immobility
• Systemic malignancy, radiotherapy, chemotherapy, terminal illness
• Malnutrition
• Systemic inflammatory diseases e.g. RA, diabetes, autoimmune
• Neurological

Wound Assessment – Surgical History

- Previous varicose vein surgery
- Sclerotherapy/endovascular
- Previous revascularisation
- Previous skin lesion and skin graft
- Previous skin condition
Wound Assessment – Pharmacological

- Steroids
- Specifics – e.g. hydroxyurea
- Anticoagulants
- Immunosuppressive
- Smoking
- Allergic Reactions
Wound Assessment – Psychosocial

- Low self esteem
- Altered body image
- Depression
- Social isolation
- Loss of independence
- Financial
- Loss of family role
- Interpersonal relationships
Holistic Wound Assessment

DOMAINS OF WELLBEING

- Physical wellbeing
- Mental wellbeing
- Social wellbeing
- Spiritual/cultural wellbeing

Delayed Wound Healing

Systemic Factors

Regional Factors

Local Factors

Checklist Wound

- Wound bed/stage of healing
- Wound site/location
- Wound size
- Amount/type of exudate
- Odour
- Pain
- Wound edge/margin
- Surrounding skin

Appearance of Wound Bed

- Necrotic or black (moist/dry)
- Slough or yellow
- Granulating or red
- Epithelialising or pink
- Hypergranulation
- Bone
- Tendon
- Infected/friable
Haematoma

- Minor haematoma may be reabsorbed so protect with dressing
- Larger haematoma decision to continue with conservative management and secondary intention or surgical intervention
- Surgical intervention may involve skin graft

Management considers best options in discussion with the patient

Conservative management
- Hydrogels
- Hydrocolloids depending on surrounding skin

Wound Site/Location

Point of Reference

Specifics to Aetiology
Choice of Dressing
Healing Time
Wound Size

- Width/length/depth/undermining and surface area – 2 or 3 dimensional
- Tracings/grids
- Depth indicators
- Digital photography
- Software
Odour

- Establish the cause
- Review QOL impact for the patient use of assessment tools for odour
- Treat and manage
  - Treat infection – topical/systemic
  - Debridement of devitalised tissue
  - Manage exudate
  - Odour control dressings
Surrounding Skin

- Healthy
- Dry/scaly
- Erythema
- Blisters
- Discolouration
- Fragile/thin
- Pale
- Shiny/hairless
- Cellulitis
- Oedema
- Eczema (dry/wet)

- Maceration
- Excoriation
- Vascularity – colour, warmth, capillary return
“Pain is an under-recognised and under-treated component of chronic wound care .......”

Pain

- When?
- Where?
- Description?
- How relieve?
- Rating scale?
- Clinical observation

- Disease
- Surgery
- Trauma
- Infection
- Retained foreign body
- Wound care practices/products
“Pain is whatever the patient says it is, but sometimes the patient doesn’t say”
Wound Bed Preparation

Aim

“To create an optimal wound healing environment by producing a well vascularised, stable wound bed with little or no exudate”

Wound Bed Preparation

T  Tissue non-viable or deficient
I  Infection or inflammation
M  Moisture balance
E  Edge of wound – non-advancing or undermined

“T” Tissue

Why debride?

- Provide a physical barrier to physiology of healing
- Interfere with topical delivery of e.g. antimicrobials, pain relief
- Contribute to infection
- Prolong inflammatory process
- Unable to assess the wound accurately
- Increase production of exudate and odour

“T” Tissue
(non viable or deficient)

CAUTION for Debridement

- Wounds in proximity to blood vessels, nerves and tendons
- Necrotic tissue on the feet extreme caution
- Ischaemia
- Necrotic pressure injury on the heel.

- Face, hands, genitalia
- Malignancy
- Patients cannot give informed consent
- Origin and diagnosis unknown
- Blood clotting disorders
- Implants/dialysis fistulas
- Inflammatory conditions


Debridement Methods

- Surgical/sharp
- Mechanical
- Autolytic
- Enzymatic
- Larval Therapy
- Ultrasonic
- Pad with filaments
- Cleansing antiseptics
“I” Inflammation or Infection

Infection = number of organisms x organism virulence x host resistance

## Definitions

<table>
<thead>
<tr>
<th>Contamination</th>
<th>No impairment to healing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonisation</td>
<td>Bacteria multiply but no impairment to healing</td>
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</tbody>
</table>

### Infection

<table>
<thead>
<tr>
<th>(a) Localised Infection</th>
<th>Bacteria multiply. Healing disrupted and wound tissues are damaged. Clinical signs of infection localised to wound and periwound tissue</th>
</tr>
</thead>
<tbody>
<tr>
<td>(b) Spreading Infection</td>
<td>Bacteria have invaded surrounding tissues. Impaired healing. Clinical signs of infection</td>
</tr>
<tr>
<td>(c) Systemic Infection</td>
<td>Impairment to healing. Systemic clinical signs.</td>
</tr>
</tbody>
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**Local Infection**

- *Wound breakdown* in wound size
- *Erythema and* temperature (localised to periwound)
- *Pain*/unexplained
- *Oedema* (localised)
- *Purulent/discoloured viscous exudate*
- *Malodour*
- *Bridging and/or pocketing within the tissue*

**Regional/Spreading Infection (Cellulitis)**

- *Spreading erythema* (>2cms wound margin)
- *Induration* (regional)
- *Fever*
- *Oedema* (Regional)
- *Unwellness*

**Systemic Infection (Sepsis)**

- Sepsis – severe sepsis – septic shock – death
Taking a Wound Swab

- Clean the wound with normal saline
- Swab only in contact with wound surface
- Levine technique

Biofilm

- What is biofilm?
- Which wounds does biofilm form in?
- Can you see a biofilm in a wound?
- How do you remove a biofilm?
Wound Infection

Confirming Diagnosis

- Wound swab (identify causative organism and sensitivities)
- Quantitative analysis (punch biopsy)
- Serum investigation (WBC, > CRP)

Managing Wound Infection

- Antimicrobial dressings
- Wound debridement
- Antibiotics
Antibiotic Resistance

‘How can nurses contribute to antimicrobial stewardship?’

Recognise

• Stages of wound healing
• Excessive inflammation caused by underlying comorbidities
• Increasing bacterial burden
• Infection

Use risk assessment and management

Exudate – understand, assess and manage..” p. 12

<table>
<thead>
<tr>
<th><strong>“M” Moisture Balance</strong></th>
</tr>
</thead>
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<tr>
<td><strong>Colour</strong></td>
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</table>
| **Consistency**          | e.g. High viscosity (high protein from infection, inflammation)  
                          | e.g. Low viscosity (low protein from CCF, malnutrition) |
| **Odour**                | e.g. infection or bacterial growth; necrotic tissue; dressing |
| **Amount (subjective)**  | Depend on surface area of wound; indicate systemic problem; type of wound  
Factors contributing to high exudate levels

- Local infection
- Lymphedema/oedema
- Venous insufficiency
- CCF, renal or hepatic failure
- Obesity/malnutrition
- Renal/hepatic failure
- Medications e.g. NSAIDs, steroids
- Prolonged inflammation
- Other e.g. wound position

Exudate Assessment

Assess wound bed/edge; size; stage of healing; fistula or sinus

Assess periwound

Assess dressing

Assess patient

Assess exudate

Assess regional factors

“E” Edge of Wound
(Epithelial Edge Advancement)

Undermining/tunnelling

• Contraction
• Re-epithelialisation
• Rolled
• Cliff hanging
• Sloping
• Poorly defined/irregular
• Punched
"Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values"

Sackett, D.L. Centre Evidence Based Medicine 2010 http://www.cebm.net/index
Investigation and Diagnosis

- Physical tests and observations
- Biological tests
- Biochemical tests
- Others
Do we have a Diagnosis

• History – Medical – Surgical - Pharmacological
  Social

• Examination – Regional
  Local – TIME +

• Investigations

• Diagnosis

• Intervention/Planning
The Patient and their Wound

The Team and Referral

Diabetes Team
District Nursing
GP & Practice
Orthotics
Plastics
Podiatrist
Infectious Diseases
Specialist Nurses
ACC

Dermatologist
Orthopaedics
Vascular
Rheumatology

Occupational Therapists
Determinants for Plan of Care

Goals/Outcome/Endpoints

- Cause
- Underlying pathology
- Co-morbidities
- Local Factors
- ‘At Risk’
- Quality of Life Issues
- Social History
- Rehabilitation

AIM
- Healing
- Maintenance
- Non-healing
Goals of Care (Local)

Short Term

• Haemostasis
• Debride
• Remove foreign bodies
• Protect surrounding skin
• Reduce bacterial load

Long Term

• To improve physical function
Documentation

- Provides communication
- Provides evidence in litigation
- Used for research and statistical evidence
- Aids education
- Used in clinical audit and quality assurance
- Contributes to care planning

- Provides evidence of continuity of care
- Supports service delivery
- Supports effective clinical judgment
- Supports decision making

“Good records= Good defence
Poor records = Poor defence
No records= No defence”

Re-evaluate

- Surface area
- Exudate amount
- Granulation tissue
- Epithelial tissue
- Pain
- Macerated skin, reddened skin, swelling, warmth/heat
Referral –
Parameters in Wound Healing

- Wound should be 30% smaller (surface area) at week 4 to heal in 12 weeks (Falanga & Sabolinski, 1999)
- 20% to 40% reduction in two and four weeks is likely to be a reliable predictor of healing (Falanga, 2005; Margolis et al, 2004)
- 50% reduction at week 4 a good predictor for persons with DFU (Sheehan et al, 2003)
- Any wound greater than six weeks old is considered chronic (Bowler & Davies, 1999)
Where to start?

- Past history?
- Wound Bed?
- Evidence based practice?
- Look at risks?
Summary

• Understand factors which influence wound healing

• Understand general and health issues that may influence ability of wound to heal

• Holistic wound assessment assesses physical; social; psychological and spiritual/cultural domains of wellbeing

• Identify the specific aetiology/causal factor of the wound and concurrent disease processes p.24

Summary (contd)

- Identify type of wound, stage of healing; consider wound bed and peri-wound skin (p. 24)
- Assess baseline information using logical systematic assessment tools and document findings
- Identify factors that may delay healing
- Re-evaluate current wound management; change according to local wound assessment
- Recognise limitation of knowledge and make appropriate referrals p.24

Other References

