In TIME wounds will heal

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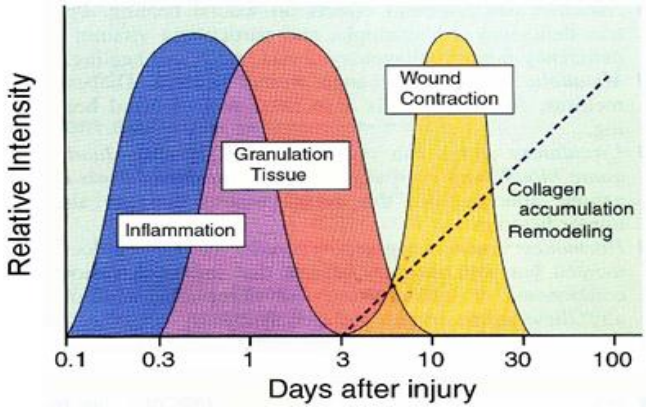
Overview

- 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

Carville, K. (2012). *Wound care manual.* Western Australia: Silver Chain Foundation

Casey, G. (2011). Wound healing – repair at the expense of function. *Kia Tiaki Nursing New Zealand*, *17*(6)22-27

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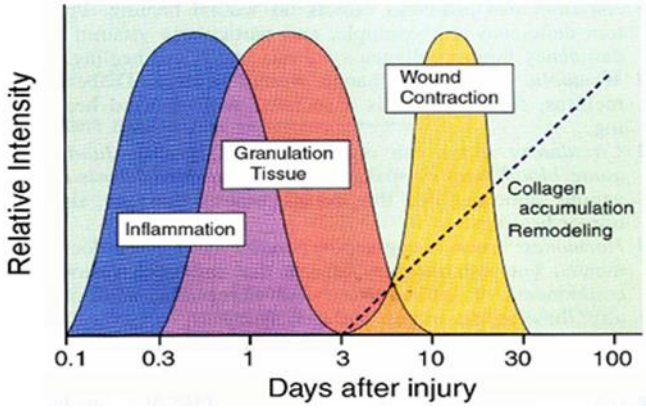
Chronic Wounds



- 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

Carville, K. (2012). *Wound care manual.* Western Australia: Silver Chain Foundation
Casey, G. (2011). Wound healing – repair at the expense of function. *Kia Tiaki Nursing New Zealand*, *17*(6)22-27

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Key Message

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

Eagle, M. (2009). Wound assessment: The patient and the wound. *Wound Essentials*, 4, 14-24

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Where to start?

- Past history?
- Wound bed?
- Evidence based practice?
- Look at risks?

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Key Message

“Examine the whole patient. Treat the cause and patient-centred concerns before the hole in the patient” p. 25

Sibbald, R. G. et al (2012). Special considerations in wound bed preparation 2011: an update. WCET Journal, 32(2), 10-30

Sibbald, R,G,, Woo, K. & Ayello, E. (2007). Increased bacterial burden and infection: NERDS and STONES. Wounds UK, 3(2), 25-46

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Wound Assessment Mnemonic

- **H** History
- **E** Examination
- **I** Investigations
- **D** Diagnosis
- **I** Intervention

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Key Message

Wound Prevention is through Management of Risk

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Risk Assessment

Loss of sensation

Social habits

Infection

Mobility

Bed mobility <

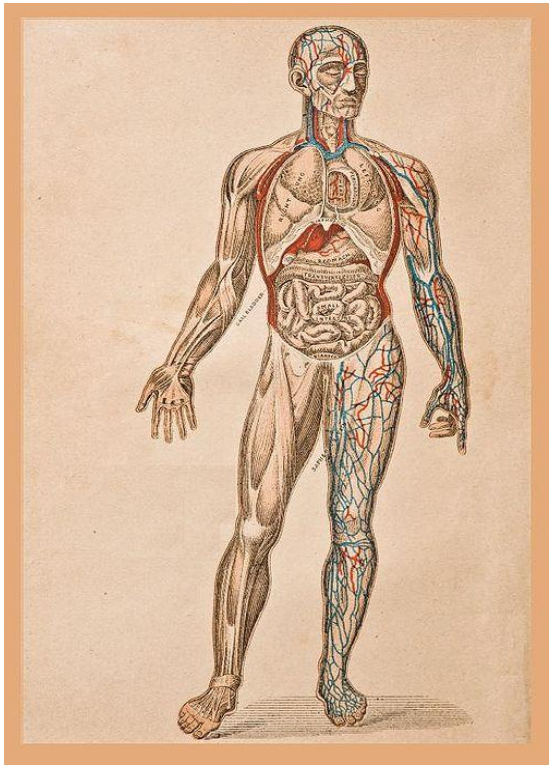
Sleeps in chair

Deformed joints

Breathing problems

Mental State

Motivation



Drugs

Neuropathy

Epidural

Nutrition

Swelling

Pain

Trauma

LOC

Ageing

Skin

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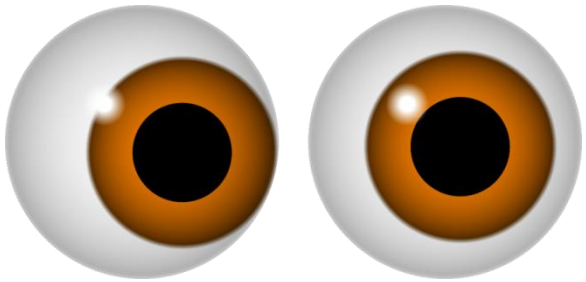
Evaluating Risk

- **Use of Risk Assessment Tools; Timely; Standardisation**
  - Skin Assessment by 8/24 on admission
  - University of Texas
  - PUSH Tool
- Use of Clinical Judgment



- Action and Documentation

Wound Assessment – History

(Risk assessment and factors affecting wound healing)

- Medical
- Surgical
- Pharmacological
- Social
- History of Wound

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Wound Assessment –

Medical History

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

Casey, G. (2011). Wound healing-repair at the expense of function. *Kia Tiaki Nursing New Zealand, 17*(6) 22-27

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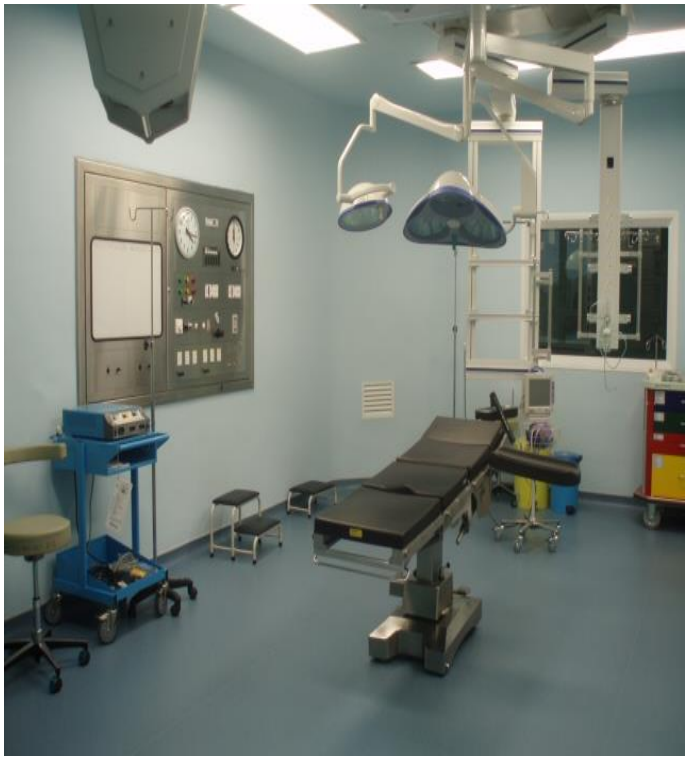
Wound Assessment – Surgical History

- Previous varicose vein surgery
- Sclerotherapy/ endovascular
- Previous revascularisation
- Previous skin lesion and skin graft
- Previous skin condition



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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

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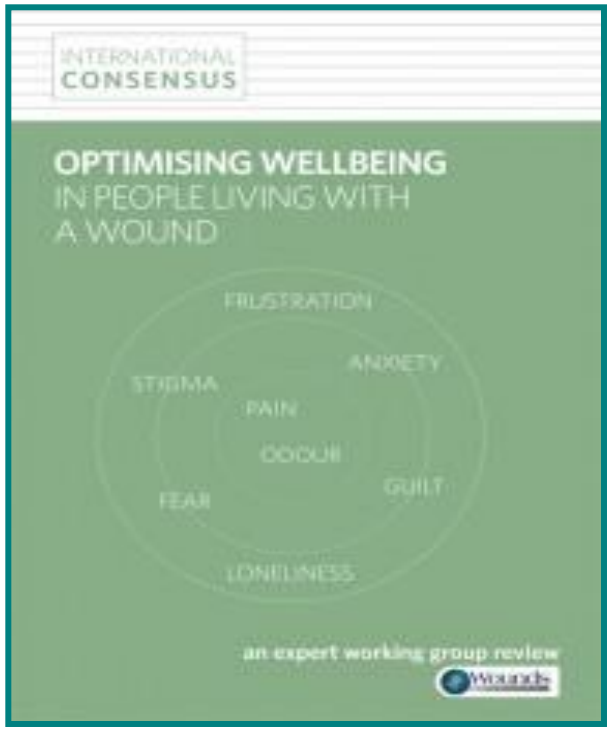
Holistic Wound Assessment

DOMAINS OF WELLBEING

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



International consensus. Optimising wellbeing in people living with a wound. An expert working group review. London: Wounds International, 2012.

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Delayed Wound Healing

Systemic Factors

Regional Factors

Local Factors

White, R. (2008). Delayed wound healing: in whom, what, when and why?. *Primary Health Care, 18*(2), 40-46

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Checklist Wound

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

Eagle, M. (2009). Wound assessment: The patient and the wound. *Wound Essentials,* 4, 14-24

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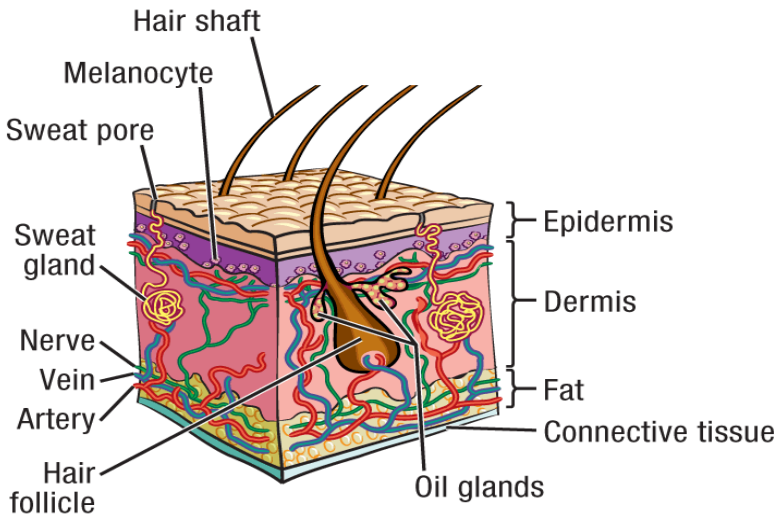
Appearance of Wound Bed

- 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

Beldon, P. (2011). Haematoma: Assessment, treatment and management. *Wound Essentials, 6* 36-39

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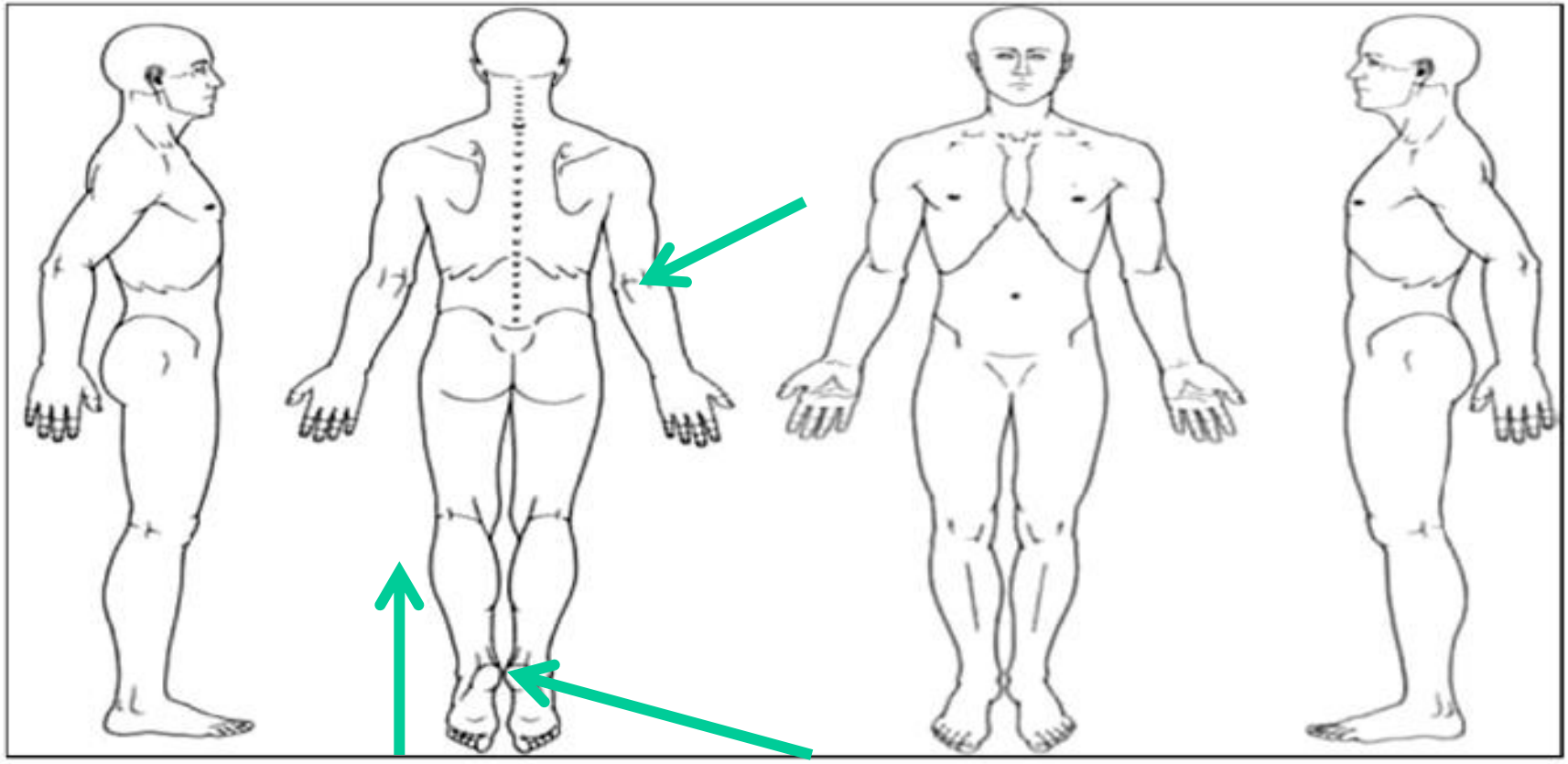
Wound Site/Location

Point of Reference



Specifics to Aetiology

Choice of Dressing

Healing Time

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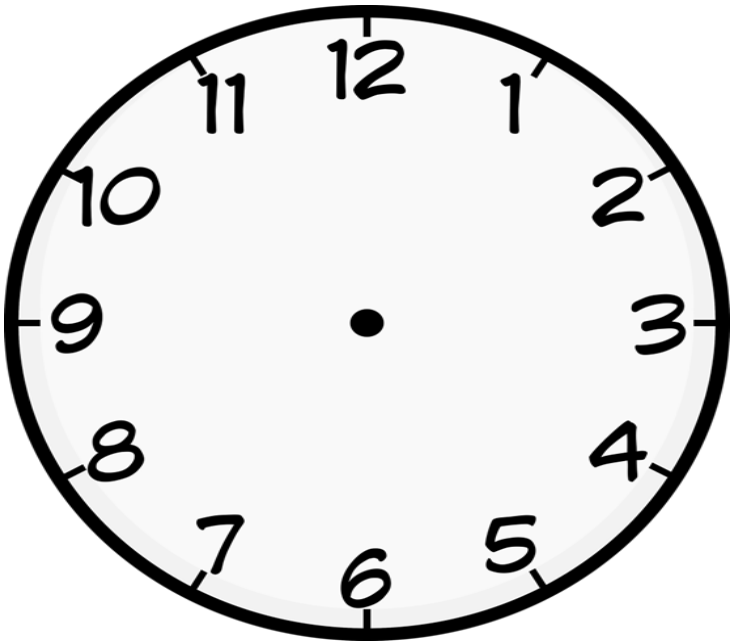
Wound Size

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

Head



Feet

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

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Key Message

“Pain is an under-recognised and under-treated component of chronic wound care …….” p.18

Sibbald, R. et al., (2012). Special considerations in wound bed preparation 2011: an update. *WCET Journal, 32(*2), April/June, 10-30

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Pain

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

- ?Disease
- ?Surgery
- ?Trauma
- ?Infection
- ?Retained foreign body
- ?Wound care practices/products

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Key Message

“Pain is whatever the patient says it is, but sometimes the patient doesn’t say” p.4

Principles of best practice: Minimising pain at wound dressing-related procedures. A consensus document. London: MEP Ltd, 2004

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Wound Bed Preparation

Aim

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

Vowden, K. & Vowden, P. (2002). Wound bed preparation. http://www.worldwidewounds.com.

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Wound Bed Preparation

T Tissue non-viable or deficient

I Infection or inflammation

M Moisture balance

E Edge of wound – non-advancing or undermined

Sibbald, R.G., Orsted, H.L., Coutts, P.M. & Keast, D.H. (2007). Best practice recommendations for preparing the wound bed: Update 2006. *Advances in Skin & Wound Care 20*, 390-405

"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

Effective debridement in a changing NHS: a UK consensus. London: Wounds UK, 2013.

"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

National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline. Emily Haesler (Ed.). Cambridge Media: Osborne Park, Western Australia; 2014

Effective debridement in a changing NHS: a UK consensus. London: Wounds UK, 2013.

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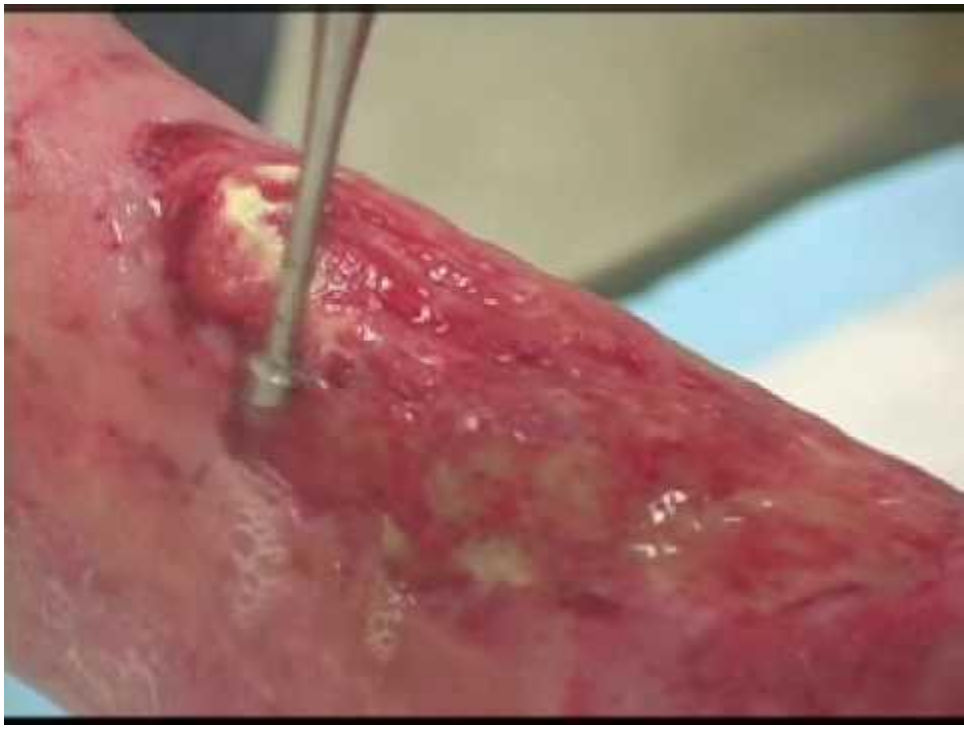
Debridement Methods

- Surgical/sharp
- Mechanical
- Autolytic
- Enzymatic
- Larval Therapy
- Ultrasonic
- Pad with filaments
- Cleansing antiseptics



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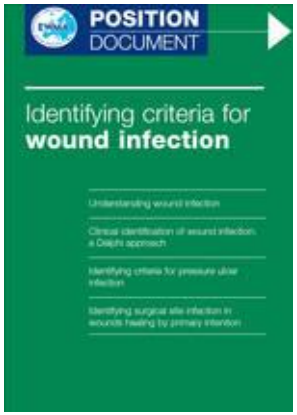
"I" Inflammation or Infection

Infection=

number of organisms x organism virulence

host resistance

Sibbald, R.G. et al., (2012). Special considerations in wound bed preparation 2011: an update. *WCET Journal, 32*(2), April/June, 10-30



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Definitions

World Union of Wound Healing Societies (WUWHS). Principles of best practice: Wound infection in clinical practice. An international consensus. London: MEP Ltd, 2008.

Contamination	No impairment to healing
Colonisation	Bacteria multiply but no impairment to healing
Infection	
(a) Localised Infection	Bacteria multiply. Healing disrupted and wound tissues are damaged. Clinical signs of infection localised to wound and periwound tissue
(b) Spreading Infection	Bacteria have invaded surrounding tissues. Impaired healing. Clinical signs of infection
(c) Systemic Infection	Impairment to healing. Systemic clinical signs.

Position Document of the Australian Wound Management Association: *Bacterial impact on wound healing: From contamination to infection* (2011).

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

Gardner, S. (2010). Expert commentary. *Wounds International 1(*3), 20

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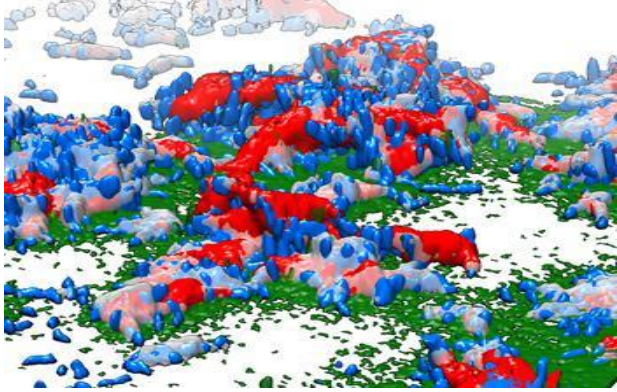
Biofilm



- 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

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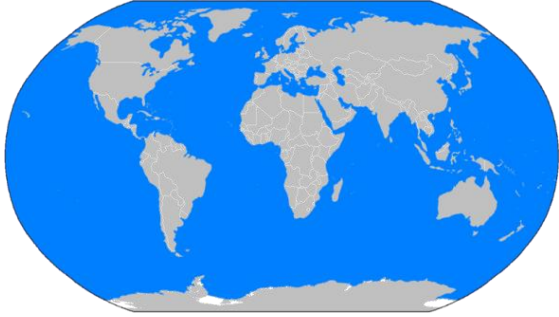
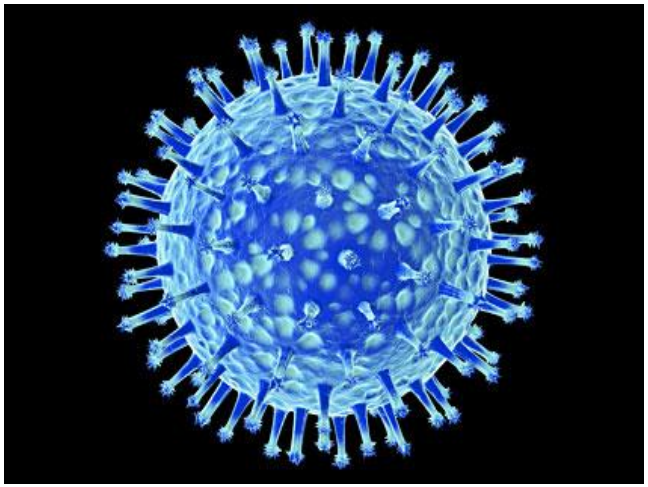
Antibiotic Resistance

‘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

Sussman, G., Swanson, T., Black, J., Cooper, R., Schultz, G., Fletcher, J. & Smith, D. (2014). Ten top tips: reducing antibiotic resistance. *Wounds International, 5*(4), 4-8

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Key Message

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

World Union of Wound Healing societies (WUWHS). *Principles of best practice: Wound exudate and the role of dressings. A consensus document.* London: MEP Ltd, 2007

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“M” Moisture Balance

Colour	e.g.Serous (clear); Purulent (cloudy, creamy); Haemoserous (pink or red); Infection (green, yellow or brown); other
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

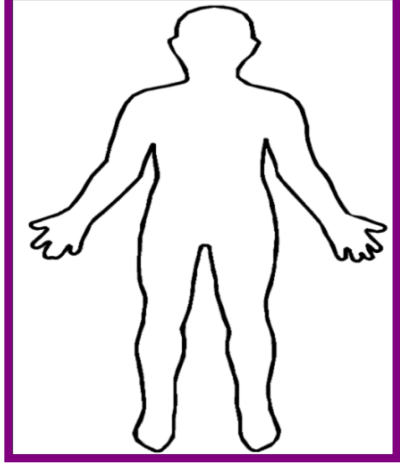
World Union of Wound Healing societies (WUWHS). *Principles of best practice: Wound exudate and the role of dressings. A consensus document.* London: MEP Ltd, 2007

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

World Union of Wound Healing societies (WUWHS). *Principles of best practice: Wound exudate and the role of dressings. A consensus document.* London: MEP Ltd, 2007

Exudate Assessment



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

Assess patient

Assess exudate

Assess periwound

Assess regional factors

Assess dressing

World Union of Wound Healing societies (WUWHS). *Principles of best practice: Wound exudate and the role of dressings. A consensus document.* London: MEP Ltd, 2007

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“E” Edge of Wound
(Epithelial Edge Advancement)

Undermining/tunnelling

- Contraction
- Re-epithelialisation
- Rolled
- Cliff hanging
- Sloping
- Poorly defined/irregular
- Punched

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Key Message

“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

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Investigation and Diagnosis

- Physical tests and observations
- Biological tests
- Biochemical tests
- Others

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Do we have a Diagnosis

- History – Medical – Surgical - Pharmacological
  Social
- Examination – Regional
  Local – TIME +
- Investigations
- Diagnosis
- Intervention/Planning

The Team and Referral

Diabetes Team

District Nursing

GP & Practice

Orthotics

Plastics

Dermatologist

The Patient and their Wound

Podiatrist

Orthopaedics

Infectious Diseases

Vascular

Rheumatology

Specialist Nurses

Occupational Therapists

ACC

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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

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Goals of Care (Local)

Short Term

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

Long Term

- To improve physical function

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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

Benbow, M. (2011). Documentation: Keeping accurate patient records. *Wound Essentials, 6*, 90-92

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Key Message

“Good records= Good defence
Poor records = Poor defence
No records= No defence” p. 23

Eagle, M. (2009). Wound assessment: The patient and the wound. *Wound Essentials,* 4, 14-24

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Re-evaluate

- Surface area<
- Exudate amount <
- Granulation tissue>
- Epithelial tissue>
- Pain <
- Macerated skin, reddened skin, swelling, warmth/heat <

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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

Eagle, M. (2009). Wound assessment: The patient and the wound. *Wound Essentials, 4,* 14-24

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

Eagle, M. (2009). Wound assessment: The patient and the wound. *Wound Essentials, 4,* 14-24

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