Clinical Wound Management In Pharmacy

Associate Professor Geoff Sussman
What are the Management Issues:

- Bleeding
- Closure
- Antisepsis
- Cleaning
- Dressing
Clinical WOUND MANAGEMENT

Bleeding

For a simple cut apply direct pressure larger areas or if bleeding continues apply a haemostatic Alginate dressing eg. Kaltostat®. These products may be also used in blood noses.
The timing of wound closure is critical if a successful outcome is to be achieved.

Primary closure
Delayed primary closure
Healing by secondary intention

- Steri-strips
  - Standard
  - Elastic

- Film Dressings
  - Opsite/Tegaderm

- Super Glues
  - Dermabond, Histoacryl,
Strips

Steri-strips Regular

Steri-strips Elastic

Leukostrips

Butterfly Closures
Simple Lacerations on non-flexor areas
Super glues

DERMABOND adhesive
Application Technique

Apply pressure at
impulse midpoint to
rush inner glass
- Hold applicator (tip
upward) away from
patient
Clinical WOUND MANAGEMENT

Antisepsis
Acute injuries will often be contaminated by the surroundings where the injury occurred eg. Dirt, gravel, grass, clothing or other foreign material. The risk of infection developing in these wounds is high due to the inflammatory nature of the wound as the tissue commences the healing process.
Antisepsis
The thorough decontaminating of the wound with a good surfactant product will help to remove most of the foreign material and reduce the risk of infection. It is also appropriate to apply a topical antiseptic before dressing the wound. This is usually left in place for 3-5 minutes and then washed off with clean water.
Indications for Wound Cleansing

- Prevent infection
- Presence of foreign bodies,
- A need to reduce contamination
Soap and the Skin
The neutral bar soaps available

Dove  Cetaphil Bar  QV Bar

Wash wounds with a pH 5-6 wash if basically clean
Cleaning

If dirty or contaminated use a surfactant antiseptic wash

- Betadine Surgical Scrub
- Povidone Iodine Scrub
LACERATIONS TREATMENT

- Wash to remove excess foreign material
- Stop bleeding by:
  - Direct pressure
  - Haemostatic Alginate dressing
- Apply simple dressing
Scrub the graze with a good Surfactant wash to remove any contaminant
Apply a topical antiseptic
Apply either an Island film, Hydrocolloid or a Foam dressing
Apply a cohesive bandage
Many burn injuries are minor in nature. They involve pain, discomfort, and disruption to the patient's normal routines of life. Most minor burns will heal spontaneously without any major consequences.
BURNS

- 1% of Australians sustain burns each year
- Carelessness (40%), Accidents (35%), Fit or faint (5%), Alcohol (5%), Psychiatric (5%)
- Most burns occur in the home
- Scalds account for 60% of burns in children
- Flame accounts for 50% of burns in adults
- Contact (10%), Electrical (5%), Chemical (3%)
Burns in the Community (ABS)
Time-surface temperature thresholds to full-thickness burn

- 70 deg C  <1 sec
- 60 deg C  5 sec
- 50 deg C  2-3 minutes
- 45 deg C  5 hours

Moritz and Hendriques  Am J Path 1947
COOL THE BURN SURFACE

- Cold running water or packs between 8 and 25 deg C for 30 mins.  

  But Not Ice

Temperatures below 5 deg may deepen burn

- 15 deg C is ideal temp

- Watch for HYPOTHERMIA!

- Wrap patient in clean sheet or towel and keep warm
ASSESS BURN SIZE

- Front: 18%
- Back: 18%
- 18% of body surface area (BSA)
BURN DEPTH

PARTIAL THICKNESS
- Superficial (SPTL)
- Deep (DD)

FULL THICKNESS
BURN DEPTH PARTIAL THICKNESS
Superficial (SPTL)
BURN DEPTH PARTIAL THICKNESS
Deep (DD)
BURN DEPTH FULL THICKNESS

Full-thickness burn

Full Thickness Burn

Characteristic
No remaining viable dermis

© Heathwise, Incorporated
Superficial Partial Thickness

Deep Partial Thickness
Full thickness
Superficial Partial Thickness In an Immune Compromised Patient

Treatment by plastic Surgeon
Topical Neomycin Ointment
What to do about blisters?

- Controversial- removal causes pain
- Tense blisters can interfere with dermal circulation, restrict movement
- Beware of blisters with “red rings”
- Blisters can hide deep burns
- Popped blisters may need to be removed
Burns dressings:

- Absorb exudate (48 hrs)
- Prevent infection
- Ideal wound healing environment
- Reduce pain
- **Hydrogels** (Prevent Conversion)
- Cost effective
- Frequency of dressings changes
Treatment Options

- Amorphous / Sheet Hydrogels
  - Solugel/ Solosite
  - Hydrosorb Sheets
  - Nugel
Hydrogels Amorphous & Sheets
Treatment Options

Silver Preparations

Old Type
- Silver Sulphadiazine Cream

New Types
- Acticoat
- Aquacel Ag
- Atrauman Ag
- Mepilex Ag
New Silver Dressings

Atrauman. Ag

Acticoat

ALLEVYN® Ag
Silver Wound Dressings

Aquacel Ag

Mepilex Ag

Safetac Technology
Partial thickness burn Case Study 14.12.03

Burn being treated with Silvazine and Jelonet by a GP. Grafting recommended as the next treatment phase.

Acticoat commenced 14.12.03

Maceration
Partial thickness burn  17.12.03

Third day after commencement of Acticoat
Partial thickness burn  22.12.03

Eight days after commencement of Acticoat
Healed in three weeks  10.01.04

Three weeks after commencement of Acticoat
Arm Burn 36 HRS POST-BURN
Treated with Silver Sulfadiazine
Arm Burn 36 HRS POST-BURN
Application of Mepilex Ag
Arm Burn 36 HRS POST-BURN
Application of Mepilex Ag  DAY  NINE
Treatment Options
Non-Woven Tapes Fixomul/Hypafix
### Treatment Options

**Grid Image**

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**Note:**

17/2/95 Scald to (L) shoulder, chest & arm
Treatment Options

23/2/95
Treatment Options

Fixomull insitu
Treatment Options
Radiotherapy

- Radiotherapy is a major treatment modality in cancer. It may result in skin damage, desquamation (burn) that needs to be managed with either amorphous or sheet hydrogels and Silicone dressings.
Skin reactions are the most common side effects of radiotherapy, with an estimated 90-95% of radiotherapy patients experiencing some sort of skin reaction. Skin reactions to radiotherapy include: erythema, dryness, epilation, dry desquamation and moist desquamation. Dryness and epilation occur due to the destruction of the sebaceous glands and hair follicles of the dermal layer.

In some cases a tissue necrosis can result
Radiation Post Radiotherapy

Radiotherapy post Mastectomy
Radio-necrotic Ulcer

Radiotherapy for Ca Rectum
Radio-necrotic Ulcers
Radiotherapy
Management of moist desquamation

- Moist desquamation is more likely to occur in skin folds, where there is more friction and moisture, the skin is gently cleansed with normal saline.
- Moisture and vapor permeable dressings such as hydrogels can be applied to areas affected, and act to soothe the exposed dermis whilst minimizing further friction between the skin folds.
Referral to a Burns Unit

Deep Partial Thickness Burns

Adults > 15% Body Surface Area
Children > 10% Body Surface Area

Full Thickness Burns

3% Body Surface Area
Deep Partial or Full Thickness Burns
Hands, Feet, Face or Perineal area
Scar Management

- Massage
- Compression
- Silicone gel sheeting
- Steroid injection
- Surgery (await scar maturity)
Examples of scars

Hypertrophic scarring following burn injury to the entire thoracic and neck regions

Hypertrophic scar on the forearm managed with a silicone gel dressing (Mepiform)

Post-cardiac surgery: only one section of the scar is hypertrophic over the sternum
Silicone Dressings
A fair body of evidence supports the use of compression therapy. The consensus is that an applied pressure of 25 mm Hg may represent ideal loading.
Most simple acute wounds will heal very rapidly however the following are indications for referral to a Doctor.

- If bleeding does not stop with conservative measures
- If a laceration re-opens or fails to heal
- If a wound does not heal even after several weeks of treatment
- If the wound becomes larger
- If the wound shows signs of infection eg. Smell, redness in the skin around the wound, pus
Skin Tears: This could be you!

- Around 2.5 million Australians are over 65
- All are at some risk of developing skin tears
- >140,000 are in high care aged-care accommodation
- 15% in high will have a skin tear at any time. (frequency 0.5-2.5 p/a)

↓ dermal thickness
weakened dermal-epidermal junction
↓ vitamin D, collagen and moisture
↓ migration of capillary epithelial cells
↓ epidermal turnover
↑ fragility of capillaries
compromised inflammatory response
concomitant illnesses and medications
Skin Tears - When do they occur?

- Main causative factor = TRAUMA
  - manual handling eg transferring from bed to chair
  - removing adhesive tapes
  - falls
  - cot sides and wheel chair foot plates
  - etc, etc
Skin tear - Purpura (Bruise)
SKIN TEARS
Skin tear - Partial tissue loss
Payne-Martin classification system for skin tears

<table>
<thead>
<tr>
<th>Category</th>
<th>Tissue Loss</th>
<th>Sub-Type</th>
<th>Description</th>
<th>Wound Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nil</td>
<td>A- Linear</td>
<td>Incision-like Occurring in wrinkle or furrow</td>
<td>Full</td>
</tr>
<tr>
<td>2</td>
<td>Nil</td>
<td>B- Flap</td>
<td>&lt;1mm of dermal layer exposed after approximation</td>
<td>Partial</td>
</tr>
<tr>
<td>2</td>
<td>Partial (≤25% loss)</td>
<td>A) Scant</td>
<td>≤25% of dermal layer exposed</td>
<td>Partial</td>
</tr>
<tr>
<td>3</td>
<td>Partial (&gt;25% loss)</td>
<td>B) Moderate-to-large</td>
<td>&gt;25% of dermal layer exposed</td>
<td>Partial</td>
</tr>
<tr>
<td>3</td>
<td>Full</td>
<td>Complete tissue loss</td>
<td>No epidermal flap</td>
<td>Partial</td>
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</table>

Skin Tears - Treatment

- stop bleeding
  - use alginate sheet (if needed)
- gentle cleansing
  - tap water/sterile saline
- pat dry
- roll skin flap into place (where possible)
  - damp cotton bud
- apply Steri-Strips if skin flap still present
  - max 1cm apart
  - avoid applying tension
- apply wound dressing
  - hydrogel (if wound is dry) AND/OR
  - foam (non-adhesive, thermally insulating, protective)
  - If major tissue loss apply Mepetil as primary dressing
- mark direction of skin flap on dressing
Skin Tears - Treatment cont’d

- dressing retention
  - AVOID ADHESIVE TAPES
  - use cohesive bandage or Tubifast
- analgesia if required, check tetanus status
- review after 24 hours
- continue with foam (+/- gel as required)
- consider zinc paste patch for full tissue loss
  skin tears
Prevention of Skin Tears

- Educate staff, family care-givers, and home health care assistants on the importance of: maintaining adequate hydration and nutrition\(^1\).
- Obtain the advice of a nutritionist to assess diet and make appropriate recommendations\(^1\).
- Offer fluids between meals to maintain hydration status\(^1\).
- Provide a well lit environment to aid visualization and minimize the risk of patients bumping into equipment or furniture\(^{21}\).
- Pad bed rails, wheelchair arm and leg supports, and any other hard surfaced equipment that the person may bump into resulting in trauma\(^{12}\).
- Pillows and blankets should be used to support dangling arms and legs\(^{12,3}\) and to pad body parts\(^1\).
- Patients should wear long sleeves and pants and geriatric gloves as an added protective barrier\(^{21}\).
- Adequately hydrate dry skin with moisturising agents. Note: creams are better than lotions\(^2\).
- Try to use lotions twice a day on dry skin areas and extremities\(^1\).
- Bag baths appear to be useful at reducing the incidence of dry skin, a risk factor for skin tears\(^4\).
- Choosing appropriate dressing products\(^1\).
- Applying a skin sealant prior to using tapes can reduce epidermal trauma\(^1\).

Educate staff, family care-givers, and home health care assistants on the importance of handling elderly patient with frail skin with care and via the proper techniques – any harsh, quick, or pulling movements may result in a skin tear\(^{12,3}\).

A lift sheet should be used to move and turn patients in order to reduce friction and shearing forces\(^{21}\).

The appropriate sheet positioning, turning, lifting, and transferring techniques should be encouraged by all staff\(^{21}\).

Non-adherent dressings, non-adhesive dressings, gauze wrap, cohesive bandages, stockinette (or paper or cloth tape only if unavoidable) should be used to secure dressings and drains\(^1\).

Applying a skin sealant prior to using tapes can reduce epidermal trauma\(^1\).

Dressings should be removed gently and with the use of an adhesive dissolvent if required\(^{2,3}\).

Remove tapes by applying a counter pressure and rolling off\(^1\).

Emollient soaps (soft, soothing, moisturising) clinically better than non-emollient soaps at lowering the incidence of skin tears by one third (1/3) - However, was not statistically significant\(^{4,5}\).

No rinse cleansers are preferred over soap for bathing\(^4\).
Chronic Wounds

Most Pharmacists believe that they do not see chronic wounds in their practice. This is not so the level of chronic wounds is Significant and is increasing due to the ageing of the population and the rapid increase in diabetes.
Chronic Wound Ætiology

- **Vascular**
  - chronic venous insufficiency
  - arterial; mixed; vasculitis
- **Mechanical**
  - pressure, friction, shear
  - trauma
- **Neuropathic**
- **Surgical, malignancy, infection**
Chronic Venous Incompetence

- over 70% of chronic wounds

  • why?
    - valve incompetence
    - venous hypertension - fluid forced into tissues
    - hypoxia at periphery → ulceration
    - initial wound often traumatic, but poor healing due to hypoxic tissue
### Venous and Arterial Leg Ulcers

<table>
<thead>
<tr>
<th>Venous</th>
<th>Arterial</th>
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<tbody>
<tr>
<td>obesity</td>
<td>symptoms - claudication, rest pain</td>
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<tr>
<td>past DVT</td>
<td>lower ABI</td>
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<tr>
<td>poor mobility</td>
<td>weak/absent pulses</td>
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<tr>
<td>lower 1/3 of leg</td>
<td>sluggish/poor capillary refill</td>
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<tr>
<td>oedema</td>
<td>very regular, punched out appearance</td>
</tr>
<tr>
<td>staining - haemosiderin deposition</td>
<td>ulcer site - below ankles to toes usually</td>
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<tr>
<td>Lipodermatsclerosis</td>
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<td>Atrophi Blanche</td>
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<td>often painless</td>
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<td>irregular shape</td>
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<td>may have copious exudate</td>
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Venous Disease

with complements of Mi-tec Media

with complements of Mi-tec Media

Jean-Francois UHL MD
Venous Ulcers

Inverted Champagne bottle Legs

Typical Venous Ulcer
Arterial Ulcers

Healthy Artery:
- Smooth surface
- Arterial blood flow

Diseased Artery:
- Ischaemic ulcer
- Poor blood flow
- Stenosis
- Plaque

with complements of Mi-tec Media
The Diabetic Foot

- Diabetic foot ulceration
  - neuropathies
    - sensory, autonomic, motor
  - abnormal plantar pressure
  - risk of amputation
  - may need
    - glycaemic control
    - foot care - education
    - podiatry
    - pressure relief
    - high risk foot clinic
Can start off Small 

End up Large
What is the potential risk?

Below Knee Amputation

Minor tissue injury was reported as the pivotal event in 86% of cases resulting in amputation.
Neuropathic or Ischaemic

- Painless
- Bony prominence or area of pressure
- Good blood supply for healing

- Painful
- Not essentially pressure area
- Poor blood supply will negatively affect healing

...or it may be of both
The Diabetic Patient

- Impaired Inflammatory Response
- Five Fold Risk of Infection
- Associated Small Vessel Disease
- Nerve Damage with Diminished Pain Sensation and Nerve Response
The Diabetic Foot ulceration
Mechanical Aetiologies: Pressure Ulcers

- “a pressure ulcer is any lesion caused by unrelieved pressure resulting in damage of underlying tissue”
  - US Department of Health and Human Services
- Pressure sores, pressure areas, bedsores, decubitus ulcers = Pressure Ulcers

95% of all pressure ulcers are preventable
  - Hibbs, 1982
Pressure Wound Ätiology

- >30mmHg over bony prominence
- physically close off small vessels
  - hypoxic tissue
  - ischemia
- identify patients at risk - screening tools
  - neuropathies
  - immobility
  - malnutrition
- manage risk factors
Complication of Leg Ulcers

Neoplastic Development
Calcification
Cellulitis
Infection
Haemorrhage
Dermatitis/ Eczema
Suppturation
Gangrene
12 year history of non-healing ulcer
Millroy’s Disease { Now SCC}
CALCINOSIS

Cutaneous Calciphylaxis
Assessment

Treat the WHOLE Patient and not just the HOLE in the Patient
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<td>- nutritional status</td>
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<td><strong>Extrinsic</strong></td>
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<td>- debris</td>
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<td>- temperature</td>
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<td>- drying/maceration</td>
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<tr>
<td>- infection</td>
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<tr>
<td>- chemical stress</td>
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<td>- other factors (eg smoking, drugs)</td>
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Medical referral always when...

- Wound infected or at high risk of infection
- Tetanus injection required
- Loss of function or movement
- Wound not healing (becomes chronic)
- Serious tissue loss or bleeding
- Separated stitches/sutures/tissue glue
- Painless or chemical burn
- Large areas involved, especially burns
**Best outcomes ........**

- Methodical, systematic approach
- Know resources
- Appropriate stock range
- Know abilities **AND** limitations
  - When to refer
    - Pharmacy assistants to pharmacist
    - Pharmacist to medical services
- Ongoing involvement after referral
Conclusion

When the customer comes into the pharmacy asking for gauze swabs, Betadine etc enquire as to the reason and you may be surprised to find that they have a chronic wound. It is also very important to help prevent wounds in your older customers with good skin care and in particular in your diabetic customers as even the simple minor wound if not treated quickly and aggressively will end up with infection and potential amputation.