Ulcer & wound management in General Practice

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Today's topics

- Understanding the physiology of wound healing
- Assessment of the wound and surrounding skin
- Determining product choice
- Discuss alternative management options on wound care
- What information is important in documentation?
- Benefits of holistic approach to wound management
- Explore factors influencing healing

Phases or stage of wound healing

- Haemostasis – bleeding ceases and a clot is formed
- Inflammatory/destructive phase—debris and unwanted dead cells are removed through the bodies natural cleansing process-autolysis
- When the area is clean the body begins to grow ne capillaries and tissue- proliferation
- When the granulation tissue is level with the sides of the wound, skin begins to migrate across the granulation tissue
- Eventually – in time it all gains strength and matures—but only 80% strength never 100%

Responses following injury:

1. Blood clotting and formation of fibrin network
2. Acute inflammation:
   - activation of neutrophils
   - phagocytosis of foreign bodies
   - release of hyaluronic acid and glycosaminoglycan (chemoattractants) into ECM.
3. Inflammatory response:
   - influx of fibroblasts into ECM
   - beginnings of granulation tissue formation
   - generation of new blood vessels
   - deposition of type III collagen fibers (thin and randomly oriented)
   - fibrin clot is dissolved, enzymes released and phagocytosis continues.
4. Remodeling and scar formation:
   - Type III collagen replaced by type I collagen: collagen bundles are larger and oriented with principal lines of stress in tissue
   - Increased amounts of chemicals such as chondroitin and dermatan sulfate
   - Scar tissue continues to form for several months
   - Blood vessels that are unattached are resorbed
   - Scar becomes pale and avascular

Cells required.......all in theory working cohesively together....

- Platelets
- Neutrophils
- Macrophages
- Fibroblasts
- Myofibroblasts

Why did this skin tear become a chronic non-healing ulcer?

- Care staff need to be able to review a wound and determine if it is following the anticipated healing trajectory
- When a wound fails to follow the normal phases or stages of healing then an detailed assessment is required
- Assessment includes past medical and surgical and current pharmacological review together with a wound assessment
Not to forget also ....

- The role of growth factors and cytokines
- Proteases and inhibitors of proteases

Physiological processes predominating in the different types of wound healing

<table>
<thead>
<tr>
<th>Type of healing mechanism</th>
<th>Primary</th>
<th>Secondary</th>
<th>Superficial wounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulation of granulation tissue</td>
<td>+</td>
<td>++</td>
<td>*</td>
</tr>
<tr>
<td>Formulation of new connective tissue</td>
<td>+++</td>
<td>++</td>
<td>*</td>
</tr>
<tr>
<td>Contraction</td>
<td>*</td>
<td>+++</td>
<td>*</td>
</tr>
<tr>
<td>Epithelialisation</td>
<td>+</td>
<td>+</td>
<td>+++</td>
</tr>
</tbody>
</table>

Yes wound healing and the understanding of this is complex

- Not all wounds follow the sequence we expect
- It is up to the clinician overseeing care to pick up that something is not right
- Close supervision of wounds is essential
- Staff should seek help if they feel out of their depth!

What changes for chronic wounds?

- Wound fluid studies show:
  - Increased pro-inflammatory cytokines
  - Imbalance between matrix metalloproteinases (MMP9, MMP2) and the tissue inhibitors of metalloproteinases
- Swab/biopsy studies show:
  - Presence of a biofilm
  - Inflammation of vessel intima

What may cause this increase in pro-inflammatory cytokines?

Some suggestions may include:
- Bacterial contamination (discuss this later)
- Repeated trauma
- Ischaemia
- Underlying diseases—including mal nutrition

So as a clinician what should you be asking?

Why is this wound ‘over-inflammed’????
Consider trauma when removing this type of dressing

Let’s start with the basics that we all need to heal a wound...

- A healthy body
- Good food and fluids, no illicit drugs, including nicotine!
- Stay young!
- Healthy body shape!
- No infection
- No trauma on the wound itself
- No dangerous chemicals placed on the skin or wound
- A wound free of debris and other unwanted substances

Yes nearly impossible to achieve in this group... But we must try

Wounds in these vulnerable people require you to .......

- Provide good food and fluids regularly
- Ensure the vulnerable skin is not roughly handled—take care to prevent skin tears, wipe creases dry without causing more damage
- If you wear gloves to remove dirty dressings then remove those gloves—wash your hands and then begin the clean procedure
- Learn about dressings and their function
- Learn how to clean a wound not just give it a ‘lick and a flick’

Normal recommended daily intake for a healthy person versus those with wounds

<table>
<thead>
<tr>
<th></th>
<th>Healthy Person</th>
<th>Wounded Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy (Cal/kg)</td>
<td>25-30</td>
<td>10-30</td>
</tr>
<tr>
<td>Protein (g/kg)</td>
<td>1.2-2.0</td>
<td>1.0-1.5</td>
</tr>
<tr>
<td>Vitamin C (mg)</td>
<td>50</td>
<td>100-200</td>
</tr>
<tr>
<td>Zinc (mg)</td>
<td>12-15</td>
<td>15-25</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>12-16</td>
<td>10-30</td>
</tr>
</tbody>
</table>

For your free copy contact 1800 671 628 and also ask for the recipes using Arginaid extra and ask for the new patient guide—Support wound healing from the inside out.

Mini-nutritional assessment scale—available from www.mna-elderly.com
Some supplements

- TwoCal, Ensure Plus, by Abbott 1800 225 311
- Arginaid, Arginaid Extra by Nestlé 1800 671 628
- Cubitan, Fortisip by Nutricia 1800 060 057
- Pro-Form by Meiji-MGC Diary Co 1300 362 774
- Enprocal Repair-Prime nutrition-1800631103

Ageing

There are many body systems that begin to fail or function less efficiently as the ageing process takes over.

Skin Care

- Consider the skin as a brick wall—a wall of defense and this certainly changes as you age!!

Functions of the skin

1. Protection from—
   - The entry of foreign material
   - Mechanical or thermic impact—i.e. pressure, heat, cold
   - UV-radiation
   - Microorganisms—i.e. bacteria, viruses
   - Water loss
2. Sensation—Reacts to heat and cold, touch, pressure, vibration etc.
3. Temperature regulation—Controls the transfer of heat across the body’s surface, letting it in or out as necessary
4. Communication—Others see our skin and can assess our mood, physical state (i.e. paling or blushing) and attractiveness
5. Storage—Storage centre for lipids and water
6. Synthesis—Produces vitamin D through exposure to UV radiation in sunlight
7. Excretion—Releases wastes including water, salts and toxins
8. Absorption—Oxygen, nitrogen and carbon dioxide diffuse into the epidermis in small amounts. Medicine can also be administered through the skin by ointments or by an adhesive patch
9. Water resistance—Prevents body fluid and essential nutrients from being washed out of the body.

Changes in the skin of the elderly

- Dermis loses 80% of its original thickness
- 40% less collagen
- Sebum and sweat production is reduced
- Epidermal layer separates more easily from the dermis
- Elastin fibres decrease in number but increase in size
- Decrease in Langerhan cells
- Small blood vessels diminish by 40%

Skin care

- Cleanse, pat dry no rubbing
- Apply moisturiser immediately cleansing and once or twice again in a 24hr period
- www.woundsinternational.com/pdf/content_10608.pdf
- Best practice statement for Emollient therapy—www.bdn.org.uk
The difference between emollient and moisturisers

- **Emollients**: lipids that occlude the skin surface thus preventing water loss from the stratum corneum
- **Moisturisers**: are lipid emulsions that actively hydrate the skin by application of a humectant to the skin.

### Common products

![Common products image]

### Other systems influenced by the ageing process

- Neurological
- Respiratory
- Cardiac
- Renal
- Gastro
- Skeletal

### Body build

**Obese patients** are less mobile, have poor oxygen delivery due to the fact that adipose tissue is poorly vascularised. They also have increased risk of wound dehiscence and hernia formation, together with increased moisture in skin folds and thus infections.

- Always think fungal skin infection when dealing with obese patients and skin rashes.

**Emaciated and thin people** however have less protection against pressure, less insulator properties and lack of energy stores to maintain metabolic processes which results in early breakdown of protein.
Mechanical stresses on the skin or wound

Mechanical stress can be caused by:
- Pressure
- Shear
- Friction
- Dressing removal
- The patient themselves

• Necrotic tissue, dry scabs and excess slough will impair epithelial migration and impair the supply of nutrients to the wound.
- Wound debris prevents the formation of granulation tissue and prolongs the inflammatory phase of healing.
- Foreign material in the wound will do the same, e.g. cotton wool fibres, dog & cat hair.

Wound debris

Maceration

• ‘Softening and breakdown of skin resulting from longed exposure to moisture’ (Anderson 1998)
• Difference between acute & chronic wound exudate, the chronic can be quite harmful to surrounding tissue
• Excessive moisture may predispose the wound to infection, skin sensitivities and irritations
• Apart from wound exudate other sources of excess moisture are urinary and faecal incontinence, and wet dressings from the shower!

Pathogenesis of soft tissue infections

1. Breach of normal skin integrity
2. Alteration of normal skin flora → colonization by potentially pathogenic organisms
3. Changes in the local environment of the tissues thereby favouring the proliferation of microorganisms, e.g. presence of devitalized tissues, haematoma, foreign body

How organisms access wounds

Exogenous or Endogenous

- Direct contact
  • [hands / equipment / environment]
- Airborne
  • [from surrounding air]

Self contamination

[Migration from one location in body to another]
Critical colonisation/local infection

- The inability to maintain a balance between the increasing numbers of bacteria and an effective immune system
- www.awma.org position document on infection
- Also www.awma.com.au document
- Sign up for www.woundinfection-institute.com

Wound swabbing protocol??

- If you do not have a protocol for swabbing wounds it is suggested that you speak with your pathology department and design one
- There is much debate on this issue but also a degree of consensus
- Probably the most important thing to do is clean the wound first

Topical antiseptics—yes, no, sometimes?

- Our use of antiseptics is possibly a carry over from routine practice instituted prior to the advent of antibiotics—we must rationalize our use today
- Bacteria cause local inflammation and are leucocytotoxic. They also damage epithelium, retard wound contraction, reduce wound tensile strength and trigger microthrombi. Therefore, the cytotoxicity of bacteria must be weighed against any possible antiseptic cytotoxicity
- More and more new research is demonstrating that there is a place for skin cleansing with antiseptics and in some cases cleansing wounds with antiseptics and then rinsing off with sterile saline

These wounds require more than soap or soap alternative

There are many other factors that influence our well being and wound healing

- Medications
- Interference with dressings (Munchausen’s syndrome)
- Wound location
- Smoking
- Stress
- Sleep deprivation
- Depression

Smoking and wound healing


- ONE CIGARETTE WILL REDUCE THE PERIPHERAL BLOOD FLOW BY 50% FOR ONE HOUR
Pain

www.ewma.org

Further reading... www.ewma.org

- Wound complexity and healing
  P Vowden, J Apelqvist, C Moffatt

- Psychosocial factors and delayed healing
  C Moffatt, K Vowden, P Price, P Vowden

- Economic burden of hard-to-heal wounds
  M Romanelli, JC Vuerstaek, LC Rogers, DG Armstrong, J Apelqvist

We need to look at the 'whole' person not the 'hole' in the person

Consider what you can do?

- Check diet
- Encourage mobilisation
- Encourage other activities and social events
- Other wound care products?
- Biopsy?
- Antibiotics
- Further investigations?

Wound tissue assessment

Wound assessment

Begin by examining the wound itself in terms of
- T - tissue within the wound
- I - inflammation or presence of infection
- M - moisture - balance - wet/dry
- E - exudate volume/type

Measure wound and note other characteristics
Other wound characteristics that you would assess:

- Presence of undermining or tracking
- Effects of previous treatments
- Current dressing frequency and proposed frequency

Wound tissue by colour:

- Pink
- Red
- Yellow
- Green
- Black

(modified from Marion Laboratories 1976)

Wound tissue descriptor:

- Necrotic tissue—eschar or slough
- Granulation tissue
- Hypergranulation tissue
- Epithelium
- Macerated tissue

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

A simplified approach that matches colour of tissue with product aim

- Black— if aiming to heal— rehydrating/cleansing/debriding dressing
- Green — antimicrobial dressing
- Wet yellow— absorbent/antimicrobial dressing
- Dry yellow— rehydrating dressing
- Red— protective dressing
- Hypergranulation— antimicrobial dressing
- Pink— protective dressing

This is not a prescription but a guide as to where to start.
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

Research for the new document

- After reviewing 5 NHS trusts - 4772 patient files, the survey indicated that 70% of patients had surrounding skin issues that were causing the care staff concern.
- The T.I.M.E. acronym has been used extensively by nurses for more than 10 years however it is clear this new update may assist in an area well past the edge of the wound — the peri wound — 4cm beyond the wound edge

New ‘Made Easy Document’

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

Then there is the..... peri wound

- Macerated—over hydrated keratin, usually white
- Dry
- Blistered
- Eczema
- Oedematous
- Inflamed
There are still a lot of other factors that will influence dressing product selection:

- Pain
- Odour
- Cost
- Size and shape available
- Location

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

Documentation includes:

<table>
<thead>
<tr>
<th>WOUND LOCATION</th>
<th>TISSUE TYPING</th>
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So making that first decision in product selection:

- What is the aim?

Setting the aim:

- To maintain current moisture level
- To donate more moisture to the drying or painful tissue-without damaging periwound
- To manage excess moisture, while not sucking completely dry and prevent damage to periwound
- To aid autolytic debridement +/- also providing antimicrobial cover
- To provide antimicrobial properties

Winter’s research:

- Winter postulated that epithelial cells in dry wounds have to negotiate the scab, consuming energy and time, whereas in moist wounds they migrate freely across a moist, vascular wound surface.
- Formation of the scab and the rate of epithelisation of superficial wounds in the skin of the young domestic pig (Nature 193:293 1962)
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**
- **D** - diagnosis - then follow an accepted pathway
- **I** - intervention, plan of care

**History**

- **Wound History**
  - Initial injury, wound age, pain, management to date.
- **Medical history**
  - Chronic disease - diabetes, rheumatoid, cardiovascular
  - Current treatments - immunosuppression, steroids, antibiotics
  - Past episodes - DVT, Vascular surgery,

**Examination**

- **Wound**
  - Wound bed, surrounding skin, oedema, exudate, odour.
- **Patient**
  - Temp, pulses, BMI, skin/hair/nail condition, muscle mass, joint mobility, gait.
- **Social setting**
  - Presentation, support structures, income, interest, life foci.

**Investigations**

- **Wound swab**
- **Wound tissue biopsy**
- **Xray**
- **Bone scan**
- **MRI**
- **Sinugram**
- **Hand held Doppler for calculating ABPI**
- **Arterial or venous duplex scan**

**Diagnosis**

- **Wound aetiology**
- **Healing progression against know trajectories**
- **Contributing factors**
- **EG “venous leg ulcer with delayed healing related to inability to tolerate short stretch compression therapy.”**
**Intervention**

• Correcting aetiology  
• Addressing contributing factors  
• Preventative strategies  

“Modified compression, patient education”

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**The reason for a comprehensive examination**

• Tissue within a wound is important, but so is also knowing just what type of wound you are dealing with  
• E.g.—tenacious slough in an abdominal wound may require a different dressing to tenacious slough on a lower limb wound  
• Mainly because of additional fluid levels associated with lower limb wounds

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**Dressing classifications**

• Low absorbent non adherent dressings  
• Impregnated mesh dressings  
• Antimicrobial impregnated mesh dressings  
• Simple absorbent pads  
• Super-absorber absorbent pads  
• Film barrier wipes and sprays  
• Polyurethane film dressings

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**Dressing classifications**

• Polyurethane foams and other foams  
• Hydrocolloids and similar wafer dressings  
• Hydrogels  
• Calcium alginates  
• Polysaccharide fibre dressings—HydroFiber

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**Antimicrobials**

• Cadexomer iodine–Iodosorb  
• Enzyme alginogel—Flaminal, forte and hydro  
• Antimicrobial binding dressing—Sorbact  
• Medicated honey  
• Hypertonic salt dressings—Mesalt  
• Tea Tree oil hydrogel—Wound Aid Gel  
• Silver dressings

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**Another way of looking at dressings is by function**

• Wound protection product  
• Moisture retention products  
• Moisture donation products  
• Moisture management products  
• Products to manage bacteria and or aid debriding
Protection products
- Impregnated gauzes and gauze like products
- Low/Non adherent pads
- Polyurethane films
- Polyurethane foams
- Hydrocolloids/Acrylic dressings
- Silicone sheets

Moisture retention products
- Polyurethane films
- Polyurethane foams
- Sheet Hydrogels
- Hydrocolloids/Acrylic dressings

Moisture donation products
- Saline packs
- TenderWet
- Hydrogels

Moisture management products
- Absorbent pads
- Polyurethane foams
- Hydrofibre
- Combination Products and combinations of products
- TNP devices

Products managing bacteria or aiding debridement
- Hydrogels
- Hydrocolloids/Acrylic dressings
- Alginates/Hydrofiber
- TenderWet
- Iodosorb
- Flaminal
- Tea tree oil products
- Hydrophyllic & hydophobic products
- Hypertonic saline products
- Silver products
- Biosurgical larvae therapy

Skin protection products
- Film barrier wipes
- Moisturisers by Ego, Hamilton or Dermatech, NutriSynergy, Sukin
- Barrier Creams e.g. Coloplast Critic Barrier Cream and Easiclense, Triple care by S & N, Epaderm by Molnlycke

*** There may be others so seek advice from clinical wound specialist.
Stimulatory products

- Cleansing phase - Iodosorb,
- Proliferative phase - Hydrocolloids,
- Epithelialisation stage – Zinc products

- There is some evidence to support the fact that these products have a direct stimulatory effect

The non adherent/low adherent dressings are:

- Essentially a cellophane that has tiny invisible holes in it to allow water vapour to pass through
- The absorbent layer is a thin layer of cotton wool and then the contact layer is a spun fibre sheet-cellulose

Non/Low adherent dressings

- Understanding the make –up of this dressings allows you to realise that it manages only the tiniest amount of wound exudate
- Also if it gets wet in the shower the moisture does not vapourise off quickly so now we have a wet pad on the wound causing peri-wound maceration unless changed promptly

Mesh dressings

- The previously mentioned products can do one of two things:
- It can dry out- just like the vaseline you apply to your lips and have to keep applying it or it can actually sit on the wound and create an impermeable barrier and so risk maceration
- So this dressing is often used to protect the healthy tissue below but unless it is a superior emollient or moisture retentive gel it may adhere to the tissue you are trying to protect or it may cause maceration of periwound

Antimicrobial mesh dressings

- Naturally these have the same properties as previous except the product applied to the fabric has antimicrobial properties
- Bactigras is chlorhexidine
- Inadine is Iodine
- Soframycin mesh is an antibiotic and ideally not used as encourages antibiotic resistance
Simple absorbent pads

- These products are composed of a tricotex or woven fabric contact layer the centre layer is sometimes a mixture of cotton wool and cellulose
- Cellulose (wood pulp), an extender whose use in a number of food products, from crackers and ice creams to puddings and baked goods, is now being exposed
- Outer layer again a woven fabric to hold all in place

Superabsorbent pads

- These are composed like the absorbent pads except they contain polymer beads that swell and ‘lock’ the fluid in so these will absorb but also manage the exudate
- The polymer beads are very similar in principal to ‘wettasoil’

Film barrier wipes

- There are a number of these on the market that contain alcohol as it aids evaporation but the newer ones contain other agents to ensure they dry quickly without causing a sting to the patient
- The early days of these saw us apply egg white to the perimeter of the wound –it would dry and seal the skin edges acting as a barrier to moisture

Polyurethane Film

- This product is like a cling film sheet with a light coatings of adhesive applied
- The sheet film has had tiny invisible perforations placed across its surface so some water vapour will pass through
- The issue here is just how much vapour will pass through the tiny pores and does the viscosity of the exudate influence the transmission rate?
Polyurethane foams

- Similar to the foams sponges you use to soak up fluid on the kitchen
- They all have different fluid absorbency
- They also have different fluid handling abilities
- Ideally the fluid is taken into the foam, locked in the foam so it cannot be squeezed out also does not sit wet on the edges of the wound

Hydrocolloids and similar

- These are a mixture of thickening/setting agents which have been made into a paste and then applied to a film backing
- This being said the plan is when they are warm the thickening /setting agents begin to mix with the wound exudate and thicken it up
- The result is a moist gel like product sits on the wound and provides the moisture for the cells

Hydrocolloids

- This product will then aid autolytic debridement but once the necrotic tissue begins to break down the exudate levels will rise and so once you start autolysis you may have to then move to a product that manages the fluid better or change the product more frequently
- Peri-wound maceration is also a risk

Hydrogels

- Polymer beads that have already been placed into water and allowed to soak up to full capacity so when placed on the wound they will begin to release some fluid back into the wound
- These are used to rehydrate dry tissue or soothe painful tissue

Calcium Alginates

- Depending on the seaweed used this product can absorb wound exudate and form a gel to keep wound moist or remain more fibrous to aid haemostasis as the exchange between calcium and sodium occurs

Polysaccharide fibre dressings- HydroFiber-Aquacel

- This product behaves a bit like fairy floss
- It is dry but when it comes in contact with wound exudate it forms a gel
- The product only swells where there is moisture so peri wound maceration is reduced
- If left on a wound and the exudate dries up then this also dries and forms a seal-trapping moisture beneath it
- This wound be considered an exudate management product
**Cadexomer iodine— Iodosorb**

- Once upon a time we used to beat sugar and betadine together to form a paste
- This is essentially that except that the iodine concentration is lower-0.9% rather than the 10% in Betadine
- So idea behind the concept-iodine kills bacteria and sugar is osmotic so ‘pulls’ the bacteria and exudate out of the wound

**Enzyme alginogel – Flaminal, forte and hydro**

- Seaweed minced until it forms a gel and two enzymes added to manage bacteria and aid autolytic debridement
- So seaweed will absorb —so this product donates moisture and absorbs moisture
- The enzymes are in your mouth—keeping your mouth clean so quite a natural product

**Antimicrobial binding dressing – Sorbact**

- A soft —rayon cloth which has been dipped in dialkylcarbamoylchloride-DACC
- This provides a ‘charge’ to the dressing and so attracting bacteria to itself—the bacteria then cling to the fabric and cannot return to the wound tissue
- Also the ‘charging’ also has been shown to stimulate fibroblasts

**Medicated honey**

- Firstly we have to promote TGA approved honey—but there has not been one documented case of botulism from topical honey!!
- Not all honeys are the same and studies of an Australian Honey(Berringa) indicate it is perhaps the highest rated Manuka honey in the world

**Hypertonic salt dressings- Mesalt**

- Salt attracts water — it has a ‘pull’ factor
- The salt dressings available are between 15-20% salt so these products are used to ‘pull’ slough off wounds—so used in wet yellow and green wounds
- Because it can ‘suck’ fluid it is also used in hypergranulation

**Tea Tree oil hydrogel- Wound Aid Gel**

- We all know the benefits of tea tree oil—antimicrobial, anti-mitotic, anti-inflammatory
- So a low dose —non toxic — has been combined with a hydrogel
- Used to manage bacterial load and donate moisture
Silver dressings

• Not all silver dressings are the same—the principal behind silver however is that it is an antimicrobial
• The old adage “born with a silver spoon in their mouths” was born out of the fact that rich people drank out silver mugs and disease did not haunt their doorsteps as opposed to poorer people

The product list is not exclusive

• PLEASE visit the trade displays
• Ask a stack of questions
• Pull dressings apart and see what they are really made of
• Continue to learn about dressings

You could begin with a blank matrix—

<table>
<thead>
<tr>
<th>Product group</th>
<th>Moisture manage</th>
<th>Moisture donate</th>
<th>Moisturization</th>
<th>Protection</th>
<th>Debridement</th>
<th>Antimicrobial</th>
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</thead>
<tbody>
<tr>
<td>Impregnated mesh</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>Film</td>
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<tr>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Hydrocolloid</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Hydrogel</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Calcium Alginate</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Hydrofiber</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Aim

<table>
<thead>
<tr>
<th>Product group</th>
<th>Moisture manage</th>
<th>Moisture donate</th>
<th>Moisturization</th>
<th>Protection</th>
<th>Debridement</th>
<th>Antimicrobial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impregnated mesh</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Film</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Foam</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Hydrocolloid</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Hydrogel</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Calcium Alginate</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Hydrofiber</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Or you could develop a matrix based on tissue types

<table>
<thead>
<tr>
<th>Tissue type</th>
<th>Impregnated mesh</th>
<th>Absorbent pads</th>
<th>Films</th>
<th>Foams</th>
<th>Hydrocolloids</th>
<th>Hydrogels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epithelium</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
</tr>
<tr>
<td>Granulation</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
</tr>
<tr>
<td>Hypergranulation</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
</tr>
<tr>
<td>Slough</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
</tr>
<tr>
<td>Eschar</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
</tr>
<tr>
<td>Eschar</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
<td>x x x x x</td>
</tr>
</tbody>
</table>

Basic dressing product guide chart—for primary dressings

<table>
<thead>
<tr>
<th>Product name</th>
<th>Pink</th>
<th>Red</th>
<th>Yellow</th>
<th>Black</th>
<th>Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquacel®</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquacel® Ag</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquacel® Extra</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flaminal®</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iodosorb® Powder</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iodosorb® Ointment</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaltostat®</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaltostat® Alginite® M™</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mepore®</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mepore® Pro</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opsite®</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pad or Opsite®</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tegaderm® and Opsite® post op, Mepore Pro, Mepore Black/Pac</td>
<td>x</td>
<td>Change weekly</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Or you list the formulary you have in your facility and the various uses

<table>
<thead>
<tr>
<th>Product type</th>
<th>Function</th>
<th>Wound type</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impregnated mesh</td>
<td>Protect tissue</td>
<td>Healed wounds or very superficial wounds</td>
<td>Change second to third daily</td>
</tr>
<tr>
<td>Absorbent pads</td>
<td>Absorbency</td>
<td>Secondary dressing</td>
<td></td>
</tr>
<tr>
<td>Films</td>
<td>Protect, waterproof, Very superficial wounds or par wound edge</td>
<td>Weekly or 3rd daily</td>
<td></td>
</tr>
<tr>
<td>Foams</td>
<td>Absorbency</td>
<td>Granulation tissue, or as secondary absorbent dressing</td>
<td>3rd–4th daily</td>
</tr>
<tr>
<td>Hydrocolloids</td>
<td>Moisture retention</td>
<td>Low exuding sloughy wounds, pink wounds</td>
<td>3rd–5th daily</td>
</tr>
</tbody>
</table>
## Basic dressing product guide chart—for primary dressings

<table>
<thead>
<tr>
<th>Product</th>
<th>Color</th>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesalt</td>
<td>Pink</td>
<td>Hypergranulation</td>
<td>To protect</td>
</tr>
<tr>
<td>DouxDerma CGF or Ultra, Epithane Ultra</td>
<td>Red</td>
<td>Sloughy</td>
<td>To protect</td>
</tr>
<tr>
<td>Akebia, Totta</td>
<td>Yellow</td>
<td>Hypergranulation</td>
<td>If dry yellow - to aid debridement</td>
</tr>
<tr>
<td>Serfect</td>
<td>Black</td>
<td>Minimal of exudate</td>
<td>If concerned about infection</td>
</tr>
<tr>
<td>Mepore, Primapore, Jetipox Stipple, Asguard Flex, Cutiplast Sterile</td>
<td>Green</td>
<td>Minimal of exudate</td>
<td>If concerned about infection</td>
</tr>
<tr>
<td>Atraumann, Adaptic</td>
<td>Green</td>
<td>To protect very fragile tissue and reduce trauma on removal</td>
<td>If concerned about infection</td>
</tr>
</tbody>
</table>

### Some cases to discuss

- **Hypergranulation**
- **Sloughy**
- **Slough**
- **Maceration**

Some cases to discuss

- **To protect**
- **To absorb**

For primary dressings

[Links to images and discussion](http://www.worldwidewounds.com/2002/april/Vowden/images/WBP-Figure-5b.jpg)
www.awma.com.au

- Australian and New Zealand Clinical Practice Guideline for Prevention and Management of Venous Leg Ulcers
- AWMA Inventory of Wound/Skin Care products and devices
- Bacterial impact on wound healing: From contamination to infection
- Clinical Practice Guidelines for the Prediction and Prevention of Pressure Ulcers
- Draft Pan Pacific Clinical Practice Guideline for Pressure Injury Prevention and Management
- Standards for Wound Management

Wound Management Association Contacts

- AWMA-Victoria contact number: 03 96961210
- www.awma.com.au go to this site for contact details in other states
- AWMA Vic twilight meetings

National Wound Conference

Wound care manual

- Recommended reading is: Wound Care Manual by Keryln Carville
  Approx $49.50
  www.silverchain.org.au