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Medicine, Nursing and Health Sciences

Dressings Workshop

Wounds Australia Conference 2018

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Declaration of Financial Interests or Relationships

Speaker Name: Associate Professor Geoff Sussman

I have no financial interest or relationship(s) to disclose

Wound Dressings

If you were to design a new wound dressing
What specific features would you want the dressing
to include ?

List six feature your ideal dressing would have

The Ideal Dressing (according to Turner)

- An ideal dressing should
 - maintain moist environment
 - absorb excess exudate
 - allow gaseous exchange
 - provide thermal insulation
 - provide a barrier to bacteria
 - be free from particulate/toxic components
 - be atraumatic on removal
 - be comfortable and conformable
 - protect the wound from further trauma
 - be cost effective

The Ideal Dressing Feature (according to Thomas)

Does the dressing:

- Stay intact and remain in place throughout wear time?
- Prevent leakage between dressing changes?
- Cause maceration/allergy or sensitivity?
- Reduce pain?
- Reduce odour?
- Retain fluid?
- Trap exudate components?

The Ideal Dressing Feature (according to Thomas)

Is the dressing:

- Comfortable, conformable, flexible and of a bulk/weight that can be accommodated in footwear?
- Suitable for leaving in place for the required duration?
- Easy to remove (does not traumatize the surrounding skin or wound bed)?
- Easy to apply?
- Cost effective?
- Likely to cause iatrogenic lesions?

Decisions

What should you base your decision to use a particular product on a specific Wound ?

How long should you continue with this product before changing your choice ?

How often do we make the wrong choice?

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What is the basis for your decision to use a particular product on a specific Wound ?

- What is available
- Your own preferences
- Samples provided
- Recent training Seminar
- Instructions { facility guidelines}
- Financial constraints
- Desperation

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How long should you continue with this product before changing your choice ?

- ? Days
- ? Weeks
- ? Months

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How long should you continue with this product before changing your choice ?

- ☞ Days
- ☞ Weeks
- ☞ Months

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How long should you continue with this product before changing your choice ?

THE TWO WEEK 'CHALLENGE'

It has been recommended that dressings should be used for two weeks initially and then the wound, the patient and the management approach should be re-evaluated. It is suggested that this initial two week period can be seen as a two week 'challenge' period during which the efficacy of the dressing can be assessed.

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How often do we make the wrong choice?

- ? Never
- ? Occasionally
- ? Frequently

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How often do we make the wrong choice?

- ☺ Never { We hope }
- ☹ Occasionally { For some }
- ☹ Frequently { More likely }

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Sometimes we don't get what we expect



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The Role of a Dressing

To provide the best environment for wound healing in combination of the management of the wound cause and the factors impacting on healing

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Patient Dressing Issues

- Cost
 - Best quality dressing products may be out of the price range
 - Consider alternatives ie. Nappies/ Incontinence or Sanitary Pads as high absorbing products
- Compliance
 - Recognise difficulties or challenges and tackle significant issues rather than challenging too many issues

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Patient Dressing Issues

- Comfort
 - Determine cause of pain- dressing change or underlying cause related to cancer, arterial ulcer, vasculitis
 - Treat appropriately and adequately
 - Select dressing products to minimize further discomfort
- Exudate
 - Can be socially isolating
 - Wound drainage or ostomy bags are an alternative option

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Patient Dressing Issues

- Odour
 - Treat any causes
 - Some dressings and drainage bags minimize odour
 - Consider use of room deodorants
- Bleeding
 - Cancerous wounds are often very fragile and bleed easily
 - This is disturbing to the family
 - Consider haemostatic dressings

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Patient Dressing Issues

Infection

- High risk of development in complex wounds such as cancerous, diabetic, patients on immuno-suppressive drugs, older frail patients
- Identify clinical signs and treat with systemic antibiotics and topical antiseptics

Aesthetics

- The way we look is significant to all of us. When dealing with someone who is dying this is very important to them and their family. Consider ways to minimize the dressings- skin coloured products, less bulk

What is wound exudate ?

There is mounting evidence that much of the destructive effects observed in chronic wounds may be compounded by components of the wound exudate which are corrosive in nature resulting in a continuum of ECM breakdown. Isolation of these components has identified MMPs, in particular MMP-9 as dominant in this destructive process. Additionally an association has been made between high bacterial levels and elevated MMP9 in chronic wounds.

Chronic wound fluid—thinking outside the box A D Widgeow Wound Rep Reg (2011) 19:287–291 c 2011

Some constituents of exudate and their function

Component	Function
Fibrin Platelets	Clotting
Macrophages	Immune defense, production of growth factors
Plasma proteins, albumin, globulin, fibrinogen	Maintain osmotic pressure, immunity, transport of macromolecules
Glucose	Cellular energy source
Growth factors	Proteins controlling factor-specific healing activities
Proteolytic enzymes	Enzymes that degrade protein, including serine, cysteine, aspartic proteases and matrix metalloproteinases (MMPs)
TIMPs	Controlled inhibition of MMPs

Keith F. Cutting British Journal of Community Nursing Sept 2003 Vol 8 Sup3

Type of exudate

Serous	Clear, watery consistency.
Fibrinous	Cloudy, contains fibrin protein strands
Purulent	Pyogenic organisms and other inflammatory cells
Haemo-purulent	Contains neutrophils, dead/dying bacteria and inflammatory cells, i.e. established infection is present. Consequent damage to dermal capillaries leads to blood leakage
Haemorrhagic	Capillaries have become so friable that they easily break down and spontaneous, copious bleeding occurs. Blood is the major component of this type of exudate. Do not confuse with bloody exudate from overenthusiastic debridement

Source: Cutting and White, 2002

Exudate descriptors

None	Wound tissues dry
Scant	Wound tissues moist
Small	Wound tissues wet, moisture evenly distributed in wound, drainage involves 25% of dressing
Moderate	Wound tissues saturated, drainage may or may not be evenly distributed in wound, drainage involves 25% to 75% of dressing
Large	Wound tissues bathed in fluid, drainage freely expressed, may or may not be evenly distributed in wound, drainage involves 75% of dressing

Source: Bates-Jensen (1997)

Exudate Acute v Chronic

Acute	Chronic
Fluid supports cell proliferation	Fluid does not support cell proliferation
Fluid does not damage peri-wound skin	Fluid damages peri-wound skin
Fibronectin intact	Fibronectin degraded
Neutrophil elastase, serine and MMP levels normal	Neutrophil elastase, serine and MMP levels high
Fibroblast mitosis present	Fibroblast mitosis altered

Source: Bates-Jensen (1997)

Dressing Classes

- Dressings can be divided into 2 broad classes
 - passive dressings
 - interactive/bio-active dressings

WOUND DRESSINGS

INERT

- *Gauze, Cotton wool, Combine, Tulle Little Role as Primary Dressing*
- Absorbing
- Non-absorbing
- Expensive
- Frequent Changes
- Painful Removal

ACTIVE

- Absorbing
- Non-Absorbing
- Moisture Donating
- Provides Favourable Environment
- Less Frequent Changes
- Less Expensive
- Pain Relieving

Passive Dressings

- include gauze, lint, non-stick dressings, tulle dressings etc
- fulfil very **few** of the properties of an ideal dressing
- **very** limited (if any) use as primary dressing, but some are useful as secondary dressings

Interactive Dressings

- alter the wound environment
- interact with the wound surface to optimise healing
- *interactive* dressings use the environment provided by the body to encourage normal healing
- *Some are bio-active* dressings also stimulate the healing cascade

Wound Dressings


- Film Dressings
- Hydrocolloid Dressings
- Foam Dressings
- Hydroactive (Foam-like) Dressings
- Alginate Dressings
- Hydrogels { Amorphous & Sheet}
- Antimicrobial
- Miscellaneous products

Dressing Properties

- 1) Protection
- 2) Absorption
- 3) Hydration
- 4) Antimicrobial
- 5) Tissue Modulators

Dressing Properties


1. Protection
 - A. The Wound
 1. Tullles Paraffin (Out dated)
 2. Silicone Tullles (Best for skin tears)



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Dressing Selection Tullles

Type	Actions	Indications/use	Precautions/contraindications
Low-adherent wound contact layer (non-silicone)	Protect new tissue growth Atraumatic to periwound skin Conformable to body contours	Low to high exuding wounds Use as contact layer on superficial low exuding wounds	May dry out if left in place for too long



Dressing Selection Silicone Tullles

Type	Actions	Indications/use	Precautions/contraindications
Low-adherent wound contact layer (silicone)	Protect new tissue growth Atraumatic to periwound skin Conformable to body contours	Low to high exuding wounds Use as contact layer on superficial low exuding wounds	May dry out if left in place for too long Known sensitivity to silicone




Dressing Properties

1. Protection
 - B. The Peri-skin
 - Polymer Films
 - Barrier Creams

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Dressing Selection Polymer Skin Protection

Type	Actions	Indications/use	Precautions/contraindications
Polymer Skin film	Protect new the peri-skin from maceration	Exudating wounds when applied to the Peri skin will dry leaving an invisible film protecting the skin	Known sensitivity to these polymers



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Dressing Selection Barrier Cream Skin Protection

Type	Actions	Indications/use	Precautions/contraindications
Barrier Creams	Protect the peri-skin from maceration or Incontinence dermatitis	Exudating wounds when applied to the Peri skin will protect the skin	Known sensitivity to the ingredients




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Dressing Properties


2. Absorption

- Low Level**
NA dressings
- Moderate Levels**
Hydrocolloids
- High Levels**
Foam Dressings
Hydroactive Polymers (Foam-like)
- Very High**
Superabsorbers

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Dressing Selection NA Dressings

Type	Actions	Indications/use	Precautions/contraindications
Inert NA cotton wool dressings	Protect new tissue growth absorb minimal exudate	Dry or Low exuding wounds Use as contact layer on superficial low exuding wounds	Will not cope with moderate or higher levels of exudate



Dressing Selection Dressings Extra Absorbent

Type	Actions	Indications/use	Precautions/contraindications
Thicker Inert NA cotton wool dressings	Protect new tissue growth absorb moderate to high exudate	moderate to high exuding wounds Use as a secondary layer on exuding wounds	Not needed for low levels of exudate



Dressing Selection Dressings Super Absorbent

Type	Actions	Indications/use	Precautions/contraindications
Polymer absorbent dressings	Protect new tissue growth absorb high to very high exudate	highly exuding wounds Use as a secondary layer on exuding wounds	Not needed for low levels of exudate



Dressing Selection Hydrocolloid Dressings

Type	Actions	Indications/use	Precautions/contraindications
Hydrocolloids	Absorb fluid Promote autolytic debridement	Clean, low to moderate exuding wounds	Do not use on dry/necrotic wounds or high exuding wounds May encourage overgranulation May cause maceration



Dressing Selection Foam Dressings

Highly absorbent, non-particulate, insulating, cushioning, moist interface, 1, 2 or 3 layer, non-stick,

Type	Actions	Indications/use	Precautions/contraindications
Foams	Absorb fluid Moisture control Conformability to wound bed	Moderate to high exuding wounds Special cavity presentations. Combined presentation with silver or PHMB for antimicrobial activity	Do not use on dry/necrotic wounds or those with minimal exudate



Dressing Selection Silicone Foam Dressings


Type	Actions	Indications/use	Precautions/contraindications
Foams	Absorb fluid Moisture control Conformability to wound bed	Moderate to high exuding wounds composed of a multiple foam that has a soft silicone surface adhesive for non-traumatic removal. Available in Border, shaped for heels and sacrum. Can be used for pressure prevention	Do not use on dry/necrotic wounds or those with minimal exudate



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Dressing Selection Foam Like

Type	Actions	Indications/use	Precautions/contraindications
Foams like (Hydroactive Dressings)	Absorb fluid Moisture control Conformability to wound bed. Similar but not the same as a Foam	Moderate to high exuding wounds Special cavity presentations in the form Low adherent versions available for patients with fragile skin.	Do not use on dry/necrotic wounds or those with minimal exudate



Dressing Properties


3. Hydration

- Hydrogels Sterile
- Hydrogels Preserved
- Hydrogels Sheet
- Physiological Solutions

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Dressing Selection Hydrogel Amorphous

Type	Actions	Indications/use	Precautions/contraindications
Hydrogels	Rehydrate wound bed. Moisture control Promote autolytic debridement Cooling Pain relieving	Dry/low to moderate exuding wounds Combined presentation with silver for antimicrobial activity	Do not use on highly exuding wounds or where anaerobic infection is suspected May cause maceration




Dressing Selection Hydrogel Amorphous Preserved

Type	Actions	Indications/use	Precautions/contraindications
Hydrogels	Rehydrate wound bed. Moisture control Promote autolytic debridement Cooling Pain relieving	Dry/low to moderate exuding wounds Combined presentation with silver for antimicrobial activity	Do not use on highly exuding wounds or where anaerobic infection is suspected May cause maceration




Dressing Selection Sheet Hydrogels

Type	Actions	Indications/use	Precautions/contraindications
Sheet Hydrogels	Rehydrate wound bed. Moisture control Promote autolytic debridement Cooling Pain relieving	Dry/low to moderate exuding wounds. Used as a cavity dressing	Do not use on highly exuding wounds or where anaerobic infection is suspected May cause maceration



Dressing Selection Physiological Solutions

Type	Actions	Indications/use	Precautions/contraindications
Polymer with Ringers Solution	Rehydrate wound bed, removes necrotic tissue and in exchange, absorbs wound exudate and in this way accelerates wound cleansing	Dry/low to moderate exuding wounds, for Debridement	Do not use on highly exuding wounds May cause maceration



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Dressing Properties

4. Antimicrobial

- Iodine
- Silver
- Honey
- DACC
- PHMB
- Enzymes
- Hypochlorous Acid
- Octenidine

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Dressing Selection Iodine Dressings

Type	Actions	Indications/use	Precautions/contraindications
Iodine	Antimicrobial action, debrider, Healing stimulation	Critically colonised wounds or clinical signs of infection Low to high exuding wounds	Do not use on dry necrotic tissue Known sensitivity to iodine Short-term use recommended 3 months (risk of systemic absorption)



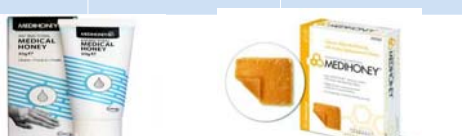
Dressing Selection Silver Dressings

Type	Actions	Indications/use	Precautions/contraindications
Silver	Antimicrobial action	Critically colonised wounds or clinical signs of infection Low to high exuding wounds Combined presentation with foam and alginates/ CMC for increased absorbency.	Some may cause discolouration Known sensitivity Discontinue after 2 weeks if no improvement and re-evaluate



Dressing Selection Honey


Type	Actions	Indications/use	Precautions/contraindications
Honey	Rehydrate wound bed Promote autolytic debridement Antimicrobial action	Sloughy, low to moderate exuding wounds Critically colonised wounds or clinical signs of infection	May cause 'drawing' pain (osmotic effect) Known sensitivity



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Other antiseptics

Product	Type	Cytotoxicity	Biofilm affect	Comments
PHMB / Betaine	Surfactant antimicrobial	The toxicity profile of both the biguanides and the polymeric biguanides is excellent. Neither molecule is a primary skin irritant nor a hypersensitising agent.	Some claimed	There is little or no evidence to suggest that this would lead to the emergence of PHMB resistant.



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wound products for wound infection


Antimicrobial agent	Type	Biofilm Efficacy	Guidance for use
Enzyme alginogel	Alginate gel with two enzymes: Lactoperoxidase Glucose oxidase	Prevents formation of biofilms at concentration $\leq 0.5\%$ (w/v) Inhibits growth of established biofilms at higher concentrations Does not disrupt biofilm biomass	



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wound products for wound infection


Antimicrobial agent	Type	Biofilm Efficacy	Guidance for use
Dialkylcarbamoylc chloride Impregnated Fibre (DACC)	Tulle-like, Foam Hydrogel Absorbent Ribbon Post Op Dressing	Not actively biocidal or biostatic Reduces the bacterial load in a wound by binding bacteria or fungus to the hydrophobic fibre	Do not use with creams or ointments as the binding effect may be impaired



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Other antiseptics

Product	Type	Cytotoxicity	Biofilm affect	Comments
Super oxidized with Hypochlorous Acid(HOCL) and Sodium Hypochloride (NaOCL)	antimicrobial	These newer solutions claim to be safe for the wound and patient while disrupting biofilm and killing planktonic bacteria and other organisms. this is NOT EUSOL!	Some	Comes in a spray-on format solution and gel



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Other antiseptics

Product	Type	Cytotoxicity	Biofilm affect	Comments
Octenidine dihydrochloride (OCT)	Surfactant antimicrobial	In-vitro testing shows high toxicity, but as the preparation is not absorbed there are no systemic effects and it has not been shown to disrupt healing	Some	Comes in a gel and irrigation preparation that can be used together or separately Lowers liquid surface tension allowing greater spread and facilitating separation of non-viable tissue



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Dressing Properties


5. Tissue Modulators

These are products that change the wound environment counteracting MMP's and stimulating the wound base

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Tissue Modulators

Type	Actions	Indications/use	Precautions/contraindications
Protease modulating	Active or passive control of wound protease levels	Clean wounds that are not progressing despite correction of underlying causes, exclusion of infection and optimal wound care	Do not use on dry wounds or those with leathery eschar

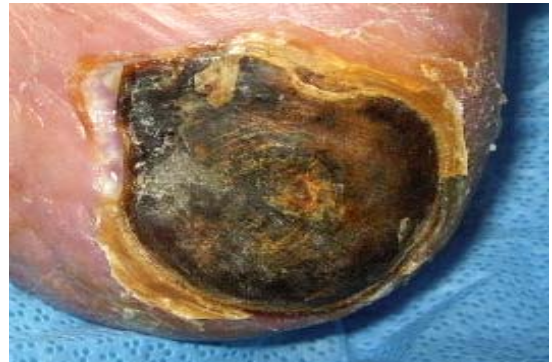


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Case Studies

- 1. Dry Wound
- 2. Lightly exudating sloughy Wound
- 3. Lightly exudating clean Wound
- 4. Deeper exudating Wound
- 5. High exudating clean Wound
- 6. High exudating sloughy Wound

Case Study Dry Wound



Case Study Lightly exudating sloughy Wound



Case Study Lightly exudating clean Wound



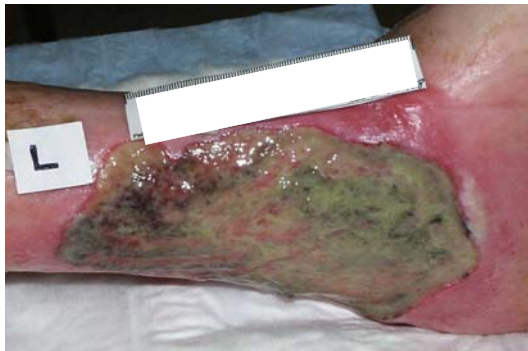
Case Study Deeper exudating Wound



Case Study High exudating clean Wound



Case Study High exudating sloughy Wound



10 Commandments for Dressing Choice

1. will the dressing provide the environment for healing
2. will the dressing be user friendly { to ensure compliance }
3. will the dressing have ease of application and removal
4. will the dressing simplify treatment { minimal changes }
5. the dressing will be cost effective { management cost }
6. the dressing will be compatible with the wound
7. the dressing will have minimal need for secondary dressing
8. the dressing is suitable for combined use with compression
9. the dressing may be suitable for use in infected wounds
10. the dressing will remain in place {given the position/type of wound}

DVA Wound Identification and Product Selection Chart



DVA Wound Identification and Product Selection Chart

The Department of Veterans' Affairs Wound Identification and Dressing Selection Chart

GENERALISED WOUND IDENTIFICATION: WOUND OR WOUND TYPE

HEALING TIME FRAME

WOUND IDENTIFICATION: WOUND OR WOUND TYPE

HEALING TIME FRAME

WOUND IDENTIFICATION: WOUND OR WOUND TYPE

HEALING TIME FRAME

WOUND IDENTIFICATION: WOUND OR WOUND TYPE

HEALING TIME FRAME

LEGEND

1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10

Conclusion

Managing a wound must be based on a clear diagnosis of the underlying Aetiology and addressing the issues relating to treating the cause.

Wound management should be based on addressing the wound environment issues and your choice of product should be one that deals with the specific nature of the wound.