Looking at the products available on the market can be quite daunting however for the majority of products a simple approach can be taken similar to that of grouping drugs together. If products are looked at within their generic names then it becomes easier to choose the appropriate dressing. Products can be grouped under generic headings:

- Alginates
- Foams
- Hydrocolloids
- Hydrofibres
- Hydrogels
- Low adherent/wound contact materials
- Odour Management
- Surgical Absorbents
- Vapour-permeable films
- Antimicrobials including iodine, honey and silver products

**Alginates**

These are produced from calcium and sodium salts of algenic acid, obtained from seaweed. They contain maluronic and gluronic acid residues in differing proportions giving the different brands slightly different properties. Calcium alginate is insoluble in water but in the presence of sodium ions (from wound exudate) ion exchange occurs producing soluble sodium alginate which forms a hydrophilic gel. This means that it attracts water and can exert an osmotic pull to transport exudate away from the wound bed. This provides a moist environment to promote autolysis that is the breakdown of dead tissue due to the action of enzymes.

**Main Indications**

- Medium to high exudating wounds.
- Cavity wounds – use rope/ribbon form.
- Calcium alginates have haemostatic properties therefore can be useful on bleeding wounds.

**Contraindications**

- Do Not Use on Dry/Necrotic Wounds

**Foams**

These dressings consist of polyurethane foam and have either hydrophillic (water attracting) or hydrophobic (water repelling) properties. They are available as either flat sheets or cavity dressings. Foams work by absorbing and evaporating off water to provide a moist wound environment (modern varieties are covered with a semi-permeable film backing to control evaporation).

**Main Indications**

- To absorb exudate and maintain moist environment on granulating wounds
- As a secondary dressing over hydrogels, alginates, hydrofibres and foam cavity dressings to help control the wound environment.
- High Moisture Vapour Permeable foams are indicated for hypergranulating wounds

**Contraindications**

- Do not use on dry necrotic wounds as primary dressing.
- Use adhesive forms with care especially on patients with fragile skin.
Hydrocolloids

Hydrocolloids are a type of dressing containing gel-forming agents, such as sodium carboxymethylcellulose (and some contain gelatin). In many products these are combined with elastomers and adhesives and applied to a carrier – usually polyurethane foam or film, to form an absorbent, self adhesive, waterproof wafer. In the presence of wound exudate, hydrocolloids absorb liquid and form a gel. In the intact state they are impermeable to water vapour, but as the gelling process takes place, the dressing becomes more permeable. The loss of water vapour through the dressing enhances the ability of the product to cope with exudate production.

Main Indications
- Suitable for all stages of wound healing – necrotic to granulating wounds. (with necrotic wounds the dressing occludes having a softening effect)
- Low to moderately exuding wounds
- Can be used as a physical occlusive barrier to prevent the spread of infection

Contraindications
- May encourage over-granulation, therefore may need to change to a more permeable dressing at this stage of wound healing.

Hydrocolloid Fibre

Hydrofibre dressings are made from 100% sodium carboxymethylcellulose (hydrocolloid), which is spun into fibres and needled to make a soft, non-woven fleece-like dressing. They are available as flat sheets or ribbons. It works by absorbing exudate into and between the fibres and locking it in. It forms a soft gel on contact with the exudate, which remains within the wound area and does not wick laterally. This reduces the risk of maceration to surrounding skin.

Main Indications
- Suitable for any wound with moderate to high levels of exudate
- Sloughy wounds with high levels of exudate which are causing maceration using a hydrogel or alginate
- Cavity wounds – available in ribbon form, do not pack, lay lightly into wound as will swell on contact with exudate

Contraindications
- Do not use on dry or necrotic wounds
- May cause pain or ‘drawing sensation’ if put on wounds with too little exudates

Hydrogels

Hydrogels come in two forms an amorphous gel or a flat sheet. They have a starch base with a high concentration of water > 75%. They work by donating and absorbing liquid within a wound in varying proportions. This encourages autolysis of dead tissue and provides a moist environment.

Main Indications
- Suitable for all stages of wound healing – necrotic to granulating wounds
- Low/no exudate wounds – cover hydrogel with a semi-permeable film
- Medium exudating wounds – cover with a semi-permeable absorbent dressing (eg. a foam) to allow absorption and evaporation of fluid.
- Sheet hydrogels can be used for flat and/or painful wounds
- Amorphous Hydrogels can be used for flat or cavity wounds

Contraindications
- Do not use with highly exudating wounds
Low adherent/wound contact materials
This group covers a range of different materials. Absorbent perforated plastic film-faced
dressings, knitted viscose primary dressings, soft silicone wound contact dressings and
paraffin gauzes. Also includes island pads which may have a vapour permeable film
backing. Most are low adherent rather than non-adherent except the soft silicone dressings.
They should not be used as the first dressing of choice as they do not provide a moist wound
healing environment and do not meet most of the criteria for an ideal wound dressing.

Main Indications
- Use as wound contact layer on dry or low exuding wounds
- Soft silicone can be used on high exuding wounds with an absorbent secondary dressing
  leaving the contact layer in place up to seven days and changing the outer padding as
  required.
- Requires a secondary dressing
- Needs to be secured with tape or bandages

Contraindications
- Tendency to dry out if left in place too long except silicone dressings
- Viscose dressing should not be used in highly exudating wounds as maceration can
  occur.

Odour Management
This group consists of a variety of products, which use either carbon or charcoal usually in
combination with other dressing materials. They aim to reduce the odour molecules by
adsorbing them to the dressing and so reducing the number that are detected by the nose.

Main Indications
- Malodorous wounds due to excess exudate or bacterial colonisation
- Need to be as closed to wound bed as possible to be effective
- If critical colonisation or local infection topical antimicrobials may need to be used(e.g.
  silver, iodine or honey products)

Absorbent Dressings
Absorbent dressings consist of a low adherent layer with pores to allow fluid uptake and
either absorbent fibres or gel bead core to absorb the exudate. The higher absorbency
dressings are thicker and have a backing to prevent strike through.

Main indications
- Use low absorbants as secondary dressing over low adherent contact layers for low
  exudate wounds especially with patient with sensitivities to other dressings
- Superabsorbants can be used alone or over silicone contact layer where there is heavier
  exudate and frequent changes of absorbent dressing are required.

Vapour-permeable Films
Vapour - permeable hypoallergenic adhesive-coated films, maintain a moist environment
under the film. However cannot manage moderate or high levels of fluid.

Main Indications
- Primary dressing over superficial low exuding wounds
- Secondary dressing over alginates and hydrogels to encourage rehydration of slough
  and necrotic tissue.

Contraindications
- Do not use on moderate to high exuding wounds
- Use with care on patients with fragile skin
Honey Based Dressings
Honey works in a number of different ways in the wound, these include by osmosis, by reducing the acidity to pH 3.2-4.5, some by releasing hydrogen peroxide in a safe form and by the action of phytochemicals & bioflavanoids. This means that it is active against many bacteria although Manuka honey is more effective because of the unique manuka factor (UMF) which is related to the phytochemicals & bioflavanoids actions which are not affected by catalase enzyme, heat/light, it can work in cavities and under occlusive dressings and is active in full strength honey. It also diffuses deeper into skin tissues than hydrogen peroxide. The UMF relates to activity compared to phenol % and greater than/equal to factor 10 is most effective.

Main Indications
• It is effective as a debriding agent for necrotic or sloughy wounds
• Is an effective antimicrobial
• Stimulate the fibroblasts to promote wound healing at the proliferation stage of wound healing.
• When first used due to the osmotic 'pull' the levels of exudate will increase for a few days and then should return to normal as the excess fluid is removed from the tissues.

Cautions/Disadvantages
• There can be rare allergic reactions
• Honey can contain viable spores of Clostridium botulinium, theoretical risk of wound botulism therefore only gamma irradiated honey is used in wounds.
• Diabetes – take into account sugar content ~ 30% glucose
• Becomes more liquid at higher temperatures and can restrict body site if liquid due to leakage.
• Some patients may experience a ‘drawing’ or stinging sensation in the wound due to change in pH

Contraindications
• Allergy to honey
• Allergy to bee stings (although risk of bee sting being in honey is extremely rare)

Silver Based Dressings
Silver works in a number of different ways on the bacterial cells, these include impairing the bacterial electron transport mechanism, affecting cell respiration and interfering with the DNA and RNA functions. It is broad spectrum being effective against bacteria, fungal and viral infections. Silver has been established as a safe and effective antimicrobial. If, after using a silver product for 1-2 weeks, no improvement in the wound is seen, then a full reassessment of the wound and patient should be undertaken.

Main indications
• Absorbent silver dressings can be used for moderate to heavily exuding wounds.
• Silver sulphadiazine cream should normally be changed daily but for wounds that are less exudative, less frequent (i.e. changes every 48 hours) may be acceptable.
• Silver foams are recommended for patients with leg ulcers where up to 7 days antimicrobial action and absorbency is required. They are more cost effective than a combination of standard foam and absorbent antimicrobial and can be used under compression bandaging.
• Silver foams should only be used for superficial wounds with no cavities. If a cavity is present use absorbent silver cavity dressing with standard foam as the secondary dressing.
Disadvantage

- Silver dressings may cause transient discolouration of surrounding skin

Contraindication

- Allergy to Silver
- Allergy to sulphadiazine (if using silver sulphadiazine cream)

Iodine Based Dressings

Iodine works by damaging the membranes and cytoplasm of the invading organism and has a wide spectrum of activity being both bacteriostatic and bactericidal. It is safe and effective with low concentrations being effective over longer time as slow release. The two main types used in wounds are Povidone-Iodine and Cadexomer Iodine. Colour indicator for all iodine products: changes from orange/brown to white when inactive.

<table>
<thead>
<tr>
<th>Povidone-Iodine</th>
<th>Cadexomer Iodine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solutions (pre-op only)</td>
<td>Paste</td>
</tr>
<tr>
<td>Creams</td>
<td>Ointment</td>
</tr>
<tr>
<td>Impregnated dressings</td>
<td>Powder</td>
</tr>
<tr>
<td>Suitable for superficial low exuding wounds only</td>
<td>Can absorb up to 6x weight in exudate</td>
</tr>
<tr>
<td>Rapidly deactivated by wound exudate (There are more effective antimicrobial dressings available e.g. honey based tulle)</td>
<td>Desloughs</td>
</tr>
<tr>
<td></td>
<td>Suitable for moderate to heavily exudating wounds</td>
</tr>
<tr>
<td></td>
<td>Biodegradable</td>
</tr>
</tbody>
</table>

Contraindications

- Extensive lesions
- Allergy to Iodine
- Iodine >1% free can be toxic to newly formed tissue within a wound.

Caution

- Pregnant women & children
- Diabetics
- Known thyroid disorders
- Compromise renal function
- Lithium therapy
- Be aware of maximum dose per application and per week due to risk of absorption

Using Wound Dressing Products in Combination

Sometimes products need to be used in combination to achieve the aim of treatment (See Table 1)

As wounds progress through the healing process the aims of treatment will need to be reviewed and product choice changed to meet these needs. However it is important to remember that a product needs to be used for a reasonable length of time to ensure it is working, changing the product used at every second dressing change is likely to be counter productive unless the wound has changed dramatically. A clear treatment plan needs to be decided upon and re-evaluated at regular intervals to ensure it is still the most appropriate treatment for the wound.
<table>
<thead>
<tr>
<th>Type of tissue in wound</th>
<th>Role of dressing</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Necrotic, black, dry</td>
<td>• Rehydration</td>
<td>• Hydrogel and vapour permeable films/membranes or foam</td>
</tr>
<tr>
<td></td>
<td>• Promotion of debridement (autolysis)</td>
<td>• Hydrocolloid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Honey dressing and vapour permeable films/membranes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hydrogel and vapour permeable films/membrane or foam Hydrocolloid</td>
</tr>
<tr>
<td>Sloughy, yellow, brown, black or grey can be</td>
<td>• If dry tissue: moisture retention and rehydration</td>
<td>• Hydrocolloid fibre and foam or surgical absorbent</td>
</tr>
<tr>
<td>dry or low – high exudate</td>
<td></td>
<td>• Alginate and foam or surgical absorbent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Honey dressing and foam or surgical absorbent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Possible maggot therapy</td>
</tr>
<tr>
<td></td>
<td>• If moist: fluid absorption</td>
<td>• Hydrocolloid fibre and foam or surgical absorbent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Alginate and foam or surgical absorbent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Honey dressing and foam or surgical absorbent</td>
</tr>
<tr>
<td></td>
<td>• Possibly odour absorption</td>
<td>• Possible maggot therapy</td>
</tr>
<tr>
<td></td>
<td>• Possibly antimicrobial action</td>
<td>• Odour management</td>
</tr>
<tr>
<td>Granulating, clean, red</td>
<td>• Fluid absorption</td>
<td>• Antimicrobial and foam or surgical absorbent</td>
</tr>
<tr>
<td>Low-high exudate</td>
<td>• Thermal insulation</td>
<td>• Possible maggot therapy</td>
</tr>
<tr>
<td></td>
<td>• Moisture control</td>
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<tr>
<td></td>
<td></td>
<td>• Foam</td>
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<tr>
<td></td>
<td></td>
<td>• Foam and hydrocolloid fibre or alginate</td>
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<tr>
<td></td>
<td></td>
<td>• Hydrocolloid</td>
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<tr>
<td></td>
<td></td>
<td>• Low adherence and wound contact materials and low absorbent</td>
</tr>
<tr>
<td></td>
<td>• Possibly odour absorption</td>
<td>• Odour management</td>
</tr>
<tr>
<td></td>
<td>• Possibly antimicrobial action</td>
<td></td>
</tr>
<tr>
<td>Epithelialising, red, pink</td>
<td>• Moisture retention</td>
<td>• Antimicrobial and foam or surgical absorbent</td>
</tr>
<tr>
<td>No-low exudate</td>
<td>• Rehydration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Low adherence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Thermal insulation</td>
<td></td>
</tr>
<tr>
<td>Mixed tissue types</td>
<td>• Balance the different states of healing</td>
<td>• Hydrocolloid (thin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Vapour-permeable films/membranes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Low adherence and wound contact materials and low absorbent secondary dressing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Assess tissue types and select appropriate dressings as above</td>
</tr>
</tbody>
</table>