

THAMES VALLEY & WESSEX NEONATAL OPERATIONAL DELIVERY NETWORK

Guideline for Neonatal Wound Care

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<p>Implications of race, equality & other diversity duties for this document</p>	<p>This guideline must be implemented fairly and without prejudice whether on the grounds of race, gender, sexual orientation or religion.</p>

Guideline for Neonatal Wound Care

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1.0 Aim of Guideline Framework

To provide an evidence base for practice, seeking to ensure highest quality wound care for all neonates within the Thames Valley & Wessex Neonatal Network.

2.0 Scope of Guideline Framework

The guideline applies to all neonatal units and maternity units covered by Thames Valley & Wessex Neonatal Network. This includes the following hospitals:

Thames Valley	
Buckinghamshire Healthcare NHS Trust	- Stoke Mandeville Hospital, Aylesbury
Frimley Health NHS Foundation Trust	- Wexham Park Hospital, Slough
Milton Keynes University Hospital NHS Foundation Trust	- Milton Keynes General Hospital
Oxford University Hospitals NHS Foundation Trust	- John Radcliffe Hospital, Oxford
Oxford University Hospitals NHS Foundation Trust	- Horton General Hospital, Banbury
Royal Berkshire NHS Foundation Trust	- Reading
Wessex	
Dorset County Hospital NHS Foundation Trust	- Dorset
Hampshire Hospitals NHS Foundation Trust	- Basingstoke
Hampshire Hospitals NHS Foundation Trust	- Winchester
Isle of Wight NHS Trust	- St Mary's Hospital
Poole Hospital NHS Foundation Trust	- Poole Hospital
Portsmouth Hospitals NHS Trust	- Queen Alexandra Hospital
Salisbury NHS Foundation Trust	- Salisbury
University Hospital Southampton NHS Foundation Trust	- Princess Anne Hospital
Western Sussex Hospitals NHS Foundation Trust	- St Richard's Hospital, Chichester

3.0 Guideline Summary.

All wounds should be assessed and clearly documented using a wound assessment tool. This should include;

- Site of the wound
- Size of the wound
- Thickness

- Wound bed 'colour'
- Exudate
- Odour
- Surrounding skin
- Skin maturity/ current gestation of the baby
- Wound pain

Goals of wound management are;

- Prevent breakdown
- Objective assessment
- Gentle cleansing- where necessary
- Dressing for protection and to promote healing
- Culture and treat if infected.

Wound care principles

- Wounds that are healthy and free from debris do not require ritualistic cleansing.
- If dead tissue or foreign debris is present the wound should be cleaned
- Sterile 0.9% saline is 'the most physiological' wound cleanser and can be used for all wound types.
- Moist wound healing is the most important principle, dry dressings can cause repeated trauma to the wound bed and retard healing
- Optimising nutritional needs of each neonate will positively impact wound healing
- Adequate oxygenation of the wound tissues is required for wound healing to occur. So physiological stability of the baby should be optimised.

Neonatal skin has unique characteristics that make it especially vulnerable to damage;

- fragile and immature
- dermis is only 60% of thickness of adult skin
- vulnerable to shearing forces and more easily removed
- no subcutaneous fat is evident until 29 weeks, and this is not fully thickened until term
- risk of percutaneous absorption is increased
- before 28 weeks the skin is thin and poorly keratinised, so its barrier function is very limited
- Staff should offer all parents information about their baby's wound and its care, based on assessment of the parent's information needs and level of understanding. This should include honest discussion about cause, if iatrogenic.
- Involve and support parents to care for their baby with a wound, as appropriate

4.0 Guideline Framework

4.1 General principles of caring for patients with wounds

4.1.1 Process of healing: (Delldot 2011)

Wound healing, or wound repair, is an intricate process in which the skin (or another organ-tissue) repairs itself after injury. In normal skin, the epidermis (outermost layer) and dermis (inner or deeper layer) exists in a steady-state of equilibrium, forming a protective barrier against the external environment. Once the protective barrier is broken, the normal (physiologic) process of wound healing is immediately set in motion. The classic model of wound healing is divided into three or four sequential, yet overlapping phases: (1) hemostasis (not considered a phase by some authors), (2) inflammatory, (3) proliferative and (4) remodeling. Upon injury to the skin, a set of complex biochemical events takes place in a closely

orchestrated cascade to repair the damage. Within minutes post-injury, platelets (thrombocytes) aggregate at the injury site to form a fibrin clot. This clot acts to control active bleeding (hemostasis).

In the inflammatory phase, bacteria and debris are phagocytosed and removed, and factors are released that cause the migration and division of cells involved in the proliferative phase.

The proliferative phase is characterised by angiogenesis, collagen deposition, granulation tissue formation, epithelialisation, and wound contraction.^[4] In angiogenesis, new blood vessels are formed by vascular endothelial cells.^[5] In fibroplasia and granulation tissue formation, fibroblasts grow and form a new, provisional extracellular matrix (ECM) by excreting collagen and fibronectin.^[4] Concurrently, re-epithelialisation of the epidermis occurs, in which epithelial cells proliferate and 'crawl' atop the wound bed, providing cover for the new tissue.^[6]

In contraction, the wound is made smaller by the action of myofibroblasts, which establish a grip on the wound edges and contract themselves using a mechanism similar to that in smooth muscle cells. When the cells' roles are close to complete, unneeded cells undergo apoptosis.

In the maturation and remodeling phase, collagen is remodeled and realigned along tension lines and cells that are no longer needed are removed by apoptosis. However, this process is not only complex but fragile, and susceptible to interruption or failure leading to the formation of chronic non-healing wounds. Factors which may contribute to this include diabetes, venous or arterial disease, old age, and infection.

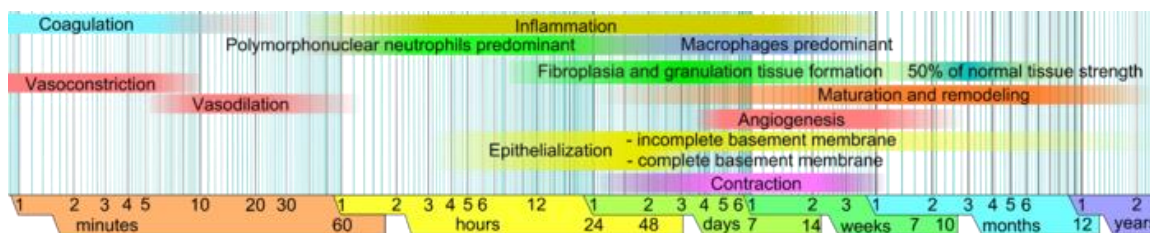


Diagram showing approximate times of the different phases of wound healing, with faded intervals marking substantial variation, depending mainly on wound size and healing conditions.

4.1.2 Goals of wound management:

1. Prevent breakdown
2. Objective assessment
3. Gentle cleansing- where necessary
4. Dressing for protection and to promote healing
5. Culture and treat if infected.

4.1.3 Wound Assessment:

'The systematic assessment of a wound in any patient group is essential, as it provides baseline data on which to evaluate healing and the efficacy of the treatment regime'. (Crest 1998)

All assessment should be clearly documented using an assessment tool. The more detailed the clinical description and documentation, the easier it will be for health care professionals to assess healing from shift to shift. It is generally agreed that assessment should include;

1: Site of the wound	-Helps to differentiate between wounds and may indicate pathology of wound.
2: Size of the wound	-Measure the maximum width, breadth and depth and record in millimetres. -If the wound is an unusual shape, consider tracing it's outline for the records. -Official 'staging' of a wound is not required for neonates this is a practice most relevant to adult pressure ulcer care.
3: Thickness	-Partial thickness involves tissue damage to the epidermis and dermis. -Full thickness involves damage to the subcutaneous tissue, muscle and bone.
4: Wound bed 'colour'	- Usually identified to be one of 5 colours which help to indicate the stage of healing and the health of the wound. The type of tissue identified will indicate the treatment objective. <ul style="list-style-type: none"> • Pink: new skin growth (the wound is being covered by epithelial cells.) • Red: granulating (the wound is being filled with vascular connective tissue.) • Yellow: slough (accumulated dead cell debris on the surface.) • Green/yellow: infected. (various indicators that organisms in the wound have provoked 'a reaction' in the host. e.g. purulent discharge/ abscess, malodour, localised redness, swelling, pyrexia.) • Black: necrotic (dead tissue, which is black or brown in colour.) -As tissue is identified as a 'type', identify how much of each is present- i.e. 60% granulation, 25% slough 15% echar.
5: Exudate	Type and quantity, will influence dressing choice. <u>Type.</u> <ul style="list-style-type: none"> • Serous: clear fluid with no visible pus, blood or debris • Sanguinous: bloody, appearing to be entirely blood. • Serosanguinous: blood mixed with clear fluid. • Purulent: pus like appearance, cloudy and viscous. <u>Quantity.</u> <ul style="list-style-type: none"> • Dry: no exudates produced. • Low: wound bed is moist (scant or small exudates) • Moderate: surrounding skin is wet and there are exudates in the wound bed. • High: surrounding skin is saturated and wound is bathed in fluid.
6: Odour	-Subjective and difficult to quantify. <ul style="list-style-type: none"> • None • Smell noticeable on dressing removal • Smell spreads away from patient
7: Surrounding skin	-Assess skin for colour, moisture (maceration), intactness, induration, oedema, pain, presence of a rash, trophic skin changes and infection.
8: Skin maturity/ current gestation of the baby	-State baby's current gestation and describe translucency, friability and intactness of baby's skin generally.
9: Wound pain	-All the time, intermittent or only at dressing time.

4.1.4 Wound Cleansing:

'The object of wound cleansing is to break the bond between tissue and the particle of dirt, foreign debris or bacteria and to assist in the removal of necrosis'. (Taquino, 2000, p109)

- Wounds that are healthy and free from debris do not require ritualistic cleansing.
- If dead tissue or foreign debris is present the wound should be cleaned, as these may support the growth of pathogenic organisms.
- Sterile 0.9% saline is 'the most physiological' wound cleanser and can be used for all wound types.
- Saline should be at least room temperature and ideally warmed to body temperature. Cold fluids reduce the temperature of the wound bed and cause polymorphic and macrophagic activity to cease, until the wound's temperature increases again. (Irving et al, 2006)
- When cleansing is indicated the wound should be irrigated (for example with a syringe) and not swabbed, as swabbing may damage fragile epithelialising/ granulating tissue.
- To perform wound irrigation use a large sized syringe, (ideally 50/ 60 mls in volume) and using the syringe trickle saline onto wound, minimising the pressure of fluid exerted onto the wound. Deliberate 'piston' irrigation' can be performed using a 20 ml syringe and a blunt needle or catheter tip, but this should always be at the direction of a wound specialist.
- Antiseptic solutions should not be used for wound cleansing. It is generally agreed that applying topical antiseptics directly on the wound bed is counterproductive, and likely to be toxic to newly forming tissues, causing a delay in active healing.

Note. Vigilant infection control precautions should be applied, when caring for neonates with wounds. Hand washing, plastic aprons and gloves.

4.1.5 Wound Treatment Objectives:

Table of wound healing objectives.

(Treatment objectives of a wound are determined by the wound bed's classification)

<p><u>PINK:</u> New skin growth/ Epithelialising</p>	<p>-Keep wound warm and moist (as epithelialisation occurs 2-3 times quicker in a warm moist environment.) -Manage exudate -Protection from trauma.</p> <ul style="list-style-type: none"> • Use a dressing that maintains a warm moist environment (e.g.-low adherent dressings/ vapour permeable films/hydrogels/hydrocolloids/ alginates/foams). • Dressing choice will depend on level of exudate.
<p><u>RED:</u> Granulating.</p>	<p>-Keep wound warm and moist -Manage exudate -Protection from trauma.</p> <ul style="list-style-type: none"> • use a dressing that maintains a warm moist environment (e.g. hydrogels / hydrofibre / hydrocolloids / alginates / foam dressings). • Dressing choice will depend on level of depth of wound and amount of exudate.
<p><u>Yellow:</u> Slough.</p>	<p>-Management of exudate and debridement. -Dressings which promote autolysis (e.g. hydrogels, hydrocolloids, -alginates, larvae).</p> <ul style="list-style-type: none"> • Debridement with a scalpel or larvae. (experienced and expert practitioners only) • -Dressing choice will depend on depth of wound and amount of exudate.
<p><u>Green:</u> Infected.</p>	<p>-Promote wound healing -For patient to be free from pain and discomfort and infection.</p> <ul style="list-style-type: none"> • Swab for organisms and sensitivities • 'All wounds are colonised, but not all wounds are infected', so do not diagnose a wound infection on the wound swab alone. Look for signs of local and systemic infection, ensuring that the inflammatory stage of healing is not confused as a sign of infection. • Wounds that show evidence of clinical infection will require systemic antibiotics.
<p><u>Black:</u> Necrotic</p>	<p>-Debridement and management of exudate.</p> <ul style="list-style-type: none"> • Necrotic tissue prolongs healing, and in most cases should be removed, but always in a controlled environment under the guidance of trained, experienced professionals –usually a surgeon in neonatal patients. • Debridement methods can include dressings/ enzymes/larvae/ scalpel.

4.1.6 Practical management:

See section 3.3 (page 12 to 14) - Wound dressing, quick reference grid (Showing products, characteristics and neonatal applications.)

- Moist wound healing is the most important principle. When a wound bed is kept moist;
 1. Phagocytes and epithelial cells can more easily migrate into place and perform their functions.
 2. Growth factors and chemo-attractants are better able to interact with their target cells.
 3. Pain is significantly reduced.

- Dry dressings can cause repeated trauma to the wound bed and retard healing.
- Concern is often expressed that use of occlusive dressings will promote the growth of bacteria underneath the dressing. However research has shown that such dressings actually minimize infection rates (Taquino, 2000)

4.1.7 Holistic patient care:

4.1.7.1 Pain

- There are two sources of pain. Firstly, the ongoing pain resulting from the presence of the wound and secondly the more short term pain that may be caused during and after dressing change.
- Both sources of pain need to be considered, assessed and treated according to local pain management guidelines. (See Thames Valley and Wessex Neonatal ODN, Guideline Framework for Pain Minimisation.)

4.1.7.2 Nutrition

- Individualised care will include consideration of nutritional needs as they relate to wound healing.

4.1.7.3 Physiological support

- Adequate oxygenation of the wound tissues is required for wound healing to occur. Thus physiological stability of the baby will have an impact upon wound healing and should be optimised.

4.1.7.4 Patient/ Parents

A wound can have multiple impacts and concerns for a patient and their family, including;

- Pain and distress,
- Compromise to general health status of patient,
- Possibility of long term scarring,
- Unpleasant appearance of wound
- Distress or anger at cause of wound, if iatrogenic.
- Altered body image

Health care professionals should aim to overcome these by;

- Providing information about the wound and its care, based on assessment of information needs and level of understanding.
- Honest discussion about cause if iatrogenic.
- Involve patient/ parents as appropriate

4.2 **Neonatal wound care principles**

4.2.1 Neonatal wounds:

1. Neonatal wounds tend to be restricted to only a few types.
2. Neonate often have an intact and rapid healing mechanisms.

Table of most common causes of neonatal wounds

Traumatic wounds	- epidermal striping - tearing from adhesives/ friction/
Surgical wounds	- incisions - primary repairs - surgically placed drains - rarely a dehisced surgical wound
Contact excoriation	- exposure to chemicals - prolonged exposure to moisture (esp skin folds - irritant contact dermatitis (nappy rash)
Extravasation injury.	- TPN - high concentration dextrose solutions - ionic, acid and alkali solutions. - inotropes
Thermal injury	- heat from probes - illuminated laryngoscope bulb inadvertently touching skin
Pressure injuries	- neonates are at relatively low risk of pressure ulcer type skin breakdown, even over bony prominences, due to their large surface area to weight ratio. The risk is elevated, however, when pharmacological muscle relaxants are used or there is significant oedema/ poor tissue perfusion. -saturation probes -nasal septum if receiving nasal CPAP or nasal High Flow Therapy. -laid on tubing -knees, occiput and ears are particularly vulnerable.
Ischaemic Injuries	-arterial line effects. -amniotic banding in-utero
Congenital conditions.	-epidermolysis bullosa (see separate protocol for care) -gastroschisis -spina bifida

4.2.2 Neonatal Skin:

Neonatal skin has unique characteristics that make it especially vulnerable to damage and require adaptation of 'normal' adult wound care practices;

- It is both fragile and immature, increasing the risk of iatrogenic tissue damage.
- The dermis is only 60% of thickness of adult skin, when baby full term.
- The fibrils connecting the epidermis and the dermis are reduced in number and more widely spaced, making it vulnerable to shearing forces and more easily removed, especially by adhesive products.
- No subcutaneous fat is evident until 29 weeks, and this is not fully thickened until term.
- Risk of percutaneous absorption is increased in neonates.
- Before 28 weeks the skin is thin and poorly keratinised, so its barrier function is very limited and exposes the infant to;
 - High transepidermal water loss
 - Risk of excessive heat loss

4.2.3 Management Factors:

- Additional thermoregulatory support may be required for neonates with a significant wound, to minimise heat loss caused by evaporation and conduction.
- Most wound care products are designed for and tested on adults. So choice of wound care products for neonates must consider active and inert ingredients that may cause systemic effects on absorption, or local irritation to skin.
- 'Management of pain is hindered by a lack of awareness amongst healthcare professionals that neonates feel pain, in part due to the fact that they may not show vigorous behavioural responses to pain. Also there may be anxiety about the possible adverse effects of analgesia' (IAG report, 2005)
- Pain assessment must be carried out using local pain management policy. The findings of the assessment must also be acted upon. Refer to unit pain management protocol for further advice and guidance.
- Alginate type dressings should NOT be used in neonates as the calcium and sodium contained within them can be absorbed systemically
- Collagen dressings are made of bovine connective tissue and should NOT be used in neonates because of their immature immune system.
- The use of silver sulfadiazine-impregnated dressings is contra-indicated in neonates.
- Consider urinary catheterisation if a wound is repeatedly contaminated. Especially in the smaller neonates when their small size may mean a wound is close to groin, peri-anal or perineum area.

4.2.4 Dressing procedures:

- Have two people to assist (the second person may be a colleague or the baby's parent). One to do the dressing change and one to contain/ non-nutritive sucking.
- Avoid bright lighting and too much handling to reduce stress to the baby.
- Assess potential for pain prior to procedure and if administering pharmacological pain relief or oral sucrose, allow time for it to take effect.
- Keep dressing changes to the minimum required.
- Prepare dressing and equipment before disturbing or exposing baby, both to minimize distress and assist with thermoregulation.
- Consider using tubular stretchy gauze to hold non adhesive dressings in place.
- Take photograph at change of dressing, to avoid extra changes for those not present to see the wound.
- Allow parents to be involved in the wound dressing if they wish to be

4.25 Seeking further advice and care.

- When a wound is severe, not responding to treatment or complexities arise it would be usual for help and advice to be sought from other health care professionals. These would include;
 - Tissue Viability specialist/ team
 - Plastic surgeons
 - Tertiary Neonatal Unit – if the baby is in an LNU
 - Paediatric surgeons

4.3 Wound dressing grid

Colour classification	Aim of care	Recommended Dressing	Nature of dressing	Comments
Pink: Epithelialising wound	<ul style="list-style-type: none"> -Keep wound warm and moist. -Manage exudate. -Protect wound. 	Hydrocolloid sheets. If surrounding skin intact	<ul style="list-style-type: none"> -self adhesive -absorbs liquid -impermeable to bacteria <p>(duoderm/ comfeel/ granuflex)</p>	<ul style="list-style-type: none"> -leave in place for up to 7 days if exudate level will allow -should not be used on wounds infected with anaerobic organisms -Hydrocolloid sheets should be removed with caution.
		Soft silicone dressing. If surrounding skin broken	<ul style="list-style-type: none"> -soft silicone wound contact layer -non adhesive -non absorbent <p>(mepitel or mepitel 1)</p>	<ul style="list-style-type: none"> -requires gauze pad layer as secondary dressing to absorb exudate -change dressing pad when saturated -silicone layer to be changed if pores are blocked, affecting passage of exudate- usually 3-4 days
Red: Granulating wound	<ul style="list-style-type: none"> -Keep wound warm and moist. -Manage exudate. -Promote granulation. -Protect wound. 	Amorphous hydrogel if low exudate	<ul style="list-style-type: none"> -colourless -odourless -facilitates autolytic debridement -rehydrates slough -absorbs exudate <p>(purilon/ intrasitegel/ active heal gel, consider medi honey gel)</p>	<ul style="list-style-type: none"> apply sufficient gel to cover wound area -change gel every 1-3 days -gel can be removed with sterile saline
			<ul style="list-style-type: none"> -thin transparent sheet with one adhesive side. <p>(opside/ biocclusive/ tegaderm)</p>	<ul style="list-style-type: none"> -use recommended technique for removal to avoid skin trauma
			<ul style="list-style-type: none"> Consider glove/boot method to contain hydrogel when semi-permeable adhesive dressing not practical or inappropriate. 	<ul style="list-style-type: none"> -risk of maceration of healthy surrounding skin
		Soft silicone dressing if moderate to high exudate.	<ul style="list-style-type: none"> -soft silicone wound contact layer -non adhesive -non absorbent <p>(mepitel)</p>	<ul style="list-style-type: none"> -requires gauze layer as secondary dressing to cover and protect silicone layer and absorb exudate. -change gauze when loose or soiled. -silicone layer to be changed every 4 days, sooner if required.

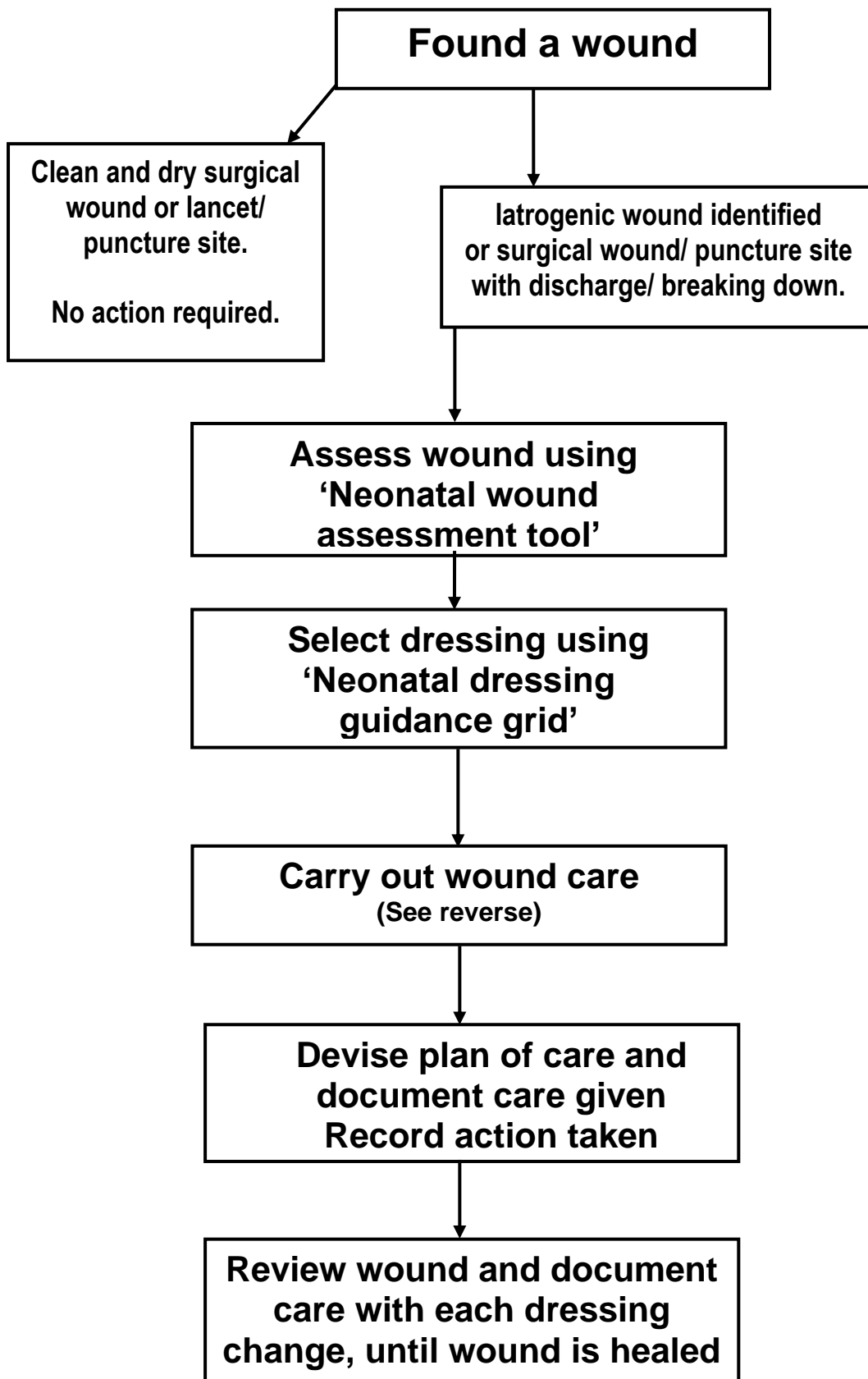
Colour classification	Aim of care	Recommended Dressing	Nature of dressing	Comments
Yellow: Sloughy wound	-debridement -management of exudate	Hydrocolloid sheets or hydrocolloid paste for fragile skin. For flat or shallow wounds	-self adhesive -absorbs liquid -impermeable to bacteria -facilitates autolytic debridement (duoderm/ comfeel/ granuflex)	-leave in place for up to 7 days if exudate level will allow -should not be used on wounds infected with anaerobic organisms -if paste is used a secondary non adhesive dressing would be required (eg Atrauman)
		Amorphous hydrogel with semi-permeable adhesive dressing. For deeper wounds.	-colourless -odourless -facilitates autolytic debridement -rehydrates slough -absorbs exudate (purilon/ intrasitegel/ granugel)	-apply sufficient gel to cover wound area and fill depression if present -change gel every 1-3 days -gel can be removed with sterile saline
			-thin transparent sheet with one adhesive side -(opside/ biocclusive/ tegaderm)	-use recommended technique for removal to avoid skin trauma
Green: Infected wounds	-prevent further infection -promote wound healing	Hydrocolloid fibrous dressing with polyurethane foam dressing or dressing products containing honey.	-soft sterile non-woven sheet composed of hydrocolloid fibres -absorbs liquid on contact and retains -maintains moist environment -aids autolytic debridement (aquacel, honey impregnated gauze, activon tulle, medi honey wound gel for cavities)	-to be changed daily as infected wound
			-hydrophilic contact layers -hydrophobic outer layer (lyofoam/ tielle/ allevyn/ mepilex,)	-ensure waterproof surface is positioned to the outside -secure using tubigrip where possible -or with layer of gauze and minimal adhesive

Colour classification	Aim of care	Recommended Dressing	Nature of dressing	Comments
Black: Necrotic wounds	-debridement -management of exudate	Hydrocolloid sheets. For flat or shallow wounds	-self adhesive -absorbs liquid -impermeable to bacteria -facilitates autolytic debridement (duoderm/ comfeel/ granuflex)	-leave in place for up to 7 days if exudate level will allow -should not be used on wounds infected with anaerobic organisms
		Amorphous hydrogel with semi-permeable adhesive dressing. For deeper wounds.	-colourless -odourless -facilitates autolytic debridement -rehydrates slough -absorbs exudate -maintains wound bed moisture (purilon/ intrasitegel/ granugel)	-apply sufficient gel to cover wound area and fill depression if present -change gel every 1-3 days -gel can be removed with sterile saline
			-thin transparent sheet with one adhesive side -(opside/ biocclusive/ tegaderm)	-use recommended technique for removal to avoid skin trauma

For any wound other than 'pink' epithelialising wounds, refer wound and its care to specialist advice.

4.4 Basic Wound Care Procedure – algorithm

Basic Wound Care Procedure



4.5 Wound assessment action plan

Wound assessment and Action Plan

Patient sticker

Initial wound assessment findings:	
Date:	Gestation at birth: Current gestation:
Colour of wound bed- -Pink (new skin growth) () -Red (granulating) () -Yellow (sloughy) () -Green/ yellow (infected) () -Black (necrotic) ()	Wound location: Wound description: Peri-wound appearance: Wound size in mm: Type of exudate (if any): Cause of wound (if known):
Photograph taken ()	
Is referral to specialist required? YES/NO Referral made () date: (i.e. Tissue viability, Plastic surgeons, Tertiary NNU, Paediatric Surgeons)	

Plan of care:	
Goal of wound care:	Anticipated frequency of dressing change:
Primary dressing:
Secondary dressing:

Ongoing wound review	Care documentation.
Date Reviewed by Pain assessment..... Pain relief given..... Appearance..... Size..... Colour..... Exudate..... Comment.....	Swabbed..... Cleaned with..... Dressed with..... Photograph taken () placed in medical notes. Tolerance (physiological/ thermoregulatory/ pain) Next dressing due.....

Date Reviewed by..... Pain assessment..... Pain relief given..... Appearance..... Size..... Colour..... Exudate..... Comment.....	Swabbed..... Cleaned with..... Dressed with..... Photograph taken () placed in medical notes. Tolerance (physiological/ thermoregulatory/ pain) Next dressing due.....
Ongoing review	Action taken and plan
Date Reviewed by..... Pain assessment..... Pain relief given..... Appearance..... Size..... Colour..... Exudate..... Comment.....	Swabbed..... Cleaned with..... Dressed with..... Photograph taken () placed in medical notes. Tolerance (physiological/ thermoregulatory/ pain) Next dressing due.....
Date Reviewed by..... Pain assessment..... Pain relief given..... Appearance..... Size..... Colour..... Exudate..... Comment.....	Swabbed..... Cleaned with..... Dressed with..... Photograph taken () placed in medical notes. Tolerance (physiological/ thermoregulatory/ pain) Next dressing due.....
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Date Reviewed by..... Pain assessment..... Pain relief given..... Appearance..... Size..... Colour..... Exudate..... Comment.....	Swabbed..... Cleaned with..... Dressed with..... Photograph taken () placed in medical notes. Tolerance (physiological/ thermoregulatory/ pain) Next dressing due.....
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4.6 Neonatal Stoma Care Guideline

3.6.1 Post-Operative Care:

- Observe stoma closely in the immediate post-operative period;
 - Colour of stoma (should be deep red/pink)
 - Position of stoma (should be slightly raised)
 - Wound appearance
- Cover stoma with petroleum impregnated gauze (ie jellonet) then a dry gauze over layer.
- When the stoma becomes active a stoma bag should be fitted
- All stoma actions should be documented on the fluid/ feed chart- including a description of the colour, consistency and indication of amount.
- If stoma losses are fluid, the volume in millilitres should be measured and recorded.
- Baby can be bathed if otherwise stable, 5 days after stoma formation performed. The bag can be removed or stay insitu for bath.

4.6.2 Indicators for concern/ seeking medical advice:

- If the stoma bleeds excessively (some bleeding is normal on cleaning)
- If the stoma prolapses out
- If the stoma retracts in to the abdomen
- If the stoma becomes dark or bluish in colour
- If the stoma losses become increasingly watery

4.6.3 Routine Stoma Care:

4.6.3.1 To empty stoma bag of stool/ flatus

1. Decontaminate hands
2. Put on non-sterile gloves
3. Identify receiver for stool. This would usually be the wet nappy, but if accurate fluid balance must be recorded, a small washable pot may be used.
4. Undo clamp/seal on open end of bag

5. Drain contents into nappy or pot (If the contents cannot be drained downwards it may be necessary to aspirate stool using a syringe with a blunt ended quill attached)
6. Clean open end of bag with tissue or clean cotton wool ball
7. Close clamp/seal on open end of stoma bag.
8. If the stoma bag is enclosed within baby's nappy, ensure it is positioned comfortably for the baby, and has space to expand as stool/ flatus enters
9. Observe/measure contents and discard according to trust policy.
10. Decontaminate hands.
11. Document stoma losses

4.6.3.2. To change stoma bag

1. Prepare equipment;
 - Bowl of warm tap water
 - Gauze or lint free wipes
 - New stoma bag with open end sealed
 - Sharp pointed scissors to cut hole for stoma
 - Template from previous stoma bag (if applicable)
 - Liquid barrier film swab (alcohol free)
 - Adhesive removal wipe (alcohol free)
2. Prepare baby;
 - Consider oral sucrose for pain/ discomfort management
 - Have dummy available for non-nutritive sucking
 - An assistant may be necessary to hold the baby and offer comfort
3. Decontaminate hands
4. Wear a pair of non-sterile gloves
5. Use warm water on a gauze or wipe to loosen the barrier adhesive
6. Using one hand peel off the existing stoma bag from top to bottom, whilst supporting the skin with the other. If removal is difficult try using an adhesive removal wipe to aid the process (these should be used with caution in babies under 32 weeks gestation.)
7. Wash the peri-stomal skin area with water and gauze/wipe
8. Dry skin thoroughly by patting, do not rub. Do not use cotton wool.
9. Observe the skin for signs of excoriation/ rashes/ epidermal stripping.
10. Apply liquid barrier film to skin surrounding stoma and allow to dry
11. Cut correct size hole in flange of stoma bag- consider proximity of umbilicus, wounds, other stomas when locating hole. Template from previous stoma bag may guide size of hole and location.
12. Peel off protective backing from stoma bag flange and apply new bag to skin so that backing is flush with surface. Try to avoid touching the exposed adhesive surface as this reduces its adhesive quality.
13. Place palm of hand over bag and flange as it is in place on baby's abdomen and keep hand insitu for 1-2 minutes. This allows the hydrocolloid backing to warm, soften, mould and adhere fully to the skin.
14. Observe/measure contents and dispose of stoma bag according to trust policy.
15. Decontaminate hands.
16. Document stoma losses and complete stoma care and assessment record.

Stoma bag should be changed every three days if not dislodged sooner as the stoma needs to be visualised and cleaned at least 72 hourly.

However depending on the condition of the baby and the stoma, the volume of output and other obstacles to bag adhesion, acceptable wear time may be 12 to 48 hours

4.6.4 Hints and tips when caring for neonatal stomas:

4.6.4.1 Stoma bag selection and use

- For a small baby choose a bag with a small flange, there is more chance the flange will be able to lay flat on the abdomen and will therefore be less likely to dislodge.
- For a larger baby choose a bag with a larger flange- this will increase the surface area of adhesive and improve the chances of the bag remaining in place.
- If the baby has a stoma and a mucous fistula, where possible select a product that allows both stoma and mucous fistula to be incorporated within the flange area.
- If a large volume of stool or flatus is being produced by the stoma then use a bag with a larger capacity. The bag will fill up less often and reduce the incidence of leakage/ bursting.
- If a bag is used without any pre-cut hole in the flange then it is possible for the user to choose the best location for the hole. This allows the opportunity to cut two holes for stoma and mucous fistula so they are both encompassed in one bag. Alternatively, the hole can be sited towards one side of the flange enabling the bag to be positioned further away from 'obstructions', such as the abdominal wound, umbilicus or groin creases.
- For some babies the best option (in the short term) can be not to use a stoma bag, if this allows recovery of damaged or infected skin, or the healing of wounds.
- The aim of stoma care for each neonate is to develop a pouching system that uses as few products as possible, for the easier the system, the more likely it is to be followed by multiple care givers.

4.6.4.2 Getting and keeping the bag stuck on

- If an adhesive removal wipe has been used to remove the previous bag, it can leave chemical residue on the skin. Clean skin with water after use of such wipes and avoid their use where possible.
- Avoid wiping stoma with cotton wool, strands will deposit on the stoma, which may interfere with bag adhesion.
- If liquid barrier film is used on surrounding skin, allow it to dry thoroughly so that the chemical component evaporates before attaching the stoma bag.
- If skin surface is very uneven, skin can be levelled to provide a flat surface for adhesion. This can be done in two ways;
 - Using a using a mouldable barrier/ caulking strip (seek advice from stoma nurse.)
 - Skin barrier paste can be used to protect the skin and level the skin surface at the same time- however due to its alcohol content using paste should not be the first choice.
- If paste is used, apply sparingly, focusing on excoriated areas and use a cotton bud to place a thin layer at the rim of the stoma bag hole. Also, before applying the stoma bag over paste, allow the paste to 'air out' for 1 minute- maximising the evaporation of alcohol from the paste.
- The skin around the stoma needs to be really dry before applying a new stoma bag. This can be achieved in a number of ways;
 - Take extra care to dry skin using lint free gauze/wipes
 - A skin barrier powder can be applied- apply with care to prevent inhalation of powder by baby.
 - Use the hospital air/oxygen supply to blow gently on the peri-stomal skin enabling it to dry really thoroughly. The tubing used to blow air/ oxygen onto the stoma area should be kept separately for that purpose, and not used for supplying facial air/oxygen.

4.6.4.3 Preventing and managing excoriated skin

- Babies swallow lots of air when sucking and crying, causing the stoma bag seal to be compromised. Release gas regularly and aim to empty the bag when 1/3rd full of stool or gas. If gas is a particular problem, try changing the bag type, to one with an incorporated charcoal filter.

- Liquid barrier film, if used to protect peri-stomal skin, must be alcohol free. Currently the only alcohol free product on the market is 'Cavilon'.
- If using liquid barrier film, do not place the stoma bag onto the wet film as it will act as glue. Instead of protecting the skin, when the bag is removed epidermal stripping can occur.
- After initial formation, the stoma will decrease in size for up to six weeks, so it will be necessary to re-measure the stoma size as each new stoma bag is applied.
- Carers should aim to leave a 2mm gap between the edge of the stoma and the flange. This will minimise the skin's exposure to bag contents. If the flange is fitted any closer to the stoma, mucous from the stoma will cause the bag to lift away from the skin.
- Angle the bag to encourage the contents to drain away from the stoma.
- Special 'gel crystals' or cotton wool can be placed in the bag, to absorb stoma loss and encourage wicking of loss away from the vulnerable skin (seek advice from the stoma nurse).
- It is a common mistake, with two piece stoma bags, for carers' to omit the flange and apply the bag directly to the skin. This will expose a significant area of peri-stomal skin to liquid stoma loss and will quickly cause excoriation of the skin.
- Loss of epidermis can result in 'weeping' of serous exudate, if this fluid accumulates under the bag it can reduce its adhesion. Try to identify and treat the underlying cause; Two causes not always considered-
 - Allergic reaction- change the stoma product(s)
 - Fungal skin infection- treat by dusting moist skin with anti-fungal powder, brush excess away before applying stoma bag.

4.6.4. Parental considerations

- Inform parents about and involve them in the care of their baby's stoma, according to their needs and wishes.
- Offer verbal and written information to parents'
- Offer parents the opportunity to meet with a stoma nurse for support and information.
- If the baby will be discharged home with a stoma present, careful discharge planning will be required. This should be co-ordinated by the stoma nurse and will include;
 - Parental teaching on stoma care.
 - Assessment of parental competence to provide stoma care.
 - Supply of stoma appliances for discharge
 - Arranging GP provision of stoma appliances in the community.
 - Arranging community support for parents

References.

Bennett.Y (2006) Discharge guidelines for a child with a stoma. Greater Glasgow and Clyde, Women and Children's service, Yorkhill site. pp1-14.

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Rogers.V. (2003) Managing preemie Stomas: More than just the pouch. Journal of Wound, Ostomy and Continence Nursing. Vol 30, No 2, pp100-110.

Southampton (2002) 'Care of a stoma'. Southampton General Hospital Neonatal Unit. Southampton University Hospitals NHS Trust.

Neonatal Stoma Assessment Tool

Patient sticker

Initial assessment date.....

Completed by.....

Type of stoma		Stoma nurse referral made on and by;	
Reason for stoma formation		Stoma nurses' name	
Date of stoma formation		Stoma nurse contact details	
Expected time period stoma required		Will parents' require stoma care teaching before discharge?	
Specific instructions from surgeons or previous ward;			

<p>Date..... Time..... Stoma products used</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Condition of peri-stomal skin</p> <p>.....</p> <p>.....</p> <p>Condition of stoma</p> <p>.....</p> <p>.....</p> <p>Are more stoma supplies needed? Yes/ No</p> <p>Sign.....</p>	<p>Date..... Time..... Stoma products used</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Condition of peri-stomal skin</p> <p>.....</p> <p>.....</p> <p>Condition of stoma</p> <p>.....</p> <p>.....</p> <p>Are more stoma supplies needed? Yes/ No</p> <p>Sign.....</p>	<p>Date..... Time..... Stoma products used</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Condition of peri-stomal skin</p> <p>.....</p> <p>.....</p> <p>Condition of stoma</p> <p>.....</p> <p>.....</p> <p>Are more stoma supplies needed? Yes/ No</p> <p>Sign.....</p>
<p>Date..... Time..... Stoma products used</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Condition of peri-stomal skin</p> <p>.....</p> <p>.....</p> <p>Condition of stoma</p> <p>.....</p> <p>.....</p> <p>Are more stoma supplies needed? Yes/ No</p> <p>Sign.....</p>	<p>Date..... Time..... Stoma products used</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Condition of peri-stomal skin</p> <p>.....</p> <p>.....</p> <p>Condition of stoma</p> <p>.....</p> <p>.....</p> <p>Are more stoma supplies needed? Yes/ No</p> <p>Sign.....</p>	<p>Date..... Time..... Stoma products used</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Condition of peri-stomal skin</p> <p>.....</p> <p>.....</p> <p>Condition of stoma</p> <p>.....</p> <p>.....</p> <p>Are more stoma supplies needed? Yes/ No</p> <p>Sign.....</p>
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<p>Date..... Time..... Stoma products used Condition of peri-stomal skin Condition of stoma Are more stoma supplies needed? Yes/ No Sign.....</p>	<p>Date..... Time..... Stoma products used Condition of peri-stomal skin Condition of stoma Are more stoma supplies needed? Yes/ No Sign.....</p>	<p>Date..... Time..... Stoma products used Condition of peri-stomal skin Condition of stoma Are more stoma supplies needed? Yes/ No Sign.....</p>
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5.0 Appendix

4.1 List of wound dressings available within local hospital.

(Local document supplied by local unit.)

4.2 Aseptic Non-Touch Technique protocol.

(Local document supplied by local unit.)

4.3 Neonatal Extravasation Protocol.

(Local document supplied by local unit)

Version Control:

Version	Date	Details	Author(s)	Comments
1	June 2012	New	KR/Team	Neonatal Network Board approved.
2	December 2015	Reviewed with agreed amendments	KR/Team	TV&W Neonatal ODN Governance Group approved 10.01.16
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