WOUND ASSESSMENT CLINICAL GUIDELINE

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SUPPORTING STATEMENTS

this document should be read in conjunction with the following statements:

SAFEGUARDING IS EVERYBODY’S BUSINESS

All Mersey Care NHS Foundation Trust employees have a statutory duty to safeguard and promote the welfare of children and adults, including:

- being alert to the possibility of child / adult abuse and neglect through their observation of abuse, or by professional judgement made as a result of information gathered about the child / adult;
- knowing how to deal with a disclosure or allegation of child / adult abuse;
- undertaking training as appropriate for their role and keeping themselves updated;
- being aware of and following the local policies and procedures they need to follow if they have a child / adult concern;
- ensuring appropriate advice and support is accessed either from managers, Safeguarding Ambassadors or the trust’s safeguarding team;
- participating in multi-agency working to safeguard the child or adult (if appropriate to your role);
- ensuring contemporaneous records are kept at all times and record keeping is in strict adherence to Mersey Care NHS Foundation Trust policy and procedures and professional guidelines. Roles, responsibilities and accountabilities, will differ depending on the post you hold within the organisation;
- ensuring that all staff and their managers discuss and record any safeguarding issues that arise at each supervision session

EQUALITY AND HUMAN RIGHTS

Mersey Care NHS Foundation Trust recognises that some sections of society experience prejudice and discrimination. The Equality Act 2010 specifically recognises the protected characteristics of age, disability, gender, race, religion or belief, sexual orientation and transgender. The Equality Act also requires regard to socio-economic factors including pregnancy / maternity and marriage / civil partnership.

The trust is committed to equality of opportunity and anti-discriminatory practice both in the provision of services and in our role as a major employer. The trust believes that all people have the right to be treated with dignity and respect and is committed to the elimination of unfair and unlawful discriminatory practices.

Mersey Care NHS Foundation Trust also is aware of its legal duties under the Human Rights Act 1998. Section 6 of the Human Rights Act requires all public authorities to uphold and promote Human Rights in everything they do. It is unlawful for a public authority to perform any act which contravenes the Human Rights Act.

Mersey Care NHS Foundation Trust is committed to carrying out its functions and service delivery in line the with a Human Rights based approach and the FREDA principles of Fairness, Respect, Equality Dignity, and Autonomy
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2 Introduction Wound Assessment

A wound is defined as “a disruption of the integrity and function of the tissues in the body” (Baharestani 2004). Any injury to the skin interrupts continuity and protective and functional capacity, rendering the individual physically and emotionally vulnerable, therefore the priority is to heal the void as quickly as possible. In order to plan and implement appropriate management, a full, holistic patient assessment must be undertaken.

Assessment is defined as “information obtained via observation, questioning, physical examination and clinical investigation in order to establish a baseline” (Collins et al 2002). In any clinical situation, a thorough assessment is fundamental in ensuring correct diagnosis of the presenting problem. Once a differential diagnosis is made an appropriate management plan can be developed. This same principle must be adopted in the treatment of patients with wounds in order to promote wound healing (Miller 1999a).

It must be remembered that the process of wound healing is a natural, normal response by the body to injury, which results in tissue repair or regeneration. In normal wound healing, the application of a dressing to a wounded area merely provides protection to a vulnerable area and allows normal wound healing to take place in an optimal environment (see guidelines on dressing selection). The key to effective wound management lies in the identification and optimisation of factors that could potentially delay the normal wound healing process and is therefore not just the act of applying a dressing.

There is no dressing that can compensate for an undiagnosed and untreated pathologic condition (Bolton 1990).

There are many factors that can potentially delay the wound healing process. It is vital that these factors are identified through assessment and optimised where possible therefore minimising their effect on wound healing.

3 Purpose of the Guideline

This guideline has been developed to provide evidence-based guidance on the wound assessment process. It aims to improve clinical practice and reduce variations in standards of care within the primary and intermediate care setting.

4 Scope of the Guideline

This guideline applies to all registered health professionals employed by Mersey Care NHS Foundation Trust who are involved in the management of patients with wounds.
5 Definitions

Taken from The Free Dictionary Online (Medical) 2013 unless otherwise stated

Abscess: A collection of pus associated with damaged and inflamed tissues.

AIDS: Acquired Immune Deficiency Syndrome

Collagen: A protein that is the principal constituent of white fibrous connective tissue. Found in tendons, skin, bone, cartilage and ligaments.

Complement: A substance in the blood that aids the body’s defence mechanisms when antibodies combine with invading antigens.

Connective tissue: Supportive or packing material consisting of a fibrous gel made up of collagen and elastin fibres in a mucopolysaccharide ground substance, bathed in extracellular fluid with scattered cells, blood vessels, lymphatics and nerve fibres transversing it (The Faber Pocket Medical Dictionary, Faber and Faber Limited, London, 1966).

Contemporaneous: Existing or occurring at the same time.

Erythema: Abnormal flushing of the skin caused by dilatation of the blood capillaries.

Fistula: An abnormal communication between two hollow organs or between a hollow organ and the exterior. Baranoski and Ayello (2004) add that fistulae are named using the point of origin and point of exit e.g. a rectovaginal fistula would originate in the rectum and terminate in the vagina. Fistulae that connect an organ with the skin is termed an ‘enterocutaneous fistula’.

Haemoserous: Serous fluid that contains blood or is blood-stained.

Neovascularisation: New blood vessel formation in abnormal tissue or in abnormal positions.

Mitosis: A type of cell division in which a single cell produces two genetically identical daughter cells. It is the way new body cells are produced for both growth and repair.

Osteomyelitis: Inflammation of the bone marrow due to infection.

Peri: A prefix denoting near, around or enclosing.

Purulent: Forming, consisting of or containing pus.

Pus: A thick yellow-green liquid formed at the site of infection. Pus contains dead white cells, both living and dead bacteria and fragments of dead tissue.

Sacrum: A curved, triangular element of the backbone consisting of five fused vertebrae. It articulates with the last lumbar vertebra above, the coccyx below and the hip bones laterally.
Sepsis: A life threatening condition that arises when the body’s response to an infection injures its own tissues and organs (Slade 2003).

Serous: Relates to, contains or resembles serum. Serum is the fluid that separates from clotted blood or blood plasma that is allowed to stand. It is similar in composition to plasma but lacks fibrinogen and other substances that are used in the coagulation process.

Sinus: In wound healing terms as sinus is an infected tract leading from the focus of infection to the surface of the skin or a hollow organ.


Tissue Regeneration: Natural re-growth of tissue lost through injury. Calvin (1998) states that it implies complete re-establishment of the original tissue structure.

Tissue Repair: Original tissue lost through injury is replaced with non-specific connective tissue, forming a functionally inferior scar (Calvin 1998).

Vasodilation: An increase in the diameter of the blood vessels.

6 Training Requirements

6.1 MERSEY CARE NHS FOUNDATION TRUST employees will be expected to act all times in such a manner as to safeguard and promote the interests of patients and clients. Registered health professionals must have the knowledge and skills for safe and effective practice; recognise and work within the limits of personal competence (Nursing and Midwifery Council [NMC] 2015)

6.2 All employees must be made aware of the organisations guidelines before commencement in post, as part of their local induction process.

6.3 Elements of this guideline have been incorporated in a Wound Assessment Competency Framework. This consists of wound assessment e-learning practical / open day (on wound dressings only), supported by practice-based learning in the clinician’s place of work and completion of the competency framework document. This will ensure that the knowledge learned in the classroom is translated into clinical practice and demonstrated through competent performance. This is available to all registered health professionals involved in the management of patients with wounds.

7 Documentation and Record Keeping

Effective documentation is of paramount importance for the following reasons:

• To comply with NMC guidance on record keeping
• Contemporaneous written records provide the evidence and rationale on
which care delivery is based and are a legal requirement. They could
be scrutinised at any time in a court of law and must therefore accurately reflect and justify the actions and decisions made by health care professionals.

- Accurate records improve communication between health care professionals regarding individual patient care.
- Accurate, comprehensive records enhance continuity of care

7.1 Wound assessment documentation is again another contentious issue (Russell 2002b) and there is still no nationally agreed wound assessment tool. Each organisation should therefore develop a wound assessment tool that is based on best practice and encompasses all relevant information.

8 Monitoring Tool

The monitoring of the use of this guideline should be undertaken by individual services and localities where wound care is performed as part of their local audit plan.

9 Development of the Guideline, Contributions and Peer Review

The guideline was developed and peer reviewed by members of the Skin Care Service and ratified by MERSEY CARE NHS FOUNDATION TRUST Clinical Policies Group.

10 Equality Analysis

This has been undertaken and the evidence has been retained by the authors and the Equality and Diversity Lead of MERSEY CARE NHS FOUNDATION TRUST

11 Distribution/Dissemination Method

On ratification by the Clinical Policies Group, this guideline will be added to the Clinical Policies intranet site and communicated via the weekly Communication Bulletin. Knowledge of the guideline will also be communicated to staff via the Learning and Development Department and also by the Skin Care Service who support community nurses in the management of patients with wounds.
12 Wound Assessment Guideline

13 Key objectives of wound assessment

- Thorough, holistic and systematic assessment.
- Identification of factors that could potentially delay wound healing.
- Diagnosis of underlying cause of the wound.
- Assessment of current care and local wound management priorities.
- Regular, planned evaluation of the effectiveness of treatment and reassessment of the patients’ situation where necessary.
- DOCUMENTATION – of assessment, treatment plan and rationale, reassessment, review and evaluation of treatment given.

14 Factors that could delay wound healing

- **Age:** The ageing process itself brings about many natural changes in the structure and functional capacity of the skin. The inflammatory and proliferative responses are delayed (Desai 1997). The skin loses much of its tensile strength and natural moisture and its capacity to repair, regenerate and fight bacterial invasion is reduced.

- **Nutrition:** Nutrition is a key aspect of assessment as wound healing is dependent upon good nutrition. All cellular activity requires oxygen and nutrients therefore patients with wounds must be nutritionally optimised for effective wound healing to take place. Russell (2002a) states that patients require adequate levels of calories, protein, vitamins and minerals to support wound healing.

  Holistic assessment of nutrition and early detection of malnutrition are essential. The nutritional assessment tool of choice should be MUST (Malnutrition Universal Screening Tool) (www.bapen.co.uk) with a local agreed care plan in place. It is vital that nutritional intake is discussed on initial assessment. If the assessing practitioner has any cause for concern or indicated at the appropriate stage of the agreed care plan a referral to a dietician is required to ensure a more expert assessment is undertaken.

- **Associated disease processes:** There are various identified disease processes that can have a negative effect on wound healing. Diabetes is associated with an increased risk of peripheral vascular disease, both of the large and small vessels, and is known to impair wound healing (Silhi 1998). Uncontrolled hyperglycaemia can delay the wound healing process and increase the risk of wound infection.

  Anaemia, chronic heart disease and chronic pulmonary disease can all potentially reduce the amount of oxygen supplied to the tissues. An adequate oxygen supply to any area of tissue damage is necessary in order to promote wound healing.

  Peripheral arterial disease results in a compromised arterial blood supply to the periphery. In situations where the blood supply is inadequate, oxygen and nutrients will not be delivered to the tissues and wound healing will be significantly impaired.
Rheumatoid arthritis is an inflammatory condition of connective tissue and is associated with delayed wound healing.

Other disease processes that may delay healing and must be considered include; malabsorption disorders, malignancy, burns (excessive or prolonged oedema, inflammation, exacerbated pain and impaired wound healing) and other immune deficiency disorders such as AIDS (Flanagan 1997).

- **Mobility:** Mobility can be affected by many underlying pathologies. Restricted mobility or total immobility increases the risk of delayed wound healing for various reasons. Directly, the inability to change position will result in prolonged pressure and possible pressure damage (refer to Trust guidelines on pressure ulcer prevention and management). Indirectly, reduced mobility may affect the patients’ ability to self care and attend to fundamental activities of daily living including shopping for food and preparing meals, maintaining personal hygiene and elimination and getting in/out of bed. Furthermore, the patients’ inability to mobilise may affect their quality of life and lead to emotional and psychological distress and social isolation.

- **Medication:** Although most of the research to date regarding the effects of drugs on wound healing has been performed on animals, the relevance of these findings to humans should be considered (Nobbs 1998)
  - **Steroids** – exert an anti-inflammatory effect therefore inhibiting the inflammatory phase of wound healing. This increases the risk of infection and a reduction in degradation of cellular debris and foreign materials. They also inhibit epithelialisation and decrease the mechanical strength of the wound.
  - **Non-steroidal anti-inflammatory drugs** – also have an anti-inflammatory effect therefore reduce the effectiveness of the inflammatory phase of wound healing. May also impair the tensile strength of new granulation tissue. Aspirin increases the risk of haematoma due to its’ anti-platelet activity.
  - **Immunosuppressants** – reduce the body’s natural immune response therefore increasing the risk of infection and reducing clearance of debris and devitalised tissue.
  - **Cytotoxic drugs** – target all rapidly dividing cells, reducing protein synthesis and cell division.
  - **Radiotherapy** – reduces cell mitosis, increases vascular damage and detrimental to fibroblasts thus reducing collagen production.
  - **Biologicals** – Significantly different from traditional drugs used, in that they target specific components of the immune system instead of broadly affecting many areas of the system, often associated with Rheumatoid arthritis/ Cancer treatments (See Appendix 5)
  - **Miscellaneous drugs** – including anticoagulants, local anesthetics, Penicillamine, alcohol and nicotine. These may all delay the wound healing process.

- **Infection:** Clinical infection delays wound healing by prolonging the inflammatory phase, depleting the components of the complement cascade, disrupting normal clotting mechanisms, preventing neovascularisation and formation of new granulation tissue (GiMersey Care NHS Foundation Trustrist 1999).
• **Sepsis:** A life threatening condition that arises when the body’s response to
an infection injures its own tissues and organs. The source of which may stem from wound/surgical site infection. Sepsis can lead to shock, multiple organ failure and death especially if not recognised early and treated promptly. If sepsis is detected early enough and has not yet affected vital organs, it may be possible to treat the condition at home with appropriate antibiotic treatment.

Routine clinical observations can play a vital role in detecting sepsis (Slade 2003). The UK Sepsis Trust (UKST) (2014) suggests that as well as the general impression at the time of initial assessment, the presence of abnormal observations should be enough to initiate evaluation for sepsis.

UKST (2014) advise that clinical evaluation for sepsis should be undertaken in patients:

- With clinical evidence of systemic infection
- In whom antibiotics are being considered
- Suspected flu
- Suspected gastroenteritis
- Who are obviously unwell without clear cause
- Who are elderly or immunocompromised and present with signs of infection
- Who have deteriorated on antibiotic therapy

**Psychological perspective:** The lack of research in the field of health psychology and its’ application to wound healing is lacking however there is a push to address these issues. Stress and anxiety can result from many wound related factors including chronicity and subsequent necessary lifestyle changes, changes in body image, stigma and sexuality. The patient’s ability to understand their condition and available treatment options will impact on their concordance with treatment regimes. A patient’s ‘desire to heal’ will also have a major impact on wound healing.

**Social environment and social support:** People from a poorer, more deprived social environment are generally more likely to smoke and eat a less nutritious diet, both of which have the potential to delay wound healing. Social isolation and lack of formal and informal social support networks may be due to the debilitating effects of underlying pathologies or may be a direct result of having a wound and may contribute to delayed healing.

**Mechanical forces:** Mechanical forces can be defined as pressure, shear and are extrinsic factors that should be considered in the assessment of patients with pressure ulceration (Dealey 1999) (refer to Trust guidelines on pressure ulcer prevention and management). Mechanical forces directly cause pressure damage and assessment of their impact on the patient is required in order to reduce associated risk, appropriately manage patients with pressure damage and prevent further tissue breakdown.
16 Specific assessment of the wound

- **Number of wounds and location:** If the patient has more than one wound, it is important to assess each wound individually. The location of the wound will give an indication of the possible aetiology. For example, a wound on the sacrum or an area with prominent bone and little skin covering could be caused by pressure damage.

- **Size:** It is important to accurately measure the dimensions of the wound to provide a baseline of wound size on assessment. To increase the accuracy of wound measurement the simplest tool is to take a trace/map of the wound and to note the maximum length and width. It is also useful to photograph the wound on initial assessment. Wound mapping and photography provide accurate visual evidence to enhance the documented assessment and will also provide a baseline on which to evaluate the effectiveness of treatment and wound progress (Flanagan 1996).

- **Depth:** Measuring wound depth is inherently difficult due to the irregular nature of wounds and fear of practitioners in causing further damage by probing areas of unknown origin (Flanagan 1996). Although subjective, a gloved finger or round ended probe can be useful in discovering the depth and direction of sinus tracts (Hampton, Collins 2004). Baranoski and Ayello (2004) advocates measuring depth when:
  - **Wounds on the foot or in close proximity to bone:** Wounds on the foot or those assessed as being close to bone should be assessed for depth and contact with bone using a sterile probe due to the increased risk of osteomyelitis. The wound should be probed in all directions and variations in depth documented in the assessment documentation. Baranoski and Ayello (2004) suggest that the most reliable method of documenting wound depth is to use a ‘clock face’ analogy, using the patient’s head as the 12 o’clock position. For example, the wound could be described as a “maximum of 4cm deep at 2 o’clock”.
  - **Undermining:** Again, this is often a characteristic of pressure ulceration that has been subject to shearing forces. The wound edges pull away from the wound bed resulting in areas of subcutaneous and underlying tissue destruction at the wound perimeter covered by intact skin. These areas are at risk of debris build up whilst the top layers may close prematurely creating dead space and increasing the risk of abscess formation.
  - **Tracking:** Sinus or track formation can occur in any part of the wound bed. A small channel or pathway forms that may pass through subcutaneous tissue and/or muscle. Again, these should be assessed as current research suggests sinuses or tracks within wounds should be lightly and gently filled to encourage granulation. Packing the wound too tightly may cause the patient unnecessary pain and could cause local ischaemia through capillary occlusion. This will delay the formation of new granulation tissue. Premature wound closure results in increased risk of abscess formation. If on assessment it is not possible to find an end to a sinus or track within a wound bed it is advisable to request further investigation to ensure that the track is not in contact with another body organ.
  - **Wound dressings:** When using multiple dressings to dress a wound, the number of dressings applied / inserted must be documented as well of the number of dressings removed at each dressing change, to reduce the risk
of any dressings being left within the wound. When planning new treatment for the wound/s it is necessary to recheck allergies as with any other change in medication

- **Grade/Stage**: Grade/Stage is only applicable when assessing pressure damage. A visual tool is used to assist the practitioner in assessing the extent of tissue destruction caused by pressure damage. A grade is applied to the ulcer dependent upon both the depth and type of tissue damage (Refer to Trust guidelines on pressure ulcer prevention and management).

- **Duration**: The length of time the patient has had the wound will provide an idea of what type of wound the practitioner is aiming to treat i.e. is it a new/acute wound or is it a wound that has failed to heal within an expected time frame and can thus be termed as ‘chronic’ (Baranoski and Ayello 2004). This information will assist the practitioner in decisions regarding treatment options and setting of realistic treatment outcomes.

- **Cause**: Collier (2002) suggests that wounds can be broadly split into four categories; mechanical injuries (surgical/traumatic wounds), burns (chemical or thermal injuries), malignant wounds (primary lesions e.g. melanomas) and chronic wounds (pressure ulcers, leg ulcers). The initial cause of a lower leg wound is often a mechanical injury such as a laceration, accidental knock/scratch or an insect bite. Foot wounds are commonly caused by inappropriate pressure, particularly in diabetic patients with neuropathy and other patient groups who have decreased sensation. Some wounds will heal without delay, however chronic wounds are defined as those that do not heal within the expected time frame of 4 weeks (Guest et al., 2015). However, NICE (2016) suggests wounds to lower limbs are chronic after 2 weeks. Following these time frames further investigations are required to ascertain any underlying aetiology. Further guidance on the management of chronic wounds can be found on the **Chronic Wound Pathway** (Appendix 4).

- **Aetiology**: Aetiology is defined as the cause of a specific disease. It is important to determine the aetiology of the wound in order to formulate an appropriate treatment regime. Different aetiologies will necessitate specific diagnostic investigations in addition to routine clinical investigations e.g. leg ulceration is a symptom of an underlying aetiology. Different investigations will be required to establish whether this aetiology is venous, arterial, a combination of both or some other underlying disease process.

- **Nature of wound fluid**: Exudate is produced at any site of tissue injury as a result of the body’s normal immune response to injury. During vasodilation there is an increased blood supply to the wounded area to ensure that important cells such as platelets and white blood cells are delivered to effect haemostasis and fight off infection. Capillary permeability is increased which allows fluid to escape into the tissue spaces causing the classic signs of inflammation; oedema, swelling, redness, heat and pain. Wound exudate contains bacteria and cell debris along with important cells, nutrients and oxygen for wound healing. Although exudate is important in promoting natural healing, excessive exudate must be controlled to prevent maceration of the surrounding skin. The important considerations when assessing exudate is the amount and type as this may provide information regarding the bacterial
burden in the wound bed and the stage of wound healing. It is recommended that exudate should be described as; serous, haemoserous or purulent (see glossary for definition of terms). It is difficult to quantify amounts of exudate as one person’s idea of moderate will be very different to the next. The measurement is subjective and therefore lacks validity and reliability. Therefore exudate volume should not be viewed in isolation but in conjunction with other methods of assessing exudate amount. Young (2004) suggested measuring exudate in terms of the ability of the dressing to contain wound fluid (e.g. noting the number of dressing changes required) and prevent strike-through. Therefore exudate can be described as increasing/decreasing. Also, consistency of exudate can give an indication of factors delaying wound healing. Low viscosity (thin and watery exudate) indicates low protein content. This could result from venous or congestive cardiac disease or malnutrition. It also suggests a urinary, lymphatic or joint space fistula. Highly viscous exudate (thick and sometimes sticky) indicates a high protein content, pointing towards infection or the inflammatory process. (WUWHS, 2007).

- **Pain:** It is important to assess the patients’ wound-associated pain yet it is an area that tends to be overlooked by health professionals (Baharestani 2004). Particular reference should be made to cause, type/nature and severity of pain experienced by the patient as this will determine the type, dose and frequency of analgesia required. Any coping mechanisms the patient may have developed in order to manage their pain should also be taken into account. The use of a visual pain scale is recommended in order to accurately assess pain as pain is a perception and can only be described by the sufferer.

- **Assessment of the surrounding skin:** The condition of the skin surrounding the wound must also be assessed, as it may be indicative of problems associated directly with the wound or with the current management plan. It is important to determine whether the peri-wound skin demonstrates any of the following characteristics:
  - Erythema – which may be due to pressure, presence of microorganisms that are not multiplying (colonisation) or the presence of microorganisms that are multiplying and causing a host response such as changes in exudates (critical colonisation/infection). A rapidly spreading erythema is often associated with spreading cellulitis and developing systemic infection.
  - Excoriation – stripping of the upper layers of the epidermis due to prolonged exposure to toxins on the skin surface.
  - Induration – a hardened texture of the skin.
  - Maceration – softening/sogginess of the skin due to excessive moisture retention. (Collier 2002)
  - Rash and irritation – this may be indicative of an eczematous type reaction. This could be exogenous in nature; a contact irritant or allergic dermatitis caused by exposure to skin irritants or an allergic reaction to a particular dressing component. It may be as a result of endogenous factors such as varicose eczema associated with venous hypertension

- **Tissue type:** It is important to classify the particular tissue type found within the wound bed, as this can be indicative of the stage of healing and the progress of the wound. It will also assist in determining initial treatment priorities.
Classification of wounds is a contentious issue but consensus opinion seems to suggest that a ‘colour-coded’ method of assessment is most appropriate (Flanagan 1996):

- **Black necrotic wounds**: in many cases hard, necrotic tissue requires removal in order to ensure that the wound progresses through the healing process (refer to wound debridement guidelines)
- **Yellow sloughy wounds**: again, slough should be removed from the wound bed to encourage granulation and epithelialisation.
- **Red granulating wounds**: granulation tissue is a healthy red-pink colour and takes on a ‘granular’ appearance due to new growth of capillary buds. It should be moist but not wet; granulating tissue is fragile in nature and has to be protected from trauma by dressings that will not adhere to the wound. Bleeding granulation tissue is not a sign of a healthy wound but more indicative of a traumatised wound (Young 2004).
- **Pink epithelialising wounds**: epithelial tissue is classically pink-white in nature and is observed migrating across the newly formed granulation tissue to cover the wound. It migrates from the edges of the wound and can occasionally be observed developing around hair follicles within the dermis.

Although again contentious, it is important as part of the wound assessment to denote the % of different tissue types within the wound bed. Not all wounds will demonstrate one particular tissue type only and more commonly two or more tissue types within a wound bed may be observed. In documenting this information on initial assessment it will provide a baseline for evaluation of wound progress. For example, it has no meaning to state that; “following four weeks of treatment the wound bed now displays 20% necrotic tissue and 80% slough” if tissue types were not classified on initial assessment. From this statement it is not possible to conclude that the wound is improving, deteriorating or remains static as there is no documented evidence of the tissue type on initial assessment. It could be that four weeks prior to commencing treatment the wound was 100% necrotic therefore improvement is noted and treatment effective however, it could be that four weeks ago the wound was 20% slough and 80% granulation, indicating deterioration and perhaps ineffective treatment.
## 18 Summary of the wound assessment process

<table>
<thead>
<tr>
<th>Action</th>
<th>Rationale</th>
<th>Supporting evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>A full, systematic and holistic patient assessment should be undertaken using the Trust wound assessment tool</td>
<td>To provide a 'prompt' that ensures all important aspects of wound assessment are considered. To ensure that all factors that could possibly delay wound healing are identified and optimised. To ensure accurate identification of the stage of wound healing.</td>
<td>C</td>
</tr>
<tr>
<td>All information gathered on assessment should be documented in a clear and concise manner using the Trust wound</td>
<td>To ensure that accurate baseline information is obtained and recorded. This provides a baseline for subsequent evaluation of treatment and wound progress.</td>
<td>C</td>
</tr>
<tr>
<td>The patient and the wound should be reviewed on a regular basis.</td>
<td>Evaluation of wound management should take place at regular intervals, which will be determined by the assessing practitioner and will depend on the individual patient situation, the wound type and agreed care outcomes.</td>
<td>C</td>
</tr>
<tr>
<td>A review can take place on set dates or sooner if required.</td>
<td>Wound healing is not always predictable and problems may arise at any time in an episode of care. If the practitioner is concerned regarding the progress of the wound, a review should be undertaken. The outcome and action taken should be documented. If patients with wounds are not reviewed at regular intervals it increases the risk of prolonged inappropriate treatment regimes to which the patient and the wound are not responding.</td>
<td>C</td>
</tr>
<tr>
<td>Evaluation dates should be documented within the records.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review should include progress of the wound and evaluation of current management plan.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
19 References


Bolton L (1990) Dressing’s effects on wound healing. Wounds 2, 126


Davidson M (2002) Sharpen your wound assessment skills Nursing 32 (10) 1-4


Miller M (1999b) Nursing assessment of patients with non-acute wounds
British Journal of Nursing 8 (1) 10-16


National Institute for Health and Care Excellence, (2016), Leg Ulcer-venous,. Available at http://cks.nice.org.uk/leg-ulcer-venous


The UK Sepsis Trust 2014 Executive Summary: General Practice Management of Sepsis Available at: http://sepsistrust.org/wp-content/files_mf/1409322498GPtoolkit2014.pdf Accessed on 02.02.15

Silhi N (1998) Diabetes and wound healing Journal of Wound Care 7 (1) 47- 51


20 Linked Areas/Information

Other related Policies, Procedures or Work Instructions of Mersey Care are:

- Accident and Incident Reporting and Management Policy
- Consent to Treatment Policy
- Risk Assessment Policy and Guidance
- Other Skin Care Service clinical guidelines
- A Practical Guide to the Management of Wounds in Primary Care
Appendix 1

Wound Assessment Audit Tool

Speciality e.g. Team / Ward: .................................................................................................

Date episode of care commenced: ............................................................................................

Date of audit: ............................................................................................................................

Completed by: (name /designation) ..........................................................................................

Audit Identifier: .........................................................................................................................

<table>
<thead>
<tr>
<th>CRITERION</th>
<th>EXCEPTION</th>
<th>COMPLIANCE ACHIEVED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient Assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Was a holistic patient assessment completed using wound assessment / care form or other systems?</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>2 Was the date of wound occurrence / duration has been recorded?</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>3 Where factors that could delay healing completed/assessed?</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>4 Where factors to consider as part of a wound assessment completed / assessed?*</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>5 *If an issue was identified eg wound pain or nutritional problems was there evidence that this was sufficiently addressed within the patient records?</td>
<td>No issues identified</td>
<td></td>
</tr>
</tbody>
</table>

| **Specific assessment of the wound**                                                        |           |                     |
| 6 Was the type / cause of wound been identified (e.g. trauma / surgical)?                   | None      |                     |
| 7 Was the site of the wound been identified?                                               | None      |                     |
| 8 Is there documented evidence that the wound has been mapped                              | A valid reason is documented for not mapping the wound |                     |
| 9 Has the dimensions of the wound been recorded (length / width / depth)?                  | None      |                     |
| 10 Is there documented evidence that the wound was assessed for exudate levels?            | None      |                     |
| 11 Is there documented evidence that the wound has been assessed for any odour?            | None      |                     |

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**Appendix 1**

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Criterion</th>
<th>Exception</th>
<th>Compliance</th>
<th>Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Is there documented evidence that the condition of the surrounding skin has been recorded?</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Is there documented evidence that the % tissue type in the wound bed has been assessed?</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Is there documented evidence that the patient and the wound have been assessed for clinical signs of infection?</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*If there is documented evidence that clinical signs of infection are present please also complete infected wound audit tool.*

**Communication**

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Criterion</th>
<th>Exception</th>
<th>Compliance</th>
<th>Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Is there documented evidence that the risks, benefits and alternative treatments have been discussed with the patient?</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Is there documented evidence that consent to treatment has been obtained?</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Care Planning and Evaluation**

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Criterion</th>
<th>Exception</th>
<th>Compliance</th>
<th>Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Is there documented evidence that the wound management plan (e.g. wound dressing selection) has been recorded</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Was the wound dressing used in line with MERSEY CARE NHS FOUNDATION TRUST formulary?</td>
<td>Clinical rationale provided for non formulary prescribing*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Identify which non formulary products where used.(if applicable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Did the wound dressing selection appear appropriate for the clinical characteristics of the wound? if NO provide details below*</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Is there documented evidence that a wound care plan has been recorded with review date identified?</td>
<td>Where only one visit was required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Did the frequency of dressing change appear sufficient for clinical need?</td>
<td>Where only one visit was required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Is there documented evidence that the expected result of wound care plan (eg wound debridement / granulation etc) has been identified?</td>
<td>Where only one visit was required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Is there documented evidence that the wound care plan has been reviewed at identified review dates?</td>
<td>Where only one visit was required</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix 1

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Is there documented evidence that the results of any clinical investigations (blood tests, wound swabs) have been followed up?</td>
<td>Where no investigations initiated</td>
</tr>
<tr>
<td>25</td>
<td>Is there documented evidence that the <strong>wound evaluation sheet</strong> was completed as specified on the wound care plan or when a change in the wound was noted?</td>
<td>Where only one visit was required</td>
</tr>
<tr>
<td>26</td>
<td>On evaluation of care plan / evaluation sheet, in terms of wound improving, static or deterioration was appropriate decision making / actions documented*</td>
<td>Where only one visit was required</td>
</tr>
</tbody>
</table>

*If no specify reason
Appendix 2

General Practice Sepsis Screening and Action Tool

Sepsis is a time critical condition. Screening, early intervention and immediate treatment saves lives. This tool should be applied to all adult patients who are not pregnant who have a suspected infection or their clinical observations are outside of normal limits.

Patient groups to consider screening: those in whom you are considering antibiotic prescription or stewardship discussion, patients with “Flu”, patients with gastroenteritis and the unwell patient without clear cause.

1. Might this be more than a self-limiting infection?
   - Symptoms of infection (e.g. a recent history of fever)
   - Acute deterioration
   - Unexplained illness, especially in immunocompromised or elderly people

   N
   Sepsis unlikely. Continue usual care.

   Y
   Sepsis may be present
   Evaluate whether acute referral/admission required, especially if:
   - already on antibiotics
   - partially treated
   - no clear source of infection
   If treating in the community, consider:
   - planned second assessment
   - brief written handover
   - documenting observations
   - specific safety net advice

2. Perform a full set of observations. Are any 2 of the following present?
   - Temperature > 38.3°C or < 36°C
   - Respiratory rate > 20 per minute
   - Heart rate > 90 per minute
   - Acute confusion, disorientation, reduced conscious level
   - Consider blood glucose: > 7.7 relevant in non-diabetics

   N

3. Is any red flag present?
   - Systolic B.P < 90 mmHg
   - Heart rate > 130 per minute
   - Respiratory rate > 25 per minute
   - Oxygen saturations < 91%
     (may be appropriate to accept Spo2 < 91% in patient with known COPD)
   - Responds only to voice or pain/unresponsive
   - Purpuric rash

   N

   Y
   Red Flag Sepsis
   This is a time critical condition, immediate action is required.
   Dial 999
   Arrange blue light transfer
   Write a brief/clear handover including observations and antibiotic allergies where present.
   Administer oxygen and other appropriate immediate care as available

---

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Sepsis Screening and Wound Assessment Clinical Guideline
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1 Appendix 3

**Toolkit: General Practice management of Sepsis**

This clinical toolkit has been developed in partnership with the Royal College of General Practitioners. It is designed to provide operational solutions to the complexities challenging the reliable identification and management of sepsis in the primary care setting, and complements clinical toolkits designed for other clinical areas*.

*We acknowledge use of some content from the Acute Medicine Toolkit developed by the UK Sepsis Trust & Royal College of Physicians

Sepsis is a medical emergency. It is responsible for 37,000 deaths annually in the United Kingdom and severe sepsis has a fivefold higher mortality than STEMI or stroke. The reliable recognition of sepsis is the responsibility of all health professionals. The campaign in secondary care has increased awareness and helped to structure the management of sepsis once the patient reaches hospital. However, it is essential that sepsis is recognized early for the patient to reach hospital soon enough to avoid serious complication or death. This document provides primary care clinicians with a toolkit for managing at risk of sepsis. It is part of a wider campaign to increase patient awareness of the signs of sepsis and to assist other pre-hospital services in the task of early recognition.

There are significant challenges and barriers to reliable sepsis identification in a Primary Care setting. Sepsis is a complex condition and its presentation variable. General Practitioners will be experienced in assessing need for hospital assessment in patients with probable self-limiting infection: it is not practicable to expect differentiation between uncomplicated viral and bacterial illness in all cases. Patients who are obviously critically ill are likely to be identified without the need for new efforts. However, there are some patients with severe sepsis with less immediately obvious signs of critical illness. Some of this group might be identified earlier with greater awareness and targeted clinical assessment.

This toolkit aims to make GPs and other primary care clinicians familiar with the significant morbidity and mortality associated with severe sepsis and to structure their knowledge and skills so that they can recognize the condition earlier. It advises on specific safety netting in patients presenting with signs and symptoms of infection and addresses the need to work collaboratively with health professionals in other clinical areas to ensure that appropriate further assessment is undertaken and time-critical care is delivered rapidly when necessary.

This toolkit is compatible with international guidelines on sepsis management, with the Department of Health’s document ‘Start Smart- then Focus’, and with guidance on infection management in primary care issued by the Health Protection Agency.
Background:

Sepsis is defined as the body’s response to an infection. Consensus definitions describe the response as the Systemic Inflammatory Response Syndrome (‘SIRS’, Box 1). SIRS is not specific to sepsis: it can be caused by non-infective conditions such as pancreatitis, trauma and burns. When SIRS is felt to arise in response to a new infection, this is sepsis. Due to the lack of specificity of SIRS, few data are available on the prevalence of sepsis prior to its progression to severe sepsis.

Severe sepsis occurs when sepsis gives rise to organ dysfunction. Criteria for the identification of severe sepsis are given below in Box 2, however these are focused on a hospital setting and demand full laboratory services with rapid delivery of results. These criteria are less appropriate to those charged with identifying acute illness in the community. In order to address this gap, the UK Sepsis Trust has developed the novel concept of ‘Red Flag Sepsis’. Using abnormal physiology rather than waiting for lab results, Red Flag Sepsis is described in detail below. From an operational perspective in Primary Care, this should be considered synonymous with severe sepsis.

**Figure 1: Relationship between SIRS, Infection, Sepsis and Red Flag Sepsis**

The overall mortality rate for patients admitted with severe sepsis is 35% - approximately 5 times higher than for ST elevation myocardial infarction and stroke and is responsible for approximately 37,000 deaths and 100,000 hospital admissions in the United Kingdom (UK) per year. The majority of episodes arise from community-acquired, rather than healthcare-associated, infection.
Though evidence is focused on the hospital setting, data from patients presenting to Emergency Departments (EDs) indicates that severe sepsis is prevalent in the community.

In the United States, the number of patients transported to hospital by Emergency Medical Services with severe sepsis now outnumbers those with heart attack or stroke. In 2007 in the UK, severe sepsis was found to account for 12% of early inpatient deaths after ED admission: this is likely to have been an underestimate due to a further 26% of deaths coded as of respiratory cause. Hospitalizations for the condition have more than doubled over the last 10 years.

Severe sepsis is a time-critical condition. In the most severe cases, septic shock, for every hour that appropriate antibiotic administration is delayed, there is an 8% increase in mortality. The Sepsis Six is an initial resuscitation bundle designed to offer basic intervention within the first hour. In a prospective observational study across a district general hospital, it was independently associated with survival suggesting that, if it alone were responsible for outcome differences, the number needed to treat (NNT) to prevent one death is 4.6. This compares to an NNT of 42 for Aspirin in major heart attack and 45-90 for PCI in ST elevation myocardial infarction.

Sepsis is poorly recognized and treated. A 24-month, large scale prospective improvement programme across 30 countries measuring the delivery of the Severe Sepsis Resuscitation Bundle showed compliance rising from 10 to just 21% in self-selected centres. More recently in 2013 in the UK, the College of Emergency Medicine (CEM) audited performance against self-imposed standards for the management of severe sepsis and septic shock and identified similarly concerning results, with antibiotics administered in only 33% of patients within the first hour from time of arrival in the ED. Developing a whole-system solution akin to that for chest pain and stroke is likely to raise the profile of the patient with sepsis, encourage hospitals to respond robustly, and significantly reduce variation and time to therapy.

Fixing our healthcare system’s response to sepsis will not be easy. To do so will demand that all health professionals involved in the patient’s journey are working to the same end. This clinical toolkit will complement those for other community-based healthcare settings, including for residential care facilities, NHS Pathways and 111, and ambulance services.

Professional responsibility & accountability

NHS England has established sepsis as a future indicator in both Domains 1 and 5 of the National Outcomes Framework, and issued a ‘stage 2 alert’ on sepsis in September 2014. This communication to all NHS Chief Executives and Regional Medical Directors established sepsis as a clinical priority for the NHS. It signposted to clinical toolkits such as this one, to education programmes, examples of good practice, and other available resources. NHS England is working with the UK Sepsis Trust and professional body stakeholders to identify and accredit exemplar acute centres, ambulance services and primary care facilities from which others can learn.
In her report of September 2013 entitled ‘A Time to Act’, the Parliamentary and Health Service Ombudsman called upon the NHS and the Department of Health to act rapidly to reduce unnecessary deaths from sepsis. As a direct result of this work, NICE will produce a clinical guideline and Quality Standard against sepsis.

We will learn valuable lessons from the report arising from the recent survey on sepsis conducted by the National Confidential Enquiry into Patient Outcome and Death (NCEPOD). Though retrospective and narrative, this report will analyse how many patients arriving in hospital with sepsis had previously consulted their General Practitioner, and the outcome of consultation. Until that time, it is the responsibility of those commissioning services from, designing clinical systems for, and working within primary care that their efforts focus on early recognition including through the use of safety netting, and urgent intervention using existing consensus guidelines from the UK Sepsis Trust and Surviving Sepsis Campaign in areas where transit times may be prolonged.

**Delivering Excellent Sepsis Care:**

**International consensus definitions require adaptation for use outside acute hospitals**

The following section describes international consensus definitions in the recognition of sepsis. They are included for completeness’ sake, but are in the main not relevant in the Primary Care setting: the definitions have a hospital focus.

Sepsis arises when the body’s response to infection causes systemic effects that manifest as two or more of the Systemic Inflammatory Response Syndrome (SIRS) criteria (Box 1) triggered by a new infection. Some patients will develop end-organ dysfunction, denoting severe sepsis. Criteria for the identification of severe sepsis (other than septic shock) are not relevant in the absence of full laboratory services, so are omitted here but can be reviewed in the consensus definitions paper or in hospital-focused toolkits. For Primary Care, the novel concept of Red Flag Sepsis (see below) will be used as an operational solution- it should be considered synonymous with severe sepsis.

Septic shock is a subset of severe sepsis, which strictly speaking (according to international consensus definition) is identified by sepsis with hypoperfusion resistant to fluid therapy (Box 2). The General Practitioner should assume septic shock is present in any patient with a clinical suspicion of infection, the presence of SIRS, and either hypotension or (if available) an elevated serum lactate above 4 mmol/l.

Items in black font are available in all, or most, Primary Care settings. Criteria in orange font (white blood cell count, lactate) are worthy of evaluation for point-of care testing to increase reliability of recognition of sepsis.
Box 1: Systemic Inflammatory Response Syndrome (SIRS):

SIRS is present if there are at least 2 of:

<table>
<thead>
<tr>
<th>Temperature &gt;38.3 or &lt;36.00C</th>
<th>New confusion/drowsiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse &gt;90/min</td>
<td>WBC &gt;12 or &lt;4.0 x 109/L</td>
</tr>
<tr>
<td>RR &gt;20/min</td>
<td>Blood glucose &gt;7.7 mmol/L (not if diabetic)</td>
</tr>
</tbody>
</table>

Box 2: Defining the severity of sepsis

<table>
<thead>
<tr>
<th>Severity</th>
<th>Definition</th>
<th>Group mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncomplicated sepsis</td>
<td>SIRS + presumed or confirmed infection</td>
<td>10%</td>
</tr>
<tr>
<td>Severe sepsis</td>
<td>Sepsis + one or more organ dysfunction criteria (other than shock)</td>
<td>35%</td>
</tr>
<tr>
<td>Septic shock</td>
<td>Sepsis + shock*</td>
<td>50%</td>
</tr>
</tbody>
</table>

*Shock criteria:

- Lactate >4mmol/l at any time point
- Hypotension persisting after 30ml/kg intravenous fluid, defined as Systolic Blood Pressure <90mmHg, Mean Blood Pressure <65mmHg, or a fall of >40mmHg from the patient's usual Systolic Blood Pressure
Describing the solutions – how can we be good at managing sepsis?

1) Early Recognition:

In Primary Care, the lack of laboratory services or point of care tests limit our ability to distinguish between sepsis, severe sepsis and septic shock (according to international definitions) in many cases. Conscious of the challenges this presents in operationalizing care pathways outside hospitals, the UK Sepsis Trust has developed the concept of ‘Red Flag Sepsis’, based upon criteria within the National Early Warning Score (NEWS).

Sepsis is identified through the presence of SIRS (Box 1) in the context of a clinical suspicion of infection. Pathogens triggering sepsis are almost exclusively bacteria, and the list of causative infections- in decreasing order of frequency, respiratory, abdominal urinary and skin and soft tissues- reflects this.

In high-risk patients, fungi may trigger sepsis, and there are features of certain viral infections (e.g. H1N1, Ebola) that can mimic sepsis. A full description is outside the scope of this document, but General Practitioners and others working in Primary Care should be wary of these potential confounders particularly during a pandemic.

A high degree of vigilance is required for early identification of the septic patient. In the primary care setting, where perceived infection is one of the most common reasons for presentation, the clinical acumen of the General Practitioner is essential in determining which patients to evaluate for sepsis.

Box 3: Suggested clinical indications for undertaking evaluation for sepsis

As well as the general impression at the time of initial assessment, the presence of abnormal observations should be enough to initiate evaluation for sepsis. Some GPs are now evaluating the use of Early Warning Scores (such as NEWS, see UKST appendix 3 - NEWS) and must decide the lowest score that will trigger evaluation for sepsis. As yet unpublished data suggests that 94% of patients who were later found to have severe sepsis or septic shock presented to Emergency Departments with a NEWS score of 3 or higher.
The use of a two-part screening process to determine severity

Sepsis screening should be done as a two-part process; screening for SIRS followed by, where sepsis is identified, screening for Red Flag Sepsis (Box 4). NHS England and the UK Sepsis Trust recommend that patients with Red Flag Sepsis be transferred immediately for hospital assessment.

Box 4. SIRS screening and evaluation for Red Flag Sepsis

* Values are guides. Interpret observations in the context of the normal physiology for the patient. For example, in a young man who runs 3 times a week and has a baseline pulse of 56 a heart rate of 90 is very significantly raised, whereas it might be relatively normal for an older patient with mitral regurgitation. Similarly for an older person, a BP of 106/60 is likely to be lot lower than their baseline BP, whereas for an athlete a systolic of <90 may be perfectly normal.

§Some patients with chronic pulmonary disease may display low oxygen saturations and elevated respiratory rates ‘normally’. Consider whether values are abnormal for the individual patient.
Sepsis screening should therefore commence with basic observations to include measurement of heart rate, respiratory rate, blood pressure, temperature and conscious level.

Where resources permit, the measurement of oxygen saturations using a pulse oximeter should be performed in addition to basic physiological assessment. General Practitioners should evaluate whether there is utility in providing point of care testing for lactate and white blood cell count. These systems are now robust, and may assist in recognition of sepsis and Red Flag Sepsis and in transfer decision planning. Normal results are likely to reassure and reinforce decisions to manage in the community, and abnormal results may identify deterioration before the clinical picture becomes evident. This approach will be of particular relevance in remote locations where transit times to hospital can be prolonged.

**The use of Point of Care Testing (POCT)**

White blood cell count forms part of consensus definitions for SIRS, and differential white cell count can help distinguish between infection of viral or bacterial origin, and non-infective causes of inflammation. POCT devices using optical technology, which require minimal or no maintenance, are now available. Studies are needed to help evaluate the clinical utility of these devices in primary care in decision-making regarding hospital assessment and antimicrobial prescription.

The lactate level in sepsis is highly predictive of death (see Box 5) and poor outcomes and, when initially elevated, the degree of reduction following resuscitation (‘lactate clearance’) predicts survival. A significant proportion of patients with sepsis who have normal blood pressure have elevated serum lactate and outcomes for these patients with ‘cryptic shock’ are as poor as for those with overt septic shock. Commercial POCT devices, as used by athletes in performance training, are readily available and have been validated against benchtop assays.

**Box 5: The relationship of lactate level in sepsis to mortality**

<table>
<thead>
<tr>
<th>Lactate</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2</td>
<td>15%</td>
</tr>
<tr>
<td>2-4</td>
<td>25%</td>
</tr>
<tr>
<td>&gt;4</td>
<td>38%</td>
</tr>
</tbody>
</table>

2. Urgent Action

The key immediate interventions that increase survival are described in a bundle termed the Sepsis Six (Box 6). This bundle has been shown to be associated with significant mortality reductions when applied within the first hour\(^8\).

Box 6: The Sepsis Six (Source: http://sepsistrust.org)

1. Administer high-flow oxygen
2. Take blood cultures and consider infective source
3. Administer intravenous antibiotics
4. Give intravenous fluid resuscitation
5. Check haemoglobin and serial lactates
6. Commence hourly urine output measurement

While few General Practitioners will have the resources to provide much of this bundle of care, it is included to illustrate the time-critical nature of Red Flag Sepsis and the need for collaborative care pathways.

Action for patients with Red Flag Sepsis

For patients identified with Red Flag Sepsis, immediate arrangement should be made for urgent transfer for hospital assessment. This should be by ‘blue light’ ambulance with a Paramedic crew. A brief, clear handover should accompany the patient to include observations, any relevant medical history and antibiotic history including allergies.

Where resources permit, General Practitioners should initiate high flow oxygen therapy. Patients with sepsis are exempt from British Thoracic Society guidelines for the administration of oxygen to acutely ill adults as the pathophysiology of sepsis is such that organs become critically hypoxic. Hypoxia will kill before hypercapnia. Current theory suggests that hypercapnia occurring in response to oxygen therapy in patients with pulmonary disease is due not to the unproven theory of a loss of ‘hypoxic drive’ but to changes in ventilation-perfusion matching. Oxygen will not cause sudden apnoea in such patients. Therefore where patients are known to have moderate to severe pulmonary disease (and where available), we recommend that oxygen be administered to maintain target oxygen saturations above 92%.

Particularly in remote areas, consideration should be given to the delivery of other elements of the Sepsis Six.

Once a patient arrives in hospital, the All Party Parliamentary Group (APPG) on sepsis has made a recommendation that organizations should give ‘consideration to the development of Sepsis Teams’\(^14\). Comparisons with heart attack and stroke, where teams are available to be mobilized when prehospital services or Primary Care pre-alert a suspected case, would make this seem obvious.
It is vital that patients with severe sepsis should be reviewed at the earliest opportunity by the most senior available doctor. This should include in Primary Care if a doctor in training identifies Red Flag Sepsis, a senior doctor should review the findings immediately or as soon as practicable.

Many patients with sepsis will have multiple co-morbidities, and may be elderly or frail. For such patients, decisions should be taken at senior level (in consultation with the patient and their family as appropriate) regarding the appropriateness of escalation of care to hospital.

**Action for patients with sepsis without signs of Red Flag Sepsis**

Where no ‘Red Flag’ signs are identified, clinical judgment will determine appropriate action.

Patients with as yet uncomplicated sepsis can deteriorate rapidly. Fit adults and young people can compensate physiologically in the early stages of sepsis with minimal changes in their observations, right up to the point where shock ensues, and careful consideration should be taken as to the need for a request for hospital assessment. Those over 80, patients on chemotherapy or immunotherapy or those unwell despite antibiotic treatment are all high risk groups. If the patient is not to be referred for hospital assessment, there must be adequate safety netting. One example of a safety netting tool is in the UK Sepsis Trust’s ‘Symptom Checker Cards’ produced in collaboration with a survivor group. Any safety netting advice given should be clearly documented in the patient’s notes, together with observations and antimicrobial therapy offered. It is good practice to agree a planned next day review assessment in any patient with sepsis (SIRS, no Red Flag) managed in the community, together with an invitation for open self-referral should the patient deteriorate or be concerned.
Suggested clinical guidelines for the management of patients attending with sepsis in Primary Care

*Sepsis (no Red Flag signs):*

- A documented decision whether to manage patient in the community or refer to hospital
- Discussion with a senior doctor (where initial assessment has been by trainee) within 30 minutes of diagnosis
- A full set of observations including heart rate, respiratory rate, blood pressure, temperature, conscious level recorded and documented
- If to be treated in the community, safety netting advice offered and documented
- If to be treated in the community, arrangements to be made for review within 24 hours
- If to be referred for hospital assessment, handover including relevant clinical history and antibiotic history including allergies to be provided

*’Red Flag’ sepsis pending confirmatory tests:*

- Immediate discussion with a senior doctor (where initial assessment has been by trainee)
- Immediate request for 999 Ambulance with Paramedic crew
- Handover including relevant clinical history and antibiotic history including allergies to be provided
- Where resources available, administer oxygen therapy
- Where transfer times may be prolonged, consider need for intravenous antibiotics and fluid therapy if available
Exemplar Standards for Primary Care management of Sepsis

The standards below are those which have been identified by the UK Sepsis Trust and the APPG for sepsis as important in the management of sepsis with specific relevance to Primary Care. They are the ‘Exemplar Standards’ which organizations should aspire to deliver. Achieving these standards will place a Primary Care organization well on the road to the provision of excellent sepsis care.

1. Clear written guidance, policies and clinical pathways to be in place for the recognition and management of sepsis and Red Flag Sepsis.
2. Clear written criteria for which patients should be screened for sepsis.
3. According to local criteria for screening, 100% of patients satisfying criteria to have, as a minimum, heart rate, respiratory rate, blood pressure, conscious level, oxygen saturations and blood glucose measured and recorded (unless precluded by equipment failure).
4. Risk assessment to be undertaken and maintained regarding the need for Point of Care Testing for lactate and white blood cell count.
5. 100% of patients identified with Red Flag Sepsis to be transported for hospital assessment unless limitations of treatment agreed.
6. Clear written and verbal handovers to accompany all patients referred for hospital assessment.
7. Oxygen therapy to be available and considered for all patients with Red Flag Sepsis.
8. Where transit times to hospital are routinely in excess of 60 minutes, risk assessment to be undertaken and maintained regarding the need for administration of antibiotics and intravenous fluids.
9. Documented decision to treat in the community or transfer to hospital in 100% of patients with sepsis without Red Flag signs.
10. Where patients with sepsis without Red Flag signs are to be managed in the community, documented safety netting advice and review plans to be in place for all patients.
References:


2. Daniels R. Surviving the first hours in Sepsis: getting the basics right (an Intensivist’s perspective). Journal of Antimicrobial Chemotherapy 2011; 66(Suppl ii): 11-23


4. Nafsi T, Russell R, Reid CM, et al. Audit of deaths less than a week after admission through an emergency department: how accurate was the ED diagnosis and were any deaths preventable? Emergency Medicine Journal 2007; 24: 691-695


10. Available via the College of Emergency Medicine website at http://www.collemergencymed.ac.uk/Shop-Floor/Clinical%20Audit/Previous%20Audits, last accessed August 2014


Appendix 4

Chronic Wound Pathway

Does the patient have a chronic wound (present for longer than 4 weeks) which is displaying signs of delayed healing?

Continue with current care plan and review at planned regular intervals.

Is the wound a pressure ulcer?

Refer to Pressure Ulcer Pathway.

Is the wound a leg ulcer?

Refer to Lower Limb Pathway

If you suspect there is an infection, refer to Infected Wound Algorithm

Have you reviewed all factors associated with delayed healing and formulated relevant care plans to manage them?

Review all factors associated with delayed healing and incorporate into existing management/care plans.

If you have reviewed all factors causing delayed healing and you still require support, refer to Skin Care Service.

Examples of wounds that may require referral:
- Not responding to antibiotics / anti-microbial dressing
- Not responding to management plan
- Not healing within expected time frame
- Non-adherence to recommended treatment plan
Appendix 5

Resource guide on completing Wound Assessment documentation for community nursing

The effective care and management of individuals with wounds is dependent upon a systematic and holistic approach. It should be based upon the knowledge of anatomy and physiology, wound healing, holistic assessment, specific wound management and appropriate selection of wound management products. This resource guide should be used to guide and direct staff on the evidence based best practice in the management of wound care within the community setting.

Step 1: Patient identifiers
Ensure the patients details are completed on each page of the assessment tool

Step 2: The Body Map
The body map acts as a visual aid when assessing a wound; this allows other staff members to easily recognise the location of the wound when carrying out wound care for the first time. Mark the location of the wound on the body map and if multiple wounds present label these with an identifiable letter.

Step 3: Wound Identifiers
The wound identifying chart enables multiple wounds to be recorded and labelled with a letter. Within this table please allocate a letter to a wound (e.g. A, B, C). Document the wound type (e.g. Pressure ulcer, trauma, sinus/fistula, surgical, burn, malignancy, diabetic foot ulcer, other). Record the date of occurrence, this should be the estimated date the patient sustained the wound, the date notified to service should be the date of the patient first visit from the service after the wound occurred. Once the wound has healed please record the date.
Step 4: **Factors that could delay healing and increase susceptibility to infection**

<table>
<thead>
<tr>
<th>Disease processes effecting wound healing</th>
<th>Medication effecting wound healing</th>
</tr>
</thead>
</table>
| **Diabetes** - Diabetes has a huge impact on wound healing. When blood glucose levels are not controlled, the wound may become infected; in addition, diabetes damages blood vessels at the microvascular level, which results in less oxygen and nutrients being delivered to where they are most needed. | **Anticoagulants** - Affects the inflammatory phase of the healing process, prevents fibrin deposition.  
**Examples:** Warfarin  
Apixaban  
**Not including Aspirin** |
| **Anaemia** - Patients who are anemic may lack red blood cells and hemoglobin, which is necessary for the transport of oxygen in the blood. This can result in poor oxygenation, particularly to the peripheral extremities. | **Steroids** - Cause an anti-inflammatory response, Reduce protein synthesis, capillary budding, fibroblast proliferation and epithelialisation.  
**Examples:** Oral medication; Inhalers; Topical creams, lotions and gels |
| **Chronic heart disease** - Hypertension and coronary artery disease often go hand in hand and can exacerbate each other. Coronary artery disease can also affect blood flow to the tissue and cells | **Non-steroidal anti-inflammatory** - Also called NSAIDs, these drugs are generally used to treat inflammation, such as in the case of the chronic inflammatory disease and rheumatoid arthritis, these drugs effect and delay the inflammatory stage of the healing process.  
**Examples:** Ibuprofen; Naproxen; Diclofenac |
| **Chronic pulmonary disease** - COPD results from damage to the lungs and is most often associated with smoking. COPD, like CHF and CAD, leads to reduced blood flow and oxygen to the tissues. | **Immunosuppressant’s** - Used in the treatment of cancer immunosuppressant’s may weaken the immune system and enhance the risk of infection. It is also used in autoimmune diseases such as rheumatoid arthritis reducing inflammatory, commonly known as Methotrexate.  
**Examples:** Cyclosporine; Corticosteroids; Sirolimus; Azathioprine |
<table>
<thead>
<tr>
<th>Disease processes effecting wound healing</th>
<th>Medication effecting wound healing</th>
</tr>
</thead>
</table>
| **Peripheral vascular disease**- (PVD) deprives the extremities of vital nutrients, oxygen making infection in these extremities difficult to treat. | **Penicillamine**- Disease-modifying antirheumatic drug, used in the treatment of Rheumatoid arthritis also known as distamine.  
Examples: Penicillamine; Distamine |
| **Rheumatoid arthritis**- Rheumatoid arthritis is an autoimmune disease that causes inflammation in the joints, treatment drugs effect and delay the inflammatory stage of the healing process. | **Cytotoxic drugs**- Delay the migration of cells into and across the wound site, they also lower the production of collagen and inhibit the contraction of the affected area, increasing scar tissue. Such drugs also weaken the immune system, which can make one more susceptible to wound infection.  
Examples: Calcium Folinate; |
| **Immune deficiency disorders**- Normal immune function required for inflammatory phase of wound healing. | **Radiotherapy**- Damages healthy tissues as well as cancer cells and complicates wound healing. |
| **Malabsorption disorders**- Such as celiac and Crohn’s disease, this prevents the bowel from absorbing nutrients such as protein, vitamins and fats which are needed for wound healing. | **Biologics** - Significantly different from traditional drugs used, in that they target specific components of the immune system instead of broadly affecting many areas of the system. These are usually seen in the treatment of Rheumatoid arthritis.  
Examples: Abatacept (Orencia); Adalimumab (Humira); Certolizumab (Cimzia); Infliximab (Remicade); Herceptin |
| **Malignancy**- May present as fungating or ulcerating lesions. Malignant tumors are those that can invade and destroy nearby tissue and may spread. Symptom control in the main aim (odor, pain, bleeding etc). |  |
| **Burns**- Excessive or prolonged oedema and inflammation exacerbate pain and impair wound healing. |  |
Step 5: **Factors to consider as part of a wound assessment**

Answer yes or no to all questions, any questions answered yes should be summarised in below in comments section.  
**This is an indication of what other risk assessments tools to consider and complete, such as Manual Handling, pressure ulcer, pain, leg ulcer or MUST.**

Ensure Wound/Skin Sensitivities are clearly documented and Patient / Carer information leaflet discussed and provided.

Step 6: **Wound Evaluation tool**

Please complete one sheet per wound, please tick how often this is to be completed, dependent on the patient's wound / your clinical opinion and or change in wound is noted.

Step 7: **Undermining and tracking**

Tunneling and undermining are not readily visible; all wounds must be thoroughly probed to identify the full extent of tissue destruction and documented.
## Appendix 6 – Wound Exudate Description

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serous</strong></td>
<td>Clear, amber, thin and watery</td>
<td>Often considered normal, but may be associated with infection by fibrinolysin-producing bacteria such as <em>Staphylococcus aureus</em>; may also be due to fluid from a urinary or lymphatic fistula</td>
</tr>
<tr>
<td><strong>Fibrinous</strong></td>
<td>Cloudy and thin, with strands of fibrin</td>
<td>A response to inflammation — fibrinous exudate, may indicate the presence of fibrin strands Possible infection — purulent exudate containing white blood cells and bacteria</td>
</tr>
<tr>
<td><strong>Serosanguineous</strong></td>
<td>Clear, pink, thin and watery</td>
<td>Due to the presence of red blood cells. This indicates capillary damage — sanguineous or haemorrhagic exudate Postoperative Traumatic dressing removal</td>
</tr>
<tr>
<td><strong>Sanguineous</strong></td>
<td>Reddish, thin and watery</td>
<td>Low protein content due to: Venous or congestive cardiac disease Malnutrition Urinary, lymphatic or joint space fistula</td>
</tr>
<tr>
<td><strong>Seropurulent</strong></td>
<td>Yellow or tan, cloudy and thick</td>
<td>Presence of infection Liquefying of necrotic tissue Material from enteric or urinary fistula</td>
</tr>
<tr>
<td><strong>Purulent</strong></td>
<td>Opaque, milky; sometimes green, thick</td>
<td>May be indicative of bacterial infection eg <em>Pseudomonas aeruginosa</em></td>
</tr>
<tr>
<td><strong>Haemopurulent</strong></td>
<td>Reddish, milky and viscous</td>
<td>Established infection. May contain neutrophils, dying bacteria, inflammatory cells, blood leakage due to dermal capillaries, some bacteria</td>
</tr>
<tr>
<td><strong>Haemorrhagic</strong></td>
<td>Dark red, thick</td>
<td>Infection, trauma. Capillaries break down easily and bleed</td>
</tr>
</tbody>
</table>