



**National Wound Care
Strategy Programme**



**Surgical
Wounds**

Recommendations for Preventing and Managing Surgical Wound Complications

DRAFT FOR STAKEHOLDER CONSULTATION 13.10.23

Working in partnership with

The AHSN Network



Table of Contents

Glossary	2
Introduction	4
Background.....	4
Scope of the recommendations	5
The process for developing and updating these recommendations.	5
Recommendations	6
A. Prevention.....	6
B. Intra-operative phase.....	7
C. Post-operative wound care	8
D. Aftercare following healing.....	12
Explanatory notes	13
A. Prevention.....	13
B. Intraoperative phase	14
C. Post-operative phase.....	14
D. Aftercare following healing.....	16
Appendix 1: Search strategy for research evidence	17
Appendix 2: Risk factors leading to surgical wound complications:	18
Appendix 3: Surgical wound assessment essential criteria	19
References	21



Glossary

Abscess - a painful collection of pus, usually caused by a bacterial infection.

Catastrophic Dehiscence – total separation of previously approximated wound edge, due to failure of proper healing. There may be internal organs that are now exposed.

Dehisce – to gape or burst open. Surgical wound dehiscence (SWD) is the separation of the margins of a closed surgical incision that has been made in skin, with or without exposure or protrusion of underlying tissue, organs, or implants.

Desiccation - is the drying out of tissues or organs leading to tissue death.

Enhanced Recovery After Surgery (eERAS®) - a multimodal perioperative care pathway designed to achieve early recovery for patients undergoing major surgery.

Enterocutaneous Fistula - is an abnormal connection that develops between the intestinal tract or stomach and the skin. As a result, contents of the stomach or intestines leak through to the skin.

Fistula - A fistula is an abnormal connection between two body parts, such as an organ or blood vessel and another structure. Fistulas are usually the result of an injury or surgery.

Haematoma – is a collection of clotted or partially clotted blood within the operative bed.

Healing by primary intention – healing in which all tissues, including the skin, are closed with suture material after completion of the operation.

Healing by secondary intention – healing in which the surgical wound is left open and closes naturally.

Healing by tertiary intention (delayed closure) – healing in which the wound is left open for a number of days or weeks and then surgically closed if it is found to be clean.

High-risk patients- Patients at a higher risk of mortality.

Lower-risk patients – Patients at a lower risk of mortality.

Peri-Stoma - The area of skin around the stoma is called peristomal skin.

Post-operative Haemorrhage – Bleeding after a surgical procedure, the haemorrhage can occur immediately after the surgery or be delayed.

Prehabilitation - Care that aims to enhance general health and wellbeing prior to major surgery.

Sepsis - is the body's overwhelming and life-threatening response to infection that can lead to tissue damage, organ failure and death.

Seroma - localised accumulation of serous fluid in a part of the body, occurring most commonly as a complication of a surgical procedure.

Sinus - an infected tract leading from a deep-seated infection and discharging pus to the surface.

Spreading Cellulitis – spreading of infection to other parts of the body, such as the deeper layers of tissue, blood, muscle and bone.

Surgical Site Infection (SSI) - SSI is infection present at the site of surgery. Clinical signs and symptoms of infection include heat, redness, swelling, elevated body temperature and purulent exudate from the wound or the drain usually within one week of surgery.

Surgical Wound - a cut or incision in the skin that is usually made by a scalpel during surgery.



Surgical Wound Complications - a disruption to normal incisional wound healing following surgery.

Viscera - the internal organs in the main cavities of the body, especially those in the abdomen, e.g., the intestines.



Introduction

The purpose of these recommendations is to provide clear advice to health and care practitioners, service managers and commissioners about the fundamentals of evidence-informed care for people with surgical wound complications treated in England. Implementing these recommendations will achieve better individual outcomes and more effective use of healthcare resources.

The recommendations describe a pathway of care that promotes early assessment and diagnosis, enabling fast access to evidence-informed therapeutic interventions, with escalation of treatment or service provision for people requiring more complex care. The recommendations thus offer a framework for the development of local delivery plans that include consideration of:

- Relevant research evidence (where it exists) to inform care.
- Configuration of services and deployment of workforce.
- Appropriate education for that workforce; and
- Relevant metrics to measure quality improvement.

These recommendations signpost to relevant clinical guidelines or outline evidence-informed care that will improve healing and optimise the use of healthcare resources. The recommendations do not replace existing evidence-informed clinical guidelines or replace clinical judgement and decision making in relation to the needs of the individual. They are intended for use in all clinical care settings and aim to support implementation of evidence-based clinical practice.

Background

The estimated annual cost to the NHS of managing patients with wounds is between £4.5 billion -£5.1 billion (1). Of the 2.2 million people with a wound that has not healed within 4 weeks, 29% have an acute wound related to an abscess, burn, surgery or trauma (1). Some chronic wounds, such as diabetic foot ulcers, pressure ulcers and some types of leg ulcer, will also require surgical procedures.

A fifth (21%) of acute wounds fail to heal within 12 months leading to considerable patient suffering and NHS cost (1). Of these, almost half are unhealed surgical wounds, and of these, almost a fifth are readmitted as a direct result of their unhealed surgical wound (2).

Although most surgery occurs in secondary care, almost half (48%) the NHS cost of caring for these patients is incurred in community services and primary care following discharge from hospital (1). due to surgical wound complications (SWC) such as a surgical site infection (SSI) or other unintended outcomes.

A SWC is defined as a disruption to normal incisional wound healing following surgery (3) that delays healing. It is estimated that surgical wound complications (SWC's) are one of the leading global causes of morbidity following surgery, with mortality affecting 1–4% of patients following gastrointestinal surgery (4) (5). SWC encompasses more specific diagnoses including:

- Surgical site infection (SSI).
- Surgical wound dehiscence (SWD).
- Delayed Healing.
- Seroma/Haematoma.
- Hypergranulation.
- Peri-wound maceration/moisture associated skin damage (MASD).
- Abnormal Scarring.



- Medical adhesive-related skin injury (MARSI) (3).

Surgical site infection (SSI) is the most common and well known surgical wound complication. SSI can lead to surgical wound dehiscence (SWD), but SWD may also be caused by non-microbial aetiologies such as haematoma, seroma or technical issues, mechanical stress, obesity or pre-existing chronic disease states. Misdiagnosis of SWD as SSI may lead to potentially severe follow-on consequences for the patient and clinical practice.

The main reason for sub-optimal management of SWCs is thought to be unwarranted variation in care with under-use of evidence-based care, over-use of therapies for which there is insufficient evidence (6) and insufficient surveillance systems for monitoring surgical site infection outside hospital care provision.

Scope of the recommendations

These recommendations are focused on preventing surgical **wound** complications so do not address other forms of surgical complications. They seek to provide a high-level overview of care to prevent and manage surgical wound complications but recognise that care will justifiably vary in relation to different types of surgical specialities or procedures, so do not describe specific care for the different types of surgery.

The process for developing and updating these recommendations.

The original NWCSP surgical wound recommendations were developed using an evidence-informed approach, including consideration of research evidence, healthcare resources, clinical settings and patients' preferences. Evidence was retrieved using a systematic approach to searching (as outlined in Appendix 1) and then sense-checked with academics, health practitioners and patients and carers before a wider consultation with those registered with the NWCSP stakeholder forums. This update has followed the same process. Where robust evidence is not available then other evidence may need to be used (e.g., consensus). Where this is the case, the recommendation is written more tentatively as could rather than should.



Recommendations

A. Prevention

1. All patients, (except those undergoing emergency surgery) must undergo a pre-operative assessment, whether this is remote (via telephone or video conferencing) or face to face.
2. The use of an objective validated risk assessment tool relevant to the surgical speciality in conjunction with clinical judgement should be used to identify specific risk factors to surgical wound complications where available.
3. Patients identified at risk should see both the surgeon and the anaesthetist preoperatively (7).
4. An **Enhanced Recovery After Surgery** (ERAS) programme targeted at reducing surgical wound complications (8) should be used for all high-risk patients and considered for all other surgical patients and its use documented.
5. A programme of **prehabilitation** should be considered to optimise the patient for forthcoming surgery (9).
6. Patients should receive education on the likely outcome of the wound to be created (primary, secondary or tertiary closure) and risks/benefits of the surgery to enable informed decision-making about care following surgery and to prepare for possible outcomes.
7. In addition to the above recommendations, care should incorporate the relevant recommendations within the most recent versions of these publications:
 - NICE: Surgical site infections: prevention and treatment NG125 (10).
 - WHO: Global Guidelines for the prevention of surgical site infection (11).



B. Intra-operative phase¹

1. In theatre, immediately following surgery and before a dressing is applied, consider capturing a digital image of the wound especially in high-risk patients.

This image should be shared with the patient (if the patient wishes) and the health care provider responsible for ongoing care using NHS compliant digital technology.

2. Cover surgical incisions with an appropriate interactive dressing at the end of the operation (10).
3. In addition to the above recommendations, care should incorporate the relevant recommendations within the most recent versions of these publications:
 - NICE: Surgical site infections: prevention and treatment NG125 (10).
 - WHO: Global guidelines for the prevention of surgical site infection (11).
 - NICE: Perioperative care in adults NG180 (12).
 - WHO Surgical safety checklist (13).
 - Association for Perioperative Practice: Infection control (14).

¹ Intraoperative Surgical technique will vary significantly for different surgical specialities, so the recommendations do not prescribe care for the different types of surgery.



C. Post-operative wound care

Patients at lower risk of surgical wound complications:

1. Surgical wound assessment should be based on the recommendations of the NHS Wound Care Information Standard (See Appendix 3).
2. Patients should be assessed for pressure ulcer risk and, if necessary, measures taken to reduce the risk (15).
3. Shared Care/supported self-management should be considered and discussed with the patient: This may include advice on dressing changes and taking a digital image of their own wound to monitor healing.
4. Dressings should be removed at 48 hours (10)
5. Prior to transfer to another healthcare provider (which may involve shared care/ supported self-management), patients should be provided with enough dressings to care for their wound for one week.
6. Following transfer to another healthcare provider, patients should be informed of the name of the Team/Service responsible for overseeing their care.
7. Consider using a digital solution for ongoing monitoring of wound healing by the surgical team.

If ongoing clinical care is required from a care provider, at each dressing change record image(s) of the wound using digital imaging.

8. In addition to the above recommendations, care should follow the most up to date version of these recommendations in relation to post-operative care:
 - NICE Guideline: Surgical site infections: prevention and treatment (10).
 - WHO: Global Guidelines for the Prevention of Surgical Site Infection (11).
 - NICE Guideline for Sepsis: Recognition, Diagnosis and Early Management (16).

Patients at higher risk of surgical wound complications:

Care should follow the recommendations for those at lower risk but **in addition**:


9. Consider using interactive dressing materials and adjuncts that will additionally support the wound. For example, abdominal supports, chest supports or use of adhesive tapes to support the sutures.
10. Consider using a risk-based assessment to determine whether the patient requires an enhanced level of care.



Care of open wounds and complications:

11. If the incision site is healing by **primary intention** and fails to heal (epithelialise) as normal or dehisces with visible subcutaneous tissue, **arrange review** by a health professional with surgical wound expertise such as the general practitioner, tissue viability specialist nurse, stoma care nurse, or podiatrist who can escalate directly to surgical team as needed.
12. If the incision site is healing by **secondary/tertiary intention**, review progress weekly to monitor healing and evaluate effectiveness of treatment plan.
13. Do not pack perianal abscess wounds after drainage surgery (17).
14. If the wound deteriorates or fails to progress, **arrange review** by health professional with surgical wound expertise such as general practitioner, tissue viability specialist nurse, stoma care nurse, or podiatrist who can escalate directly to surgical team as needed.
15. Reassure patient, address concerns and manage expectations.

Early surgical wound complications:

 **Early Red Flags**


Treat as an emergency situation

- **Post-Operative Haemorrhage**
 - **Call for help.**
 - **Lay the patient flat.**
 - Apply a clean/sterile dressing material and apply direct pressure to the bleeding site until help arrives.
- **Catastrophic dehiscence with newly exposed viscera with visible internal organs ('burst abdomen')**
 - **Immediately inform the surgical team.**
 - **Lay the patient flat.**
 - Cover the exposed viscera/organs with saline-soaked gauze until the patient can be taken to theatre. Change saline-soaked gauze hourly to prevent desiccation of viable tissue.

If the patient has been discharged from Hospital, then call 999.



Intermediate surgical wound complications:

 **Intermediate Red Flags**

Refer to the surgical team within 24 hours:

- **Systemic signs of infection/sepsis**
 - Arrange for immediate review by the senior clinical decision maker.
 - Follow NICE Guideline for Sepsis: Recognition, Diagnosis and Early Management (16; 25).
- **Spreading cellulitis** - (e.g., increasing erythema, swelling, pain, pus, heat).
 - Arrange for immediate review by the senior clinical decision maker.
- **Dehiscence when surgery involved implants** (e.g., mesh, prosthesis) or an **aesthetically or functionally important surgical site** (e.g., face or joints).

Refer to the surgical team within 72 hours:

- **Dehiscence with newly exposed subcutaneous layers and fascia.**
- **Suspected sinus / fistula tracking.**
- **Draining seromas.**
- **Enterocutaneous fistula formation.**
- **Peri-stoma wound dehiscence.**

16. Care should incorporate the relevant recommendations relevant to surgical wound complications within the most recent versions of these publications:

- NICE: Surgical site infections: prevention and treatment.
- [WUWHS Surgical wound dehiscence: Improving prevention and outcomes \(18\)](#).
- [ISWCAP International Best Practice Recommendations for the early identification and prevention of surgical wound complications \(3\)](#).

17. If surgical wound infection (SSI) is suspected:

- a. Obtain relevant samples for culture and sensitivity testing.
- b. Consider prescribing an appropriate antibiotic that covers the likely causative organisms and considers local resistance patterns and the results of microbiological tests (10) (19).
- c. Ensure patients are advised to complete the course if antibiotics are prescribed.
- d. Monitor patient for **signs of sepsis** (16).
- e. Report any SSI via the SSI Surveillance Service.



18. If there is surgical wound dehiscence (SWD):
- a. Investigate events leading to dehiscence e.g., coughing, vomiting, trauma, closure material removal purulent drainage.
 - b. Identify and address modifiable factors that may be hindering healing. e.g., local or systemic infection.
 - c. Consider whether further investigations are required.
 - d. If the wound starts to dehisce, discuss wound management with the surgical team, and consider removal of remaining sutures.
 - e. Assess the condition of the dehisced area and grade using the World Union of Wound Healing Society (WUWHS) Surgical Wound Dehiscence Grading System (18).
 - f. Assess pain and offer appropriate analgesia.
 - g. Ensure any abscess, haematoma, or seroma is drained by an appropriately qualified practitioner.
 - h. Debride non-viable tissue.
 - i. Apply appropriate dressing or device for exudate level and depth/area of the wound to promote wound healing.
19. Review **at least weekly** for healing / further wound complications.
- a. If there is a new complication (e.g., infection) seek review by the surgical team, via the locally agreed referral route.
 - b. If surgical closure is planned, **refer back** to the surgical team for listing once the wound is clean and ready for surgery.

Ongoing treatment at home:

20. Consider using NHS compliant digital technology for ongoing monitoring of wound healing.
21. Prior to transfer to another healthcare provider (which may involve shared care/ supported self-care), patients should be provided with enough dressings to care for their wound for one week.
22. Following transfer to another healthcare provider, patients should be informed of the new Team/Service who will be responsible for overseeing their care.
23. The written handover to the patient and the new care provider should fully document the treatment to date and plan going forward to ensure continuity of care.



D. Aftercare following healing.

1. Consider teaching patients to massage the affected scar 7-10 days post healing with a simple emollient, in small circles, 2-3 times a day for up to 12 months starting gently and increasing pressure as can be tolerated.
2. Patients should be advised to use sun protection (Factor 50) on the healed, affected scar for a minimum of 12 months and ideally up to 24 months.
3. Should abnormal scarring (hypertrophic/keloid) become apparent consider referral to Plastic Surgery for specialist scar intervention.



Explanatory notes

A. Prevention

Preoperative assessment to stratify risk of SSI /SWD is recommended to inform the consent process and reduce the risk of SSI /SWD.

Assessment of risk is complex and differs depending on the point of view of the assessor. The risk of a particular procedure may have a different value when considered by the surgeon, anaesthetist, intensivist, patient or family member.

An accurate estimation of surgical risk is important in communication with patients and their families, to help them make informed decisions regarding the best possible care and to preparing them for the possibility of adverse events. Patients should be aware that surgical wounds may heal by primary, secondary, or tertiary closure which may impact on their quality of life and care arrangements following surgery.

There are several risk factors that may lead to surgical wound complications:

- Emergency surgery is known to significantly increase the risk of morbidity and mortality (20).
- The classification of the surgery, clean, clean-contaminated, contaminated, or dirty, is significant given that surgical wound dehiscence is more common in the contaminated or dirty categories (21). High risk patients are defined by a predicted mortality of greater or equal to 5% (7) and assessment is made using a number of factors (Appendix 2).
- Risk assessment and optimisation of the patient in the pre-operative phase, where possible, could reduce patient morbidity and mortality. Risk is assessed to allow suitable targeting of therapeutic options and decision-making with regard to treatment choices so that a suitable balance of risks, often between the possible side effects and dangers of surgery and the potential success of treatment, can be made.

However, the risk factors vary according to the type of surgery being planned and the patient comorbidities and there is currently a lack of evidence as to which risk assessment tools are the most valid and reliable for different types of surgery. Therefore, these recommendations do not recommend any specific risk assessment tools.

Enhanced Recovery After Surgery (eERAS®) is a multimodal perioperative care pathway designed to achieve early recovery for patients undergoing major surgery. eERAS® represents a paradigm shift in perioperative care in two ways. First, it re-examines traditional practices, replacing them with evidence-based best practices when necessary. Second, it is comprehensive in its scope, covering all areas of the patient's journey through the surgical process e.g., nutrition, mobility existing wounds etc.

Prehabilitation is care that aims to enhance general health and wellbeing prior to major surgery. By intervening in the preoperative period to modify behavioural and lifestyle risk factors, the 'physiological reserve' of the patient is enhanced to buffer the surgical stress response, this can include nutrition, exercise and psychology.



B. Intraoperative phase

Given the diversity of operational procedures, it is not possible for these recommendations to cover all of the different surgical specialities, but these key elements of intra-operative care are considered to increase the risk of surgical wound complications:

- Peri-operative hypothermia.
- Length of intended surgery.
- Inadequate surgical closure.
- Failure to obliterate dead space.
- Implant /prosthesis.
- Blood transfusion.
- High wound tension closure.

Consider taking a digital image in theatre which would provide a baseline of the surgical wound post-surgery, to assist ongoing carers who may be the first health care practitioners to see the wound post-operatively.

C. Post-operative phase

Following surgery, care may follow one of four different clinical pathways:

1. Primary closure following elective surgery.
2. Primary closure following emergency surgery.
3. Open wounds left to heal by secondary intention.
4. Open wounds with planned closure (tertiary intention).

These pathways can happen either as day cases or with an inpatient stay. Pressure for shorter lengths of stay means that surgical wound complications may occur following discharge from hospital.

Primary intention healing

Normal wound healing is usually considered to be complete epithelialisation at 10-14 days.

Secondary intention healing

Wound deliberately left open due to either infection or deficit of available tissue would be managed until the point of healing, such as patients with identified surgical wound complications who require ongoing care.

Tertiary intention healing (delayed primary closure)

In tertiary intention healing in surgical wounds, there is a need for the wound to be open for a period of time before it can be sutured. Alternatively, in the case of a traumatic wound requiring surgical intervention, there is not enough tissue available to close the wound. The aim here is to reduce the bacterial count and promote granulation tissue to fill the cavity in preparedness for the wound to be surgically closed.

Wound product selection should seek to match wound symptoms with the characteristics of wound dressings or management systems and patient needs, while remaining mindful of patient comfort and dignity, clinician time and the cost of alternative products.

Incisional negative wound pressure therapy (INWPT) remains a rapidly evolving area of research where there is not yet strong evidence of benefit. Therefore, these recommendations do not



recommend the widespread adoption of INWPT for prevention of surgical wound complications or promotion of healing.

Patients and carers should be supported and encouraged to manage their own wounds with shared care/supported self-care. This enables patients to bath and manage their wounds at a time that suits their lifestyle, whilst maintaining easy access to advice and support about any concerns.

Care of open wounds and complications

Surgical wound complications have been shown to delay wound healing and are usually reported around 7-9 days post-surgery (22) but can happen between day 1 to day 20 or day 90 if there has been implant surgery (3).

Wound cavities should not be tightly packed except when seeking to apply pressure to haemorrhage. However, depending on the amount of exudate present and the depth of the wound, wound fillers may be useful to absorb excess exudate, thus preventing pooling of blood or exudate, potentially causing maceration and increasing the risk of infection (18).

Recent evidence has shown that perianal abscesses without wound packing have significantly less pain and less adverse events than those that were packed (17).

Early surgical wound complications

Surgical wound complications prior to discharge may be due to technical difficulties with closure methods. Dehiscence can occur within the first few days and patients returned to theatre for renewal of closure methods.

Haemorrhage may also be an early complication and again, following emergency care, the patient would return to theatre for this to be addressed.

Intermediate surgical wound complications

Surgical wound infection is suspected by the presence of cellulitis, pus or purulent exudate, abscess, swelling, heat, crepitus, either by a new infection or an infection caused by treatment failure. It is important to be aware of the difficulties in assessing for visual signs of infection in darker skin tones.

In the absence of systemic illness, antibiotics should only be prescribed after discussion with the relevant clinical team responsible for the surgical treatment.

Wound sampling or swabbing should only be carried out if the above signs of clinical infection are present. The wound should be cleansed before taking a wound swab otherwise there is a possibility that bacteria on the wound surface alone are identified, rather than those that penetrate the soft tissue, leading to false positive results (21).

The WUWHS SWD Grading System uses depth and the presence of infection as the main determinants of SWD severity. It is important to distinguish SWD with no clinical signs and symptoms of infection from SWD with clinical signs and symptoms of infection to identify the correct approach to management (23).

Abscesses should be drained to remove pus to prevent further infection. Many seromas and haematomas may resolve spontaneously but, depending on the size, location, some seromas and haematomas may require aspiration or the insertion of a drain (23).



For wounds beginning to dehisce, it may be more appropriate to remove the remaining sutures as this allows the wound to be managed more easily.

If ongoing care in primary care or community care is required, this could include supported self-care of the patient with weekly review of wound healing to determine progress.

Surgical wounds can develop complications many weeks following surgery. This could be at the point of removal of closure material or at any other timepoint.

The SSI surveillance service helps hospitals in England record and follow up incidents of infection after surgery and use results to review or change practice as necessary. This service supports both the mandatory surveillance of SSI in 4 categories of orthopaedics and voluntary surveillance in 13 categories of surgical procedures.

D. Aftercare following healing.

Massage may improve pain, itch and tensile strength (24) once the healed tissue has gained sufficient strength to tolerate surface friction. There is no agreement on the exact method of massage but generally it is advocated 2-3 times a day and more if early signs of abnormal scarring appear and should be facilitated by lubricants (such as moisturisers/emollients after wound healing).

UV radiation increases scar pigmentation and worsens clinical appearance (25). Sunlight exposure should be avoided, and use of maximum sun protection factor (>50 Sun Protection Factor (SPF) should be encouraged until the scar has matured (26).

If abnormal scarring (hypertrophic/keloid) begins to develop, consider referral to a specialist service (e.g., plastic surgery).



Appendix 1: Search strategy for research evidence

The search strategy was limited to pre-appraised sources of research evidence, using a 4S approach² to structure a search strategy as shown.

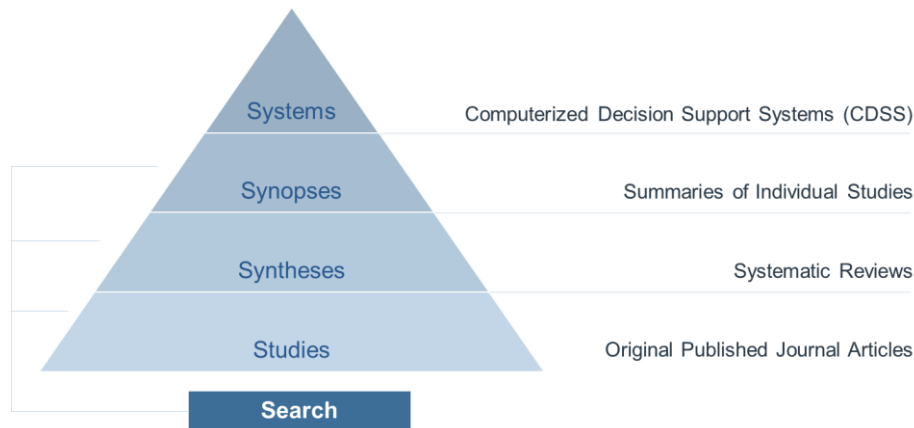


Figure 1 4S search strategy approach

- **Systems:** searched UK computerised decision support systems for chronic lower limb wounds.
- **Synopses:** searched for summaries of the current state of knowledge about the prevention and treatment of chronic lower limb wounds.
- **Syntheses:** searched the Cochrane Library of Systematic Reviews to identify reviews for chronic lower limb wounds foot ulcer treatment.
- **Studies:** searched the NIHR library for NIHR funded studies completed after publication of the relevant Cochrane systematic reviews for foot ulceration.

² Haynes RB Of studies, syntheses, synopses, and systems: the “4S” evolution of services for finding current best evidence *BMJ Evidence-Based Medicine* 2001;6:36-38.



Appendix 2: Risk factors leading to surgical wound complications:

Pre-Operative

- Lifestyle factors – smoking, alcohol, obesity, malnutrition.
- Pre-existing co-morbidities - diabetes cardiovascular disease.
- Psychological factors and anxiety.
- Cultural and ethnicity factors - beliefs around washing etc.
- Extended preoperative hospital stays or residency in a nursing home.
- Elective vs Emergency Surgery.
- Type of Surgery - surgical wound classification.
- Omission or sub optimal timing of antibiotic prophylaxis.
- Age.
- Medication History and allergy status.
- Dementia and cognitive function.
- Frailty.
- Functional status.
- Chronic pain.

Perioperative

- Peri-operative hypothermia.
- Length of intended surgery.
- Inadequate surgical closure.
- Failure to obliterate dead space.
- Implant /prosthesis.
- Blood transfusion.
- High wound tension closure.

Post-Operative

- Wound infection.
- Premature suture removal.
- Failure to wean from ventilator.
- One or more complications excluding dehiscence.



Appendix 3: Surgical wound assessment essential criteria

The Surgical Wound Assessment Essential Criteria has been compiled using all the criteria from the NHS England [Leading Change Adding Value Framework Minimum Data Set](#)¹ (Table 4 p 235) and the assessment criteria from the [WUWHS Consensus Document - Surgical Wound Dehiscence](#)². These criteria are the **minimum** that should be documented in a surgical wound assessment.

The following should be assessed and recorded in the patient record:	
Domain	Data Item
General Health Information ^{1, a}	Risk factors for delayed healing ^b . Allergies. Skin sensitivities. Impact of the wound on quality of life (physical, social & emotional). Information provided to patient and carers.
Wound Baseline Information ^{1, 2}	Number of Surgical wounds Wound location Wound type/classification ^c - clean, clean-contaminated, contaminated dirty Date of Surgery Treatment aim ^d Planned re-assessment date ^e
Wound Assessment Parameters ^{1, 2}	Wound size (maximum length, width and depth). Closure method - sutures, staples, glue, adhesive strips. Date of closure removal. Drain in situ / type of drain. Prosthesis / implant present Undermining/tunnelling ^f Wound bed tissue type ^g Wound bed tissue amount ^h Description of wound margins/edges ⁱ Approximation of wound edges ^j Colour and condition of surrounding skin ^k Whether the wound has healed ^l
Wound Symptoms ^{1, 2}	Presence of wound pain ^m Wound pain frequency Fluid collection beneath the wound closure (Abscess, Haematoma, Seroma) ⁿ Crepitus present ^o Dehiscence (size and number) ^p Healing ridge present ^q Exudate amount ^r Exudate consistency/type/colour ^s Odour occurrence ^t



	Signs of systemic infection ^u Signs of local wound infection ^v Whether a wound swab has been taken ^w
Surgical Wound Specific	Type of surgery ^x Emergency /Elective Surgery ^y Duration of surgery ^z Antibiotic prophylaxis given

¹ Coleman, S., Nelson, E. A., Vowden, P. et al 2017. Development Of a Generic Wound Care Assessment Minimum Data Set. *Journal Of Tissue Viability*. 26 (4) 226-40

<https://www.sciencedirect.com/science/article/pii/S0965206X17300529?via%3Dihub>

² World Union of Wound Healing Societies (WUWHS) Consensus Document. *Surgical wound dehiscence: improving prevention and outcomes*. Wounds International, 2018



References

1. **Guest J.F., Ayoub N., McIlwraith T., et al.** Health economic burden that wounds impose on the National Health Service in the UK. *BMJ Open*. 2015, Vol. 5 , 12.
2. **Guest J.F., Fuller G.W., Vowden P.,** Costs and outcomes in evaluating management of unhealed surgical wounds in the community in clinical practice in the UK: a cohort study. *BMJ Open* . 2018, Vol. 8.
3. **Sandy-Hodgetts K., Ousey K., Conway B., et al.** International best practice recommendations for the early identification and prevention of surgical wound complications. *Wounds International*. 2020.
4. **Pearse R.M., Moreno R.P., Bauer P., et al.** Mortality after surgery in Europe: a 7-day cohort study. *The Lancet*. 2012, 1059-65.
5. **GlobalSurg Collaborative.** Determining the worldwide epidemiology of surgical site infections after gastrointestinal resection surgery: protocol for a multicentre, international prospective cohort study (GlocalSurg2). *BMJ Open*. 21 July 2017, Vol. 7, 7.
6. **Gray T.A., Rhodes S., Atkinson R.A., et al.** Opportunities for better value wound care: a multicentre , cross-sectional survey of complex wounds and their care in a UK community population. *BMJ Open* . 2018, Vol. 8, 3.
7. **Royal College of Surgeons.** The higher risk general surgery patient. towards improved care for a forgotten group. *RCS, England*. 2011.
8. **Ljungvist O., Scott M., Fearon K.C.,** Enhanced recovery after surgery; a review. *JAMA Surg*. 1, 2017, Vol. 152, 3.
9. **Santa Mina D., Scheede-Bergdahl C., Gillis C et al.** Optimization of surgical outcomes with prehabilitation. *Appl Physiol Nutr Metab*. 2015, Vol. Sept 40, 9, pp. 966-9.
10. **National Institute of Care and Excellence (NICE).** Surgical site infections: prevention and treatment NG125. *NICE*. 2019.
11. **World Health Organisation (WHO).** Global guidelines for the prevention of surgical site infection. *WHO*. 2018.
12. **National Institute of Health and Care Excellence (NICE).** Perioperative care in adults NG 180. *NICE*. 2020.
13. **World Health Organisation (WHO).** Surgical Safety Checklist. *WHO*. 2009.
14. **Association for Perioperative Practice.** Standards and recommendations - infection control. *APP*. 2020.
15. **National Wound Care Strategy Programme (NWCSP).** Recommendations for preventing and managing pressure ulcers. *NWCSP*. 2023.
16. **National Institute of Health and Care Excellence (NICE).** Sepsis: recognition, diagnosis and early management NG51. *NICE*. 2017.
17. **Newton K., Dumville J., and Briggs M., et al.** Postoperative packing of perianal abscess cavities (PPAC2): randomized clinical trial. *British Journal of Surgery* . 2022, Vol. 109, 10, pp. 951-957.
18. **World Union of Wound Healing Societies (WUWHS).** Consensus document: Surgical wound dehiscence: improving prevention and outcomes. *Wounds International*. 2018.



19. **National Institute of Health and Care Excellence (NICE)**. Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use. *NICE*. 2015.
20. **Mullen M.G., Michaels A.D., Mehaffey M., et al.** Risk associated with complications and mortality after urgent surgery vs elective and emergency surgery. implications for defining 'quality' and reporting outcomes for urgent surgery. *JAMA Surg.* 1, 2017, Vol. 52, 8.
21. **Centre for Disease Control**. Surgical site infection criteria (SSI). *CDC*. 2021.
22. **Sandy-Hodgetts K., Carville K., Leslie D.G.,** Surgical wound dehiscence: a conceptual framework for patient assessment. *Journal of Wound Care*. 2018, Vol. 27, 3, pp. 119-26.
23. **Stryia J., Sandy-Hodgetts K., Collier M., et al.** Surgical site infection: prevention and management across health care sectors. *Journal of Wound Care* . 2020, Vol. 29 (Supp 2b), S1-S72.
24. **Ault P., Plaza A., Paratz J.** Scar Massage for hypertrophic burn scarring - A systematic review. *Burns*. 2018, Vol. 44, 1.
25. **Due E., Rossen K., Sorensen L.T., Kliem A., Karslmark T., Haedersdal M.** Effect of UV irradiation on cutaneous cicatrices: a randomised controlled trial with clinical, skin reflectance, histological, immunohistochemical and biochemical evaluations. *Acta Derm Venereol.* 2007, Vol. 8, 7.
26. **Middlekoop E., Monstrey S., Teot L., Vranckx J.J.** *Scar management: practical guidelines*. Elsene : Maca-Cloetens, 2011.

