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International Surgical Wound Complications Advisory Panel guideline for post-operative incision care

A.O. Okhunov, S. Carvalhal[1], M. Rochon[2], E.K. Stuermer[3], G.T. Mir[4], W.H. Tettelbach[5], Zh. Van der Merwe[6], Th.W. Wainwright[7]

ABSTRACT

Surgical wound complications are an unwanted outcome and may occur following any type of surgical procedure. While there are a number of guidelines for prevention of surgical site infection for tertiary level care, these are designed to be used during the perioperative and intraoperative phases of the patient's surgical journey. As such, there is a paucity of clinical guidance for post-operative incision care, in both the acute and home-care settings. Moreover, this deficit is exacerbated by a limited evidence base to draw upon. This guideline is the first of its kind that demarcates clinical care principles for patients with closed surgical incisions, separate to management of patients with hard-to-heal (chronic) wounds or surgical wounds healing by secondary intention.

[1] Consultant Surgeon, Portuguese Institute of Oncology in Lisbon, Portugal

[2] Trust Lead for SSI Surveillance, Research & Innovation, Surveillance and Innovation Unit, Directorate of Infection, Guy's and St Thomas' NHS Foundation Trust, UK

[3] Surgical Head of the Comprehensive Wound Centre, Head of Translational Research, Department for Vascular Medicine, University Medical Centre Hamburg-Eppendorf, Germany

[4] CEO, International Inter-Professional Wound Care Group, UAE

[5] Chief Medical Officer, Restorix Health, Metairie, LA, US, and Adjunct Assistant Professor, Duke University School of Medicine, Durham, NC, US

[6] Advanced Wound Care Specialist, 4Wounds Wound Care Practice, Pretoria, South Africa

[7] Professor of Orthopaedics, Bournemouth University, UK

INTRODUCTION

The anticipated normal healing trajectory of an incisional wound is full closure 6-8 weeks following surgery on the provision the wound is not contaminated, tension is minimized at the opposed margins and the patient is relatively healthy [3].

However, both intrinsic and extrinsic factors may confound the healing process and result in surgical wound complications (SWCs), defined as any disruption to normal incisional healing after surgery [4].

Surgical site infections (SSIs) are the most common SWC; other complications include surgical wound dehiscence (SWD), 5 hyper granulation, peri-wound maceration, scarring and medical adhesive-related skin injury [1, 2, 5, 6].

Complications are most commonly reported 7–9 days after the procedure, but may occur within 90 days post-operatively, particularly for procedures with implants [4, 7, 8].

Need for new guidance Globally, 310 million major surgeries are performed each year, with 40–50 million in the United States and 20 million in Europe [9]. Of all post-operative patients, around 15% will develop an SWC, and 5–15% will be readmitted to the hospital within 30 days [9]. SSIs occur in an estimated 2.5% of all surgical patients [10]. Higher incidence rates are reported for specific surgical diagnoses, such as 3.1% for spine surgeries [11] , 19–29% for head-and-neck cancer surgeries [12], 8.1% for groin infections after arterial interventions [13] and 16.3% for abdominal surgeries [14]. These numbers tend to be higher in low- or middle-income countries, due to a combination of factors, including access to safer surgery, resources and social determinants of health care [15–17].

Consensus statement: Given the difference between SSI and SWD, it is highly likely that SWD is significantly underreported.

Unwanted outcomes after surgery affect a patient's wellbeing and return to normal life. SWCs typically extend how long a patient must stay in the hospital or cause a patient to be re-admitted. Extended stays and re-admission increase the risk of hospital-acquired complications, such as infection, falls and pressure injuries. They also require more resources to manage, impacting on the capacity and finances of hospitals, allied health services and social services.

The cost of caring for patients with SWCs places a significant burden on healthcare systems. A Canadian study reported that care for a patient with a primary hip or knee arthroplasty cost five times as much if the patient developed an SSI [18]. In the US, the total annual cost of treating SSIs has been estimated at least $3.5 billion and potentially over $10 billion [19]. An Australian study found that an SWC increased the cost of treating a surgical incision threefold [20]. A subsequent study found that managing SSIs cost the Australian acute care sector A$325 million annually [21]. In the UK, 81% of the district nursing caseload is for the clinical management of unhealed wounds, particularly surgical wounds [22].

Box 1. International guidelines for prevention of surgical site infection

- Asia Pacific Society of Infection Control (APSIC), 2019[16]
- European Wound Management Organisation (EWMA), 2020[26]
- International Surgical Wound Complications Advisory Panel (ISWCAP), 2020[4]
- National Institute for Health and Care Excellence (NICE), 2019[27]
- US Centers for Disease Control and Prevention (CDC), 2017[3]
- World Health Organization (WHO), 2018[25]

Box 2. Care bundles by surgical discipline

- Abdominal surgery[63,64]
- Bariatric surgery[48]
- Caesarean and gynaecological surgery[49–52]
- Colorectal surgery[53,54]
- Cranial surgery[55–57]
- Head and neck surgery[58]
- Joint arthroplasty[59–61]
- Lower-extremity vascular surgery [62]
- Spinal surgery[36,46,47]

There are several guidelines for the prevention of SSI. However, the implementation of this guidance in clinical practice is limited, with fewer than 10% of respondents to a recent global survey of health professionals reporting using evidence-based guidelines for the prevention of SSI [23]. Moreover, the scope of these guidelines is limited to the pre-operative and peri-operative phases, with a distinct paucity of evidence-based recommendations for incision care in the acute and post-acute post-operative phases [24]. While pre-operative and peri-operative guidelines are based on strong clinical evidence, existing recommendations for post-operative incision care are based on best practices, which may not be evidence-based. This may be due to a paucity of evidence, as well as a focus on peri- and intra-opera-

tive tasks within acute care at the expense of guidance on incision care once the patient leaves the hospital.

GLOBAL GUIDELINE

This global guideline aims to establish evidence - based recommendations on the clinical surveillance and management of surgical incisions to minimize the risk of SWCs, including SSIs and SWD. The recommendations presented are intended to be relevant to all surgical incisions approximated with sutures, staples or surgical glue (healing by primary intention). However, the recommendations exclude incisions left open until healing (healing by secondary intention) or retained with sutures for delayed primary closure (healing by tertiary intention). These recommendations should be relevant across healthcare sectors, including the acute and post-acute care settings. Disciplines considered include obstetric, gynecological, orthopedic, colorectal/abdominal, upper gastrointestinal, vascular, cardiothoracic, breast, reconstructive, oncological and spinal surgery.

Recommendations may differ between surgical procedures and classes of surgical wound.

This global guideline presents the outcomes of a consensus meeting between the Chair and author panel, held in London on 29 April 2024. The recommendations were agreed upon after a review of the evidence and an in-depth discussion among the expert panel to reach a consensus. As far as possible, these recommendations are based on the latest relevant research evidence, which was identified through EBSCO, CINHAL and PubMed using topic-specific search terms before undergoing panel review. Where possible, the panel aimed to describe existing evidence for clinical practice across surgical disciplines. Where appropriate, recommendations have been given a Cochrane GRADEpro evidence level based on available systematic reviews and meta-analyses. Recommendations based on expert experience are presented as consensus statements.

Consensus statement: This global guideline is intended to complement existing best-practice guidelines.

EXISTING GUIDELINES

There are several evidence-based guidelines for the prevention of SSI [3, 4, 16, 23–27].

Consensus statement: Prevention of SSIs should follow guidelines from the World Health Organization (WHO) [25] and the US Centers for Disease Control (CDC) [3].

Box 3. Risk factors for delayed wound healing[26,66,67]

Intrinsic
- Co-morbidities
  - Diabetes
  - Obesity
  - Protein calorie malnutrition
  - Arterial insufficiency
  - Chronic oedema
- Medications
  - Steroids
  - Nonsteroidal anti-inflammatory drugs
  - Anticoagulants
  - Antirejection medications
- Cancer
  - Chemotherapy
  - Immunotherapy
  - Radiation therapy
- Autoimmune disorders
- Stress
- Immobility
- Psychosocial behaviours
  - Smoking
  - Vaping
  - Alcohol abuse

Extrinsic
- Foreign bodies
- Tension and/or pressure on the wound site
- Lack of adherence and concordance to care plan
- Patient's environment and living conditions
  - Distance from point of care
  - Lack of access to care

Bundled care guidelines have been developed for different procedures [36, 46–64]. For example, bundled interventions for colorectal surgery include antibiotic prophylaxis, oral antibiotic prophylaxis, mechanical bowel preparation, laparoscopy, normothermia and a wound retractor [53, 54]. These bundled care guidelines primarily cover peri-operative and intra-operative procedures and tend not to cover post-operative care.

Implementation of these general guidelines can be informed by relevant research pertaining to specific surgical procedures, such as the following:

- Breast reconstruction [28, 29].
- Caesarean section [30].
- Cardiothoracic surgery [31, 32].
- Colorectal surgery [33].
- Gynaecological surgery [34].
- Hernia repair [35].
- Spinal surgery [36].
- Joint arthroplasty [37, 38].

Box 4. Risk factors for surgical site infection in colorectal surgery[68]

Patient-related
- Cigarette smoking
- Diabetes
- Male gender
- Obesity (BMI >30 kg/m^2)
- Serum albumin <2.5 g/dL
- Tumour location
- American Association of Anaesthesiologists score >3

Treatment-related
- Blood loss ≥100 mL
- Need for blood transfusion
- Open versus laparoscopic surgery
- Operation time >180 minutes
- Ostomy formation (decreased incidence)
- Previous abdominal surgery

Current guidelines build on William Stewart Halsted's original model for training programmes to promote safe surgery, which established the model of graduated responsibilities in medical education and prevention of contamination of the surgical field, including the use of surgical gloves, local anaesthesia, asepsis, silk suturing and elimination of dead space [39].

Halsted's model of graduated responsibilities remains the basic structure of surgical training in the US [39]. While guidelines for quality assurance of surgical training programmes are universally adopted across institutions, often disparities exist between countries resulting in variability in competence and skill sets [40, 41]. Cost implications and resources vary across the world, with inconsistencies in interpretation of evidence and existing guidelines [42]. Some published guidance is specifically focused on resource-limited settings, including from the WHO [43], National Institute for Health and Care Research (NIHR) [44] and LifeBox Clean Cut programme [45].

Consensus statement: Surgical wound treatment plans must be individualised.

PATHOGENESIS AND RISK FACTORS

To minimise the risk of SWCs in surgical patients, it is necessary to understand their pathogenesis and associated risk factors.

SSIs are most likely to be caused by pathogens originating in sites remote from the incision rather than being caused by intraoperative contamination, known as the Trojan Horse Theory [65].

The Trojan Horse hypothesis assumes that SSI pathogenesis occurs when pathogens are transported from areas remote from the surgical incision (e.g., teeth, gums, or gastrointestinal tract) to the surgical site, where they subsequently cause infections [65]. A patient's susceptibility to SSI can be increased by the intrinsic and extrinsic factors that affect the healing trajectory of any wound, including surgical incisions [26, 66, 67]. Further risk factors specific to surgical incisions have been identified for particular areas, such as colorectal surgery [68]. A patient's predisposition to pathogenic activity is influenced by the level of contamination of the surgical procedure, categorised as clean, clean-contaminated, contaminated or dirty/infected [69].

Consensus statement: Some risk factors for SSI are modifiable. Before and after surgery, patients need to be fully informed about these modifiable factors and supported with cooperative strategies to reduce their risk of SSI. These strategies may include diabetes control, reduced alcohol intake, a healthier diet for weight loss or to address protein-calorie malnutrition and cessation of smoking and/or vaping. Patients should also be helped to manage their medications to optimise the chance of successful surgery and wound healing.

Risk can be formally assessed using specific tools. There are at least 10 validated risk-assessment tools widely available, primarily for cardiothoracic surgery [70]. As an example, the Brompton and Harefield Infection Score (BHIS) includes five weighted variables:
- Diabetes or haemoglobin A1c >7.5%
- BMI >35kg/m2
- Female sex
- Emergency surgery
- Left ventricular ejection fraction <45% [71].

Another example is the Perth Surgical Wound Dehiscence Risk Tool (PSWDRT) for abdominal procedures, which identifies the following as independent risk predictors for wound complications after colorectal surgery:
- Previous surgery in the same anatomical location
- Duration of surgery
- Diabetes [72].

PRE-OPERATIVE AND PERI-OPERATIVE CARE

There are steps that should be taken in pre-operative and peri-operative care to minimise the risk of SWCs [38].

ANTISEPTIC SKIN PREPARATION

Recommendations on protocols for antiseptic skin preparation vary. According to the WHO and CDC, the skin around the surgical site should be prepared with an alcohol-based antiseptic solution [25]. However, the National Institute for Health and Care Excellence (NICE) recommends either an alcohol-based solution or chlorhexidine as a first choice and, if these are unsuitable or not available, an aqueous solution of povidone-iodine [73].

Recommendation: Chlorhexidine and povidone-iodine can be used for pre-operative antiseptic skin preparation, depending on local protocols and availability.

Evidence grade: strong [2].

The CDC recommends against applying antimicrobial ointments, solutions or powders to the surgical incision [3].

Instead, they advise that the patient shower and wash the full body with soap or an antiseptic agent the night before surgery [3].

The WHO recommends that body hair should only be removed if necessary and only with clippers; shaving is avoided pre- and intra-operatively [25]. If a patient has a positive nasal swab for S. aureus, the WHO also recommends intranasal applications of mupirocin 2% ointment with or without a chlorhexidine gluconate body wash [25].

SURGICAL ANTIBIOTIC PROPHYLAXIS

The CDC and WHO recommend surgical antibiotic prophylaxis (SAP) before surgery only when indicated for a specific diagnosis, such as a caesarean section [3, 25]. SAP should be administered within 120 minutes before incision, considering the half-life of the antibiotic, and discontinued after completion of surgery [25]. Additional prophylactic antimicrobials should not be administered after the incision is closed if the procedure is clean or clean-contaminated [3]. The use of SAP varies among surgical diagnoses and disciplines, partly due to variations in the intrinsic likelihood of exposure to microbes. In addition, between 38% and 50% of the pathogens that cause SSIs have been shown to be resistant to the antibiotics used for SAP, complicating consistent guidelines [74].

Patients undergoing elective colorectal surgery should not have mechanical bowel preparation alone without oral antibiotics [25].

OPTIMISING PATIENT STATUS

According to CDC guidance, normothermia (maintenance of normal core body temperature) must be maintained through the peri-operative period [3]. Meanwhile, patients with or without diabetes require perioperative glycaemic control, with blood glucose target levels <200 mg/dL [3]. Blood transfusion guidelines are specialty-specific, but necessary blood products should not be withheld to prevent SSI [3].

The WHO recommends that adult patients undergoing general anaesthesia with endotracheal intubation receive an 80% fraction of inspired oxygen intraoperatively and 2–6 hours post-operatively [25]. According to CDC, patients with normal pulmonary function undergoing general anaesthesia with endotracheal intubation should be administered an increased fraction of inspired oxygen during surgery and immediately after post-operative extubation [38].

ADVANCED WOUND DRESSINGS FOR POST-OPERATIVE CARE

After surgery, the incision should be covered with an advanced wound dressing. These advanced dressings are designed to perform specific functions, such as creating a sealed environment to protect the incision and periwound skin from external contamination [75]. Advanced dressings are also often intended to absorb excess exudate and maintain appropriate moisture balance, both to prevent maceration and to promote moist wound healing, a central tenet of wound care [75].

Appropriate use of advanced wound dressings can optimise the wound environment to promote healing, minimise the risk of SWCs and potentially reduce treatment time and cost [76].

UNDISTURBED WOUND HEALING

Wound dressings for a post-operative incision should be kept in place for the maximum amount of time. This strategy, known as undisturbed wound healing, aims to maintain the aseptic microclimate of the operating theatre at the surgical incision for as long as possible. This should minimise the risks of external contamination and developing an SSI [77].

Consensus statement: In general, post-operative dressings should be left in place for around 7 days or until the suture is removed on a clean surgical site. Dressings may be left in place for up to 14 days, depend-

ing upon patient circumstances, exudate level and goal of care.

Box 5. Features of an optimal wound dressing for post-operative incisions[76,77,80,81]

- Absence of particulate contaminants left in the wound after removal
- Absorption capability to control exudate
- Adhesion to the skin, whether it is dry after disinfection or moistened by sweat
- Atraumatic removal
- Cosmetic acceptability
- Ease of use to ensure consistent care
- Elimination of dead space between the wound bed and dressing to avoid exudate pooling
- Flexibility to not impede the person's movement and provide elasticity to avoid pulling the skin or blistering (particularly over joints)
- Patient comfort
- Protection of periwound skin
- Suitability for use with different skin closures (e.g., sutures or staples)
- Suppression of scar-tissue formation
- Transparency to allow visualisation of the incision, reducing the need to remove the dressing
- Waterproofing to provide a good seal/barrier function and allow showering

Decisions on the type of wound dressings needed for a patient's incision should be protective and consider several factors.

These include the goal of care, the location of the incision site and the type of surgical procedure; for example, a patient with a total knee replacement requires a dressing that will adhere during knee flexion during gait, while a patient with a sternal incision requires a dressing that will withstand friction from clothing. Patient condition is important, including mobility, overall health and risk of SWCs.

Dressing selection is also influenced by wound status and the presence of existing SWCs. For example, an incision that is dehisced with moderate purulent exudate requires a more absorbent material (to control the exudate).

Other factors include the post-acute care setting, as well as the patient's preferences and ability to manage the dressing after discharge [80, 82]. The cost and availability of dressings and reimbursement policies of the local healthcare system can influence decision-making and may create significant discrepancies in universal care of surgical incisions [80].

National guidelines, local protocols and recommendations for the surgical specialty will determine the length of time a dressing needs to be in place. Optimal wear time may vary according to the amount of exudate, patient mobility and patient health [78].

Consensus statement: A dressing should be removed if it ceases to be intact or detaches from the wound edges, thus ceasing to be waterproof and exposing the incision to external contaminants. Dressing removal may also be required if the dressing becomes saturated with exudate or blood, if the incision shows signs of infection or if the patient shows signs of an allergic reaction to the dressing (e.g., itching, pain or erythema).

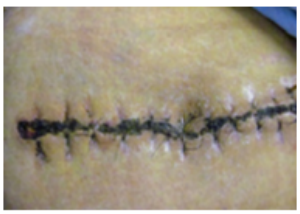
When necessary, the dressing should be removed and replaced with a new sterile dressing using an aseptic non-touch technique [79].

DRESSING SELECTION

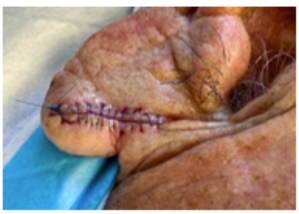
There is a plethora of advanced wound dressings, which vary in composition, size and shape, as well as function and properties. A Cochrane review concluded that it is uncertain if any secondary wound dressing used over a primary dressing is more effective than others in reducing SSIs [80]. Consensus panels have proposed several features for an ideal post-operative dressing.

Figure 1. Surgical sites without signs of infection

Images courtesy of Rose Hamm



Surgical site with eschar forming along suture line



Surgical site closed by primary intention

Decisions on the type of wound dressings needed for a patient's incision should be protective and consider several factors.

These include the goal of care, the location of the incision site and the type of surgical procedure; for example, a patient with a total knee replacement requires a dressing that will adhere during knee flexion during gait, while a patient with a sternal incision requires a dressing that will withstand friction from clothing. Patient condi-

tion is important, including mobility, overall health and risk of SWCs.

Dressing selection is also influenced by wound status and the presence of existing SWCs. For example, an incision that is dehisced with moderate purulent exudate requires a more absorbent material (to control the exudate).

Other factors include the post-acute care setting, as well as the patient's preferences and ability to manage the dressing after discharge [80, 82]. The cost and availability of dressings and reimbursement policies of the local healthcare system can influence decision-making and may create significant discrepancies in universal care of surgical incisions [80].

ANTIMICROBIAL EFFECT

Studies of advanced dressings with antimicrobial agents vary in their findings. A meta-analysis of advanced antimicrobial dressings on surgical sites post-caesarean section concluded that dialkylcarbamoyl (DACC)-impregnated dressings potentially reduced the risk of SSIs [75]. Other studies have demonstrated a reduced occurrence of SSI following vascular and orthopedic surgery using DACC-containing dressings [85–87].

Recommendation: DACC-containing dressings may be considered for people with vascular or caesarean wounds that are expected to have low-to-moderate exudate and may be used as part of usual prevention measures to reduce SSI.

Evidence grade: low [88].

The aforementioned meta-analysis also found no benefit from silver dressings [75]. Studies in cardiac surgery did not support the use of silver dressings to minimise the risk of SSIs in either paediatric or adult populations [89,90]. A meta-analysis found that silver dressings were not more effective than alginate dressings in reducing the risk of developing an SSI in adult cancer patients [91]. In another study, silver dressings compared with silver-free dressings were not associated with a lower incidence of SSIs in clean or clean-contaminated surgical procedures [92].

However, a study on breast cancer patients with high risk for SWCs found that a silver alginate dressing did reduce complications in the first week after surgery [93].

There is considerable discourse on use of iNPWT for prevention of SSI, with conflicting studies. Studies of the impact of iNPWT on SSI incidence in Class I and Class II procedures vary in their results and by surgical discipline. A systematic review evaluating iNPWTs' effect on surgical site healing by primary intention revealed a decrease in incidences of SSI, sero/haematoma formation and need for re-operation, although there was less evidence for impact on SWD incidence [97]. Another study compared iNPWT to other types of dressings used for surgical sites and reported superior subjective and objective outcomes but increased cost [82]. However, a meta-analysis showed that the prophylactic use of NPWT for groin wounds with vascular surgery significantly reduced the incidence of SSIs, revision surgeries and hospital stays [98]. Furthermore, when evaluated for use after spinal surgery, a significant reduction in SSIs was reported [99,100]. An meta-analysis and trial sequential analysis found high-certainty evidence that NPWT is effective in reducing SSI, although this conclusion is general and not specialty-specific and thus should be interpreted with caution [101,102]. Evidence supports use of iNPWT in open colorectal surgery and areolar skin grafts with breast reconstruction [103–105]. A study on use of iNPWT on incisions for major trauma fractures showed no significant difference in the rate of deep SSIs as compared to standard dressings [106]. Studies at the Cleveland Clinic showed similar results in high-risk patients following colorectal surgery [107] and sternotomies [108]. Likewise, a meta-analysis reported that NPWT with absorbent dressings was not effective in reducing the risk of developing an SSI in adult cancer patients compared with standard care [91].

INFRARED THERMOGRAPHY

Infrared thermography is a rapid point-of-care technique for assessing skin temperature that may provide early warning of infection. It has proved effective in the early detection of inflammation in pressure-injury formation [112,113] alongside subepidermal moisture detection devices [114,115]. Studies using infrared thermography suggest periwound infection is indicated by a temperature difference between the periwound skin and normal skin over 1.5–2.2°C [116–118]. However, further studies are required to elucidate the clinical validity of this technology.

FLUORESCENCE IMAGING

Fluorescence imaging is a non-contact, point-of-care method to detect and identify bacteria in the wound bed and periwound skin [119]. The hand-held device visualises red or cyan fluorescence from bacteria metabolites.

A study of 350 patients with wounds of multiple diagnoses compared the diagnostic accuracy of fluorescence imaging with CSSs. Fluorescence imaging significantly increased the detection of bacteria fourfold over CSSs, providing information that influenced wound bed preparation and antimicrobial therapy [120].

A similar study on 138 patients with diabetic foot ulcers found that 89.1% had bacterial loads greater than 104 CFU/g tissue, although most of the patients had no CSSs of infection [121].

Another study reported that fluorescence imaging improved the sensitivity of bacterial detection 11-fold compared to CSSs alone, and sensitivity improved if the clinician was highly experienced in the use of the device [122].

Fluorescence imaging provides a more objective and equitable indicator of contamination than traditional visual assessment and palpation alone. The use of fluorescence imaging to detect bacterial load and track its location can result in improved interventions, informing appropriate wound cleansing and debriding techniques, as well as the use of topical antimicrobial therapies [123]. It can also help reduce the overuse of systemic antibiotics, which may lower antibiotic resistance [124].

NEAR-INFRARED SPECTROSCOPY

Near-infrared spectroscopy (NIRS) is used to determine the oxygenation status of tissue by measuring the absorption of near-infrared light (650–1100 nm) by haemoglobin. It can accurately measure the St02 tissue haemoglobin index, perfusion index and tissue water index [125–127].

Currently used in other disciplines, such as plastic surgery [128] and oncology [129-131], this technology shows promise as a diagnostic tool in wound care. Spectral imaging allows a clinician to visualise microcirculation related to wound healing and can further assist in the assessment and diagnosis of underlying aetiologies. NIRS can be beneficial in monitoring hypoperfusion, inflammation and venous congestion of the wound and periwound tissue as indicators of how treatment and healing are progressing [132].

DIGITAL SURVEILLANCE TOOLS

Digital telehealth tools have been shown to be beneficial in post-operative surveillance for SSIs, especially in remote or under-served communities [83,133–136]. A digital remote wound surveillance service was piloted in the Tracking Wound Infection With Smartphone Technology (TWIST) randomised control trial, evaluating its readiness for implementation [137].

The authors reported 83% usage by the 223 patients enrolled in the smartphone arm, and 99.4% of the images received were of sufficient quality to provide a degree of clinical insight. However, the quality of communication was rated low [137]. Effective implementation of remote post-operative assessment with photographs requires up-to-date tools, participant training and some mechanism to verify image quality [138].

Telehealth and remote self-reporting Patients can be encouraged to use the Bluebelle Wound Healing Questionnaire (WHQ) to self-report wound status without having to return to the clinic or have a home health visit [139]. The questionnaire consists of 16 items: eight regarding CSSs and eight regarding interventions. CSSs are rated on a scale of 0–3, and interventions are reported as 'Yes' or 'No'. Further adaptations of the WHQ have been reported for global research and practice (TALON-1) study, including translations [140].

EDUCATION

Successful surveillance of surgical sites requires adequately specific and thorough education of healthcare providers, patients and caregivers.

Provider education should include the importance of identifying patients at risk for SWCs, how to identify that risk and how to customise pre- and post-operative care to minimise that risk [7]. It should also cover how to distinguish different types of SWC, including SSI and SWD. The International Surgical Wound Complications Advisory Panel (ISWCAP) provides extensive information for providers on caring for people with surgical wounds.

Provider education should clarify the definition of SWD, emphasising that a dehisced wound is not necessarily infected.

For example, the minor dehiscence created on the removal of a suture abscess (Figure 5) would not equate to an SSI.

CARE PLAN AND GOALS

A key factor in determining post-operative follow-up is the goals set in the patient's care plan based on the following factors:

- Patient discharge destination (home, skilled nursing facility, acute rehabilitation)
- Who will be providing post-surgical care (patient, family member, caregiver, home health personnel)

• Patient access to follow-up care (remote, rural, local, metropolitan).

CONCLUSIONS

SWCs, including SSI and SWD, are unwanted outcomes after surgery. However, the incidence, duration, and severity of SWCs can be reduced through diligent post-operative incision care. Post-operative care includes patient-centred care goals that incorporate the importance of incision and skin care when the patient is discharged from the hospital.

This guideline has provided recommendations based on current evidence and best practices in relation to incision care. While there is a growing body of evidence for several topics within this document, recommendations are based upon a synthesis of research and clinical expertise to provide a living guideline for real-world application. Research continues in the areas of advanced wound dressings, antimicrobials, antibacterial agents and new technologies, such as fluorescent imaging and near-infrared devices.

Further advances in effective post-operative monitoring will be essential for early detection and resolution of SWCs.

This guideline is designed for implementation across most surgical disciplines and can be used to inform post-operative incision care decisions in a team environment. The guideline is applicable to all healthcare settings, from hospitals and pharmacies to home and residential care. As a living guideline, this document will be regularly updated by the International Surgical Wound Complications Advisory Panel (ISWCAP) to incorporate new and emerging evidence that enables evidence-based practice for post-operative incisional care.

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