

# **Incision care and dressing selection in surgical wounds:** Findings from a series of international meetings

This report summarises the findings from 6 international consensus meetings held across different geographical regions between July 2019 and August 2022. The original reports summarised the findings from an international meeting of surgeons in London, as well as meetings of surgeons in Northern Europe, Eastern Europe, the Asia-Pacific region, Middle East and Africa. This summary report is supported by Mölnlycke Healthcare.

# Incision care and dressing selection in surgical wounds: Findings from a series of international meetings

This report summarises the findings from 6 international consensus meetings held across different geographical regions between July 2019 and August 2022. The original reports summarised the findings from an international meeting of surgeons in London, as well as meetings of surgeons in Northern Europe, Eastern Europe, the Asia-Pacific region, Middle East and Africa. This summary report is supported by Mölnlycke Healthcare.

The aim of these meetings was to examine post-surgical care and dressing selection for surgical incisions closed with primary intention among surgeons working in different geographical regions, for Class I procedures only (CDC, 2016). The consensus panels differed in each region but each one had the same overall aims and objectives:

- To clarify global views on incision care and dressing selection in surgical wounds
- To discuss key areas and reach consensus on recommendations
- To discuss findings raised in the previous international reports and agree on the properties of the 'ideal' dressing in managing post-surgical incision wounds.

While there were some geographical variations in best practice, there were broad areas of agreement in the aims when treating incisional wounds.

### The importance of dressing selection in surgical wounds

Post-operative wounds may be susceptible to infection and associated complications, and advanced wound dressings play a vital role in protecting the wound during the healing process and in preventing surgical wound complications (SWCs) (WUWHS, 2016).

The term SWCs is a broad term that incorporates specific diagnoses such as surgical wound dehiscence, surgical site infection (SSI), hypergranulation, peri-wound maceration, scarring and medical adhesive-related skin injury (MARSJ; Box 1; Sandy-Hodgetts et al, 2020).

Surgical site infections are among the most common SWC and healthcare-associated infections (HAIs) globally (ECDC, 2016). The burden of SSIs in the EU/EEA was estimated at

#### Box 1. Surgical wound complication (Sandy-Hodgetts et al, 2020)

The term 'surgical wound complication' is an umbrella term that encompasses more specific diagnoses, such as surgical site infection (SSI), surgical wound dehiscence (SWD), hypergranulation, periwound maceration, scarring and medical adhesive-related skin injury (MARSJ).

over half a million cases annually, based on data from the European Centre for Disease Prevention and Control (ECDC, 2013). Across Europe, the overall percentage of SSIs varies from 0.5% to 9.0% depending on the type of surgical procedure – e.g. abdominoplasty in people with obesity has an infection rate of over 30%, and complicated limb traumas requiring surgery have an infection rate of up to 50% (ECDC, 2018).

Currently, SSI prevalence may be underestimated, as post-discharge surveillance programmes are sporadic and in some cases absent (Rochon et al 2020; Sandy-Hodgetts et al 2022; Fletcher et al 2022). Moreover, standardised methodologies for surveillance that are consistent in definitions, methodology and data capture that allow for pooling of data are in its infancy, hence a deficit in the known burden of this type of wound outside of the acute care setting. Therefore, the true rate of SSI and SWD may be underreported (WUWHS, 2018).

SSIs are often associated with longer post-operative hospital stays, may necessitate additional surgical procedures, may require intensive care, and can result in higher cost and higher attributable morbidity and mortality (Cassini et al, 2016; Baida et al, 2017; Totty et al, 2021).

Successful outcomes for patients following

*A full list of authors and contributors can be found on page 5*

surgery are multi-factorial, with dressing selection and post-operative care protocols a key part of the patient's surgical journey. All clinicians involved in the care of surgical incision wounds should focus on reducing the risk of infection and associated complications (Sandy-Hodgetts et al, 2017; 2018; Morgan-Jones et al, 2019). The international groups reached consensus around best practice in caring for incisional wounds and selecting products according to the patient's needs.

### Properties of the ideal dressing

In the meetings, the surgeons reflected on their practice and discussed dressing selection and local protocols in their care settings following surgery.

Dressing selection plays a key role in post-surgical incision care (WUWHS, 2016). The purpose of a wound dressing for post-surgical incisions is to absorb and retain any leakage, provide ideal conditions for healing and protect the area until the wound is healed.

There is considerable discourse regarding the efficacy of wound dressings for prevention of SSI (Dumville et al, 2016; WHO, 2016; Sandy-Hodgetts, 2017). Protection of the incision site is of key importance, particularly in managing the risk of SSI and SWD. More importantly, for improved patient wellbeing and outcomes, is the ability to create an optimal wound healing environment.

Following a Class I procedure where risk of SSI may be low or negligible, the use of a cover dressing with the following properties is ideal:

- Prevents wound contamination
- Maintains a moist wound environment
- Minimises risk of skin damage (e.g. blistering)
- Does not disturb patient mobilisation
- Stays in place for as long as possible, until sutures or staples are removed.

For moderate risk cases, following surgery where a longer post-operative hospital stay is required, a dedicated wound dressing that absorbs and retains large volumes of fluid and exudate, allows visibility of the skin was proposed, as it can reduce dressing change frequency and enable surgeons to observe the surrounding area, leaving the dressing in situ.

The first international consensus reported six key requirements of an 'ideal' dressing in managing post-surgical incisions (Morgan-Jones et al, 2019):

- Flexible (not impede the patient's movement), providing elasticity to avoid pulling the skin or blistering (e.g. particularly over knee joints)
- Well fixed to the skin on application, even if the wound has been disinfected shortly before
- Absorbent, able to handle exudate
- Skin protective (e.g. reduce the risk of

blistering or irritation, not excessively adhesive)

- Waterproof: providing a good seal/barrier function and enabling the patient to shower
- Eliminate dead space where necessary.

The Asia-Pacific and Northern European panels discussed additional requirements for patient comfort and usage (Morgan-Jones et al, 2021a; 2021b). The Asia-Pacific panel discussed the potential for an additional consideration – transparency of dressing borders – to allow the surrounding skin to be visualised (Morgan-Jones et al, 2022). However, there was some debate as to whether there is a benefit to the wound being visible (i.e. through the use of a transparent dressing pad). It was generally agreed that for some very low-exuding wounds this might be relevant; however, it was also stated that some patients may become more anxious if they are able to see the wound.

The Middle East panel added two new characteristics – to reduce the risk of complications (e.g. infection and dehiscence) and for the dressing to be cost-effective. Additionally, the African panel suggested that the dressing should be as small as possible while being suitable for the size of the patient's wound; if a large dressing is placed over a wound, the patient will assume their wound is relatively large in size and may be more anxious than necessary about their wound.

### Dressing wear time

Dressing wear time among the groups varied; however, they all agreed that the wound status, surgery type and patient cooperation levels can influence dressing wear time. It was also agreed that it is important to choose a dressing that can manage exudate and afford extended wear time wherever possible.

The standard dressing wear time for surgical sites varied among the panels based on the surgery type, local protocol and clinician choice (Box 2). However, what remained constant was the importance of consistency and standardisation in care. Regardless of the specific protocol for dressing changes, it is vital that the protocol is followed by all staff and that it is individualised for the person at the centre of care.

### Undisturbed wound healing

A great deal of dressing change protocol can be dependent on routine, habit and a 'ritualistic' approach, which has been recognised as a wider issue in wound care (Berg et al, 2019). This means that, instead of dressing change being carried out when it is

#### Box 2. Suggestions for dressing wear time following surgery, demonstrating differences in local protocols and clinician preferences

- Until stitches are removed
- 14 days
- 7 days
- 4 days
- Until the patient is discharged, usually 2–4 days
- 48 hours
- Depends on individual patient's infection risk
- Only when the dressing is saturated or infection is suspected; otherwise there is no advantage to changing
- Use glue rather than dressing in a healthy patient with a clean wound, leaving the wound uncovered

### Box 3. Concept of undisturbed wound healing

The concept of undisturbed wound covers specific domains:

- Reduction of tissue trauma and pain during dressing change
- Reduction of dressing changes where indicated to reduce patient anticipatory stress and anxiety
- Protecting the wound to provide an optimal healing environment with minimal disturbance to the wound bed
- Optimisation of ECM and periwound skin
- Improved quality of life for the patient (Brindle and Farmer, 2019)

clinically necessary, dressings may be changed at a particular, predetermined time – not because the dressing necessarily needs to be changed, but because ‘this is when we always do it’. This blanket approach means that the individual requirements of the patient and wound are not taken into consideration, and it may be that the wound is unnecessarily disturbed by dressing change, and healing is therefore impeded (Berg et al, 2019).

Across the groups, it was agreed that UWH is an important topic that requires increased consideration in incision care. While UWH has been practiced sporadically over the years, it is gaining much more attention and is now widely referred to in the clinical management of all wounds. In acute wounds such as surgical incisions, protection from contamination is a key factor, which makes UWH of particular relevance (WUWHS, 2016).

The potential benefits of UWH depend on the individual patient and their circumstances. However, in appropriate patients, longer wear time can result in a range of benefits such as (Brindle and Farmer, 2019):

- Healing is optimised if the wound remains undisturbed (unless there is a specific reason to do so)
- Risk of contamination and potential infection is reduced
- Further potential benefits, such as savings in cost and clinician time.

While specific timeframes for dressing change – and therefore the selection of appropriate dressings – vary depending on local protocol and individual clinician choice, it was agreed that a change in mindset is required when approaching incision care, giving increased consideration to the concept of UWH.

There are, of course, cases when promoting UWH is not suitable; fluid leakage, strikethrough or dressing saturation are reasons to change the wound dressing (Morgan-Jones et al, 2019). Potential indicators that dressing change is necessary (or preferred) include:

- Saturation of the wound dressing
- Dressing leakage
- Excessive bleeding
- Suspected local/systemic infection (e.g. local wound pain, redness, swelling)
- Potential dehiscence or wound edge deterioration
- Loss of adherence of the dressing (i.e. the dressing is peeling off).

### Region-specific considerations

There are some region-specific considerations

in dressing selection and wound healing, including factors around the dressing or cultural considerations. For example, in some humid/tropical climates, waterproof dressings are very important. Patients travelling long distances can also be an issue in dressing selection and change frequency. It is important that patients can be confident they have the information and resources they need when they are far from the hospital.

Patient optimisation before and after surgery utilising the Enhanced Recovery After Surgery (ERAS) protocols is used in some areas, which include post-surgery dressing requirements (ERAS Society, 2016). While it is not universally embedded in clinical practice, early adopters have seen improved outcomes (Gustafsson et al, 2013; Kaye et al, 2019).

It was agreed that good pre-operative assessment can generally improve outcomes and the WHO surgical checklist (WHO, 2020) is also used in some settings. It was agreed that using checklists and ensuring that a specific staff member takes responsibility for checklists, and that senior staff are vigilant in standard-setting, can have a positive effect.

It is also important to note that product availability across differing geographic regions can present issues for dressing choices in clinical management, as not all dressings are widely available in all care settings. Cost is also a consideration.

### Summary and key points

Post-incisional care can vary according to region based on healthcare systems. Incision care should focus on reducing the risk of infection and associated complications, and that care should be optimised prior to surgery where possible.

Dressing selection should be carried out according to local protocol, with special consideration given to the wound status, surgery type and individual circumstances, such as patient cooperation levels. The groups agreed that incision care is an area with specific dressing needs as outlined by the ‘ideal’ dressing requirements.

It was agreed that selecting ‘the right dressing for the right patient’ is essential in surgical incision wounds and that dressings should be left for as long as possible as the principles of UWH are important and necessary for wound healing to progress.

Dressing change ‘ritualism’ has been identified as a wider issue in wound care, and this particularly applies to post-surgical incision wounds, where pre-set schedules may be in place regardless of individual clinical need.

Although post-incisional care may vary across different geographical regions, the groups agreed that consistent care and standardisation across care settings; individual optimisation pre-, peri- and post-surgery; education and training of staff; and access to the surgical team are vital to improving outcomes for people with incisional wounds.

To improve outcomes for incision care, an appropriate dressing needs to be selected that meets the requirements discussed, and to ensure that dressings are changed only when clinically necessary, rather than in a 'ritualistic' way, promoting UWH.

WINT

## References

- Baida et al (2017) Impact of surgical site infection on healthcare costs and patient outcomes: a systematic review in six European countries. *J Hosp Infect* 96(1): 1-15
- Berg L et al (2019) Meeting report: promoting wound healing by optimising dressing change frequency. *Wounds International* 10(3): 44-51
- Brindle T, Farmer P (2019) Undisturbed wound healing. *Wounds International* 10(2): 40-8
- Cassini A et al (2016) Burden of six healthcare-associated infections on European population health. *PLoS Med* 13(10): e1002150
- CDC (2016) Surgical site infection (SSI) event
- Dumville JC et al (2016) Dressing for the prevention of surgical site infection. *Cochrane Database Syst Rev* 12: CD003091
- ERAS Society (2016) Enhanced Recovery After Surgery
- ECDC (2013) Observed prevalence of HAIs with 95% confidence intervals and predicted prevalence of HAI in acute care hospitals based on patient case-mix and hospital characteristics, by country, ECDC PPS 2011-2012
- ECDC (2018) Annual epidemiological report for 2016
- Fletcher J et al (2022) SSI Surveillance: Promoting a seamless patient journey from surgery to community. *Wounds UK*
- Gustafsson UO et al (2013) Guidelines for perioperative care in elective colonic surgery. *World J Surg* 37: 259-84
- Kaye A et al (2019) Enhanced recovery pathways in orthopaedic surgery. *J Anaesthesiol Clin Pharmacol* 35: S35-9
- Morgan-Jones R et al (2019) Incision care and dressing selection in surgical wounds. *Wounds International*
- Morgan-Jones R et al (2021a) Incision care and dressing selection in surgical wounds: Findings from an international meeting in the APAC region. *Wounds International*
- Morgan-Jones R et al (2021b) Incision care and dressing selection in surgical incisions wounds: Findings from an international meeting of surgeons from Northern Europe. *Wounds International*
- Rochon M et al (2020) Implementing enhanced patient education for surgical site infection prevention in cardiac surgery. *BJN* 29(17)
- Sandy-Hodgetts K et al (2017) Top ten tips: Management of surgical wound dehiscence. *Wounds International* 8(1): 11-5
- Sandy-Hodgetts K et al (2018) Surgical wound dehiscence: a conceptual framework for patient assessment (2018) *JWC* 27(3): 119-26
- Sandy-Hodgetts K et al (2020) International Best Practice Recommendations for the early identification and prevention of surgical wound complications. *Wounds International*
- Sandy-Hodgetts et al (2022) Optimising prevention of surgical wound complications: Detection, diagnosis, surveillance and prediction. *Wounds International*
- Totty JP (2021) The impact of surgical site infection on hospitalisation, treatment costs, and health-related quality of life after vascular surgery. *Int Wound J* 18(3):261-8
- World Health Organization (2016) SSI prevention
- World Health Organization (2020) Safe surgery
- World Union of Wound Healing Societies (2016) Closed surgical incision management: Understanding the role of NPWT. *Wounds International*

## Authors:

**Kylie Sandy-Hodgetts (Co-chair)**, ISWCAP President, Australia  
**Rhidian Morgan-Jones (Co-chair)**, Consultant Orthopaedic Surgeon, Cardiff Knee Clinic, University Hospital Llandough, Cardiff, UK

## Contributors:

**Mohamed Muath Adi (Co-chair)**, Consultant Orthopaedic Surgeon, Abu Dhabi, United Arab Emirates  
**Adesoji Ademuyiwa**, Professor of Surgery (Paediatric and Surgical Epidemiology), University of Lagos; Honorary Consultant and Chief, Lagos University Teaching Hospital, Lagos, Nigeria  
**Ali Al Belooshi**, Consultant Orthopaedic Surgeon, Mediclinic, United Arab Emirates  
**Saed Al Habib**, Consultant Plastic Surgeon, Saudi Arabia  
**Salem Al Nuaimi**, Consultant Orthopaedic Surgeon, Zayed Military Hospital, Abu Dhabi, United Arab Emirates  
**Jonas Andersen**, Orthopaedic Consultant, Steno Diabetes Center Copenhagen, Denmark  
**Peter Awang**, Specialist General Surgeon, Bokamoso Private Hospital, Gaborone, Botswana  
**Hasan Aziz**, Plastic Surgeon, Kuwait  
**Georges Balenda**, General Surgeon, Louis Pasteur Hospital Medical Centre, Pretoria, South Africa  
**Prof Tomasz Banasiewicz**, Head of Department of General Endocrine Surgery and Gastrointestinal Oncology, Poznań University of Medical Sciences, Poznań, Poland  
**Michael Bishay**, Consultant Orthopaedic Surgeon, Royal United Hospital, Bath, UK  
**Pål Borgen**, Orthopaedic Surgeon, Martina Hansens Hospital, Sandvåg, Norway  
**Li Cao**, Orthopaedic Surgeon, First affiliated Hospital of Xinjiang Medical University, China

**Timo Clasen**, Consultant in Visceral Surgery and Wound Care Specialist, Agaplesion Deiakonieklinikum in Rotenburg/Wuemme, Germany  
**Cai Daozhang**, Doctor of Sport Medicine, Third Affiliated Hospital of Southern Medical University, China  
**Dr Ján Debre**, Head Orthopaedic Surgeon, Šumperk Hospital, Šumperk, Czech Republic  
**Dr Radek Dolezel**, General and Oncology Surgeon, Charles University and Military University Hospital, Prague, Czech Republic  
**Dr Tibor Gunther**, Chief Surgeon, Trauma and Orthopaedic Department, Petz Aladar University Hospital, Győr, Hungary  
**José A. Hernández-Hermoso**, Chairman of Orthopaedic Surgery and Traumatology, Germans Trias i Pujol University Hospital, Barcelona, Spain; Associate Professor UAB  
**Lee Sung Hyun**, Orthopaedic Surgeon, Wonkwang University, Iksan Hospital, Korea  
**Nils Irsigler**, Plastic and Reconstructive Surgeon, Zuid-Afrikaans Hospital, Pretoria, South Africa  
**Ahmed Khazbak**, Plastic Surgeon, Ministry of Health and Prevention, United Arab Emirates  
**Tay Boon Keng**, Orthopaedic Surgeon, Singapore General Hospital, Singapore  
**Junjiro Kobayashi**, Cardiovascular Surgeon, National Cerebral and Cardiovascular Center, Osaka, Japan  
**Colin M Krüger**, Chief Oncologic Surgeon & Robotic Surgery Specialist, Ruedersdorf b. Berlin, Germany  
**John C. Lantis**, Vice Chairman of the Department of Surgery, Chief of Vascular and Endovascular Surgery, Director of Surgical Clinical Research, Professor of Surgery at the Icahn School of Medicine, Mount Sinai West, New York City, New York, USA  
**Christiaan Andre Loubser**, Consultant, Busamed Bram Fischer International Airport Hospital, Bloemfontein, South Africa  
**Niveshni Maistry**, Paediatric Surgical Registrar, Nelson Mandela's

Children's Hospital, Johannesburg, South Africa  
**James Murray**, AOC, Southmead Hospital, University of Bristol and Knee Specialists Bristol, UK  
**Bhushan Nariani**, Orthopaedic Surgeon, BL Kapur Super Speciality Hospital, India  
**Liezi Naude**, Clinical Nurse Specialist and Founder, Eloquent Learning Health, Pretoria, South Africa  
**Neford Oendo Ongaro**, Orthopaedic Surgeon, NEFRIS, Eldoret, Kenya  
**Jorma Pajamaki**, Senior Orthopaedic Specialist, Pihlajalinn Group, Finland  
**Dr Örs Pécsi**, Trauma and Orthopaedic Surgeon, Erzsébet Kórház, Budapest, Hungary  
**Antonio Pellegrini**, Consultant Orthopaedic Surgeon, IRCCS Istituto Ortopedico Galeazzi, Centre for Reconstructive Surgery and Osteoarticular Infection, Milan, Italy  
**Dr Antoni Szczepanik**, General and Oncology Surgeon, Department of General, Oncological, Gastroenterological and Transplant Surgery, Jagiellonian University Medical College, Krakow, Poland  
**Samih Tarabichi**, Consultant Orthopaedic Surgeon and Chairman, Tarabichi Centre of Joint Surgery, Alzahra Hospital, Dubai  
**Gulnaz Tariq**, WUWHS President, United Arab Emirates  
**Mazen Tayeb**, Arthroplasty Hip and Knee Surgeon at Security Forces Hospital, Saudi Arabia  
**Zhavandre Van der Merwe**, Advanced Wound Care Specialist, 4 Wounds Wound Care Practice, Pretoria, South Africa  
**Prof Maciej Wilczak**, Director, Department of Mother's and Child's Health, Gynecology and Obstetrics University Hospital, Poznań University of Medical Sciences, Poznań, Poland  
**Christian Willy**, Professor of Surgery and Head of Department, Trauma & Orthopaedic Surgery, Septic & Reconstructive Surgery, Research and Treatment Centre for Complex Combat Injuries, Wound Centre (ICW e.V.), Military Hospital Berlin, Germany