

Policy
Compliance
Procedure



Health
Hunter New England
Local Health District

Preoperative procedures for the prevention of surgical site and implanted device infections

Sites where PCP applies	All HNE Health facilities where surgical , IV device and all implantable procedures are performed
This PCP applies to:	
1. Adults	Yes
2. Children up to 16 years	Yes
3. Neonates – less than 29 days	No
Target audience	Surgeons, Anaesthetists, Pre-procedural clinics, Nurses & Midwives caring for surgical patients, Nephrology Services, HNE Imaging
Description	Proper pre-procedure controls reduces the risk of post procedure and device associated infection

[Go to Procedure](#)

Keywords	Skin disinfection, Surgery, Infection Prevention, Surgical Site Infection, Urinary Tract Infection, Chlorhexidine, urine culture, Portacath, Permacath, haemodialysis, pre-op wash, SSI, MRSA, MSSA
This PCP relates to NSW Ministry of Health Policy Directive	NSW Health PD2017_013 Infection Prevention and Control Policy
PCP number	PD2017_013:PCP 33
Replaces existing document?	Yes
Document number and dates of superseded document/s	GNAH_0110, JHH_0094, JHH_0093, JHH_0091, JHH_0095, JHH_0092
Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:	
See Reference Section at end of this document.	
Tier 2 Director responsible for Policy to which the PCP relates. PCP authorised by	Elizabeth Grist, Executive Director Nursing and Midwifery Service
PCP contact person and Network or Service etc. responsible for the PCP	Dr John Ferguson, Director Infection Prevention Service
Contact details	HNELHD-InfectionControl@hnehealth.nsw.gov.au
Date authorised	8 October 2020
This document contains advice on therapeutics	Yes Approval gained from HNE Quality Use of Medicines Committee on 24 August 2020
Issue date	8 October 2020
Review date	8 October 2023

Note: Over time links in this document may cease working. Where this occurs please source the document in the PPG Directory at: <http://ppg.hne.health.nsw.gov.au/>

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PURPOSE AND RISKS

Surgical site infection (SSI) and procedure-associated infections are associated with increased morbidity and mortality and other negative impacts on patient physical and mental health. They contribute to a substantial financial burden to the health system due increased length of stay, the need for return to surgery, increased nursing care and hospital readmission.

Patients known to carry MSSA or MRSA are at a higher risk of developing a serious SSI. Screening of patients for MSSA or MRSA nasal colonisation is indicated prior to certain types of major surgery so that staphylococcal load reduction can take place to reduce the risk of postoperative infection.

Modifiable risk factors that may predispose a patient to a post procedure infection should be considered prior to all procedures. This PCP provides guidance on best practice requirements for peri-procedure/surgical care in order to reduce complications due to infection.

Any unplanned event resulting in, or with the potential for, injury, damage or other loss to patients/staff/visitors as a result of this procedure must be reported through the Incident Information Management System and managed in accordance with the [PD2020_020 Incident Management Policy](#). This would include unintended injury that results in disability, death or prolonged hospital stay.

Risk Category: Clinical Care & Patient Safety

GLOSSARY

Acronym or Term	Definition
Chlorhexidine	Chlorhexidine gluconate is a broad spectrum topical antiseptic with action against gram negative and positive bacteria. It provides immediate and residual action in reducing the postoperative infection risk.
MRSA	Methicillin-resistant <i>Staphylococcus aureus</i> – these strains are resistant to nearly all betalactams and for systemic infection or prophylaxis, a glycopeptide (vancomycin or teicoplanin) is required.
MSSA	Methicillin-susceptible <i>Staphylococcus aureus</i> – these strains are susceptible also to flucloxacillin.
Surgical Site Infection (SSI)	Post-operative infection, defined as either superficial or deep (includes organ or organ-space infections). The surveillance criteria come from the CDC (USA) ¹ which is reflected in NSW and national definitions. For superficial infections, infection must manifest by 30 days post operatively. For deep infections related to certain types of surgery, this time interval moves out to 90 days (see appendix 1).
Antibiotic prophylaxis (surgical)	Refers to the prevention of infectious complications by administering an effective antimicrobial agent prior to exposure to contamination during surgery. Prophylaxis must be administered with enough time (generally 15-30 minutes) before incision to achieve effective plasma and tissue concentrations at time of incision.
Negative Pressure Wound Therapy (NPWT)	Refers to disposable dressings that are prescribed to promote wound healing of surgical, complex and high risk wounds in clients who have been appropriately assessed. They provide sub atmospheric pressure to incision lines and shallow/deep wound beds while removing excess exudate, reducing peri-wound oedema, promoting granulation and splinting of the surgical wound.
Open surgery	Surgical procedures performed by making an incision large enough to expose the entire operative area are called “open” surgeries, as opposed to more minimally invasive surgeries such as those performed laparoscopically
TRUS biopsy	Trans-rectal ultrasound guided biopsy

PROCEDURE

Compliance with this PCP is mandatory.

1. With the introduction of this PCP, the following procedures are no longer required of HNE Health preoperative services:

- a. The use of antiseptic wash in showering before surgery is to be phased out.

¹ 2020 version - <https://www.cdc.gov/nhsn/pdfs/pscmanual/9pscscssicurrent.pdf>

- i. According to extensive evidence from randomized trials, the use of antimicrobial solution/soap prior to surgical procedures has not been proven to reduce surgical site infections. This is to be replaced with showering with normal soap in most instances.
 - ii. For certain types of procedures (listed below in Section 6), non-rinse 2% aqueous chlorhexidine wash cloths are to be used preoperatively as a more effective measure of skin disinfection.
- b. Preoperative midstream urine cultures from asymptomatic patients are NOT required for most types of procedures (see section 4 below).

2. CJD risk screening: as specified in the [PCP, Management of Creutzfeldt - Jakob disease \(CJD\) risk due to reprocessing of instruments](#), administration of a pre-procedure CJD questionnaire is required prior to posterior eye surgery, ENT surgery within the olfactory region and neurosurgery at John Hunter Hospital (planned or unplanned procedures).

3. Management of patients at high risk for infection

- a. Patients with diabetes should have their glycaemia control assessed and optimized as, good glycemic control markedly reduces the risk of post-operative infections.
 - i. Perform or review HbA1c and capillary glucose measurements.
 - ii. Withhold anti-glycaemia medications that could cause complications : SGLT-2 inhibitors and metformin – refer to [Peri-procedural Management of Glycaemia - JHH](#) for specific actions
 - iii. Contact the Endocrinology Service or the appropriate local physician for advice if required.

For guidance, [Peri-procedural Management of Glycaemia- JHH](#) can be used as a model of practice and requires consideration for local application/endorsement.

- b. Patients who are current smokers should be encouraged and assisted in cessation.

All aspects of smoking history and therapy offered should be recorded on the Nicotine Dependent Care Assessment Form. Please refer to [PD2015_003 PCP 3 MNID and prospective aged care residents.pdf](#)

4. Indications for preoperative screening for *Staphylococcus aureus* (MSSA or MRSA) nasal carriage and preoperative staphylococcal load reduction

- a. Preoperative MSSA/MRSA screening is required for patients undergoing the following procedures:
 - Open cardiac and valve procedures
 - Shoulder, hip or knee joint total arthroplasties: primary or revision procedures
 - Aortic work (stent and open) and all lower limb open surgery for vascular reconstructions (bypass, endarterectomy). Iliac stents (as they are a covered stent)
 - Haemodialysis catheter insertions- refer to [HNELHD GandP 20_06 Renal: Staphylococcus aureus Load Reduction in Dialysis Patients](#)
- b. Collect nasal swab
 - i. Use the blue bacterial transport swab, sample both anterior nostrils with same swab to a depth of 2 cm, rotating the swab against the nasal septum and interior of

the nose for at least 15 seconds.

- c. It is recommended that a pre-printed pathology request screening form be used.
 - i. On the pathology request, specify '**Pre-op. Staph screening**' and include details of the planned procedure.
- d. Patients shown to be nasal MSSA and MRSA carriers preoperatively are to undergo staphylococcal load reduction over the 5 days prior to the procedure².
 - i. For emergency procedures, the process can commence as soon as practicable and if necessary continued post-operatively to make up the 5 days. There are two instruction sheets- one for staff and one for patients. Links are provided below.
- e. Carriers of MRSA require addition of teicoplanin for preoperative surgical prophylaxis ([HNELHD CG 14_35 Surgical Antibiotic Prophylaxis](#)).
- f. If a patient who carries MSSA or MRSA is prepared for theatre and then cancelled on the day of surgery;
 - i. The load reduction needs to be repeated prior to the re-scheduled procedure if more than one week has elapsed.
 - ii. Further nasal screening is unnecessary.
- g. For other re-scheduled patients who were initially negative for MSSA/MRSA, repeat nasal screening required if delay of more than one month occurs.
- h. Repeat nasal screening is NOT performed to assess MSSA/MRSA clearance post load reduction.
- i. If the purpose of screening is also to 'clear' a patient's MRO carriage status (based on advice from Infection prevention service), then two separately collected sets of clearance swabs are required (consult infection prevention service advice).
 - i. Request is for '**MRO screening**'. Inform facility infection prevention consultant that screening has been initiated so follow up of results is organised.

5. Indications for preoperative mid-stream urine culture³:

- a. Any preoperative patient with symptoms of an acute urinary tract infection (recent onset dysuria and/or loin pain) requires urine culture⁴.
 - i. Symptomatic urinary infection requires treatment PRIOR to surgery.
 - ii. Clearance urine cultures are NOT required post treatment.
- b. Urological patient – require preoperative urine culture regardless of symptoms.

² The load reduction for *S. aureus* relies on use of topical chlorhexidine for skin disinfection and nasal Mupirocin or Octenidine. In order to avoid antiseptic incompatibility, the surgical or procedural skin preparation should be with a Chlorhexidine-containing product rather than iodine.

³ The service, clinic or doctor who organizes the urine culture should arrange to review the result and provide antimicrobial treatment well in advance of the procedure date.

⁴ Urinalysis or the appearance of the urine are NOT indications for urine culture *per se*.

- i. Detection of significant bacteriuria ($> 10^8/L$ of two or less uropathogens) is an indication for short course (5 days) oral antibiotic treatment targeted against the pathogen(s).
 - ii. Rectal swab for multi-resistant (ciprofloxacin-resistant) Gram negative colonization may be required before TRUS biopsy- see [JHH Urology Antibiotic Prophylaxis Guidelines](#) or the locally endorsed adaptation of this guidance. Therapeutic Guidelines: Antibiotic, version 16 (via [CIAP](#)) is also a suitable reference.
 - iii. Preoperative surgical antibiotic prophylaxis agent may need to be altered based on the susceptibility of significant bacterial pathogens cultured from the urine. Consult Infectious Diseases or Clinical Microbiologist on call consultant as required.
- c. Vascular surgery patient – infrarenal procedure involving graft placement – require preoperative urine culture regardless of symptoms.
- i. Detection of significant bacteriuria ($> 10^8/L$ of two or less uropathogens) is an indication for short course (5 days) oral antibiotic treatment targeted against the pathogen(s).

6. Pre-operative and pre-procedure showering

- a. All patients are recommended to shower or be washed with soap and water or bed bath wipe for bed bound patients on the day of surgery and be dressed in freshly laundered gown or clothes.
 - i. Showering can occur at home prior to hospital entry or at the hospital on the morning of surgery according to hospital instruction.
- b. All patient's must be supplied a bed or procedure trolley which has been cleaned and remade with clean linen prior to transfer to the operating theatre.

7. Indications for use of preoperative non-rinse chlorhexidine 2% aqueous skin wipes (Impress oracle purchase number: 832113)

- a. Patients undergoing the following surgeries or procedures (whether elective or emergency) should apply (or have applied by staff) non-rinse 2% chlorhexidine skin wipes on the morning of the day of the procedure after showering (prior to application of the wipes, staff should review the patient for cleanliness of skin).
 - i. Application can be performed at home prior to hospital entry.
- b. Indicated procedures⁵:
 - Open cardiac, aortic, permanent pacemakers, cardiac stents and valve Surgeries
 - Orthopaedic surgery—upper or lower limb hemi and total arthroplasties including emergency procedures
 - Laminectomies and spinal fusions
 - Aortic surgery (stent and open), all lower limb open surgery for vascular reconstructions (bypass, endarterectomy) and iliac stents
 - Central venous access device (CVAD) insertion (e.g. Portacaths, Hickman lines,

⁵ In order to avoid antiseptic incompatibility, the surgical or procedural skin preparation should be with a chlorhexidine-containing product rather than iodine.

Swan-Ganz) – relevant surgery, Paediatric and medical Imaging services

- Insertion of Permacaths or Vascaths for dialysis or other therapy
- c. Refer to procedural fact sheets for non-rinse chlorhexidine 2% aqueous skin wipes via the intranet links provided below.
- i. After application to skin, the solution is allowed to dry and not washed off.
 - ii. Record the preparation on the surgical checklist as “chlorhexidine wash cloth applied”. (Consult infectious disease clinician if allergy to chlorhexidine).
- d. In the absence of available non-rinse wipes, use either MICROSHIELD® 2% Chlorhexidine skin cleanser or Triclosan 1% (PhisoHex).
- i. To be applied during showering on the day of surgery (see instruction sheet).

8. Pre-procedure hair removal

Prior to surgical procedures patients should only have body hair removed if absolutely necessary. In these instances it should be removed only by clipping as close to procedure time as possible. Shaving as a form of pre-operative hair removal is strongly discouraged.

9. Pre-procedure antibiotic prophylaxis when indicated⁶

Prophylaxis must be administered with enough time (generally 15-30 minutes) before incision to achieve effective plasma and tissue concentrations at time of incision. See this guidance [HNELHD CG 14_35 Surgical Antibiotic Prophylaxis](#) or consult Therapeutic Guidelines: Antibiotic, version 16 (via [CIAP](#)).

10. Patients in whom negative pressure wound therapy should be considered:

Identifying patients who are at increased risk of developing a SSI pre-operatively will assist planning to decrease their risk. For patients who meet the following criteria single use disposable NPWT may be considered to promote wound healing i.e.:

- BMI >35.
- History of SSI or wound dehiscence
- Diabetes
- Extended intraoperative procedure time

Patients need to be appropriately assessed pre-operatively and meet the criteria of the specialty to be prescribed in accordance with [HNELHD GandP 17_28 Negative Pressure Wound Therapy Single Use, Disposable Dressings Guideline](#).

Staff Preparation

It is mandatory for staff to follow relevant: “Five moments of hand hygiene”, infection control, moving safely/safe manual handling, documentation practices and to use HAIDET for patient/carer communication: **H**and hygiene **A**cknowledge, **I**ntroduce, **D**uration, **E**xplanation, **T**hank you or closing comment.

⁶ Pre-emptive treatment of established or presumptive preoperative infection, for instance perforated viscus or Orthopaedic trauma patients requires separate consideration.

CONSULTATION

- Infection Prevention Service staff
- Nursing and Midwifery Policy Guidelines Committee
- Patient Safety and Quality
- Public Health
- CYP&F
- Health Share Services
- Children Young People and Families
- Renal Stream
- Facility Managers
- Theatre and CSD Managers
- Surgical Services
- Staff Health & Wellbeing Services
- Cardiac, Orthopaedic, Renal, Obstetric, & Vascular Services
- District Pharmacy Services / DQUMC
- Clinical Nurse Consultant & Nurse Educators District Wide
- Consumer Representative Christina West

IMPLEMENTATION, MONITORING COMPLIANCE AND AUDIT

1. The document will be communicated through the Policy and Procedure Guideline updates and the CE News.
2. The document will be monitored for effectiveness and compliance through investigation of surgical site infections (SSI) ensuring that the guidelines of this policy are referenced. Results of SSI investigations will be tabled at relevant Morbidity and Mortality (M&M) meetings and reported via the Incident information management system (IIMS). Example audit tool within Appendix below.
3. ONLINE RESOURCES
 - [Surgical Site Infection surveillance definitions: staff information](#)
 - [Guidance for collecting MRO screening specimens](#) (HNE Infection Prevention service)
 - [Pre Procedure load reduction -Information for Clinicians](#)
 - [Pre Procedure load reduction for MRSA and MSSA patients: Patient Information](#)
 - [Non-rinse 2% chlorhexidine wash cloth for adults: staff information](#)
 - [Non-rinse 2% chlorhexidine wash cloth application for children: staff information](#)
 - [Non-rinse 2% chlorhexidine wash cloth application: patient information](#)

REFERENCES

1. [PD2017_013_PCP_14_Management_of_Creutzfeldt-Jakob_Disease_\(CJD\)_risk_due_to_reprocessing_of_instruments](#)
2. [JHH_BH_0047: Glycaemic management in patients awaiting elective surgery](#)
3. [HNELHD CG 14_35 Surgical Antibiotic Prophylaxis \(undergoing update June 2020\)](#)
4. [JHH_JHCH_0116: Urology Antibiotic Prophylaxis](#)
5. [NT_LG_001_1701: Urology Antibiotic prophylaxis](#)
6. [PD2017_013:PCP 9 Management of Multi-resistant Organisms \(MROs\) and *Clostridium difficile*](#)
7. Lee B. et al. Should vascular surgery patients be screened preoperatively for methicillin-resistant *Staphylococcus aureus*? [Infect Control Hosp Epidemiol. 2009 Dec;30 \(12\):1158-65. <https://www.ncbi.nlm.nih.gov/pubmed/19852665>](#)
8. [HNELHD GandP 17_28 Negative Pressure Wound Therapy Single Use, Disposable Dressings](#)
9. World Health Organisation: [Global Guidelines for the prevention of surgical site Infections, 2016](#)
10. Karki S, Cheng AC. Impact of non-rinse skin cleansing with Chlorhexidine gluconate on prevention of healthcare-associated infections and colonization with multi-resistant organisms: systematic review [Journal of Hospital Infection 82 \(2012\)71-84.](#)
11. Webster J, Osborne S. Preoperative bathing or showering with skin antiseptics to prevent surgical site infection. [Cochrane Database Syst.Rev 2015 Feb20;2:CD004985](#)
12. Wang C et al. Current evidence does not support systematic antibiotic therapy prior to joint arthroplasty in patients with asymptomatic bacteriuria-a meta analysis. [Int Orthop. 2018 Mar;42\(3\):479-485. <https://www.ncbi.nlm.nih.gov/pubmed/29368046>](#)
13. HNELHD Guideline 18_02 [Morbidity and Mortality \(M&M\) Meetings](#)

FEEDBACK

Any feedback on this document should be sent to the Contact Officer listed on the front page.

APPENDIX 1

SSI Audit tool

Infection Prevention
Issued: December 2019

Surgical site Infection (SSI) bundle audit tool

The data specification table is intended to support standardised provision of collecting SSI surveillance in a consistent method. This protocol will be used with each diagnosed SSI according to CDC criteria for diagnosis and presented to relevant meetings for discussion.

Procedure	Patients MRN	Age	Sex
Data	Response		
Procedure			
Wound class	Clean	Clean/contaminated	Contaminated
Time in surgery	Time started	Time finished	Total time
Operating Surgeon			
Load reduction for 5 days	MRSA/MSSA	Yes	N/A
Was Pre-op wash attended/ type?	Yes / No	If yes Type:	Not documented
Hair removal	Yes / No Clip	If Yes Shave / Clip	
Documented Pre-identified risk factors Hba1c prior to OT BMI ASA	Yes / No	Circle • Diabetes (type) • Previous wound infection • Other (MRO) OT • Smoking	
Type of infection	Deep	Superficial	According to criteria
UTI prior to surgery	Yes / No	If yes specify-	
Type of surgery	Planned (elective)	Emergency	
AB prophylaxis used-name.	Yes / No	Used but not within the time frame	Re dosed after 3 hrs
AB post op. Doses.		How long was the course -	
Skin prep-intraoperative	Betadine Chlorhexidine/alcohol Betadine/alcohol	Other -	
Wound therapy applied post-operative. How long? Dressing type.			
Mode for diagnosis of wound infection	SSI prior to D/C	Superficial SSI (30 days)	Deep wound infection
Infection detected	During Admission	Readmission	Readmission to other facility

