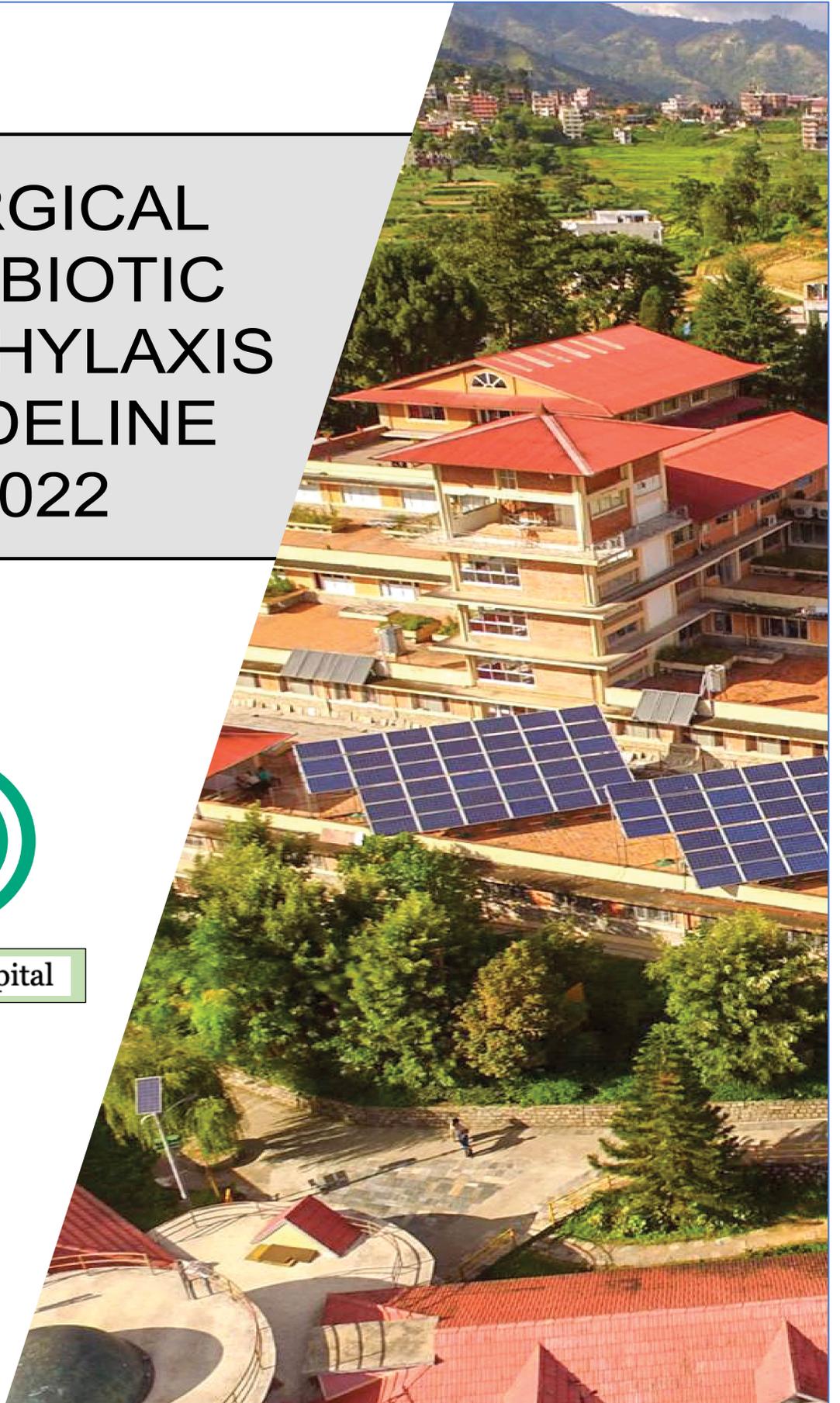


SURGICAL ANTIBIOTIC PROPHYLAXIS GUIDELINE 2022



Dhulikhel Hospital



Surgical Antibiotic Prophylaxis Guideline

Surgical Antibiotic

P r o p h y l a x i s G u i d e l i n e

Approved By	Administrative Director, Dhulikhel Hospital
Date Approved	25th December 2022
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Surgical Antibiotic Prophylaxis Guideline

Forward

Surgical antibiotic prophylaxis consists of a brief course of antibiotics initiated preoperatively in order to decrease the risk of postoperative wound infections in the surgical patients.

The purpose of surgical antibiotic prophylaxis guideline is to help the health care providers to adhere to the best practice in using prophylactic antibiotics to surgical site infection in hospital.

The use of the guideline will also ensure the uniformity of practice in infection control in the hospital. I am confident that the judicious use of antibiotic as per the guideline will decrease the infection rate in the surgical patients and reduce the financial burden to the surgical patients and to the hospital.

Finally, I would like to convey my sincere thanks to the infection control team for their persistent effort and dedication in producing the guideline for prophylaxis use of antibiotics in controlling infection in hospital.

Thank you!

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Surgical Antibiotic Prophylaxis Guideline

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Surgical Antibiotic Prophylaxis Guideline

Surgical Antibiotic Prophylaxis Guideline

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Surgical Antibiotic Prophylaxis Guideline

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Department of gastrointestinal and general surgery, urosurgery, neurosurgery, cardiothoracic and vascular surgery

Department of orthopedics and traumatology

Department of obstetrics and gynecology

Department of Ear, nose, throat (ENT), head and neck surgery

Department of ophthalmology

Department of oral and maxillofacial surgery

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IPC Team, 2022

Surgical Antibiotic Prophylaxis Guideline

TABLE OF CONTENTS

<u>Content</u>	<u>Page No.</u>
FORWARD	
ACKNOWLEDGEMENTS	
INTRODUCTION	
GUIDELINE STATEMENT	
ROLES AND RESPONSIBILITIES	
POLICY REQUIREMENTS	
IMPLEMENTATION AND MONITORING	
ABBREVIATIONS	
REFERENCES	
APPENDICES	
• APPENDIX 1: BREAST PROCEDURES / ABDOMINAL PROCEDURES (INCLUDING SPLENECTOMY) / HERNIORRHAPY / INSERTION OF INFUSAPORT / CLEAN EXCISION PROCEDURE	
• APPENDIX 2: CARDIOTHORACIC AND VASCULAR SURGERY (CTVS)	
• APPENDIX 3: UROLOGICAL PROCEDURES	
• APPENDIX 4: GASTROINTESTINAL SURGERY	
• APPENDIX 5: NEUROSURGICAL PROCEDURES	
• APPENDIX 6: EAR, NOSE, THROAT (ENT), HEAD AND NECK SURGERY	
• APPENDIX 7: ORTHOPEDIC SURGERY (JOINT REPLACEMENT)	
• APPENDIX 8: ORTHOPEDIC SURGERY (NON-JOINT REPLACEMENT)	
• APPENDIX 9: OBSTETRICS AND GYNAECOLOGICAL SURGERY	
• APPENDIX 10: OPHTHALMOLOGY SURGERY	
• APPENDIX 11: ORAL AND MAXILLOFACIAL SURGERY	
• APPENDIX 12: PREVENTION OF ENDOCARDITIS OR INFECTION OF PROSTHETIC IMPLANTS OR GRAFTS	

1. Introduction

Surgical antimicrobial prophylaxis refers to the use of antibiotics for the prevention of surgical site infections. Effective use of antibiotics to prevent infection is essential to reduce risks associated with surgical procedures. Efforts need to be made to maximize the quality of surgical antimicrobial prophylaxis prescribing.¹

The key elements of appropriate surgical antibiotic prophylaxis prescribing include the correct indication, right antibiotic, drug dose, route, timing of administration and duration.¹

2. Guideline Statement

Surgical antibiotic prophylaxis (SAP) is an integral part of surgical procedures to prevent the surgical site infections and improve the post-operative recovery process. This guideline has been formulated by the infection control committee at Dhulikhel hospital to aid the medical personnel with up-to-date information on proper antibiotic use, dosing, risks, contraindications, and post-operative care for the commonly performed surgical procedures at the institution mainly referring to the Australian guidelines.²

3. Role and Responsibilities

The SAP guideline applies to surgery performed in Dhulikhel hospital and all its outreach centers.

3.1 Infection control committee head is responsible for:

- ensuring clinicians have access to this guideline
- ensuring adequate resources are available to implement this guideline and the trainings are conducted as required
- maintaining effective mechanism for review of implementation of this guideline within the hospital

3.2 Infection control committee is responsible for:

- provision of governance over the use of prophylactic antibiotic agents in surgery
- collaborating with concerned departments for development, implementation, and update of surgical guidelines
- providing leadership for the training of clinical staff at Dhulikhel hospital on SAP administration

3.3 Prescribers are responsible for:

- safe and appropriate prescribing according to the general principles of SAP administration
- ensuring antibiotic administration within appropriate time frames as specified SAP guideline
- prescribing according to the appropriate surgical prophylaxis guideline
- where prescribing is not compliant with guidelines, properly documenting on the patient file
- ensuring patient and their caretakers get the proper information on their SAP prior to surgery

3.4 Pharmacists are responsible for:

- timely supply of antibiotic used in SAP guideline and their accountability

- safe, appropriate, and timely advice to prescribers and nurses with regards to the selection, dose, route, duration, and monitoring of antibiotic used in surgical prophylaxis

3.5 Nurses are responsible for:

- be up to date with the current SAP guideline and assist the prescribers to access the guideline
- ensuring safe and timely administration of prescribed antibiotic used in SAP guideline
- provision of department wise audit in relation to monitoring of antibiotic use as per the guideline
- assisting patients and caretakers to obtain information and understanding of their antibiotic therapy

4. Policy Requirements

4.1 Background

The surgical site infection (SSI) rate in Dhulikhel Hospital is 2.6% which is the lower than other centers in Nepal and places the hospital's infection control standards closer to the European Hospitals.³ To maintain and further improve the SSI rates, a hospital-wide guideline on surgical antibiotic prophylaxis is necessary and this guideline on SAP thus aims to standardize the prescription of SAP across all the surgical departments.

4.2 Recommendations

Antibiotic prophylaxis should be considered where there is a clear indication, a risk of postoperative infection, or if postoperative infection will have serious consequences.⁴

In general, antibiotic prophylaxis is indicated in all procedures in the categories of “clean-contaminated”, “contaminated” or “dirty”. Prophylaxis for “clean” procedures is not generally indicated unless specific risk factors or circumstances that are associated with greater risk exist for example, patients of immunosuppressive states, diabetes mellitus, malignancies, prosthesis in-situ.

The recommended antibiotic prophylaxis regimens for specific surgical procedures, along with alternatives for patients with a high risk of penicillin/cephalosporin allergy, are available in appendices 1 to 12.

4.2.1 General Principles

Consider individual risk factors for every patient – In selected cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

4.2.2 Drug Administration

IV bolus: should be administered no more than 60 minutes prior to skin incision.⁴ Administration outside of this time frame reduces effectiveness.⁵

IV infusion: start one hour before skin incision. This ensures adequate concentration at the time of incision and allows for any potential infusion-related toxicity to be recognized before induction.²

4.2.3 Methicillin-resistant *Staphylococcus aureus* (MRSA) Risk

When MRSA colonization is suspected (inpatient of unit with high risk of MRSA) for more than the last five days, OR MRSA infection is present, add Vancomycin.

4.2.4 Administration of vancomycin

Vancomycin 1g (1.5g for patients >80kg actual body weight) is administered by IV infusion started 30 minutes to 2 hours prior to skin incision. It should be given at a rate of 1g per hour (1.5g over 90 minutes).

Note: infusion can be completed after skin incision.

4.2.5 Administration of Clindamycin

Clindamycin 600mg (child: 15mg/kg up to 600mg) is administered by IV infusion over at least two hours just before the operation. For prolonged procedures, repeat four hourly intra-operatively.

4.2.6 Administration of Gentamicin

Dosing should be based on ideal body weight, provided that ideal body weight is less than the actual body weight.

4.2.7 Repeat Doses

A single pre-operative dose is enough for most of the procedures, however, for the following scenarios, repeat dosing is advisable:

- Prolonged surgery: More than four hours from the time of the first pre-operative dose when a short-acting agent is used (e.g., cefazolin).
- If major blood loss occurs, following fluid resuscitation. Major blood loss can be defined as follows:⁶
 - (i) blood loss exceeding circulating blood volume within a 24-hour period,
 - (ii) blood loss of 50% of circulating blood volume within a 3-hour period,
 - (iii) blood loss exceeding 150 ml/min, or
 - (iv) blood loss that necessitates plasma and platelet transfusion

When measuring the time to a second intraoperative dose, the interval from the time of the first preoperative dose rather than the surgical incision time should be used.

4.2.8 Obese patients

Consider increased dose of cefazolin (3g) if patient is obese (>120kg)

Consider increased dose of vancomycin (1.5g) for adult patients weighing more than 80kg

5. Classification of surgical wounds

Surgical procedures can be classified according to the level of microbial contamination routinely associated with that procedure and can be used to determine the need for, or choice of, antibiotic prophylaxis (see table 1 below). In general, antibiotic prophylaxis is indicated in all procedures in the categories of “clean-contaminated”, “contaminated” or “dirty”. Prophylaxis for “clean” procedures is not generally indicated unless specific risk factors or circumstances that are associated with greater risk or consequence of infectious complications exist.

Table 1: Classification of surgical wounds as defined by the CDC⁷

Classification of surgical wound	Criteria
Clean	Uninfected operative wounds in which no inflammation is encountered and the respiratory, gastrointestinal, genital or urinary tracts are not entered (and no break in aseptic technique). Clean wounds are primarily closed and, if necessary, drained with closed drainage. Operative incisional wounds that follow non-penetrating (blunt) trauma should be included in this category if they meet the criteria.
Clean-contaminated	Operative wounds in which the respiratory, gastrointestinal, genital (including female and male reproductive tracts), or urinary tracts are entered under controlled conditions and without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided no evidence of infection or major break in technique is encountered.
Contaminated	Major breaks in sterile technique (e.g. open cardiac massage), gross spillage from the gastrointestinal tract, or the incision encounters acute, non-purulent inflammation (including necrotic tissue without evidence of purulent discharge). Open, fresh or accidental wounds are also included in this category.

Dirty (or infected)	Existing clinical infection or perforated viscera, as well as old traumatic wounds with retained devitalized tissue. This definition suggests that the organisms causing postoperative infection were present before the operation. In these cases, antibiotic treatment in addition to prophylaxis is required.
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CDC = Centers for Disease Control and Prevention

6. Implementation and Monitoring

The infection control committee will coordinate the actions in response to the results of audits of antibiotic use in surgical prophylaxis. The results of annual audits should be reported to head of infection control committee along with a plan for continuous improvement. The guideline will be revised and updated annually by infection control team.

7. Abbreviations

CDC = Centers for Disease Control and Prevention

IV = Intravenous

MRSA = Methicillin-resistant *Staphylococcus aureus*

SAP = Surgical antibiotic prophylaxis

SSI = Surgical site infection

8. References

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9. Appendices

Appendix 1	Breast procedures / Abdominal procedures (including Splenectomy) / Herniorrhaphy / Insertion of infusaport / Clean excision procedures
Appendix 2	Cardiothoracic and Vascular Surgery (CTVS)
Appendix 3	Urological Procedures
Appendix 4	Gastrointestinal Surgery
Appendix 5	Neurosurgical Procedures
Appendix 6	Ear, Nose, Throat (ENT), Head and Neck Surgery
Appendix 7	Orthopedic Surgery (Joint Replacement)
Appendix 8	Orthopedic Surgery (Not-Joint Replacement)
Appendix 9	Obstetrics and Gynecology Surgery
Appendix 10	Ophthalmologic Surgery
Appendix 11	Oral and Maxillofacial Surgery
Appendix 12	Prevention of Endocarditis or Infection of Prosthetic Implants or Grafts

Surgical Antibiotic Prophylaxis Guideline

Appendix 1: Breast procedures / Abdominal procedures (including Splenectomy) / Herniorrhaphy / Insertion of infusaport / Clean excision procedure

PRE-OPERATIVE CONSIDERATIONS

Consider individual risk factors for every patient – In select cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

RECOMMENDED PRACTICE

Refer Section 3.2

RECOMMENDED PROPHYLAXIS^{1,2}

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
<p>Uncomplicated clean procedures (diagnostic excisional biopsy, stand-alone sentinel node biopsy, excision of scar tissue, lumpectomy (with or without needle or wire localization))</p> <p>Clean excision procedures</p>	Prophylaxis NOT recommended.	
<p>Breast Clean contaminated procedures (microdochectomy, mastectomy, reconstruction (incl. implants), reduction, sentinel node biopsy, re-operative surgery <6wks prior.</p>	<p>Cefazolin 2g IV (child: 30mg/kg up to 2g) OR Cefuroxime 1.5g IV</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
<p>Complicated clean-contaminated procedures</p> <p>(prosthetic breast reconstruction surgery, prosthetic implant, autologous breast reconstruction surgery, breast augmentation surgery)</p>	<p>Cefazolin 2g IV OR Cefuroxime 1.5g IV</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)</p> <p>POST-OPERATIVE: For breast reconstruction or augmentation surgery, a further 2 doses of cefazolin (8 hours apart) can be considered</p>	<p>vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</p> <p>POST-OPERATIVE: For breast reconstruction or augmentation surgery, a single additional vancomycin dose 12 hour after the first dose can be considered</p>
<p>Abdominal Procedures involving viscera (e.g., appendectomy, division of adhesions, resection)</p>	<p>Metronidazole 500mg IV infusion (child: 12.5 mg/kg), PLUS, either, Cefazolin 2g IV (child: 30mg/kg up to 2g) OR Cefuroxime 1.5g IV OR Gentamicin 2mg/kg IV</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Metronidazole 500mg IV infusion (child: 12.5 mg/kg), PLUS, Gentamicin 2mg/kg IV</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>
<p>Abdominal Procedures not involving viscera (e.g., abdominoplasty)</p>	<p>Cefazolin 2g IV (child: 30mg/kg up to 2g) OR Cefuroxime 1.5gm IV</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual</p>	<p>Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
	body weight)	
Splenectomy (Vaccination and post-splenectomy antibiotic prophylaxis is required in all the cases)	Cefazolin 2g IV (child: 30mg/kg up to 2g) OR Cefuroxime 1.5g IV <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)	Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)
Other Insertion of infusaport/other devices	Cefazolin 2g IV (child: 30mg/kg up to 2g) OR Cefuroxime 1.5g IV <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)	Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)

POST-OPERATIVE CARE

Post-operative antibiotics are NOT advised unless an infection is confirmed or suspected apart from the conditions mentioned above.

If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS

IV = Intravenous

MRSA = Methicillin-resistant *Staphylococcus aureus*

REFERENCES

1. Surgical Antimicrobial Prophylaxis Prescribing Guideline South Australian Health, v.3.0, 2021. Available from: <https://www.sahealth.sa.gov.au/connect/policies> (Last accessed on 25 Aug 2022).
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Surgical Antibiotic Prophylaxis Guideline

Appendix 2: Cardiothoracic and Vascular Surgery (CTVS)

PRE-OPERATIVE CONSIDERATIONS

Consider individual risk factors for every patient – In select cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

Local epidemiology - modify prophylaxis if there is a high local incidence of specific infections.

RECOMMENDED PRACTICE

Refer Section 3.2

RECOMMENDED PROPHYLAXIS¹

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Coronary Artery Bypass Surgery (CABG) Cardiac Valve Surgery	Cefazolin 2g IV OR Cefuroxime 1.5g IV Give Cefazolin 2g IV 8-hourly for another 2 doses commencing 8 hours after the first dose <i>High risk of MRSA infection:</i> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)	Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) PLUS gentamicin 5mg/kg IV (single dose only – do not give postoperative dose) Check kidney function first – if CrCl > 40 mL/min, give 1 additional dose of vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) 12 hours after the first dose
Postoperative doses can be considered for all cardiac procedures for up to		

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
	24 hours	
Atrial Septal Defect (ASD) closure, Patent Foramen Ovale (PFO) closure, Left Atrial Appendage Closure Valvuloplasty, septal occlusion for high risk patients only (e.g. femoral catheter > 6hrs, prosthetic valves, past history of endocarditis)	Cefazolin 2g IV OR Cefuroxime 1.5g IV PLUS Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)	Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) PLUS Gentamicin 5mg/kg IV
Radio-frequency Ablation (RFA) for varicose veins	Prophylaxis is NOT recommended.	
RFA for varicose veins and venous ulcer Peripheral bypass for peripheral arterial disease Arterio-venous (AV) fistula creation	Cefazolin 2g IV OR Cefuroxime 1.5g IV <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)	Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight), may repeat 12 hours after initial dose
Vascular Reconstruction	Cefazolin 2g IV (child: 30mg/kg up to 2g) repeated 8-hourly for two further doses post-operatively OR Cefuroxime 1.5g IV <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)	Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight), may repeat 12 hours after initial dose
AV fistula revision or AV fistula with insertion of prosthetic material (e.g., Dacron graft)	Cefazolin 2g IV OR Cefuroxime 1.5g IV	Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
	<p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)</p>	
<p>Amputation of ischemic limb</p>	<p>Cefazolin 2g IV (child: 30mg/kg up to 2g) repeated 8-hourly for two further doses post-operatively OR Cefuroxime 1.5g IV PLUS, Metronidazole 500mg IV infusion (child: 12.5 mg/kg up to 500mg) repeated 12 hours after initial dose</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)</p>	<p>Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight), repeated 12 hours after initial dose PLUS, Metronidazole 500mg IV infusion (child: 12.5 mg/kg up to 500mg) repeated 12 hours after initial dose</p>
<p>Lobectomy / Pneumonectomy / Bullectomy / Peripheral bypass for peripheral arterial disease</p>	<p>Cefazolin 2g IV OR Cefuroxime 1.5g IV <i>If anaerobic cover required (empyema or abscess) then ADD:</i> Metronidazole 500mg IV infusion THEN Metronidazole 500mg IV infusion for 1 more dose commencing 12 hours after the initial dose</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)</p>	<p>Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) THEN Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) for 1 more dose commencing 12 hours after the initial dose <i>If anaerobic cover required (empyema or abscess) then</i> ADD Metronidazole 500mg IV infusion THEN Metronidazole 500mg IV</p>

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
		infusion for 1 more dose commencing 12 hours after the initial dose
Decortication/ Pleurectomy	Cefazolin 2g IV OR Cefuroxime 1.5g IV <i>If anaerobic coverage is needed ADD:</i> Metronidazole 500mg IV infusion (child: 12.5 mg/kg) <i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)	Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight) <i>If anaerobic coverage is needed ADD:</i> Metronidazole 500mg IV infusion (child: 12.5 mg/kg)
Procedures involving insertion of prosthetic material Procedures associated with an increased risk of infection, including video-assisted thoracoscopic surgery (VATS), aneurysm repair, thromboendarterectomy, vein bypass, mediastinoscopy	Cefazolin 2g IV OR Cefuroxime 1.5g IV <i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)	Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)

POST-OPERATIVE CARE

Post-operative antibiotics are NOT advised unless an infection is confirmed or suspected apart from the conditions mentioned above.

If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS/DEFINITIONS

ASD = Atrial Septal Defect

AV = Arterio-venous

CABG = Coronary Artery Bypass Surgery

CTVS = Cardiothoracic and Vascular Surgery

IV = Intravenous

MRSA = Methicillin-resistant *Staphylococcus aureus*

PFO = Patent foramen ovale

RFA = Radio-frequency ablation

VATS = Video-assisted thoracoscopic surgery

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1. Surgical Antimicrobial Prophylaxis Prescribing Guideline South Australian Health, v.3.0, 2021. Available from: <https://www.sahealth.sa.gov.au/connect/policies> (Last accessed on 25 Aug 2022).

Surgical Antibiotic Prophylaxis Guideline

Appendix 3: Urological Procedures

PRE-OPERATIVE CONSIDERATIONS

Consider individual risk factors for every patient – In selected cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

Pre-operative urine screening – Urinary tract infections (UTIs) should be excluded or treated prior to surgery wherever possible. If surgery is urgent in the presence of confirmed infection or bacteriuria, use gentamicin 3mg/kg IV as a single preoperative dose. Higher doses may be required if systemic symptoms are present.

RECOMMENDED PRACTICE

The common organisms encountered are *Escherichia coli*, *Proteus mirabilis*, *Klebsiella spp.*, *Enterococcus spp.*
Refer Section 3.2

RECOMMENDED PROPHYLAXIS¹

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
<p>Clean procedures Open or laparoscopic urological procedure in when urinary tract not entered (e.g., vasectomy, scrotal surgery, varicocele ligation) and prosthetic material is not implanted Extracorporeal shock-wave lithotripsy</p> <p>Urodynamic studies</p> <p>Diagnostic cystoscopy without manipulation of urinary tract</p>	Prophylaxis is NOT recommended.	

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
<p>Open/laparoscopic procedures when: > urinary tract entered > urinary tract not entered but:</p> <ul style="list-style-type: none"> • patient is at risk of postoperative infection (e.g., urinary tract obstruction/ abnormalities) • prosthetic material is inserted OR, • bacteriuria cannot be excluded <p>Open Prostatectomy</p>	<p>Cefazolin 2g IV OR Cefuroxime 1.5g IV</p> <p>PLUS, Gentamicin 2mg/kg IV (adults and children) <u>If risk of entry into bowel lumen, then ADD:</u> Metronidazole 500mg IV infusion (child: 12.5 mg/kg)</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight) PLUS, Gentamicin 2mg/kg IV (adults and children)</p> <p><u>If risk of entry into bowel lumen, then ADD:</u> Metronidazole 500mg IV infusion (child: 12.5 mg/kg),</p>
<p>Endoscopic procedures</p> <ul style="list-style-type: none"> ➤ Calculi removal ➤ Extracorporeal Shock Wave Lithotripsy (ESWL) - only if high risk of infection ➤ Specific risk for postoperative infection 	<p>Cefazolin 2g IV OR Cefuroxime 1.5g IV</p> <p><u>Known urinary MRSA colonization:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Gentamicin 2mg/kg IV (adults and children)</p> <p><u>Known urinary MRSA colonization:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>
<p>Removal of calculi Transurethral resection of prostate (TURP) Stent Insertion Ureterscopy/instrumentation of upper tract (including retrograde pyelogram)</p>	<p>Gentamicin 2mg/kg IV (adults and children) OR <i>(if gentamicin is contraindicated)</i> Cefazolin 2g IV (child: 30mg/kg up to 2g) OR Cefuroxime 1.5gm IV</p> <p><u>Known urinary MRSA colonization:</u></p>	<p>Gentamicin 2mg/kg IV (adults and children)</p> <p><i>OR (if gentamicin is contraindicated)</i> Trimethoprim 300mg PO 1 hour prior to insertion</p>

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
	ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)	
Transperineal prostatic biopsy	Cefazolin 2g IV OR Cefuroxime 1.5g IV <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)	Gentamycin 2mg/kg IV PLUS Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)
Transrectal prostatic biopsy	Ciprofloxacin 500mg IV as a single dose	

POST-OPERATIVE CARE

Post-operative antibiotics are NOT advised unless an infection is confirmed or suspected apart from the conditions mentioned above.

If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS/DEFINITIONS

ESWL: = Extracorporeal Shock Wave Lithotripsy

IV = Intravenous

MRSA = Methicillin-resistant *Staphylococcus aureus*

PO = Per oral

TURP = Transurethral resection of prostate

UTI = Urinary Tract Infection

REFERENCES

1. Surgical Antimicrobial Prophylaxis Prescribing Guideline South Australian Health, v.3.0, 2021. Available from: <https://www.sahealth.sa.gov.au/connect/policies> (Last accessed on 25 Aug 2022).

Surgical Antibiotic Prophylaxis Guideline

Appendix 4: Gastrointestinal Surgery

PRE-OPERATIVE CONSIDERATIONS

Consider individual risk factors for every patient – In select cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

For patients with cardiac conditions refer to **Antibiotic Prophylaxis Guidelines for Prevention of Endocarditis** for further information.

RECOMMENDED PRACTICE

The common organism encountered are *Escherichia coli*, *Proteus mirabilis*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *MRSA*.

Refer Section 3.2

RECOMMENDED PROPHYLAXIS¹

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Hernia repair with or without mesh insertion Transabdominal Preperitoneal (TAPP) inguinal hernia repair	Cefazolin 2g IV OR Cefuroxime 1.5g IV If entry into the bowel lumen is expected: ADD Metronidazole 500mg IV infusion <i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)	Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) OR If entry into the bowel lumen is expected give INSTEAD: Metronidazole 500mg IV infusion PLUS Gentamicin 2mg/kg IV

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
<p>Gastrointestinal and esophageal Non-endoscopic procedures that enter the GI tract OR Non-endoscopic procedures that do not enter the GI lumen but patient has risk factors for postoperative infection</p>	<p>Cefazolin 2g IV infusion OR Cefuroxime 1.5g IV</p> <p><i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)</p>	<p>Gentamicin 2mg/kg IV ^ PLUS Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</p>
<p>Small intestinal Non-endoscopic small intestinal procedures</p>	<p>Cefazolin 2g IV infusion OR Cefuroxime 1.5g IV</p> <p>If the small intestine is obstructed: ADD metronidazole 500mg IV infusion</p> <p><i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)</p>	<p>Gentamicin 2mg/kg IV PLUS Metronidazole 500mg IV infusion</p> <p>High risk of MRSA infection: Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</p>
<p>Colorectal Non-endoscopic colorectal procedures (e.g. colon resection, revision of anastomosis)</p> <p>Stoma</p>	<p>Cefazolin 2g IV infusion OR Cefuroxime 1.5g IV PLUS Metronidazole 500mg IV infusion</p> <p><i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)</p>	<p>Gentamicin 2mg/kg IV ^ PLUS Metronidazole 500mg IV infusion</p> <p>High risk of MRSA infection: Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</p>
<p>Biliary Tract Surgery (including laparoscopic procedures) Open cholecystectomy</p>	<p>Cefazolin 2g IV infusion OR Cefuroxime 1.5g IV</p> <p><i>High risk of MRSA infection:</i></p>	<p>Gentamycin 2mg/kg IV PLUS Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Laparoscopic cholecystectomy if patient has risk factors for postoperative infection (e.g., older than 70 years, diabetes, acute cholecystitis, non-functioning gallbladder)	ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)	
Common bile duct (CBD) exploration	Cefotaxime 2g IV PLUS Metronidazole 500mg IV infusion PLUS Gentamycin 2mg/kg IV	Gentamycin 2mg/kg IV PLUS Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)
Pancreatic Whipple’s procedure, pancreatic necrosectomy, pancreatectomy Liver resection	Cefazolin 2g IV infusion OR Cefuroxime 1.5g IV PLUS Metronidazole 500mg IV infusion <i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)	Gentamycin 2mg/kg IV PLUS Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)

POST-OPERATIVE CARE

Post-operative antibiotics are NOT advised unless an infection is confirmed or suspected apart from the conditions mentioned above.

If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS/DEFINITIONS

CBD = Common Bile Duct

IV = Intravenous

MRSA = Methicillin Resistant *Staphylococcus aureus*

ERCP = Endoscopic Retrograde Cholangiopancreatography

TAPP = Transabdominal Preperitoneal

REFERENCES

1. Surgical Antimicrobial Prophylaxis Prescribing Guideline South Australian Health, v.3.0, 2021. Available from: <https://www.sahealth.sa.gov.au/connect/policies> (Last accessed on 25 Aug 2022).

Surgical Antibiotic Prophylaxis Guideline

Appendix 5: Neurosurgical Procedures

PRE-OPERATIVE CONSIDERATIONS

Consider individual risk factors for every patient – In select cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

For patients with cardiac conditions refer to **Antibiotic Prophylaxis Guidelines for Prevention of Endocarditis** for further information.

RECOMMENDED PRACTICE

The common organism encountered are *Staphylococcus aureus*, *coagulase-negative staphylococci (CoNS)*, *Staphylococcus epidermidis*.

Refer Section 3.2

RECOMMENDED PROPHYLAXIS

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Clean procedures	Prophylaxis NOT recommended	
Craniotomy procedures for closed traumatic head injury Trans-sphenoidal procedures Spinal procedures (laminectomy, microscopic discectomy) External ventricular drain (EVD) placement Microsurgery Ventriculo-peritoneal/ventriculo-atrial shunt placement Procedures involving insertion of prosthetic material Decompressive hemicraniectomy for stroke cases or tumor cases	Flucloxacillin 1g IV OR Cefazolin 2g IV OR Cefuroxime 1.5g IV <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)	Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Re-exploration procedures Burr hole drainage for chronic subdural hemorrhage Peripheral nerve decompression Neuronavigation guided brain biopsy		
All clean contaminated procedures Sub labial resection of pituitary tumor Endoscopic repair of CSF leak Penetrating skull/ spine injuries	Cefuroxime 1.5g IV then Cefuroxime 750mg every 8 hours ADD Metronidazole 500mg IV every 8 hours	Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)

POST-OPERATIVE CARE

Post-operative antibiotics are NOT advised unless an infection is confirmed or suspected apart from the conditions mentioned above.

If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS/DEFINITIONS

CoNS = Coagulase Negative Staphylococci

CSF = Cerebrospinal Fluid

EVD = External Ventricular drain

IV = Intravenous

MRSA = Methicillin-resistant *Staphylococcus aureus*

Surgical Antibiotic Prophylaxis Guideline

Appendix 6: Ear, Nose, Throat (ENT), Head and Neck Surgery

PRE-OPERATIVE CONSIDERATIONS

Consider individual risk factors for every patient – In select cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

For patients with cardiac conditions refer to **Antibiotic Prophylaxis Guideline for Prevention of Endocarditis** for further information.

RECOMMENDED PRACTICE

The common organisms encountered are *Staphylococcus aureus* and *Klebsiella pneumoniae*.

Refer Section 3.2

RECOMMENDED PROPHYLAXIS

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
ENT Surgeries Uncomplicated or minor clean procedures <ul style="list-style-type: none"> • Uncomplicated ear surgery including tympanoplasty (not infected), otoplasty • Uncomplicated nose or sinus surgery 	Prophylaxis is NOT recommended Patients with specific cardiac conditions (e.g. prosthetic heart valve) undergoing these procedures require antibiotic prophylaxis for endocarditis	
Hearing implant procedures including cochlear implant	Cefazolin 2g IV OR Cefuroxime 1.5g IV	Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
ENT Procedures <ul style="list-style-type: none"> • Nose and sinus surgeries including septoplasty and turbinoplasty, endoscopic procedures (microlaryngoscopy, panendoscopy) • Stapedectomy • Tonsillectomy • Adenoidectomy 	Ampicloxacillin 1g IV OR Cefazolin 2g IV <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)	Clindamycin 600mg IV
ENT Procedures Major ear surgery Complex septorhinoplasty Revision sinus surgery	Ampicloxacillin 1g IV OR Cefazolin 2g IV PLUS Metronidazole 500mg IV <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)	
Tympanomastoid surgery Laryngectomy (primary or salvage)	Ampicloxacillin 1g IV OR Cefazolin 2g IV PLUS Metronidazole 500mg IV <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)	Clindamycin 600mg IV PLUS Gentamycin 2mg/kg IV
Head and Neck Surgery Thyroidectomy	Prophylaxis is NOT recommended.	

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Simple lymph node excision (including submandibular lymph node excision) Parotidectomy		
Clean-contaminated procedures Procedures involving insertion of prosthetic material	Cefazolin 2g IV OR Cefuroxime 1.5g IV If insertion through mucosal surfaces: ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight)	Clindamycin 600mg IV
Extensive neck dissection for malignancy Debulking or reconstructive surgery for malignancy	Cefazolin 2g IV OR Cefuroxime 1.5g IV PLUS Metronidazole 500mg IV <i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual weight) POST-OPERATIVE: A further 2 doses of cefazolin (8 hours apart) and 1 dose of metronidazole (12 hours apart) may be considered. Prophylaxis should not extend beyond 24 hours.	Clindamycin 600mg IV PLUS Gentamycin 2mg/kg IV POST-OPERATIVE: A further 2 doses of clindamycin (8 hours apart) may be considered. Prophylaxis should not extend beyond 24 hours.

POST-OPERATIVE CARE

Post-operative antibiotics are NOT advised unless an infection is confirmed or suspected apart from the conditions mentioned above.

If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS/DEFINITIONS

ENT = Ear, Nose, Throat

ESPAL = Endoscopic Sphenopalatine Artery Ligation

FESS = Functional endoscopic sinus surgery

I & D = Incision and Drainage

IV = Intravenous

MRM = Modified Radical Mastoidectomy

MRSA = Methicillin Resistant *Staphylococcus aureus*

Surgical Antibiotic Prophylaxis Guideline

Appendix 7: Orthopedic Surgery (Joint Replacement)

PRE-OPERATIVE CONSIDERATIONS

Consider individual risk factors for every patient – In select cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

RECOMMENDED PRACTICE

Refer Section 3.2

RECOMMENDED PROPHYLAXIS¹

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
<p>Primary Total Hip Replacement (THR)</p> <p>Total Knee Replacement (TKR)</p>	<p>Cefazolin 2g IV</p> <p>Then (postoperative):</p> <p>Cefazolin 2g IV 8-hourly for up to two more doses</p> <p>OR</p> <p>Cefuroxime 1.5g IV</p> <p><i>High risk of MRSA infection:</i></p> <p>ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>
<p>Patients requiring revision / re-operation (joint replacement)</p>	<p>Cefazolin 2g IV</p> <p>OR</p> <p>Cefuroxime 1.5g IV</p> <p>PLUS</p> <p>Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</p>	<p>Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p> <p>THEN (postoperative):</p> <p>Vancomycin 1g IV infusion: single dose given 12 hours after initial dose</p>

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
	THEN (postoperative): Cefazolin 2g IV 8 hourly for a further 2 doses PLUS Vancomycin 1g IV infusion: single dose given 12 hours after initial dose	
	<i>Note: Pre-existing infections (known or suspected)</i> – if present, use appropriate treatment regimen instead of prophylactic regimen for procedure. Doses should be scheduled to allow for re-dosing just prior to skin incision.	
Morcellised allografting at joint replacement	Add approximately 250mg vancomycin to bone cement for first femoral head equivalent, and 500mg for more than one head, and no more than 500mg to graft	
Routine arthroscopic procedures	Prophylaxis is NOT recommended (Unless prosthesis is being inserted or patient is immunocompromised)	

POST-OPERATIVE CARE

Post-operative antibiotics are NOT advised unless an infection is confirmed or suspected apart from the conditions mentioned above.

If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS/DEFINITIONS

THR = Total Hip Replacement

TKR = Total Knee Replacement

IV = Intravenous

MRSA = Methicillin-resistant *Staphylococcus aureus*

REFERENCES

1. Surgical Antimicrobial Prophylaxis Prescribing Guideline South Australian Health, v.3.0, 2021. Available from: <https://www.sahealth.sa.gov.au/connect/policies> (Last accessed on 25 Aug 2022).

Surgical Antibiotic Prophylaxis Guideline

Appendix 8: Orthopedic Surgery (Non-joint Replacement)

PRE-OPERATIVE CONSIDERATIONS

Consider individual risk factors for every patient – In select cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

RECOMMENDED PRACTICE

The common organism encountered are *Staphylococcus aureus*, *Streptococcus*, *E. coli*, *Acinetobacter*, *Psuedomonas*, *MRSA*.

Refer Section 3.2

RECOMMENDED PROPHYLAXIS

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Spinal procedures	Cefazolin 2g IV OR Cefuroxime 1.5g IV <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)	Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)

Surgical Antibiotic Prophylaxis Guideline

<p>Internal fixation of fractures of large bones Procedures involving insertion of prosthetic of allograft material Other (closed) internal fixation</p>	<p>Cefazolin 2g IV OR Cefuroxime 1.5g IV</p> <p><i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</p>
<p>Lower limb amputation</p>	<p>Cefazolin 2g IV If limb is ischemic: OR Cefuroxime 1.5g IV</p> <p>ADD Metronidazole 500mg IV infusion</p> <p><i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</p> <p>PLUS</p> <p>Gentamicin 2mg/kg IV (for procedures likely to continue for longer than 6 hours, consider using a 5mg/kg dose)</p> <p>If limb is ischemic: ADD Metronidazole 500mg IV</p>
<p>Open fractures - debridement + stabilization</p>	<p>Cefuroxime 1.5g IV ADD Gentamycin 160mg OR Crystalline penicillin 1 million unit IV</p> <p><i>High risk of MRSA infection:</i> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</p>

POST-OPERATIVE CARE

Post-operative antibiotics are NOT advised unless an infection is confirmed or suspected apart from the conditions mentioned above.

If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS/DEFINITIONS

ORIF = Open Reduction Internal Fixation

CR = Closed Reduction

IV = Intravenous

MRSA = Methicillin-resistant *Staphylococcus aureus*

REFERENCES

1. Surgical Antimicrobial Prophylaxis Prescribing Guideline South Australian Health, v.3.0, 2021. Available from: <https://www.sahealth.sa.gov.au/connect/policies> (Last accessed on 25 Aug 2022).

Surgical Antibiotic Prophylaxis Guideline

Appendix 9: Obstetrics and gynecology Surgery

PRE-OPERATIVE CONSIDERATIONS

Consider individual risk factors for every patient – In select cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

Before hysterectomy – Screening for and treating bacterial vaginosis (BV) reduces BV-associated cuff infection.

Before surgical termination of pregnancy – Screening for and treating *Chlamydia*, *trachomatis* and BV reduces infectious complications.

Investigate patients for sexually transmitted infections (STIs) if they have symptoms of an STI or before insertion of an intrauterine device or before a transcervical procedure (including surgical termination of pregnancy and hysteroscopy). If the results of investigations are positive, provide appropriate treatment for the STI to reduce the risk of postprocedural infective complications. Ideally treatment should be completed before the procedure.

RECOMMENDED PRACTICE

The common organism encountered are *Escherichia coli* and *Klebsiella*.
Refer Section 3.2

RECOMMENDED PROPHYLAXIS¹

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Gynaecological Procedures Laparoscopic procedures that do not enter the bowel or vagina (diagnostic, tubal sterilization, operative (except for hysterectomy)) Other transcervical procedures (cystoscopy, hysterectomy, IUCD)	Prophylaxis NOT recommended.	

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
insertion, endometrial biopsy, D&C for non-pregnancy indication)		
Hysterectomy Gynaecological laparotomy procedures (omentectomy, oophorectomy) Pelvic organ prolapse procedures Mid-urethral sling procedures Vaginal repair	Cefazolin 2g IV OR Cefuroxime 1.5g IV PLUS Metronidazole 500mg IV infusion <u>High risk of MRSA:</u> Add vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual body weight)	Clindamycin 600mg IV infusion PLUS, Gentamicin 2mg/kg IV <u>High risk of MRSA:</u> Replace Clindamycin with vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual body weight)
Obstetric Procedures Lower Segment Cesarean Section (LSCS (elective or non-elective))	Cefazolin 2g IV OR Cefuroxime 1.5g IV <u>High risk of MRSA:</u> Add cefazolin with vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual body weight)	Clindamycin 600mg IV infusion PLUS, Gentamicin 2mg/kg IV <u>High risk of MRSA:</u> Replace clindamycin with vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual body weight)
Assisted vaginal delivery	Amoxicillin+clavulanate (1+0.2g) IV (as a single dose as soon as possible after assisted vaginal delivery, ideally within 6 hours) <u>Moderate risk penicillin allergy:</u> Cefazolin 2g IV (as a single dose as soon as possible after assisted vaginal delivery, ideally within 6 hours) PLUS metronidazole 500mg IV (as a single dose as soon as possible after assisted vaginal delivery, ideally within 6 hours)	Clindamycin 600mg IV infusion PLUS Gentamicin 2 mg/kg IV

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Surgical termination of pregnancy	Doxycycline 400mg PO as a single dose (1 hour prior to the procedure) OR Azithromycin 1g PO (within 120 minutes before the procedure)	
Prophylaxis for repair of obstetric anal sphincter injuries (including third- or fourth-degree perineal tears)	Cefazolin 2g IV (as early as possible) PLUS Metronidazole 500mg IV infusion (as early as possible) <u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)	Clindamycin 600mg IV infusion (as early as possible)
Post-operative antibiotic therapy is recommended.		

POST-OPERATIVE CARE

Post-operative antibiotics are NOT advised unless an infection is confirmed or suspected apart from the conditions mentioned above.

If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS/DEFINITIONS

BV = Bacterial vaginosis

IUD = Intra-uterine device

IV = Intravenous

LSCS = Lower Segment Cesarean Section

MRSA = Methicillin resistant *Staphylococcus aureus*

PO = Per oral

STIs = Sexually transmitted infections

REFERENCES

1. Surgical Antimicrobial Prophylaxis Prescribing Guideline South Australian Health, v.3.0, 2021. Available from: <https://www.sahealth.sa.gov.au/connect/policies> (Last accessed on 25 Aug 2022).

Surgical Antibiotic Prophylaxis Guideline

Appendix 10: Ophthalmology Surgery

PRE-OPERATIVE CONSIDERATIONS

Consider individual risk factors for every patient – In select cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

RECOMMENDED PRACTICE

Refer Section 3.2

RECOMMENDED PROPHYLAXIS

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
All procedures	Pre-operatively: Immediately prior to surgical incision, apply sterile povidone-iodine 5% swab to conjunctival cul de sac, lid margins and periorbital skin and dry at 5 minutes. In patients with a povidone iodine (Betadine®) allergy, use a sterile product containing chlorhexidine acetate 0.05% for 5 minutes ¹	
Extra-ocular procedures	No strong evidence for IV prophylaxis. For procedures where infection may be present, Moxifloxacin 0.5% eye drops four times a day post-operatively for 7 days. ²	
Anterior intra-ocular procedures	<ul style="list-style-type: none"> • phacoemulsification / lens implant • keratoplasty • trabeculectomy / tube implant • corneal graft 	Intracameral moxifloxacin 0.5% can be a substitute of ceftazidime / cefazolin ^{3,4} Intracameral vancomycin NOT recommended as it carries the risk of haemorrhagic occlusive retinal vasculitis ⁵
Posterior intra-ocular procedures	Ceftazidime 2.25 mg/0.1 mL subconjunctival injection at the end of the procedure	

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
	PLUS, Ofloxacin 0.3% eye drops two hourly post-operatively for one week	
Skin graft	Ciprofloxacin 0.3% Topical OR Ofloxacin 0.3% Topical OR Levofloxacin 0.5% Topical four doses every five minutes PLUS, Tab. Amoxicillin (500mg) + Clavulanate (125mg) PO	
Orbital Procedures that communicate orbit and paranasal sinuses (orbital fracture or orbital decompression)	If implant is used: Soak implant pre-operatively with antimicrobial solution PLUS, Tab. Amoxicillin (500mg) + Clavulanate (125mg) PO	
Lacrimal sac + Nasolacrimal duct	Intraoperative Tab. Amoxicillin (500mg) + Clavulanate (125mg) PO	

POST-OPERATIVE CARE

Post-operative use of topical antibiotics lack strong evidence.² A prolonged course of antibiotic drops or ointment is not advised unless an infection is known or suspected. Immunological defenses may be lowered in patients receiving prolonged topical steroid therapy or who received systemic steroid therapy prior to surgery, which may increase their risk of infection.⁶ Chloramphenicol 0.5% eye drops can be taken four times daily for seven days if postoperative topical antibiotics are deemed required due to an increased risk of infection.² Due to a higher risk of resistance, tobramycin eye drops should only be used in individuals who have chloramphenicol hypersensitivity.² If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS/DEFINITIONS

IV = Intravenous
 MRSA = Methicillin-resistant *Staphylococcus aureus*
 PO = Per oral

REFERENCES

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Surgical Antibiotic Prophylaxis Guideline

Appendix 11: Oral and Maxillofacial Surgery

PRE-OPERATIVE CONSIDERATIONS

Prophylaxis is not indicated for intra-oral procedures: dentoalveolar surgery (extractions, impactions, exposures); minor pathology (soft tissue, cysts).

Consider individual risk factors for every patient – In selected cases of immunosuppressive states, diabetics, allergic conditions, obese patients, prosthesis in-situ, remote infection, malignancies, or other pathologies the requirement of prophylaxis, choice of drug or dose may alter.

Pre-existing infections (known or suspected) – If such infections are present, appropriate treatment regime should be used instead of prophylactic medications for the procedure. Schedule the doses in a way that allows repeat dosing just prior to commencing skin incision.

For patients with cardiac conditions refer to **Antibiotic Prophylaxis Guidelines for Prevention of Endocarditis** for further information.

RECOMMENDED PRACTICE

The common organism encountered are *Staphylococcus*, *Streptococcus*, *Fusobacterium*, *Peptostreptococcus*, *Klebsiella*, *Pseudomonas*, *Porphyromonas*.

Refer Section 3.2

RECOMMENDED PROPHYLAXIS¹

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Procedures involving insertion of dental implants Clean procedures (including dentoalveolar surgery (extractions, impactions, exposures, minor pathology soft tissue, cysts))	Prophylaxis not recommended	
Procedures involving incision through the oral mucosa only Orthognathic surgery	Benzyl penicillin 1.2g IV (child < 12 years: 30mg/kg up to 1.2g) Repeat dose 1-hourly intra-operatively	Clindamycin 600mg IV infusion (child: 15mg/kg up to 600mg)

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
<p>Skin approach procedures (Oral cavity not involved)</p> <ul style="list-style-type: none"> • Temporomandibular joint (arthrocentesis, reconstruction) • Submandibular gland excision/removal • Mandibular reconstruction (without bone graft) 	<p>Cefazolin 2g IV OR Cefuroxime 1.5g IV</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Clindamycin 600mg IV infusion</p>
<p>Skin and oral mucosa approach procedures (oral cavity involved)</p> <ul style="list-style-type: none"> • Orthognathic surgery (temporomandibular joint replacement) • Sublingual gland excision and salivary gland procedures • Intraoral bone grafting procedures • Procedures involving insertion of prosthetic material 	<p>Cefazolin 2g IV OR Cefuroxime 1.5g IV</p> <p>PLUS, Metronidazole 500mg IV infusion</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Clindamycin 600mg IV infusion</p>
<p>Open reduction and internal fixation of mandibular fractures or midfacial fractures (e.g. Le Fort or zygomatic)</p>	<p>Cefazolin 2g IV OR Cefuroxime 1.5g IV</p> <p>PLUS, Metronidazole 500mg IV infusion</p> <p><u>High risk of MRSA infection:</u> ADD Vancomycin 1g IV infusion (1.5g for patients with >80kg actual body weight)</p>	<p>Clindamycin 600mg IV infusion</p>
<p>Postoperative doses can be considered for high risk patients (e.g. fracture in tooth-bearing segment of the mandible, prolonged lag time between injury and surgery, a carious or unhealthy tooth left in</p>		

Surgical Antibiotic Prophylaxis Guideline

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
	the fracture line, inability to surgically restore the mucosal barrier, extensive periodontal disease) but prophylaxis (intravenous or oral) should not continue beyond 24 hours	

POST-OPERATIVE CARE

Post-operative antibiotics are NOT advised unless an infection is confirmed or suspected apart from the conditions mentioned above.

If an infection is suspected, modify the antibiotic treatment based on clinical context and microbiological findings.

ABBREVIATIONS/DEFINITIONS

TMJ = Temporomandibular Joint

IV = Intravenous

ORIF = Open Reduction Internal Fixation

MRSA = Methicillin-resistant *Staphylococcus aureus*

REFERENCES

1. Surgical Antimicrobial Prophylaxis Prescribing Guideline South Australian Health, v.3.0, 2021. Available from: <https://www.sahealth.sa.gov.au/connect/policies> (Last accessed on 25 Aug 2022).

Surgical Antibiotic Prophylaxis Guideline

Appendix 12: Prevention of Endocarditis or Infection of Prosthetic Implants or Grafts

PRE-OPERATIVE CONSIDERATIONS

Antibiotic prophylaxis to prevent endocarditis is **ONLY** recommended for patients with cardiac conditions associated with the **HIGHEST RISK** of adverse outcomes from endocarditis (See Box 1) and only for certain conditions (See Box 2).

Box 1: Cardiac conditions for which antibiotic prophylaxis to prevent endocarditis is recommended

- Prosthetic cardiac valve or prosthetic material used for cardiac valve repair
 - Previous infective endocarditis
 - Cardiac transplantation with the subsequent development of cardiac valvulopathy
 - Rheumatic heart disease in all procedures
 - Congenital heart disease, only if it involves:
 - a) unrepaired cyanotic defects, including palliative shunts and conduits
 - b) completely repaired defects with prosthetic material or devices, whether placed by surgery or catheter intervention, during the first six months after the procedure (after which the prosthetic material is likely to have endothelialized)
- OR
- c) repaired defects with residual defects at, or adjacent to the site of a prosthetic patch or device (which inhibit endothelialisation).



Box 2: Procedures where antibiotic prophylaxis for endocarditis may or may not be required

Prophylaxis ALWAYS REQUIRED	Prophylaxis IS NOT REQUIRED
<p>DENTAL PROCEDURES:</p> <ul style="list-style-type: none"> • tooth extractions • periodontal procedures including surgery, subgingival scaling and root planning • replanting avulsed teeth • other surgical procedures (e.g., implant placement, apicoectomy) <p>RESPIRATORY PROCEDURES:</p> <p>Any invasive procedure involving incision or biopsy of respiratory mucosa, for example:</p> <ul style="list-style-type: none"> • tonsillectomy/ adenoidectomy • surgery involving bronchial, sinus, nasal or middle ear mucosa, including tympanostomy tube insertion. <p>GENITOURINARY AND GASTROINTESTINAL PROCEDURES: Any procedure where antibiotic prophylaxis is indicated for surgical reasons</p> <ul style="list-style-type: none"> • lithotripsy • any genitourinary procedure in the presence of a genitourinary infection unless already treating enterococci (for elective cystoscopy or urinary tract manipulations, obtain a urine culture and treat any bacteruria beforehand) • any gastrointestinal procedure in the presence of an intra- abdominal infection unless already treating enterococci • sclerotherapy for oesophageal varices. <p>OTHER PROCEDURES:</p> <ul style="list-style-type: none"> • Incision and drainage of local abscess: brain, boils and carbuncles, dacryocystitis, epidural, lung, orbital, perirectal, pyogenic liver, tooth, surgical procedures through infected skin. 	<p>DENTAL PROCEDURES:</p> <ul style="list-style-type: none"> • oral examination • infiltration and block local anaesthetic injection • restorative dentistry • supragingival rubber dam clamping and placement of rubber dam • intracanal endodontic procedures • removal of sutures • impressions and construction of dentures • orthodontic bracket placement and adjustment of fixed appliances • application of gels • intraoral radiographs • supragingival plaque removal <p>RESPIRATORY PROCEDURES:</p> <ul style="list-style-type: none"> • endotracheal intubation • rigid or flexible bronchoscopy with or without incision or biopsy <p>GENITOURINARY AND GASTROINTESTINAL PROCEDURES:</p> <ul style="list-style-type: none"> • urethral catheterisation, uterine dilatation and curettage, sterilization procedures, insertion or removal of intrauterine contraceptive device • obstetric procedures • transoesophageal echocardiography • endoscopy (with or without gastrointestinal biopsy including colonoscopy)

Surgical Antibiotic Prophylaxis Guideline

- Percutaneous endoscopic gastrostomy

RECOMMENDED PRACTICE

Refer Section 3.2

RECOMMENDED PROPHYLAXIS¹

Surgical Procedure	Recommended Prophylaxis	*High risk Allergic to beta-lactams
Dental procedures Tonsillectomy Adenoidectomy	Amoxicillin 2g PO (child: 50mg/kg up to 2g) 1 hour prior to the procedure <u>OR if oral administration not possible</u> Amoxicillin 2g IV (child: 50mg/kg up to 2g)	Clindamycin 600mg PO (child: 20mg/kg up to 600mg) 60 to 120 minutes prior to procedure <u>OR if oral administration not possible</u> Clindamycin 600mg IV (child: 20mg/kg up to 600mg)
All other procedures	Amoxicillin 2g IV (child: 50mg/kg up to 2g)	Vancomycin 1g IV infusion (1.5g for patients with more than 80kg actual body weight) (child: 30mg/kg up to 1.5g)

ABBREVIATIONS/DEFINITIONS

IV = Intravenous

MRSA = Methicillin-resistant *Staphylococcus aureus*

PO = Per oral

REFERENCES

1. Surgical Antimicrobial Prophylaxis Prescribing Guideline South Australian Health, v.3.0, 2021. Available from: <https://www.sahealth.sa.gov.au/connect/policies> (Last accessed on 25 Aug 2022).



Antimicrobial Resistance; major threat to health and human development

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