Local Guideline

Health
Hunter New England
Local Health District

Document Number: JHH_JHCH_0116

Urology Antibiotic Prophylaxis

Sites where guideline applies:	John Hunter Hospital & John Hunter Children's Hospital
Target audience:	Clinical staff
Description:	This guideline outlines clinically appropriate antibiotic prophylaxis for urology surgical procedures
This local guideline applies to:	
1. Adults	Yes
2. Children up to 16 years	Yes
3. Neonates – less than 29 days	No Approval gained from the Children Young People and Families Network on April 2017
National Standard:	4
Keywords:	Urology, antibiotic prophylaxis, JHH, JHCH

Hyperlink to Guideline

Replaces Existing Guideline / Procedure:	No
Registration Number(s) and/or name and of Superseded Documents:	

- Relevant or related Documents, Australian Standards, Guidelines etc:
- NSW Health Policy Directive PD 2017_013 Infection Prevention and Control Policy
- NSW Health Policy Directive PD2012_069 Health Care Records - Documentation and Management
- NSW Health Policy Directive PD2013_043 Medication Handling in NSW Public Health Facilities
- HNELHD CG 17_12 Urinary catheterisation for adults – acute and community care
- Therapeutic Guidelines: Antibiotic, Therapeutic Guidelines®, Melbourne, Victoria 2014

Note: Over time, some 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/

Prerequisites:	Nil
Local guideline note :	This document reflects what is currently regarded as safe and appropriate practice. However, in any clinical situation there may be many factors that cannot be covered by a single document and therefore it does not replace the need for the application of clinical judgment in respect to each individual patient. If this document needs to be used outside JHH/JHCH, liaise with the patient's medical officer to ensure the appropriateness of the information contained within the guideline.
Date initial authorisation:	July 2017
Authorised by:	JHH Clinical Quality and Patient Care committee
This local guideline contains advice on	Yes Approval gained from JHH Quality Use of Medicines Committee on

therapeutics	20/7/2017
Contact Person:	Director Infection Prevention Service
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Date Reviewed:	July 2020, June 2018
Review due date:	July 2022
Responsible for review:	Director Infection Prevention Service
Version:	3.0 26 November 2020

RISK STATEMENT

The risk of post-surgical infection and avoidable antimicrobial resistance is significantly decreased by the use of correct choice, dose & duration of antibiotic prophylaxis.

OUTCOMES

1	Clinically appropriate antibiotic prophylaxis for urology surgical procedures

ABBREVIATIONS & GLOSSARY

Abbreviation/Word	Definition
CPE	Carbapenemase-producing *Enterobacteriaceae* – gram-negative species that are meropenem resistant and usually multiresistant
DTC	Drug & Therapeutics Committee
MRSA	Methicillin-resistant *Staphylococcus aureus*
PPG	Policy, Procedure and Guideline directory
QUMC	Quality Use of Medicines Committee
TRUS	Transrectal ultrasound guided (prostate biopsy)
TURP	Transurethral resection of the prostate
UTI	Urinary tract infection
VRE	Vancomycin-resistant enterococcus

Hospital/Service Manager Responsibility

- Ensure that the principles and requirements of this guideline are applied, achieved and sustained.

Line management responsibility

- Ensure that all staff are made aware of their obligations regarding this guideline through staff education.

Employee responsibility

Clinical staff must:

- Comply with the requirements of this guideline.

GUIDELINE

This guideline does not replace the need for the application of clinical judgment in respect to each individual patient.

1. **Patients with symptomatic urinary infection should be treated prior to surgery.** Repeat urine culture to document clearance is unnecessary. However, if antibiotic prophylaxis is required for the later procedure, then the urinary isolate susceptibility should be checked to see that the prophylaxis choice is appropriate (consult Clinical Microbiologist if necessary).
2. **Cystoscopy (low risk/diagnostic procedure including biopsies):** Prophylaxis is NOT recommended and preoperative urine cultures are unnecessary[1].
3. **Preoperative urine cultures should be taken before elective urological procedures that require antibiotic prophylaxis (see Table 1) and for open or laparoscopic procedures.** Symptomatic infections should be treated (refer to point 1 above). Patient results should be reviewed preoperatively to check that the planned antibiotic prophylaxis will cover the cultured urinary isolate and that any symptoms of infection have settled with treatment (consult Clinical Microbiologist if necessary).

   Catheterised patients should have samples collected from a new catheter due to risk of contamination from organisms colonising the collecting system. Refer to HNELHD CG 17_12 Urinary catheterisation for adults – acute and community care
4. **Transurethral resection of the prostate (TURP):** Preoperative prophylaxis is indicated (level A evidence).
5. **Other endoscopic procedures**: Prophylaxis is indicated for percutaneous nephrolithotomy, ureteroscopy or pyeloscopy for ureteric or renal stones, and for endoscopic resection of large or necrotic tumours.
6. **Transrectal prostatic (TRUS) biopsy**: Prophylaxis is indicated to reduce the risk of severe sepsis post-procedure. Prophylaxis failure is more likely to occur if an adequate time between oral antibiotic and the procedure is not observed and/or bacterial resistance to the antibiotic is present in bowel bacteria[2]. In general, ciprofloxacin is preferred to gentamicin in view of superior tissue penetration into prostate.

   NB: If the patient has been treated with ciprofloxacin or norfloxacin in the previous 6 months OR travelled to the Indian subcontinent, Asia or Southern Europe in the previous 12 months, collect a rectal swab for multiresistant gram-negative screening (HNE Health Pathology (North) Lab. request: "**Gram-negative quinolone resistance screen**") and discuss prophylaxis approach with a clinical microbiologist.
7. **Open or laparoscopic procedures**: Prophylaxis is NOT required for patients with sterile urine who are undergoing open or laparoscopic urological procedures. Consider prophylaxis where an immediate operation is required and bacteriuria cannot be excluded or where the patient has risk factors for postoperative infection (eg urinary tract obstruction or abnormalities) or the procedure involves implantation of prosthetic devices.
8. **Postoperative considerations**: Strict maintenance of closed-catheter drainage and early removal of the catheter reduces the incidence of urinary tract infection in patients with a temporary indwelling catheter. Do not continue antibiotic prophylaxis until the urinary catheter is removed—this practice is not supported by evidence and may cause adverse effects.

TABLE 1 Antibiotic Prophylaxis for Urology Procedures

Procedure	**First Line**	**Second Line *(beta-lactam allergy)***
Diagnostic cystoscopy including biopsy	No urine culture or prophylaxis required	
Other endoscopic procedures including TURP (see above for indications)[1]	Cefazolin 2 g (child: 30 mg/kg up to 2 g) IV within 60 minutes (ideally 15 to 30 minutes) before the procedure. If MRSA or *vanB* VRE positive, ADD teicoplanin (adult and child) 10 mg/kg up to 400 mg IV within 60 minutes (ideally 15 to 30 minutes) before the procedure. If *vanA* VRE positive (teicoplanin-resistant strain of VRE), ADD daptomycin (6–8 mg/kg) within 60 minutes (ideally 15 to 30 minutes) before the procedure.	Gentamicin (adult and child) 2 mg/kg IV within 60 minutes (ideally 15 to 30 minutes) before the procedure. **OR** Trimethoprim 300 mg orally 60 minutes before procedure
Open or laparoscopic procedures (if indicated-see above) [3]	Cefazolin 2 g (child: 30 mg/kg up to 2 g) IV within 60 minutes (ideally 15 to 30 minutes) before the procedure. If ileal conduit or rectocele repair, ADD metronidazole 500 mg (child: 12.5 mg/kg up to 500 mg) IV within 60 minutes (ideally 15 to 30 minutes) before the procedure. If VRE colonised, refer to above for recommendations.	Gentamicin (adult and child) 2 mg/kg IV within 60 minutes (ideally 15 to 30 minutes) before the procedure.
TRUS biopsy	Ciprofloxacin 500 mg orally, as a single dose 60–120 minutes prior to the procedure Meropenem should be considered if rectal swab positive for ESBL-producing organisms	Consider submitting rectal swab for quinolone resistance screen if indicated (refer point 6) Consult Clinical Microbiologist with result of rectal swab when indicated. Consider transperineal biopsy if no safe prophylaxis alternative available.

[1] Current regional urinary isolate antibiograms (2017) indicate that 81–95% of *E. coli* were susceptible to cefazolin and 77–84% susceptible to trimethoprim.

TABLE 2 Intravenous Antibiotic Administration Guideline

Agent	Administration guidance
Ciprofloxacin	Give 500 mg **orally**, as a single dose, 60 to 120 minutes before the procedure. Ciprofloxacin has excellent oral bioavailability
Gentamicin	Give within the 60 minutes (ideally 15 to 30 minutes) before surgical incision. Dose as indicated above. Dose according to actual body weight up to maximum of 360 mg. Intravenous dosing may be by slow injection over 5 minutes. *Avoid gentamicin if significant pre-existing conductive hearing or vestibular problem (including past history of Ménière's disease).*
Metronidazole	Give within the 60 minutes (ideally 15 to 30 minutes) before surgical incision. 500 mg IV infusion over 15–30 minutes ending the infusion at the time of induction.
Teicoplanin	Give within the 60 minutes (ideally 15 to 30 minutes) before surgical incision. Give as slow IV injection over 5 minutes.
Vancomycin (to be used only if teicoplanin not available)	15 mg/kg (based on actual body weight) up to 1.5 g infused at a maximum rate of 10 mg/minute to prevent "red man" syndrome. Due to its long infusion time, vancomycin should ideally be commenced between 30 and 120 minutes before surgical incision, ending the infusion 15 to 30 minutes PRIOR to anaesthetic induction. To co-ordinate this, vancomycin infusion must begin when the patient is on the ward. If gentamicin is also indicated, this can be given 15 to 30 minutes before surgical incision.
Daptomycin	Dose 6–8 mg/mg within 60 minutes before surgical incision. Slowly reconstitute 350 mg vial with 7 mL sodium chloride 0.9% or 500 mg vial with 10 mL sodium chloride 0.9%. Do not shake. Allow vial to stand 10 minutes. Slowly remove reconstituted solution (50 mg/mL). Slow bolus over 2 minutes or infuse further diluted solution over 30 minutes. Flush line before and after injection.

Monitoring

Surgical prophylaxis audits by Pharmacy will assess perioperative timeliness, correct agent and correct dose. Reports will be tabled at QUMCs, DTCs & equivalent meetings.

APPENDICES

Nil

REFERENCES

1. **Herr-HW. Should antibiotics be given prior to outpatient cystoscopy? A plea to urologists to practice antibiotic stewardship. Eur Urol. 2014:65(4):839-42.** 2,010 consecutive patients underwent flexible cystoscopy and received no antibiotics immediately before or after cystoscopy. They were followed for 30 d for onset of febrile UTI. Thirty-nine patients (1.9%) developed febrile UTI ≤30 d after cystoscopy. None of the patients was admitted for bacterial sepsis. Study conclusions: Antibacterial therapy before outpatient flexible cystoscopy does not appear necessary in bladder tumor patients who have no clinical signs or symptoms of acute UTI, including asymptomatic bacteriuria. Antibiotic stewardship is the responsibility of all urologists.
2. **Mirmilstein-G and Ferguson-J. Stable post-TRUS biopsy sepsis rates and antibiotic resistance over 5 years in patients from Newcastle, New South Wales. MJA 2015;202(5).** From 2008 to 2012, 4218 males underwent a TRUS-guided prostate biopsy. Of these men, 35 (0.8%) developed bacteraemia The isolate cultured was resistant to at least one of the pre-procedure prophylactic antibiotics given in 13 out of 35 cases.