

## BC Provincial Antimicrobial Clinical Expert Committee (PACE)

### ***Surgical Antibiotic Prophylaxis – Adults (Urology)***

The PACE Committee has undertaken a series of reviews of surgical antibiotic prophylaxis (for adults) in all clinical settings. This series, which begins with the General Principles section, will also be accompanied by an FAQ document, to assist and provide rationale for practitioners on the latest evidence-based guidance.

<b>UROLOGY</b>	
<b>PROCEDURE</b>	<b>RECOMMENDED PROPHYLAXIS</b>
<b>Note: If positive urine culture, institute treatment according to culture and susceptibility results</b>	
<b>Open or laparoscopic procedures:</b> <ul style="list-style-type: none"> <li>entry into urinary tract (including urethroplasty -stricture repair/reconstruction/urethrectomy)</li> </ul>	<b>cefazolin 2 g IV x 1 dose +/- gentamicin 4.5 mg/kg IV x 1 dose</b>
<b>Open or laparoscopic procedures:</b> <ul style="list-style-type: none"> <li>entry into vagina (including vaginal sling / transvaginal tape/ bladder repair/pelvic organ prolapse +/- graft/mesh)</li> </ul> <i>Note: For all procedures above, treat bacterial vaginosis pre-operatively if present. If found incidentally at time of surgery, treat immediately pre-op and for 4 days post-operatively</i>	<b>cefazolin 2 g IV x 1 dose + metronidazole 500 mg IV x 1 dose</b>
<b>Open or laparoscopic procedure with placement of prosthetic material</b> <ul style="list-style-type: none"> <li>penile implant / artificial sphincters</li> </ul>	<b>cefazolin 2 g IV x 1 dose +/- gentamicin 4.5 mg/kg IV x 1 dose</b>
<b>Suprapubic catheter insertion – no risk factors</b>	<b>prophylaxis not routinely indicated</b>
<b>Suprapubic catheter insertion with risk factors:</b> <ul style="list-style-type: none"> <li>recent UTI</li> <li>urethral catheter</li> <li>recent instrumentation</li> <li>multiple failed catheter attempts</li> </ul>	<b>cefazolin 2 g IV x 1 dose</b>
<b>Urodynamic studies – Low risk</b>	<b>prophylaxis not routinely indicated</b>

## UROLOGY

PROCEDURE	RECOMMENDED PROPHYLAXIS
<b>Note: If positive urine culture, institute treatment according to culture and susceptibility results</b>	
<b>Urodynamic studies – High risk</b> <ul style="list-style-type: none"> <li>• neurogenic bladder</li> <li>• bladder outlet obstruction</li> <li>• elevated residual volume</li> <li>• advanced age</li> <li>• immunosuppression/ chronic steroid use</li> <li>• anatomical abnormalities with recent instrumentation</li> <li>• recent antibiotic use (last 6 months)</li> </ul>	<b>co-trimoxazole 800/160 mg PO x 1 dose</b>  Alternative: <b>ciprofloxacin 500 mg PO x 1 dose</b>
<b>Cystoscopy - no risk factors</b>	<b>prophylaxis not routinely indicated</b>
<b>Cystoscopy - risk factors:</b> <ul style="list-style-type: none"> <li>• prolonged indwelling catheter</li> <li>• intermittent catheterization</li> <li>• urinary retention</li> <li>• previous urinary tract infection</li> <li>• neutropenia</li> </ul> <b>Cystourethroscopy with:</b> <ul style="list-style-type: none"> <li>• manipulation / break in mucosal barrier, dilatation, biopsy, fulguration, resection or ureteral instrumentation</li> </ul> <b>Ureteroscopy +/- stent</b>	Oral regimen (give 1-2 h pre-op): <b>ciprofloxacin 500 mg PO x 1 dose</b> or <b>co-trimoxazole 800/160 mg PO x 1 dose</b>  Parenteral regimen: <b>cefazolin 2 g IV x 1 dose</b> or <b>ceftriaxone 1 g IV x 1 dose</b> or <b>gentamicin 4.5 mg/kg IV x 1 dose</b> <i>Note: – consider using a different class of antibiotic if used in the past 3 months</i>
<b>Shock wave lithotripsy- No risk factors</b>	<b>prophylaxis not routinely indicated</b>
<b>Shock wave lithotripsy- Risk factors:</b> <ul style="list-style-type: none"> <li>• large stone burden / proximal stone/stone ≥ 2 cm</li> <li>• associated pyuria</li> <li>• history of pyelonephritis</li> <li>• stent in place</li> <li>• nephrostomy tube in place</li> </ul>	Oral regimen (give 1-2 h pre-op): <b>ciprofloxacin 500 mg PO x 1 dose</b> or <b>co-trimoxazole 800/160 mg PO x 1 dose</b>  Parenteral regimen: <b>cefazolin 2 g IV x 1 dose</b> or <b>ceftriaxone 1 g IV x 1 dose</b> or <b>gentamicin 1.5 mg/kg IV x 1 dose</b>

## UROLOGY

PROCEDURE	RECOMMENDED PROPHYLAXIS
<p><b>Note: If positive urine culture, institute treatment according to culture and susceptibility results</b></p>	
<p><b>Nephrostomy <u>tube change</u> – low risk only</b></p>	<p><b>prophylaxis not routinely indicated</b></p>
<p><b>Nephrostomy <u>insertion</u></b></p> <p><b>Nephrostomy <u>tube change</u> – high risk only:</b></p> <ul style="list-style-type: none"> <li>• ureteral stents / externalized catheter / prolonged catheter</li> <li>• uretero-intestinal anastomosis</li> <li>• nephrostomy tube occlusion</li> <li>• anatomical abnormality/neurogenic, dysfunctional bladder</li> <li>• immunodeficiency / chronic steroid use</li> <li>• prolonged hospitalization</li> <li>• advanced age/ poor nutritional status / diabetes / smoking</li> </ul> <p><i>Note – most nephrostomy tubes have asymptomatic bacterial contamination at time of exchange. Post procedural infection is uncommon – lower risk patients</i></p>	<p><u>Oral regimen (give 1-2 h pre-op):</u></p> <p style="text-align: center;"><b>ciprofloxacin 500 mg PO</b> or <b>co-trimoxazole 800/160 mg PO x 1 dose</b></p> <p style="text-align: center;">Parenteral regimen: <b>cefazolin 2 g IV x 1 dose</b> or <b>ceftriaxone 1 g IV x 1 dose</b> or <b>gentamicin 1.5 mg/kg IV x 1 dose</b></p>
<p><b>Prostatectomy, transurethral</b></p> <p><b>Green light enucleation of prostate</b></p> <p><b>Transurethral bladder resection of tumour</b></p>	<p><u>Oral Regimen: (give 1-2 h pre-op)</u></p> <p style="text-align: center;"><b>ciprofloxacin 500 mg PO</b> or <b>co-trimoxazole 800/160 mg PO x 1 dose</b> or Parenteral regimen: <b>cefazolin 2 g IV x 1 dose</b> or <b>ceftriaxone 1 g IV x 1 dose</b> or <b>gentamicin 4.5 mg/kg IV x 1 dose</b></p>

## UROLOGY

PROCEDURE	RECOMMENDED PROPHYLAXIS
<b>Note: If positive urine culture, institute treatment according to culture and susceptibility results</b>	
<b>Transrectal prostate biopsy</b>	<p>Oral Regimen: (give 1-2 h pre-op)  <b>ciprofloxacin 500 mg PO x 1 dose</b>                      or  <b>co-trimoxazole 800/160 mg PO x 1 dose</b></p> <p style="text-align: center;"><u>Augmented Prophylaxis*-</u>                      add to above:  <b>fosfomycin 3 g PO x 1 dose (1-4 h pre-op)</b></p> <ul style="list-style-type: none"> <li>• antibiotics in last 6 months</li> <li>• recent (6 months) travel to S or SE Asia</li> <li>• previous resistant organism - infection or colonization</li> <li>• fluoroquinolone or co-trimoxazole resistant <i>E. coli</i> &gt;20% in target population</li> </ul> <p><u>*risk of ciprofloxacin or co-trimoxazole resistance</u></p>
<b>Transperineal Biopsy</b>	<b>prophylaxis not routinely indicated</b>
<b>Prostate brachytherapy or cryotherapy</b>	<b>cefazolin 2 g IV x 1 dose</b>
<b>Adrenalectomy</b> <b>Cystectomy</b> <b>Nephrectomy</b> <b>Percutaneous nephrolithotomy</b> <b>Radical orchidectomy</b> <b>Prostatectomy, radical or suprapubic</b> <b>Renal transplantation</b>	<b>cefazolin 2 g IV x 1 dose</b>
<b>Cystectomy with ileal conduit/urinary diversion</b>	<b>cefazolin 2 g IV x 1 dose</b> + <b>metronidazole 500 mg IV x 1 dose</b>
<b>Renal tumour ablation</b>	<b>prophylaxis not routinely indicated</b>
<b>Penile surgery – Low risk</b> <ul style="list-style-type: none"> <li>• biopsy</li> <li>• circumcision</li> <li>• dorsal slit</li> </ul>	<b>prophylaxis not routinely indicated</b>

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PROCEDURE	RECOMMENDED PROPHYLAXIS
<b>Note: If positive urine culture, institute treatment according to culture and susceptibility results</b>	
<b>Penile surgery – high risk</b> <ul style="list-style-type: none"> <li>• implants</li> <li>• artificial sphincters</li> <li>• sacral immunomodulators</li> </ul>	<p style="text-align: center;"><b>[cefazolin 2 g IV x 1 dose + gentamicin or tobramycin 4.5 mg/kg IV x 1 dose]</b></p> <p style="text-align: center;">If MRSA colonization or infection, <b>add:</b> <b>vancomycin 15 mg/kg IV x 1 dose</b></p>
<b>Scrotal surgery</b> <ul style="list-style-type: none"> <li>• vasectomy</li> <li>• varicocele ligation</li> <li>• epididymal cyst excision</li> <li>• orchiectomy (inguinal)</li> <li>• hydrocele repair</li> </ul>	<b>prophylaxis not routinely indicated</b>
<b>Varicocele embolization</b>	<b>prophylaxis not routinely indicated</b>

## References

### Urology

1. Alsaywid BS, Smith GH. Antibiotic prophylaxis for transurethral urological surgeries: Systematic review. *Urol Ann* 2013; 5: 61-74
2. Anon. Surgical Antibiotic Prophylaxis Clinical Guideline. Version 2.0; November 2, 2017. Government of South Australia. Found at: [Surgical+Prophylaxis+Antimicrobial+guideline+3.0+FINAL+March+2022.pdf \(sahealth.sa.gov.au\)](#)
3. Bonkat G, Bartoletti R, Bruyere F, Cai T, Geerling SE, Koves B, et al. EAU Guidelines on Urological Infections 2022; Found at: [EAU-Guidelines-on-Urological-Infections-2022.pdf \(d56bochluxqnz.cloudfront.net\)](#)
4. Cameron AP, Campeau L, Brucker BM, Clemens JQ, Bales GT, Albo ME et al. Best practice policy statement on urodynamic antibiotic prophylaxis in the non-index patients. *Neurourol Urodynamics* 2017; 36: 915-926
5. Chehab MA et al. Adult and pediatric antibiotic prophylaxis during vascular and IR procedures: A Society of Interventional Radiology Practice Parameter update endorsed by the Cardiovascular and Interventional Radiological Society of Europe and the Canadian Association of Interventional Radiology. *J Vasc Interv Radiol* 2018;29:1483-1501.
6. Elshal AM, Atwa AM, El-Nahas AR, El-Ghar MA, Gaber A, Elsayy E et al. Chemoprophylaxis during transrectal prostate needle biopsy: Critical analysis through randomized clinical trial. *World J Urol* 2018; 36: 1845-1852
7. Hsieh C, Shei-Dei S, Lin C, Chang S. Are prophylactic antibiotics necessary for patients with preoperative sterile urine undergoing urterorenoscopic lithotripsy? *BJU Int* 2014; 113: 275-280
8. Ivan SJ, Sindhvani P. Comparison of guideline recommendations for antimicrobial prophylaxis in urologic procedures: Variability, lack of consensus and contradictions. *Int Urol Nephrol* 2018; 50: 1923-1937
9. Lee MS, Moon MH, Kim CK, Park SY, Choi MH, Jung SI et al. Guidelines for transrectal ultrasonography-guided prostate biopsy: Korean Society of Urogenital Radiology consensus statement for patient preparation, standard technique, and biopsy-related pain management. *Korean J Radiol* 2020; 21: 422-430
10. Lightner DJ, Wymer K, Sanchez J, Kavoussi L. Best practice statement on urologic procedures and antimicrobial prophylaxis. *J Urol* 2020; 203: 351-356
11. May A, Broggi E, Lorphenlin H, Tabchouri N, Giretti G. Comparison of risk of postoperative infection between transurethral vaporesction and transurethral resection of the prostate. *Laser Surg Med* 2014; 45: 405-411
12. Mrkobrada M, Ying I, Mokrycke S, Dresser G, Elsayed S, Bathini V et al. CUA Guidelines on antibiotic prophylaxis for urologic procedures. *Can Urolog Assn J* 2015; 9: 13-22
13. Noreikaite J, Jones P, Fitzpatrick J, Amitharaj R, Pietropaolo A, Vasdev N et al. Fosfomycin vs. quinolone-based antibiotic prophylaxis for transrectal ultra-sound-guided biopsy of the prostate: A systematic review and meta-analysis. *Prost Can Prost Dis* 2018; 21: 153-160
14. Piltaz A, Dimitropoulos K, Veeratterapillay R, Yuan Y, Omar MI, MacLennan S et al. Antibiotic prophylaxis for the prevention of infectious complications following prostate biopsy: A systematic review and meta-analysis. *J Urol* 2020; 204: 224-230
15. Roberts MJ, Scott S, Harris PN, Naber K, Wagenlehner FM, Doi SA. Comparison of fosfomycin against fluoroquinolones for transrectal prostate biopsy prophylaxis: An individual patient-data meta-analysis. *World J Urol* 2018; 36: 323-330
16. Speich B, Baucsck K, Roth KA, Hemkens LG, Ewald H, Vogt D et al. Single-dose versus 3-day cotrimoxazole prophylaxis in transurethral resection or greenlight laser vaporization of the prostate: study protocol for a multicentre randomized placebo controlled non-inferiority trial (CITrUs Trial). *Trials* 2019; 20: 142
17. Uehara T, Takahashi S, Ichihara K, Hiyama Y Hashimoto J, Kurimura Y, Masumori N. Surgical site infection of scrotal and inguinal lesions after urologic surgery. *Journal of Infection and Chemotherapy* 2014;20:186-189

18. Wolf, JS et al. Best practice policy statement on urologic surgery antimicrobial prophylaxis. *J Urol* 2008; 179: 1379-1390.
19. Yamamoto S, Shigemura K, Kiyota H, Wada K, Hayami H, Yasuda M et al. Essential Japanese guidelines for the prevention of perioperative infections in the urological field: 2015 Edition. *Int J Urolog* 2016; 23: 814-824
20. Yang L, Tang Z, Gao L, Li T, Chen Y, Liu L et al. The augmented prophylactic antibiotic could be more efficacious in patients undergoing transrectal prostate biopsy: a systematic review and meta-analysis. *Int Urol Nephrol* 2016; 48: 1197-1207

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