

Chronic Bacterial Prostatitis in Adults - Microbiology Full Clinical Guideline

Reference number: CG-ANTI/2023/069

Introduction

- Bacterial invasion of the prostate - with symptoms and signs persisting for ≥ 3 months - is termed chronic bacterial prostatitis.
- The commonest cause of chronic bacterial prostatitis is *Escherichia coli*.
- *Enterococcus faecalis*, *Proteus mirabilis*, *Klebsiella pneumoniae*, and *Pseudomonas aeruginosa* are other relatively common bacterial causes.
- Less common causes include *Staphylococcus aureus* and *Streptococcus* species.
- The pathogens of chronic bacterial prostatitis are most commonly inoculated through reflux of urine: from the urethra, through the prostatic ducts, and into the prostate.
- Less commonly, pathogen inoculation is via iatrogenic mechanisms of transmission, e.g. transrectal prostate biopsy, transurethral catheterisation, and cystoscopy.
- Symptoms and signs of chronic bacterial prostatitis include perineal-scrotal pain, urgency, frequency, dysuria, pyuria, prostate tenderness, and prostatomegaly.

Diagnosis

- Urgency, frequency, dysuria, and pyuria are manifestations that overlap with other urinary tract pathologies, including acute bacterial prostatitis.
- Persistence for ≥ 3 months - or recurrence of these symptoms and signs - can be indicative of chronic bacterial prostatitis.
- Recurrent bacteriuria can also indicate chronic bacterial prostatitis.

Investigation

Past

- Review the past microbiology results:
 - For recurrent cultures of *Escherichia coli*, etc. over ≥ 3 months.
- Also, review the past microbiology results, with specific reference to previous genito-urinary samples:
 - Culture positive for *Escherichia coli*, etc.:
 - Noting susceptibility or resistance to first and second line options for chronic bacterial prostatitis.

Present: microbiology

Before starting antibiotics:

- Chronic bacterial prostatitis can be investigated with 'two glass' methodology in theatre:
 - 5-10 ml of pre-prostate massage, cystoscopy urine is sent for microscopy, culture, and susceptibilities (MC&S).
 - The prostate is next massaged and expressed prostatic secretions (EPS) are then sent for MC&S.
 - \pm 5-10 ml of post-prostate massage, cystoscopy urine is also sent for MC&S.

- If the bacterial cultures of the:
 - Pre-prostate massage, cystoscopy urine are negative; and
 - EPS (\pm post-prostate massage, cystoscopy urine) are positive
 This is diagnostic for chronic bacterial prostatitis.
- If the bacterial colony count of the:
 - EPS (\pm post-prostate massage, cystoscopy urine) is 10 times higher than the pre-prostate massage, cystoscopy urine
 This is also diagnostic for chronic bacterial prostatitis.

Treatment

Please note:

- The antibiotic sections include fluoroquinolone usage.
- The empiric/directed per oral/intravenous regimens include [ciprofloxacin/levofloxacin](#) hyperlinked to the British National Formulary.
- For extra information on fluoroquinolone side-effects, please also note the Medicines & Healthcare products Regulatory Agency:
 - [Healthcare professional information](#); and
 - [Patient leaflet](#).

Empiric, per oral antibiotics

- If there is no history of a urogenital procedure/surgery with fluoroquinolone prophylaxis:
 - First line:
 - [Ciprofloxacin](#) 500 mg 12 hourly.
- If there is a history of a urogenital procedure/surgery with fluoroquinolone prophylaxis, or if [ciprofloxacin](#) is contraindicated:
 - First line:
 - Trimethoprim* 200 mg 12 hourly.
 - Second line:
 - Co-amoxiclav* 625 mg 8 hourly **PLUS** amoxicillin 500 mg 8 hourly.
 - Third line:
 - Fosfomycin** 3 g 24 hourly for 7 days; thereafter, 3 g 48 hourly.
- * Trimethoprim and co-amoxiclav's spectrums include common bacterial causes of chronic bacterial prostatitis; however, there is no anti-pseudomonal activity.
- ** Fosfomycin and this dosage are unlicensed for chronic bacterial prostatitis.

Directed, per oral antibiotics (**with susceptibilities**)

- *Enterobacterales* (e.g. *Escherichia coli*, *Proteus mirabilis*, and *Klebsiella pneumoniae*), **according to susceptibilities**:
 - First line:
 - [Ciprofloxacin](#) 500 mg 12 hourly.
 - Second line, if [ciprofloxacin](#) is contraindicated:
 - Trimethoprim 200 mg 12 hourly.
 - Third line, if [ciprofloxacin](#) and trimethoprim are contraindicated:
 - Narrowest spectrum of:
 - Amoxicillin 1 g 8 hourly; **or**
 - Co-amoxiclav 625 mg 8 hourly **PLUS** amoxicillin 500 mg 8 hourly.
 - Fourth line, if [ciprofloxacin](#), trimethoprim, and amoxicillin/co-amoxiclav are contraindicated:
 - Fosfomycin* 3 g 24 hourly for 7 days, thereafter, 3 g 48 hourly.

- *Enterococcus* species, **according to susceptibilities**:
 - First line:
 - Amoxicillin 1 g 8 hourly.
 - Second line, if amoxicillin is contraindicated:
 - Linezolid** 600 mg 12 hourly.
 - Third line, if amoxicillin and linezolid are contraindicated:
 - Collaborate with the microbiology team re ± trimethoprim 200 mg 12 hourly or ± co-trimoxazole 960 mg 12 hourly.
- *Pseudomonas aeruginosa*, **according to susceptibilities**:
 - [Ciprofloxacin](#) 750 mg 12 hourly.
- *Staphylococcus aureus*, **according to susceptibilities**:
 - First line:
 - [Levofloxacin](#) 500 mg 24 hourly.
 - Second line, if [levofloxacin](#) is contraindicated:
 - Trimethoprim 200 mg 12 hourly.
 - Third line, if [levofloxacin](#) and co-trimoxazole are contraindicated:
 - Linezolid** 600 mg 12 hourly.
- *Streptococcus* species, **according to susceptibilities**:
 - First line:
 - Amoxicillin 1 g 8 hourly.
 - Second line, if amoxicillin is contraindicated:
 - Linezolid** 600 mg 12 hourly.
 - Third line, if amoxicillin and linezolid are contraindicated:
 - Collaborate with the microbiology team re ± trimethoprim 200 mg 12 hourly or ± co-trimoxazole 960 mg 12 hourly.
- * Fosfomycin and this dosage are unlicensed for chronic bacterial prostatitis.
- ** Linezolid is licensed for a maximum duration of 28 days.

Duration of antibiotics

- ≥ 4 weeks:
 - After 4 weeks, if there is resolution of symptoms and signs and if the bloods (FBC, CRP) and urine are indicative of resolved prostatitis, stop antimicrobial chemotherapy.
 - After 4 weeks, if the symptoms and signs are ongoing or if the bloods (FBC, CRP) or urine are indicative of a persisting prostatitis, prolong the antimicrobial chemotherapy for an extra 2 weeks.
 - Consider a differential diagnosis of prostate abscess.

Management

Symptoms and signs of chronic bacterial prostatitis (e.g. perineal-scrotal pain, urgency, frequency, dysuria, pyuria, prostate tenderness, and prostatomegaly)



Review the past microbiology results, with specific reference to previous genito-urinary samples:

- Culture positive for *Escherichia coli*, etc.:
 - Noting susceptibility or resistance to first and second line options for chronic bacterial prostatitis



Request new pathology investigations:

- Chronic bacterial prostatitis can be investigated with 'two glass' methodology in theatre:
 - 5-10 ml of pre-prostate massage, cystoscopy urine is sent for MC&S
 - The prostate is next massaged and expressed prostatic secretions are then sent for MC&S
 - ± 5-10 ml of post-prostate massage, cystoscopy urine is also sent for MC&S



Empiric antibiotics

- If there is no history of a urogenital procedure/surgery with fluoroquinolone prophylaxis:
 - First line: [ciprofloxacin](#) 500 mg 12 hourly
- If there is a history of a urogenital procedure/surgery with fluoroquinolone prophylaxis, or if [ciprofloxacin](#) is contraindicated:
 - First line: trimethoprim* 200 mg 12 hourly
 - Second line: co-amoxiclav* 625 mg 8 hourly **PLUS** amoxicillin 500 mg 8 hourly
 - Third line: fosfomycin** 3 g 24 hourly for 7 days; thereafter, 3 g 48 hourly
- * Trimethoprim and co-amoxiclav's spectrums include common bacterial causes of chronic bacterial prostatitis; however, there is no anti-pseudomonal activity
- ** Fosfomycin and this dosage are unlicensed for chronic bacterial prostatitis



Directed antibiotics with culture and susceptibilities (please note, pages 2-3)

References

Bennett, J. E., Dolin, R., and Blaser, M. J. 2015. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases, 8th Edition. Elsevier.

Bonkat, G., Pickard, R., Bartoletti, R., Cai, T., Bruyere, F., Geerlings, S. E., Koves, B., and Wagenlehner, F. 2022. EAU Guidelines on Urological Infections. Available at: [EAU-Guidelines-on-Urological-Infections-2022.pdf](https://www.euro.uptodate.com/consult/topic/EAU-Guidelines-on-Urological-Infections-2022.pdf) (d56bochluxqnz.cloudfront.net).

Johns Hopkins ABX Guide. 2016. Prostatitis, Acute Bacterial. Available at: [Prostatitis, Acute Bacterial | Johns Hopkins ABX Guide \(hopkinsguides.com\)](https://www.hopkinsguides.com/hopkins/view/1105523/1105523/prostatitis_acute_bacterial.html).

Karaiskos, I., Galani, L., Sakka, V., Gkoufa, A., Sopilidis, O., Chalikopoulos, D., Alivizatos, G., and Giamarellou, E. 2019. Oral fosfomycin for the treatment of chronic bacterial prostatitis. Journal of Antimicrobial Chemotherapy.

Meyrier, A. and Fekete, T. 2023. Chronic bacterial prostatitis. Available at: [Chronic bacterial prostatitis - UpToDate](https://www.uptodate.com/consult/topic/chronic-bacterial-prostatitis).

National Institute for Health and Care Excellence (NICE). 2018. Prostatitis (acute): antimicrobial prescribing. Available at: [Prostatitis \(acute\): antimicrobial prescribing \(nice.org.uk\)](https://www.nice.org.uk/guidance/ng174).

Sanford Guide Antimicrobial Therapy. 2022. Prostatitis, Bacterial Acute. Available at: <https://www.sanfordguide.com/products/digital-subscriptions/>.

Document control

Development of guidelines:	Kayleigh Lehal, Dr Peter Slovak, Dr Hayley Wood
Consultation with:	Consultant Genitourinary Medicine, Lead Antimicrobial Pharmacist, Microbiology Consultant,
Version:	2
Approval date:	Antimicrobial Stewardship Group - 25/04/2023 Surgical division - 11/05/2023
Changes from previous version:	Introduction: reworded (minor) and reformatted (minor). Diagnosis: reworded (minor) and reformatted (minor). Investigation: reworded (minor) and reformatted (minor). Treatment: reworded (minor) and reformatted (minor). Management: reworded (minor) and reformatted (minor). References: updated (minor).
Date uploaded:	24/5/2023
Next review date:	June 2026
Key contacts:	Dr Peter Slovak, Microbiology Consultant p.slovak@nhs.net Kayleigh Lehal, Lead Antimicrobial Pharmacist kayleigh.lehal@nhs.net