

Prosthetic Joint Infection in Adults - Microbiology Summary Clinical Guideline

Reference number: CG-ANTI/2023/064

Clinical concerns re PJI

Consultation with the orthopaedic registrar/consultant on call

Pre-operative

- Investigation:
 - Radiology:
 - XR
 - Microbiology:
 - Aspirate, MRSA screen, ± blood cultures × 2
 - Blood sciences:
 - FBC, ESR, CRP, ± lactate, U&Es, and LFTs
- Treatment:
 - Collaborate with the orthopaedic consultant regarding DAIR or one stage exchange or two stage exchange (page 2)

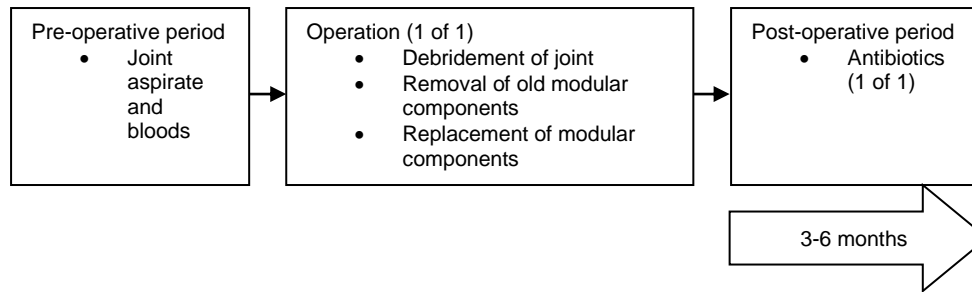
Intra-operative

- Investigation:
 - Microbiology:
 - 6 surgical samples obtained with 6 sets of instrumentation
 - Histology:
 - ≥ 2 tissues for histopathology
 - ± Biochemistry:
 - Synovial biomarkers
- Treatment:
 - DAIR or one stage exchange or two stage exchange (page 2)
 - Local, intra-operative antibiotics with STIMULAN Rapid Cure® (page 3)

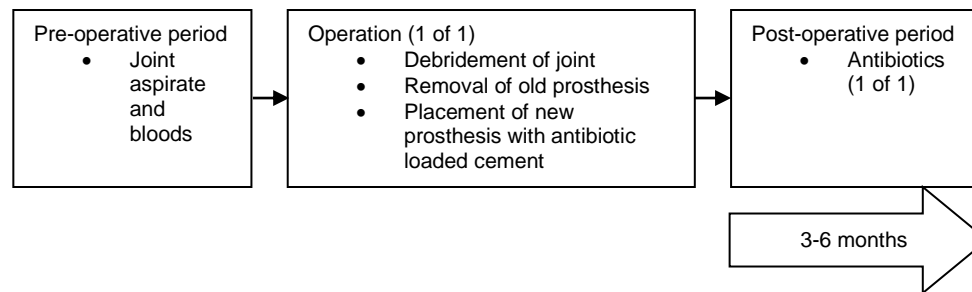
Post-operative

- Treatment:
 - Empiric/Directed antibiotics (page 3) initially
 - Directed antibiotics (microbiology full clinical guideline, pages 5-11) latterly
- ± Referral to the UHDB orthopaedic multi-disciplinary meeting (1200-1300 Fridays)

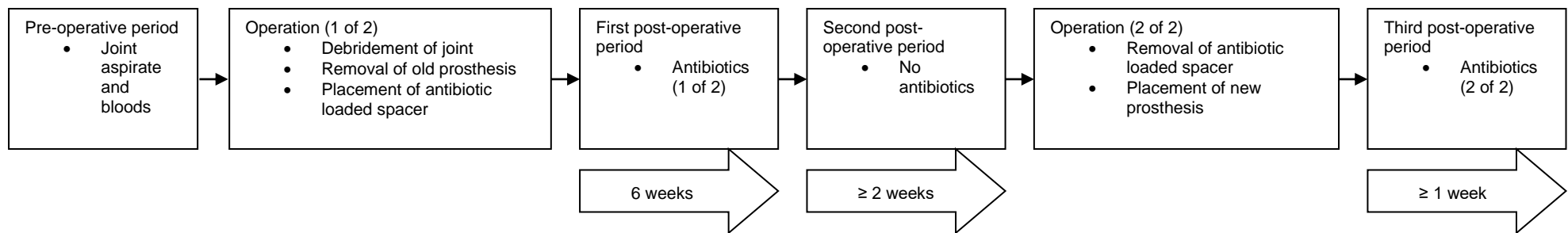
Debridement, Antibiotics, and Implant Retention (DAIR); Synonym, Debridement with Prosthesis Retention



One Stage Exchange; Synonyms, Direct Exchange Procedure, 1-Stage Replacement



Two Stage Exchange; Synonyms, Staged Exchange, 2-Stage Replacement



Regarding local, intra-operative antibiotics with STIMULAN Rapid Cure®:

STIMULAN Rapid Cure® Powder	Vancomycin	Gentamicin
5 cc	500 mg	120 mg; 3 ml of gentamicin liquid (80 mg in 2 ml per ampoule)
10 cc	1 g	240 mg; 6 ml of gentamicin liquid (80 mg in 2 ml per ampoule)
20 cc	2 g	480 mg; 12 ml of gentamicin liquid (80 mg in 2 ml per ampoule)

- Add 500 mg, 1 g, or 2 g of vancomycin powder to 5 cc, 10 cc, or 20 cc of STIMULAN Rapid Cure® powder, respectively, and mix.
- Transfer 3 ml, 6 ml, or 12 ml of gentamicin liquid to syringe.
- Add 3 ml, 6 ml, or 12 ml of gentamicin liquid to 5 cc-500 mg, 10 cc-1 g, or 20 cc-2 g STIMULAN Rapid Cure®-vancomycin powder mixes, respectively, and mix for 30 seconds.
- Apply to bead mat immediately.
- Sets in 3-5 minutes.
- CAUTION: when using liquid antibiotics, the mixing solution provided in the pack should not be used and should be discarded.
- <https://www.youtube.com/watch?v=CrBee2Vhbn0v>

Regarding systemic, post-operative antibiotics:

- If the pre-operative microbiology (aspirate/fluid) was negative:
 - First line:
 - Vancomycin or teicoplanin, [dose as per hospital guidelines](#), vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 20-40 mg/l, **and**
 - If DAIR/one stage exchange: rifampicin 300 mg per oral 12 hourly.
 - Second line, if vancomycin/teicoplanin is contraindicated:
 - Daptomycin 6 mg/kg intravenously 24 hourly **and**
 - If DAIR/one stage exchange: rifampicin 300 mg per oral 12 hourly.
- If the pre-operative microbiology (aspirate/fluid) was positive with a microorganism consistent with PJI (e.g. *Staphylococcus*, *Streptococcus*, or *Enterococcus* species; *Enterobacteriales* [e.g. *Escherichia coli*]; or *Pseudomonas aeruginosa*):
 - Directed antibiotics (microbiology full clinical guideline, pages 5-11).
- NB If clinical concerns re sepsis (life threatening organ dysfunction caused by a dysregulated host immune response to infection) secondary to PJI:

First line	Piperacillin tazobactam 4.5 g 6 hourly and Vancomycin or teicoplanin, dose as per hospital guidelines , vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 20-40 mg/l
Second line, if non-immediate without systemic involvement penicillin allergy	Ceftazidime 2 g 8 hourly and Vancomycin or teicoplanin, dose as per hospital guidelines , vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 20-40 mg/l
Third line, if immediate rapidly evolving or non-immediate with systemic involvement penicillin allergy	Ciprofloxacin 400 mg 8 hourly and Vancomycin or teicoplanin, dose as per hospital guidelines , vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 20-40 mg/l

References

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Document control

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