

Cardiac Implantable Electronic Device Pocket Infection - Microbiology Summary Clinical Guideline

Reference number: CG-ANTI/2019/062

Background includes CIED; and

- Generator pocket: pain, erythema, warmth, tenderness, swelling, purulent discharge, and/or erosion; or
- Pyrexia of unknown origin

Investigate

Radiology:

- CXR

Cardiology/Clinical measurements:

- Echocardiogram:
 - TTE ± TOE

AND

Microbiology:

- Blood cultures x 3
- If purulent discharge, fluid MC&S

Blood sciences:

- FBC, CRP, lactate, U&Es, and LFTs

Treatment

Medical or surgical intervention:

- Step 1: explantation of the CIED:
 - Collaborate with the cardiology consultant regarding removal versus retention of the CIED
 - If there is no 'definite' CIED clinical pocket/generator infection, consider further investigation with nuclear medicine
 - If returned to the cath lab or taken to theatre, pocket swab, tissue sample, and/or lead tip for MC&S
- Step 2: ± temporary pacing
- Step 3: ± reimplantation of the CIED

AND

Antibiotics:

- Step 1: empiric
 - Microbiology summary clinical guideline, page 2
- Step 2: directed
 - Microbiology full clinical guideline, pages 5-8

Empiric antibiotics: no clinical concerns regarding sepsis

First line	Vancomycin or teicoplanin intravenously, dose as per hospital guidelines , vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 30-40 mg/l, and Gentamicin 1 mg/kg intravenously 12 hourly, target pre dose trough < 1 mg/l and target post dose peak 3-5 mg/l, and Rifampicin 300-600* mg per oral 12 hourly
Second line	Daptomycin 8-10 mg/kg intravenously 24 hourly and Gentamicin 1 mg/kg intravenously 12 hourly, target pre dose trough < 1 mg/l and target post dose peak 3-5 mg/l, and Rifampicin 300-600* mg per oral 12 hourly
* Rifampicin 300 mg if creatinine clearance < 30 ml/min, 600 mg if creatinine clearance ≥ 30 ml/min	

Empiric antibiotics: clinical concerns regarding **sepsis (life threatening organ dysfunction caused by a dysregulated host immune response to infection) secondary to pocket infection**

First line	Piperacillin tazobactam 4.5 g intravenously 6 hourly and Vancomycin or teicoplanin intravenously, dose as per hospital guidelines , vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 30-40 mg/l
Second line, if non-immediate without systemic involvement penicillin allergy	Ceftazidime 2 g intravenously 8 hourly and Vancomycin or teicoplanin intravenously, dose as per hospital guidelines , vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 30-40 mg/l
Third line, if immediate rapidly evolving or non-immediate with systemic involvement penicillin allergy	Ciprofloxacin 400 mg intravenously 8 hourly and Vancomycin or teicoplanin intravenously, dose as per hospital guidelines , vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 30-40 mg/l

References

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- Gould, F. K., et al.** 2012. Guidelines for the diagnosis and antibiotic treatment of endocarditis in adults: a report of the Working Party of the British Society for Antimicrobial Chemotherapy. Journal of Antimicrobial Chemotherapy.
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- Sandoe, J. A. T., et al.** 2015. Guidelines for the diagnosis, prevention and management of implantable cardiac electronic device infection. Report of a joint Working Party project on behalf of the British Society for Antimicrobial Chemotherapy (BSAC, host organization), British Heart Rhythm Society (BHRS), British Cardiovascular Society (BCS), British Heart Valve Society (BHVS) and British Society for Echocardiography (BSE). Journal of Antimicrobial Chemotherapy.

Document control

Development of guidelines:	Kayleigh Lehal, Dr Peter Slovak
Consultation with:	Lead Antimicrobial Pharmacist, Microbiology Consultant, Cardiology Consultants for version 1
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Changes from previous version:	Introduction: reworded (minor) and reformatted (minor). Differential diagnosis: reworded (minor) and reformatted (minor). Criteria for diagnosis of CIED pocket infection. Investigation: reworded (minor), reformatted (minor), and expanded (Echocardiogram, provided by cardiology and clinical measurements; Radiology and nuclear medicine). Treatment: reworded (minor) and reformatted (minor). Management: reworded (minor), reformatted (minor). Appendix 1: Gentamicin. References: expanded (minor).
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