NHS FORTH VALLEY

Suspected/Confirmed Central Venous Access Device (CVAD) Infection Protocol - Adults

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Consultation and Change Record – for All documents.

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1. Epidemiology & Risk

- Central Venous Access Device (CVAD) infections can result in any person with the following lines in situ: Hickman, PICC, Central, Port-a-Cath and Midline, these devices are different to Peripheral Venous Cannulae (PVC) which provide Peripheral Venous access only
- CVADS used for Parenteral Nutrition (PN) are at greater risk of Candidaemia
- Patients with more than one CVAD are at a greater risk of blood stream infection, Only one CVAD should be in use at one time unless there are documented exceptional circumstances for a limited time
- CVAD infections may appear as a tunnel or exit site infection with erythema and/or pus around the exit site, they can also be inside the CVAD in the lumen itself or at the tip
- Strict aseptic technique during CVAD access is a significant factor in preventing CVAD infections
  Only staff that have been trained and deemed competent in care and maintenance of CVAD's in NHS Forth Valley should access CVAD's including taking routine blood and blood cultures.
- Guidance on management on PVC(Venflon) site infection under the 'skin and surface' section of NHS Forth Valley antimicrobial guidance on the intranet

2. Clinical Features of a CVAD Infection

- Pyrexia or Rigors when CVAD is flushed
- Discharge from the exit site
- Inflammation around the exit site or tunnel
- Sepsis in a patient with a CVAD and no other obvious source
  Note the exit site may not always appear inflamed in a CVAD infection, the infection may be inside the CVAD itself or at the tip.

3. Empirical Management

<u>In all cases</u>

Take paired blood culture samples from the CVAD and a peripheral site:

- In Multi-Lumen devices (e.g. Central Line) take samples from the 2 most used Lumen before starting antibiotics and one peripheral set
- Label each sample appropriately

Only staff that have been trained and deemed competent in care and maintenance of CVADS in NHS Forth Valley should take blood cultures

Treatment

Treatment is based on Clinical assessment of the patient.

Scenario: CVAD exit site looks clean and dry; there is no inflammation, pain or pus is present.

Stable Patient

Action: Collect cultures as above

Prescribe: - IV Vancomycin through the CVAD and ensure levels are taken as per protocol.
- Add IV Gentamicin if deterioration.

Unstable Patient

Action: A-B-C-D assessment and corrective actions, take paired blood cultures, remove CVAS if safe to do so and send tip to Microbiology lab in white top universal container, if CVAD cannot be removed then indicate reason(s) in the clinical notes.

Prescribe: - IV Vancomycin & IV Gentamicin through the CVAD (if retained) or peripheral venous cannula (if CVAD removed) and ensure levels are taken as per protocol.

Special Consideration - Parenteral Nutrition (PN Patients)

- Add IV Caspofungin (Consult BNF for dosing) to the above.
- Review fluid and electrolyte replacements needs in absence of TPN.
- Speak to Pharmacist and Dietician about TPN patients with CVAD infections as soon as possible.

Scenario: CVAD exit site inflamed and/or pus or discharge is present

Action in all patients:
- A-B-C-D assessment and action.
- Trained staff to take paired blood cultures.
- Remove CVAD if safe to do so and send tip to Microbiology lab in white top universal container.
- If CVAD cannot be removed, then indicate reason(s) in the clinical notes.

Prescribe: - IV Flucloxacillin through a newly inserted Peripheral Cannula
- Penicillin allergy or MRSA: IV Vancomycin through a newly inserted Peripheral Venous Cannula
- Add IV Gentamicin if deterioration

If the patient is Neutropenic, please ensure the Neutropenic sepsis policy is followed in addition to the above.

Note on Prescribing: Review previous microbiology results and alerts for any resistant organisms (e.g. MRSA, VRE, CPE). If identified, then discuss empirical antibiotic cover with microbiology.
It is the clinical team's responsibility to look over previous results and alerts.

4. Indications for removal of infected CVAD

This applies even when the patient is clinically stable, and the exit site appears healthy.

- Infection with any of the following isolates:
  Staphylococcus aureus, Staphylococcus Lugdunensis, B-haemolytic streptococci, Gram-negative organisms, Mycobacterium species, and all Candida species. See table following page. The Microbiologist will advise of any other organism not included in this list. Infectious disease consultants may also give advice on this matter.
- If the resulting cultures are Polymicrobial
- Severe exit site or tunnel infection
- Clinical deterioration despite appropriate antibiotics
- Recurrent episodes with the same organism or within two weeks of stopping antimicrobials
- Where there is no further need for the CVAD
  CVAD Salvage may be possible with the following isolates:
- Coagulase Negative Staphylococci (apart from S Lugdunensis)
- Viridans Streptococci
- Corynebacterium (or similar) species

5. Replacing the CVAD

If a CVAD has been removed due infection it is advisable to delay placing a new CVAD until at least 48 hours post removal with antimicrobials given via a peripheral venous cannula. The patient should ideally be apyrexial and clinically improving with negative blood cultures. This reduces the likelihood of the new CVAD becoming infected by organisms circulating in the bloodstream.

6. Duration of Therapy

Once confirmed the microbiologist will advise management as per the organism identified.

For general guidance on treatment duration please refer to the information below.

Organisms for which retaining the CVAD may be possible:

<u>Culture Negative</u>

- CVAD removed
  Duration: No further treatment once temperature resolves
- CVAD not removed
  Duration: 48 Hours after normalisation of temperature

<u>Culture Negative Staphylococci</u>

- CVAD removed
  Duration: No further treatment once temperature resolves
- CVAD not removed
  Duration: 7 days total therapy with IV Vancomycin through CVAD

Viridans streptococci / Corynebacterium species

- CVAD removed
  Duration: 48 hours after normalisation of temperature
- CVAD not removed
  Duration: 7-14 days IV vancomycin therapy through the CVAD

Organisms for which the CVAD must be removed (once safe to do so)

Staphylococcus aureus / Staphylococcus lugdunensis

- Uncomplicated infection
  Must remove CVAD
  Duration: 14 days IV flucloxacillin or vancomycin counted from day CVAD removed
- Complicated infection
  Must remove CVAD
  Duration: 4 weeks IV flucloxacillin or vancomycin counted from day CVAD removed

B-haemolytic streptococci

- Must remove CVAD
  Duration: 7-14 days therapy based on sensitivities

Gram-negative organisms

- Must remove CVAD
  Duration: 7-14 days total therapy based on sensitivities

Candida species

- Must remove CVAD
  Duration: Minimum 14 days IV Caspofungin counted from day CVAD removed

Mycobacterium species

- Must remove CVAD
  Duration: Consult microbiologist will advise

7. References

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