Unidentified Infection – Diagnosis Guidelines

ARTERIAL LINE BLOOD CULTURES AND TRACHEAL ASPIRATE ARE NOT THE BEST WAY TO DO THIS.

FOLLOW ADVICE BELOW

SUSPICION THAT PATIENT HAS A NEW INFECTION

Temperature > 38℃ or < 36℃ — Heart rate > 90 beats/min

WCC > 12 or <4 — New organ dysfunction

Take 2 sets of peripheral venous blood cultures.
(see Blood Cultures- Sampling Procedure - p 2)

1 SET = aerobic and anaerobic culture bottles

LOOK FOR ADDITIONAL SIGNS AND TAKE SAMPLES AS INDICATED BELOW

Possible Ventilator Associated Pneumonia (VAP)

Purulent sputum, clinical signs of consolidation with chest X-ray changes. Oxygenation worsens.

- **CXR**
- **Broncho-alveolar lavage** (BAL) (see BAL guideline)
- ***OR* Mini-BAL** if BAL contra-indicated
- (see Mini-BAL guideline)
- Tracheal aspirates should only be sent if there is a contra-indication to BAL
- Pleural effusion (if present) should be tapped with ultrasound guidance

Possible Catheter Related Bloodstream Infection (CRBSI)

- If entry site **inflamed** or has **pus -** swab and send to microbiology
- **1 set of blood cultures** through each line, after cleaning the hub with chlorhexidine/alcohol
- **Change/Remove line(s)** DISCUSS THIS WITH SENIOR MEDICAL STAFF
- **Removing line(s):** Clean the entry site with chlorhexidine/alcohol, remove line and send the distal 7cm to microbiology

If clinically appropriate:

- CSU
- Drain fluid
- Ascites
- CSF
- Repeat MRSA screen

Give appropriate antibiotics
(see Guideline for Empirical Antibiotic Policy)

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The firm diagnosis of infection in critically ill patients is difficult. Clinical features such as fever and raised white cell count may have other causes and need not indicate infection. There are also problems with distinguishing between contamination of samples, colonization of the patient by microbes and true infection.

Ventilator-acquired pneumonia (VAP) Suspicious signs: production of more purulent sputum, clinical signs of consolidation with chest X-ray changes. Oxygenation worsens. A microbiological diagnosis must then be sought, but should not delay early appropriate antibiotic therapy. See flowchart p. 1.

Septicaemia may occur after any infection in the critically ill. Severe sepsis may result with signs of shock and worsening oxygenation. The presence of organisms in the blood stream can only be confidently diagnosed after careful taking of **peripheral** venous blood cultures. If there is any difficulty in obtaining a peripheral venous sample, ask the medical staff to obtain the specimens. **Do not** rely on obtaining blood from an arterial or central venous line.

Consider bacterial **Endocarditis** or **SBE** in those with persistent signs of sepsis and no identified source, or non-resolution of signs following treatment of sepsis or septicaemia. **Trans-oesophageal echocardiography** in combination with repeated blood cultures are the investigations of choice.

CRBSI are unusual in the first 2-3 days after line insertion. Clinical signs of septicaemia may be present. The entry site of the line is sometimes inflamed; pus may be present. See flowchart p. 1.

Blood Culture Sampling

Aims - TO IMPROVE BLOOD CULTURE SUCCESS AND REDUCE CONTAMINATION

Key Points:

- **1 SET** = a pair of **aerobic** and **anaerobic** culture bottles
- Use the 'Blood culture box', take to the bedside.
- Take 2 sets of blood cultures **(3 sets if SBE suspected)** from separate peripheral sites.
- Avoid taking samples from intravascular catheters unless CRBSI suspected – see above
- Preferably take samples before antibiotics are given

PROCEDURE

1. Prepare required equipment.
2. Wash and dry hands.
3. Wear clean gloves.
4. Clean venepucture site **TWICE** with fresh chlorhexidine/alcohol wipes and allow to dry
5. Do not re-touch the proposed puncture site.
6. Draw 20mls blood into a fresh syringe.
7. Remove flip-top caps from bottles and clean each top with a fresh chlorhexidine/alcohol wipe. Inject 10 mls per bottle.
8. Dispose of sharps.
9. Wash and dry hands.
10. Write patient details clearly on bottle.
11. Complete all relevant details and record current antibiotic therapy. Label bottles/forms as peripheral, line (type) etc. Ensure that patient label on form – if not available as minimum include name, date of birth, and postcode and CHI number.
12. Record on Microbiology sheet in notes and send.

Blood culture system grows fungi as well as bacteria – no other bottles are used.