



Blood culture diagnostic stewardship for adults: take *care* and take *two*.

A joint position statement from the New Zealand Microbiology Network (NZMN) and the New Zealand branch of the Australasian Society of Infectious Diseases (NZASID), endorsed by the Sepsis Trust NZ.

Blood cultures (BC) are essential for the diagnosis and management of sepsis and severe infections. Optimising BC sampling, through evidence-based diagnostic stewardship approaches, can improve pathogen recovery and support patient management. Key diagnostic stewardship principles for BC include optimising blood volume (to maximise test sensitivity), adherence to the correct sampling technique (to reduce contamination and improve test specificity) and appropriate patient selection (to minimise low yield sampling).

The NZMN and NZASID recommend the following:

1. BC are only recommended if there is a moderate to high clinical suspicion of bacteraemia
 - a. See table 1 below for examples, although this list is not exhaustive.
2. **Take care** to perform BC with strict adherence to aseptic technique: disinfect the venepuncture site thoroughly and allow sufficient drying time (30 secs) to prevent BC contamination.
 - a. If contamination rates remain suboptimal (>3%) despite efforts to improve collection technique, consider initial sample diversion or collection by dedicated phlebotomists.
3. Volume of blood is critical to pathogen recovery. For adults, **two sets** are required (i.e. four bottles: two aerobic, two anaerobic) with 10mL in each bottle. For endocarditis, three sets are preferable.
 - a. More than three sets per 24 hours need not be collected.
4. Take BC before giving antibiotics whenever possible.
5. Do not sample from indwelling lines unless line-related infection is suspected due to the increased risk of BC contamination.
6. Both sets may be obtained from a single venepuncture if a second venepuncture is unlikely to be possible. Ensuring two sets are obtained is most important to help maximise test sensitivity.
7. Sampling during cannulation is **not recommended** due to the increased risk of contaminant.
8. Do not routinely collect blood cultures as part of “triage” bloods but wait for clinical assessment and perform as part of a dedicated, and carefully performed, venepuncture.



Table 1. Indications for adult blood cultures

BC recommended	BC not recommended
<p>Moderate to high pre-test probability of bacteraemia</p> <p>Severe infections, suspected sepsis, Red Flag sepsis, septic shock</p> <p>Meningitis</p> <p>Infective endocarditis</p> <p>Endovascular infections</p> <ul style="list-style-type: none"> • Line-associated infection (take one set from line and one peripheral set) • Endovascular graft infection <p>Orthopaedic infections</p> <ul style="list-style-type: none"> • Septic arthritis • Acute osteomyelitis • Spinal infection <p>Fever in a returned traveller</p> <p>Fever in neutropenic patient</p>	<p>Low pre-test probability of bacteraemia</p> <p>Non-severe UTI, cellulitis, pneumonia</p> <ul style="list-style-type: none"> • consider sampling from the site of infection if not improving with empiric therapy e.g. urine, pus swab <p>Isolated fever or leucocytosis, including postoperative</p> <p>Likely viral infection</p> <p>Daily BC for persistent fever or as surveillance BC</p> <p>BC from > 1 lumen of a central line</p> <p>To document BC clearance UNLESS for:</p> <ol style="list-style-type: none"> 1. <i>S. aureus</i> 2. Yeast 3. Recommended by Infectious diseases/microbiology

Paediatric BC

BC diagnostic stewardship for children is just as important as it is for adults. Starship guidelines for paediatric BC collection are available here: [Blood Cultures: When, Where and How to Take \(starship.org.nz\)](https://www.starship.org.nz/blood-cultures-when-where-and-how-to-take).



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