BLOOD CULTURES: Timing, Techniques, etc.

Clinically significant bacteremia is often intermittent (except in endocarditis, endarteritis, uncontrolled infections, typhoid fever, brucellosis). Bacteremia (when intermittent) precedes the development of fever of chills by approximately one hour, so that by the time fever has appeared the blood may be sterile. Several sets of blood cultures are therefore necessary.

Because of the periodicity of microorganisms may be continuous or random, these patterns of bacteremia must be considered when determining the timing and number of blood cultures. When the volume of blood collected is adequate, usually 2 or 3 sets are sufficient.

In patients with endocarditis who have not received antibiotics a single set is positive in 90-95% of cases, a second set establishes the diagnosis in 98% of patients. In patients whom have received antibiotics, three separate blood culture collections and an additional blood culture or two on the second day if necessary will detect most agents of endocarditis.

In bacteremic patients without endocarditis, 80-92% are detected by the first blood culture, 90-95% by the first two and 99.6% by at least one of the first 3 cultures.

In cases of fever of unknown origin, four sets, 2 drawn on each of two days detects most agents. The yield beyond four cultures is virtually nil.

A large number of samples may be necessary from patients who are already receiving antimicrobial therapy. These should be taken just prior to the next dose. A preferred practice, when possible, is to reculture persons not responding to current regimes after discontinuing antimicrobial coverage for 24 hours.

Unless otherwise specified by the MD, adult patients should have two sets of blood cultures drawn. Collection should be from separate vein puncture, from alternate arms, at one hour intervals, although specimen volume appears more critical than the timing of collection. Our lab procedure is to draw 17 cc's for each set, divided 10 cc to an aerobic bottle and 7 cc to an anaerobic bottle. STAT cultures are drawn same time, different sites.

In pediatric patients, those under the age of thirteen, 1-2 ml of blood is optimal in a pediatric blood culture bottle. It is recommended that children should only have one set of cultures drawn in a 24 hour period.

REFERENCE