

PEDIATRIC BLOOD CULTURE COLLECTION

When should a pediatric blood culture (BC) sample be collected?



Highly recommended

- Sepsis
- Focal infections with prevalence of bacteremia > 10%
- Fever without source with prevalence of bacteremia > 1.5%

Groups according to BSI* risk¹

Consider collection

- Focal infections with prevalence of bacteremia 1-10%
- Admission for IV** antibiotic treatment
- Fever without source with prevalence of bacteremia 0.5-1.5%

Not recommended

- Focal infections with prevalence of bacteremia < 1%
- Fever without source with prevalence of bacteremia < 0.5%

What is the recommended volume?²

All parameters are calculated based on the weight, including:

- Drug dosages
- Growth chart
- Blood volume

Weight of patient (Kg)	Total patient blood volume (mL)	Recommended volume of blood for culture (mL)		Total volume for culture (mL)	% of total blood volume
		Culture n°1	Culture n°2		
≤ 1	50-99	2	-	2	4
1.1-2	100-200	2	2	4	4
2.1-12.7	> 200	4	5	6	3
12.8-36.3	> 800	10	10	20	2.5
> 36.3	> 2200	20-30	20-30	40-60	1.8-2.7 or less

Miller JM, et al. IDSA Guidelines. Clin Infect Dis. 2024 Mar 5;ciae104. DOI: 10.1093/cid/ciae104

Simple method to estimate circulating blood volume³

In general, a blood sample of up to 4% of the total blood volume of a patient is recommended.²

Reminder of blood to broth ratio (1:5 to 1:10)

Age	Estimated blood volume (mL/Kg)
Preterm neonate	100
Full-term infant	90
Infant	80
Child	75
Teenagers & adults	70

Pediatric Anesthesia Digital Handbook (maskinduction.com)

When should an anaerobic bottle be used?⁴

Bacteremia caused by obligate anaerobes is rare in pediatric patients. Some investigators have recommended the use of aerobic bottles only.

Use of anaerobic blood culture bottles may be considered in the following high-risk groups:

- Immunocompromised patients
- Neck infections
- Teeth infections
- Intra-abdominal infections

How to prepare children's skin to collect BC samples?²



< 2 months old

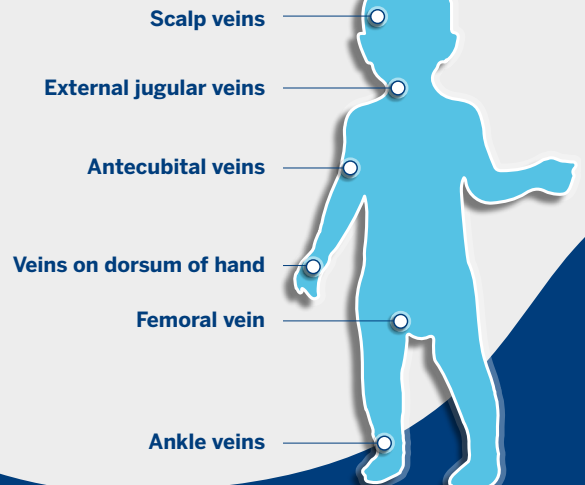
- ▶ Povidone-iodine and alcohol

> 2 months old

- ▶ Chlorhexidine or 2% iodine tincture

Where to take samples from?⁵

Preferred venipuncture site, if possible antecubital fossa



* BSI: bloodstream infection
** IV: intravenous

REFERENCES

- Hernández-Bou S, et al. Blood cultures in the paediatric emergency department. Guidelines and recommendations on their indications, collection, processing and interpretation. An Pediatr (Barc). 2016;84(5):294.e1-294.e2949. / 2. Miller JM, et al. Guide to Utilization of the Microbiology Laboratory for Diagnosis of Infectious Diseases: 2024 Update by the Infectious Diseases Society of America (IDSA) and the American Society for Microbiology (ASM). Clin Infect Dis. 10.1093/cid/ciae104. / 3. Estimating Circulating Blood Volume – Pediatric Anesthesia Digital Handbook (maskinduction.com) / 4. CLSI M47 Principles and Procedures for Blood Cultures 2nd edition / 5. Pediatric Vascular Access and Blood Sampling Techniques. Clinical Gate – Chapter 19 (clinicalgate.com)