

<b>DATE:</b>	2022 May 16
<b>TO:</b>	Health Care Practitioners in Alberta
<b>FROM:</b>	Alberta Precision Laboratories (APL)
<b>RE:</b>	<b>Provincial Blood Culture Collection and Pediatric Weight-Based Guidelines</b>

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### Key Message

- Effective immediately, there are new APL provincial blood culture collection guidelines: <https://www.albertahealthservices.ca/webapps/labservices/indexAPL.asp?id=9323&tests=&zoneid=4&details=true>
- These include weight-based pediatric collection guidance to optimize the sensitivity of blood culture, and to assist in identifying contaminants and diagnosing line infections.

### Background

- The **most important factor** for optimal sensitivity of blood cultures is the **volume** of blood drawn.
- When patient weight and size allow, collection from two sites rather than one is considered best practice and helps differentiate contaminants from true bacteremia and line infections.
- For patients weighing more than 30 kg, 4 adult vials should be collected from 2 sites (2 bottles/vials per site), for a total of 40 mL.
- Refer to Appendix (next page) for background on weight-based pediatric guidance.

### Actions required

- Review the new guidelines as relevant to your area.
- **Connect Care:** For patients weighing  $\leq 30$ kg, use the “Blood Culture Panel-Pediatric (weight-based)” order set. For patients weighing  $>30$ kg, use the blood culture order set (“Blood Cultures x 2”)
- **Sunrise Clinical Manager:** For patients weighing  $>30$ kg, continue to use the adult order sets. For pediatric patients, please use the Order Set “Blood Culture – Peds”. It will be updated by **end of June** to include weight-based guidance and allow ordering of two sets at once. Certain order sets with pediatric blood cultures may not have the weight-based peds ordering applied. In this case, order blood cultures from the “Blood Cultures – Peds” Order Set, or place two separate Blood Culture orders when indicated.
- **Meditech:** continue to order two separate blood culture orders when two sites are recommended by the guidelines.

### Inquiries and feedback may be directed to

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- Greg Tyrrell, Clinical Microbiologist, APL North E-mail: [Greg.Tyrrell@aplabs.ca](mailto:Greg.Tyrrell@aplabs.ca)

### Approved by

- Carolyn O'Hara, Chief Medical Laboratory Officer, APL



### Appendix: Background on weight-based pediatric guidance

- This guidance, a revision of previous 2019 guidelines, was composed using feedback from clinical stakeholders, including pediatricians, pediatric and adult infectious disease specialists, NICU/PICU intensivists, medical microbiologists, and nursing and laboratory staff. They incorporate available evidence in the literature.
- Multiple factors were considered in developing the guidance:
  - The higher the volume of blood collected, the better the sensitivity for bacteremia.
  - Historically, the volume of blood drawn for cultures from children (especially older ones) is often grossly inadequate.
  - Practicality of drawing large volumes from neonates and younger children.
    - The recommendations give optimal blood volumes to guide decisions but are not meant to replace clinical decision making. Decisions on the volume and number of sites drawn is up to the ordering clinician.
  - Practicality of drawing from more than one site in neonates and younger children.
    - The recommendations and electronic orders allow the clinician to decide when blood should be collected from two sites.
  - An optimal blood culture volume draw of  $\leq 2.5\%$  of total blood volume was used (if  $>1\text{kg}$ ). This is well within safe limits (Howie 2011), with total blood volume calculated as 80 mL/kg. Due to the safe margin, the volume of blood drawn for blood cultures can be considered separately from APL maximum daily blood volume draws for other tests.
  - Minimum volume allowed for the blood culture pediatric vials (1mL).

### Weight-Based Pediatric Blood Culture Collection Guidance Table

Body Weight (kg)*	Site 1	Site 2	Number of bottles to be collected
Less than or equal to 5 kg	Pediatric Bottle Minimum 1 mL*	N/A	1
5.1 - 12.7 kg	Pediatric Bottle 4 mL	Pediatric Bottle 2-4 mL*	1-2
12.8 kg - 30 kg	Aerobic + Anaerobic 10 mL + 10 mL	Aerobic 10 mL	2-3
Greater than 30 kg	Aerobic + Anaerobic 10 mL + 10 mL	Aerobic + Anaerobic 10 mL + 10 mL	4

\*More blood (up to 4mL per bottle) can be collected if clinically appropriate.

### References:

1. Leber et al. Clinical Microbiology Procedures Handbook, 4th ed. May 2016
2. Miller et al. Clin Infect Dis 2018; 67(6):e1-94.
3. Strand et al. JAMA 1993. 269(8):1004-6
4. Mimoz et al. Ann Intern Med 1999. 131(11):834-7 5.
5. Little et al. Am J Med 1999. 107(2):119-25
6. Clinical Laboratory Standards Institute (CLSI) Principles and Procedures for Blood Cultures M47, 1<sup>st</sup> ed.
7. Howie SRC. Bull World Health Organ 2011; 89:46–53.