



**Simulation:** Blood Volume for Blood Cultures

**Time:** 10 minutes

**Max number of people per station:** 10

**Number of facilitators per station:** 1-2

**Supplies Needed:**

- Three 20mL syringes with blunt tip needles
- Food coloring
- water
- Three blood culture vials
- Three transfer devices
- Permanent marker
- Blood Culture Volume still series

Blood Volume still series will be used showing proper and improper blood volumes in both syringes and blood culture vials. Learners will identify adequate versus inadequate volumes of blood for the sample collection through a matching game. Learners will discuss the relationship of blood volume and pathogen growth yield.

### Steps to Perform Simulation

For in-person:

1. Prepare water and red food coloring mixture to create “blood”.
2. Draw up three syringes with 5mL, 10mL, and 20mL respectively.
3. Mark the blood culture bottles at the 10mL line. Transfer “blood” into the blood culture vials showing various amounts of blood volume both above and below the 10mL line.
4. The instructor will encourage the visualization of the “blood” in the vials and syringes, facilitating a discussion on adequate blood volume for germ growth.

For virtual:

1. Show Blood Volume Still Series. Prepare the photos in a matching game of correct or incorrect blood volume in syringes and vials.
2. The instructor will encourage the visualization of the blood in the vials and syringes, facilitating a discussion on adequate blood volume for germ growth.

### Debriefing Script\*:

**Facilitator:** Thank you for participating in this debriefing session about the importance of Blood Volume for Blood Cultures. Let's discuss the key points and address any questions or concerns you may have.

**Question 1:** How does the volume of blood collected impact the pathogen growth yield?

**Answer:** It is essential in adults to obtain 20mLs (10mL for aerobic and 10mL for anaerobic) for the most accurate pathogen yield.

**Question 2:** What might be the implications of obtaining too little volume for the blood culture?

**Answer:** Adequate blood volume is imperative. Having too little volume decreases the sensitivity of the culture.

**Question 3:** When would it most appropriate to rule out bacteremia and stop drawing blood cultures?

**Answer:** Two blood cultures collected from two separate and properly prepared sites (two venipunctures) in a 24-hour period is usually satisfactory with special considerations for conditions like endocarditis.

**Facilitator:** Thank you for your participation. Understanding the importance Blood Volume for Blood Cultures is essential for the most accurate pathogen yield. If you have any further questions or need clarification on any topic, please feel free to ask.

**\*Disclaimer:** Please follow this debriefing script. The skill of debriefing is a process that takes time and experience to learn. Please do not use these debriefing tools outside of this situation without appropriate knowledge and experience.

Kirn, T.J., Weinstein, M.P. (2013). Update on blood cultures: how to obtain, process, report, and interpret. *Clinical Microbiology and Infection*. 19(6). 513-520. [Update on blood cultures: how to obtain, process, report, and interpret - ScienceDirect](#)

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