

# Provincial Laboratory Services



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**Health PEI**  
One Island Health System

## Blood Culture Utilization and Quality 2017-2019 Poor Performance on Collecting Correct Volume of Blood Across the Province March 20, 2020

**This information applies to:** Physicians, Nurse Practitioners, Directors of Nursing, Nurse Managers, Clinical Instructors/Educators, and Infection Control Practitioners

Blood cultures are one of the most important microbiological tests available to the clinician. In 2019, over 7,000 blood cultures were drawn from patients across the Island. Regular audits on the proper utilization of this diagnostic test provide a quality indicator which is measurable. Our contamination rate remains very low; however, blood culture volume is an on-going major problem requiring prompt attention.

### 1. Blood volume

The most recent audit indicated that Western Hospital consistently collected appropriate blood volumes; however, almost all other sites are collecting too much blood per bottle, with one site collecting too little. Incorrect volumes (either too high or too low) directly affect outcomes and lead to falsely negative results (see figure 1).

The optimal volume to be collected in adult aerobic and anaerobic culture vials is 8-10mL and it is recommended to mark the required blood volume level on the culture vial prior to performing venipuncture. Please see QEH Nursing policy "Blood Cultures" and/or Provincial Laboratory Procedure "PRMPRE002 Blood Cultures Collection" for blood culture collection instructions. In the future, the Microbiology laboratory will be adding a comment to blood culture reports where culture vials are received without a blood volume marking indicated on the bottle (see appendix 1). Thank you for providing education to the nursing staff on this practice change.

### 2. Contamination

The target rate for contamination is  $\leq 3\%$  (see figure 2). Sites throughout the province are **doing very well** with regard to collection technique.

Should you require more detailed information related to your unit or facility, please contact Vanessa Arseneau or Jennifer Dowling.

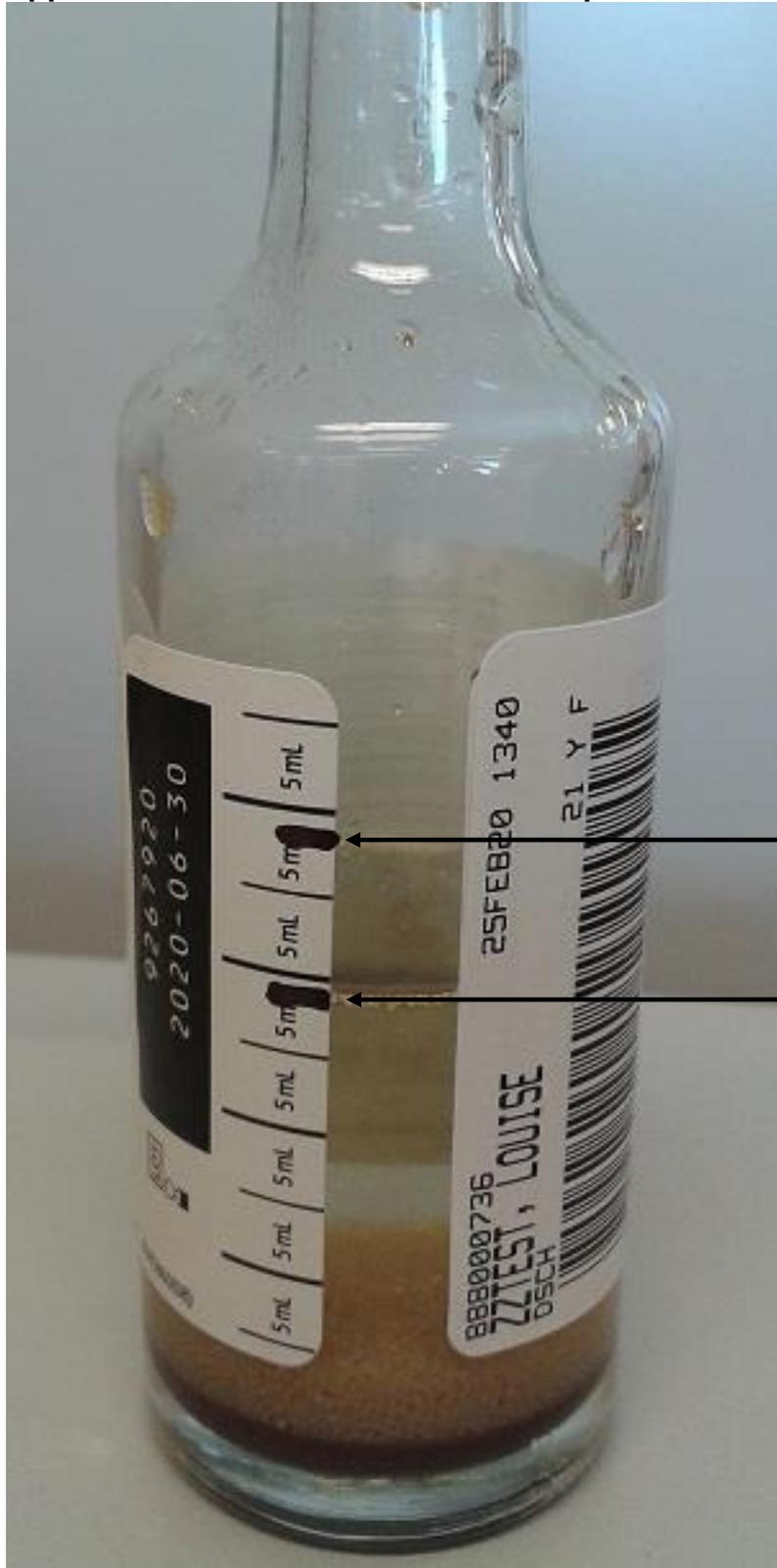
**REFERENCE:** Baron, E. J. *et al.* (2005). Blood Cultures IV. In E. J. Baron (Ed.), *Cumitech: Cumulative Techniques and Procedures in Clinical Microbiology* (pp. 1-25). Washington, DC: ASM Press.

Cc: Shane Buchanan, Brian Timmons, Jamie MacDonald, Dr. K. Mead

### For more information, contact:

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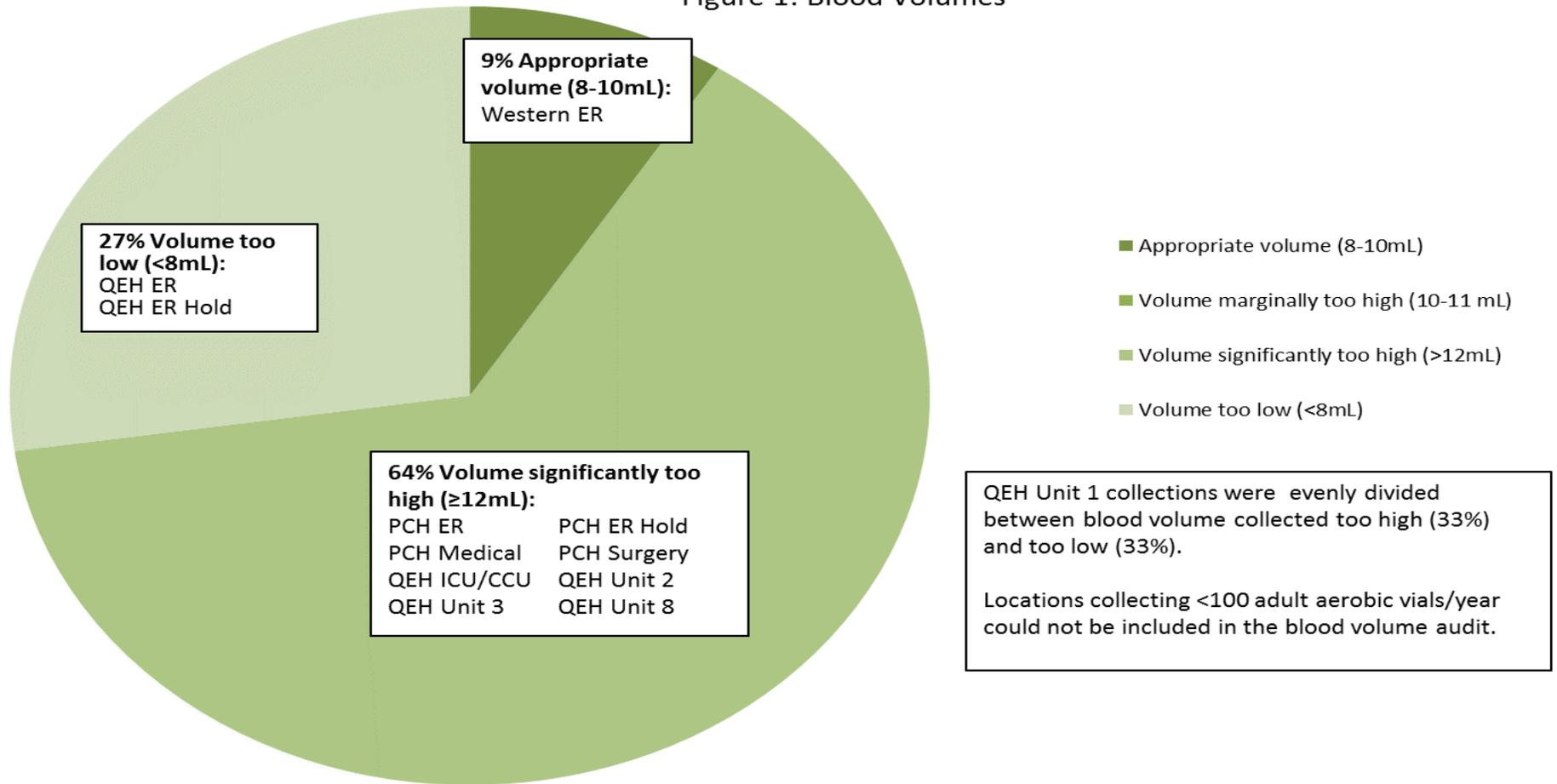
**Appendix 1: Blood culture vial with required blood volume level marked**



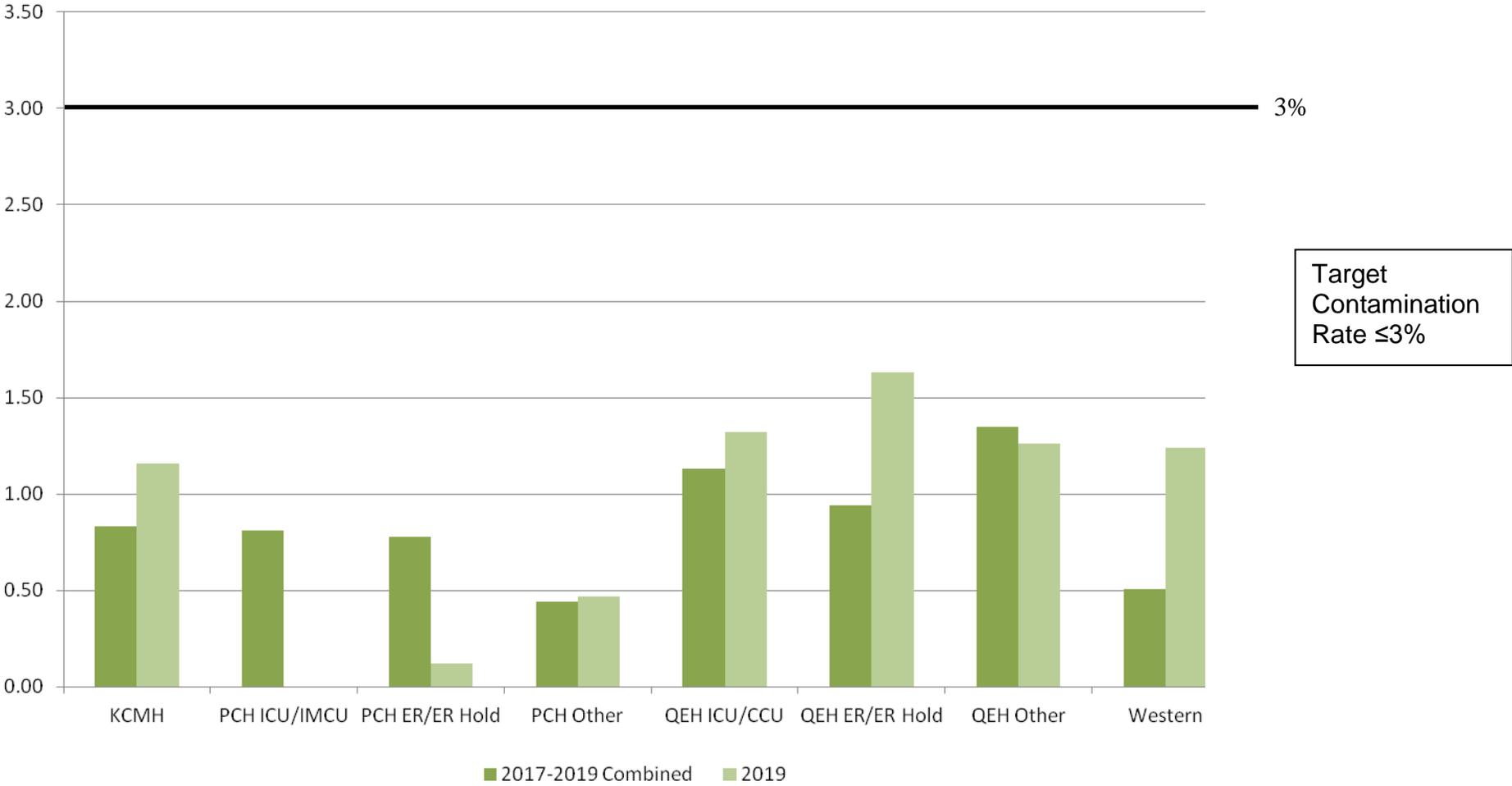
Volume end line (required volume is 8-10mL)

Volume start line

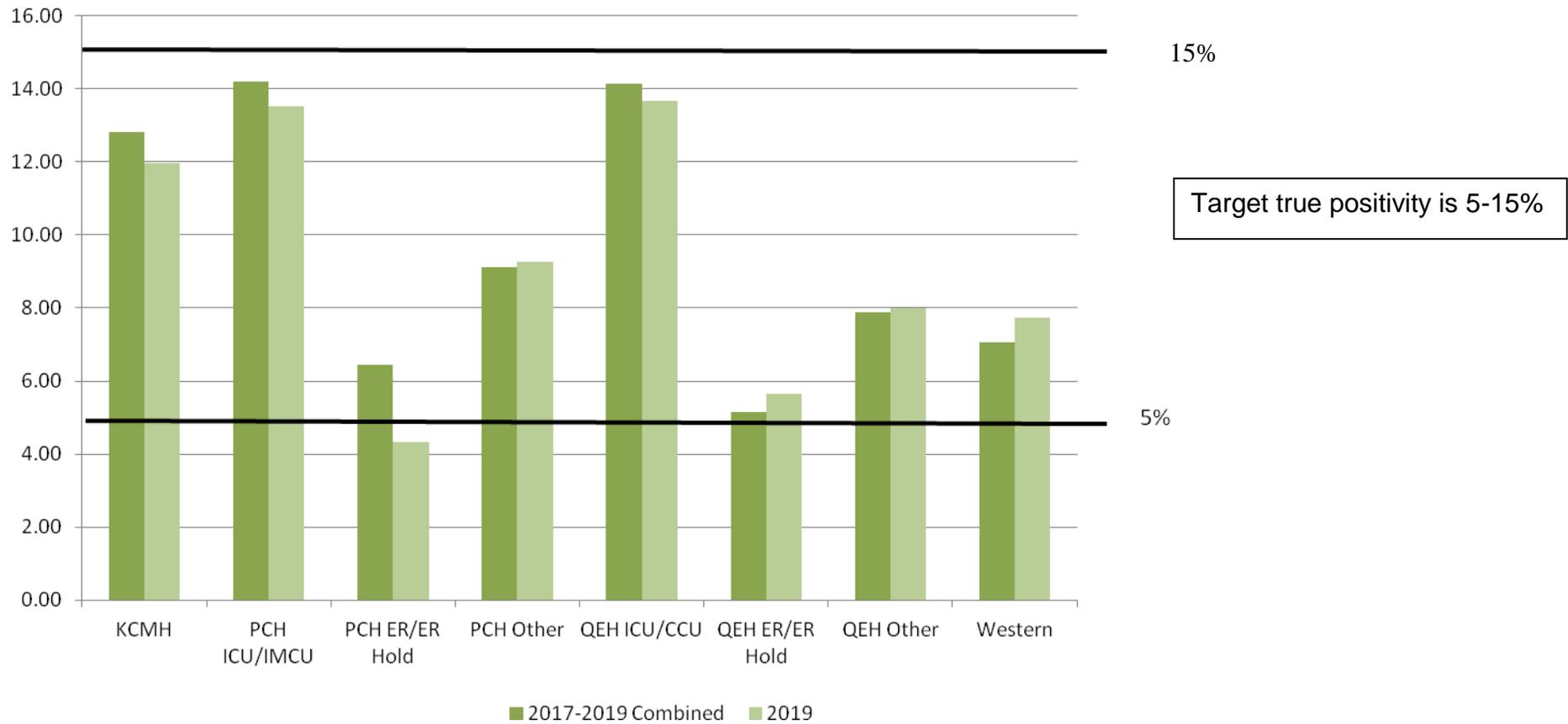
Figure 1: Blood Volumes



# Figure 2: Contamination



### Figure 3: True Positivity



The goal rate for true positivity is 5 – 15%. True positivity is the percentage of positive blood cultures (excluding contamination) over all blood cultures collected.

- A true positivity of less than 5% indicates that blood cultures are being collected too often. A low true positivity may also be due to inappropriate collection technique (i.e. underfilled vials).
- A true positivity of greater than 15% indicates that blood cultures are not being collected often enough.