

Provincial Laboratory Services



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Health PEI
One Island Health System

Blood Culture Utilization and Quality 2021 - 2023

February 1, 2024

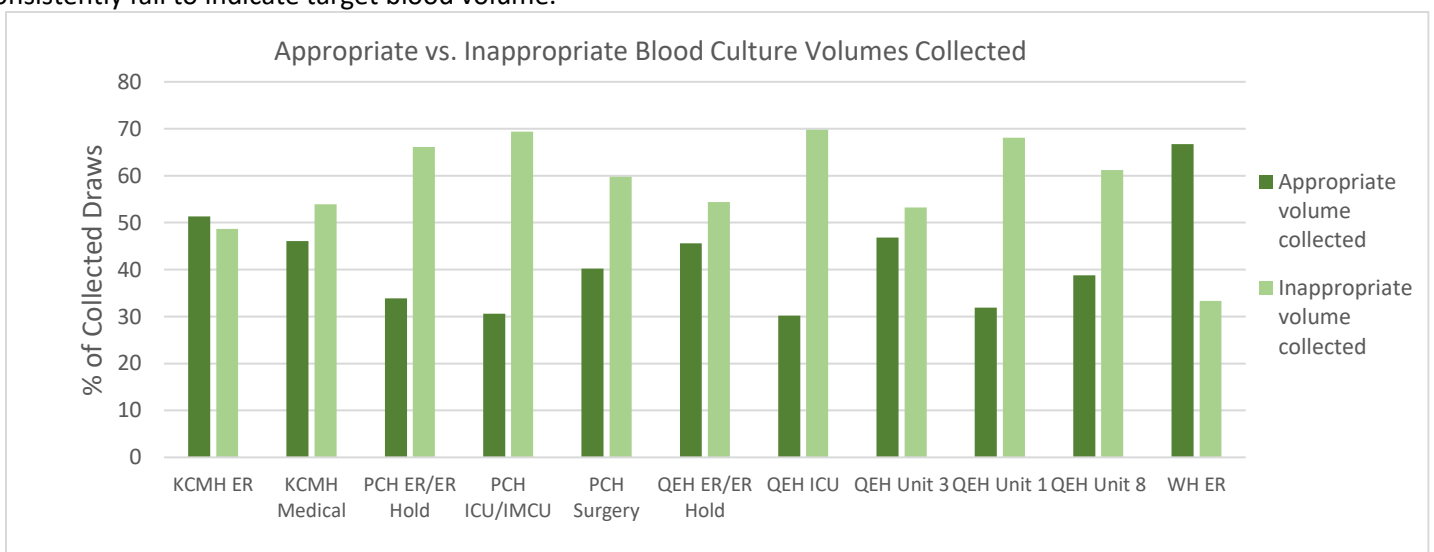
This information applies to: Physicians, Nurse Practitioners, Directors of Nursing, Nurse Managers, Clinical Instructors/Educators, and Infection Control Practitioners

In 2023, almost 8,200 blood cultures were collected from patients across the Island. Regular audits on the proper utilization of this important diagnostic test provide a quality indicator which is measurable. **Our contamination rate remains low and the blood volume collected has improved over volumes collected in 2022.**

1. Blood Volume

Incorrect volumes (either too high or too low) directly affect outcomes and lead to contamination and false results (see figure 1). The optimal collection volume for adult aerobic and anaerobic culture vials is 8-10mL and current blood collection policies require marking optimal blood volume level on the vial prior to performing venipuncture. Locations collecting <100 adult aerobic vials/year could not be included in the blood volume audit.

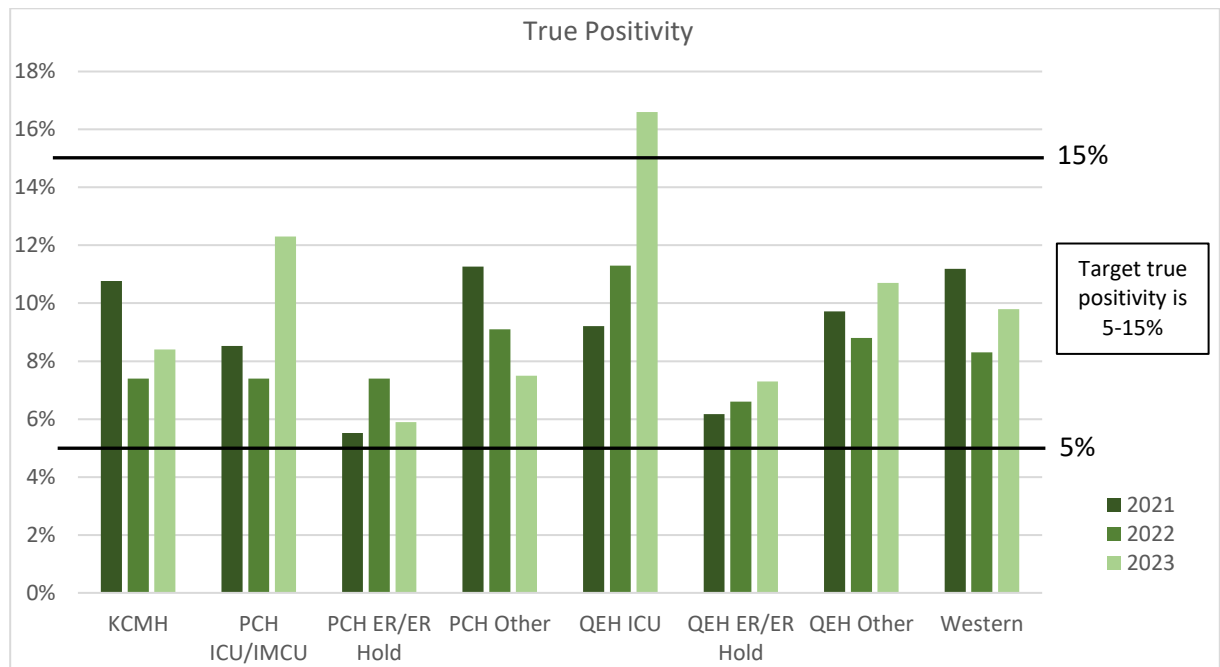
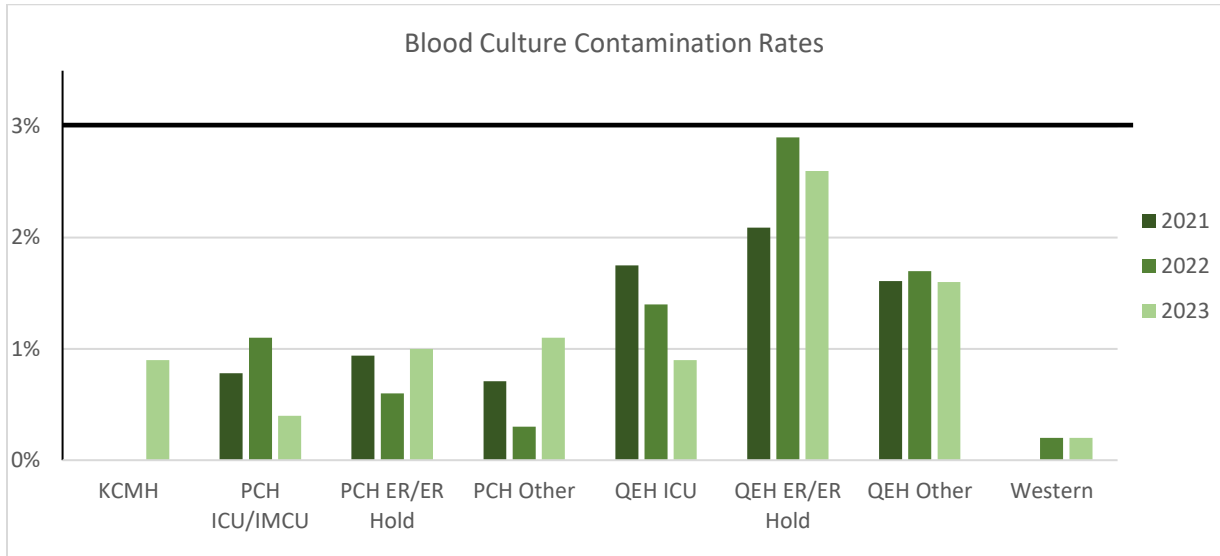
The QEH Microbiology laboratory will continue to add comments to blood culture reports where vials are received without a volume marking indicated on the bottle. In addition, incident reports will continue to be filed for any facility units that consistently fail to indicate target blood volume.



2. Contamination and True Positivity

The target contamination rate is $\leq 3\%$ (see figure below). Although the contamination rate for a few sites increased in 2023, generally sites throughout the province continue to do well with regard to this aspect of collection technique.

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 (see figure below). A true positivity of less than 5% may indicate that blood cultures are being collected too often; however, it 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.



References: 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; Doern, G. V. *et al.* (2019). Practical Guidance for Clinical Microbiology Laboratories: A Comprehensive Update on the Problem of Blood Culture Contamination and a Discussion of Methods for Addressing the Problem. *Clinical Microbiology Reviews*, 33(1). Doi: 10.1128/CMP.00009-19.

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