

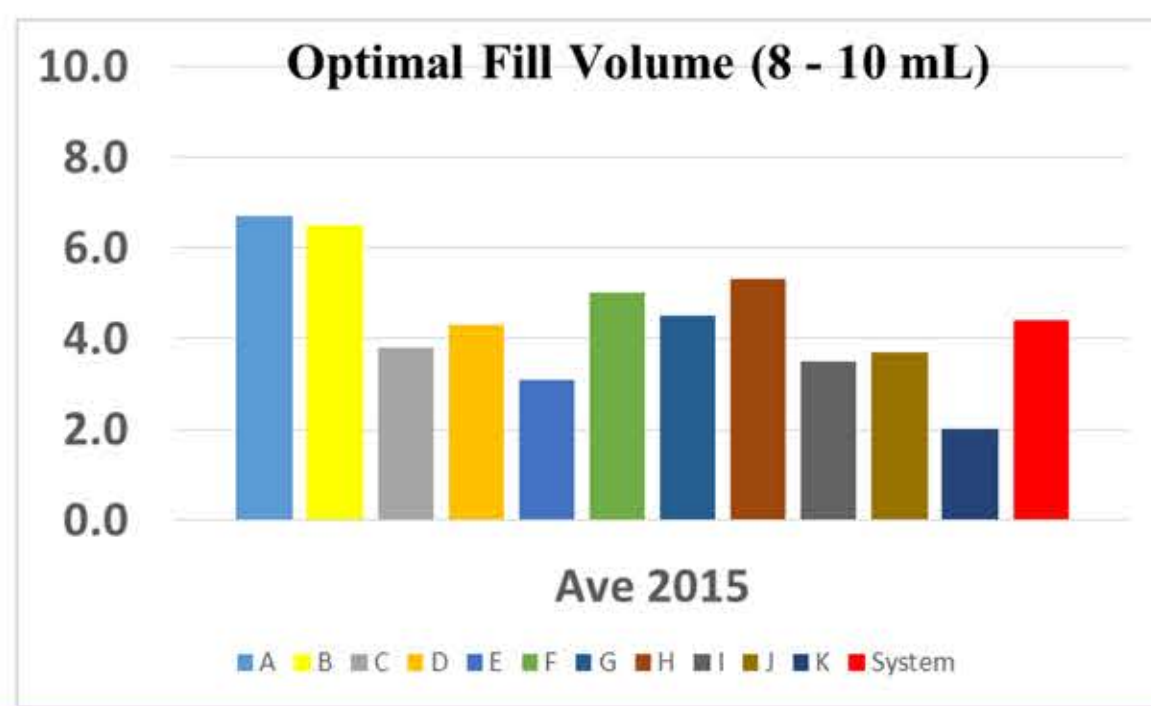
# System Approach to Obtaining Optimal Blood Culture Fill Volume

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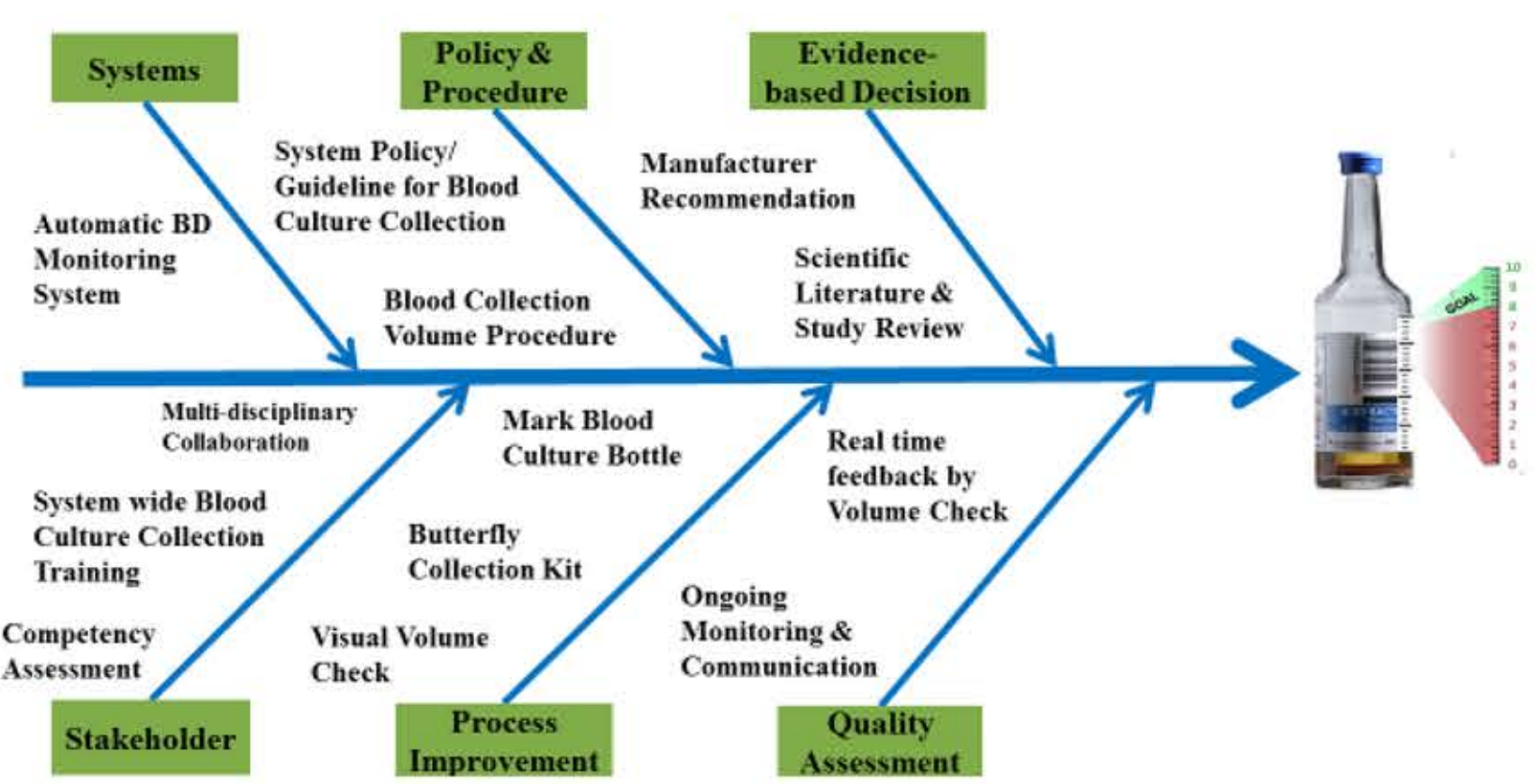
## ABSTRACT

Published studies have shown each ml of blood, up to 10 ml, can increase the sensitivity of the blood culture by 3-5%. The automatic BD BACTEC Blood Volume Monitoring system identified the practice of culturing suboptimal volumes of blood was widespread throughout the health system. A system approach utilizing Lean Methodologies and multi-disciplinary collaboration to improve the fill volume, positivity rate, reduce hospital acquired infections and continue to meet blood culture contamination Performance Improvement metric.

### Baseline Hospital Blood Culture Fill Volumes



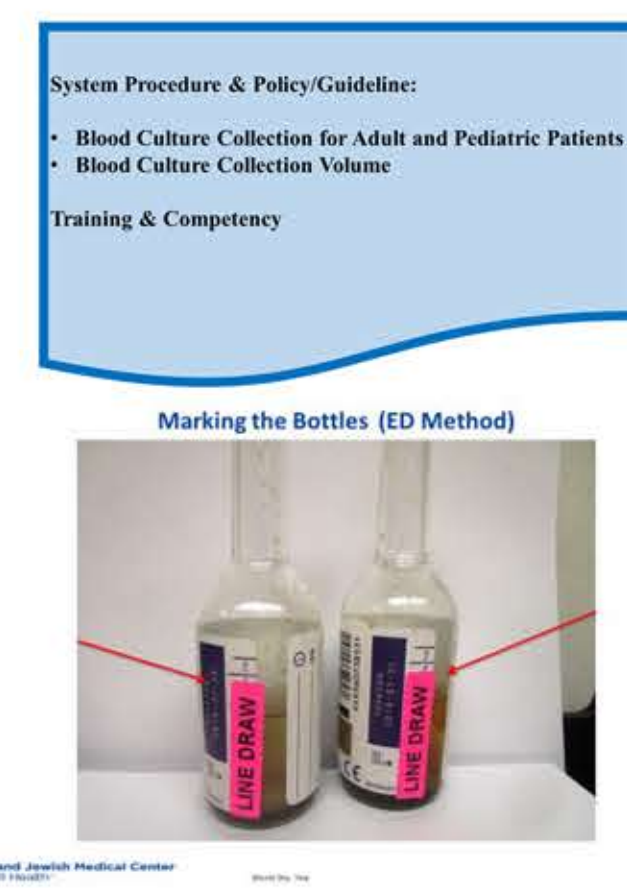
## Cause and Effect Diagram (Ishikawa)



### Multi-disciplinary Collaboration

- CORPH** (Northwell Health Parent and Shared Service)
  - Chief Quality Officer
  - System Infection Prevention
  - Chief nurse Executive
  - System Quality Management -PICG
- SERVICE LINE**
  - Quality Management, Medicine
  - Clinical, Emergency Department
  - Epidemiology, Infection Prevention
  - Laboratory
    - Infectious Disease Diagnostics
    - Hospital Laboratory Operations
    - Lab Quality Management-PICG
    - Phlebotomy Methods Committee
- LOCAL HOSPITAL**
  - Hospital Administration
  - Clinical Medical Officer
  - Patient Care Services
  - Nursing Education
  - Infection Control
  - Quality Management-PICG
  - Collaborative Care Council
  - Patient Safety Round
- LOCAL LABORATORY**
  - Medical Director
  - Administrative Director
  - Management Team
  - Microbiology Team
  - Quality Management-PICG
  - Phlebotomy

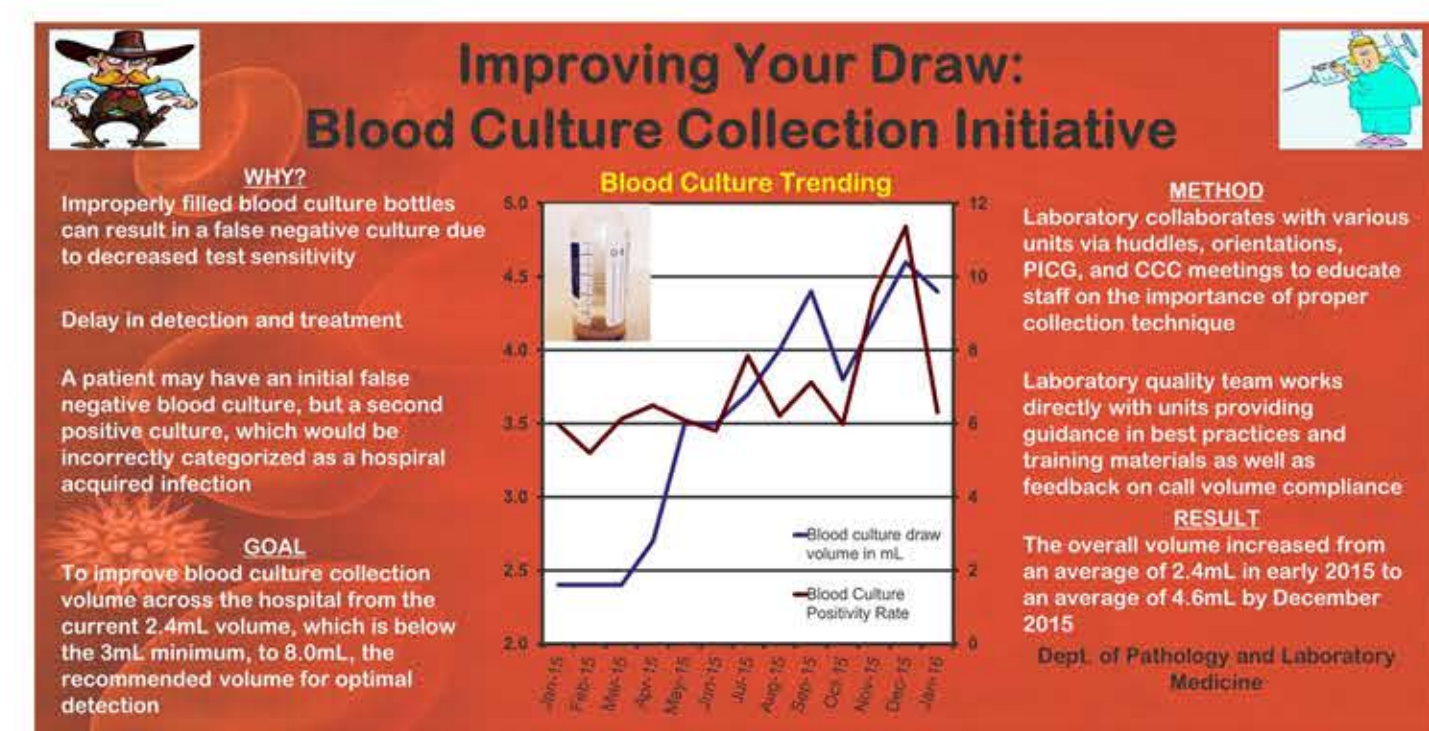
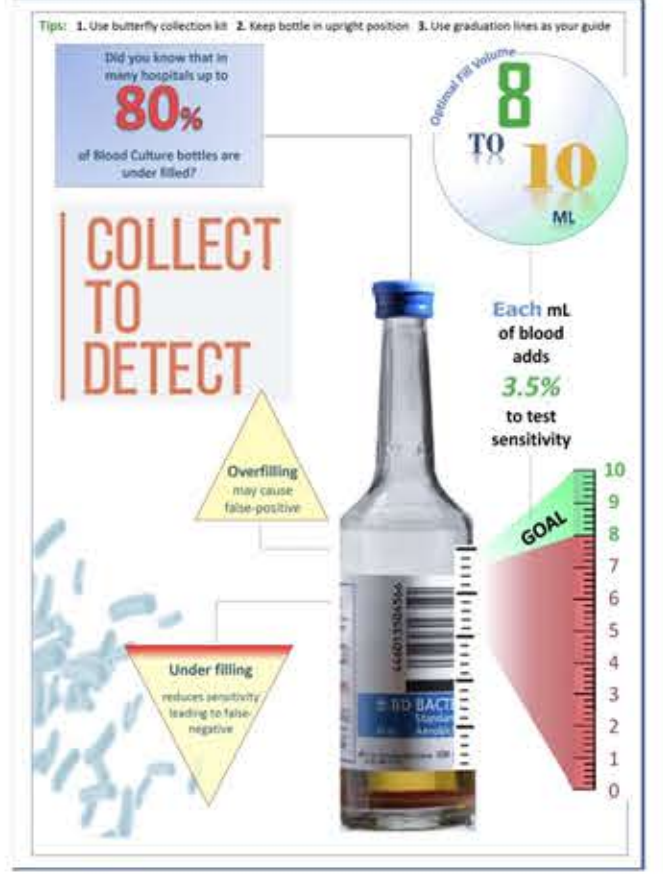
## METHODS



## System Coordination

**Adult Blood Culture Collection Instructions**  
Prepare Blood Culture Bottles

- Step 1:** Mark bottle at desired fill level (each bottle needs at least 8 mL)
- Step 2:** Remove cap
- Step 3:** Clean the top of the bottle with 70% isopropyl alcohol
- Step 4:** Use butterfly and syringe to collect blood



**Blood Cultures - Fill Me Up!**  
(But Not Too Much)

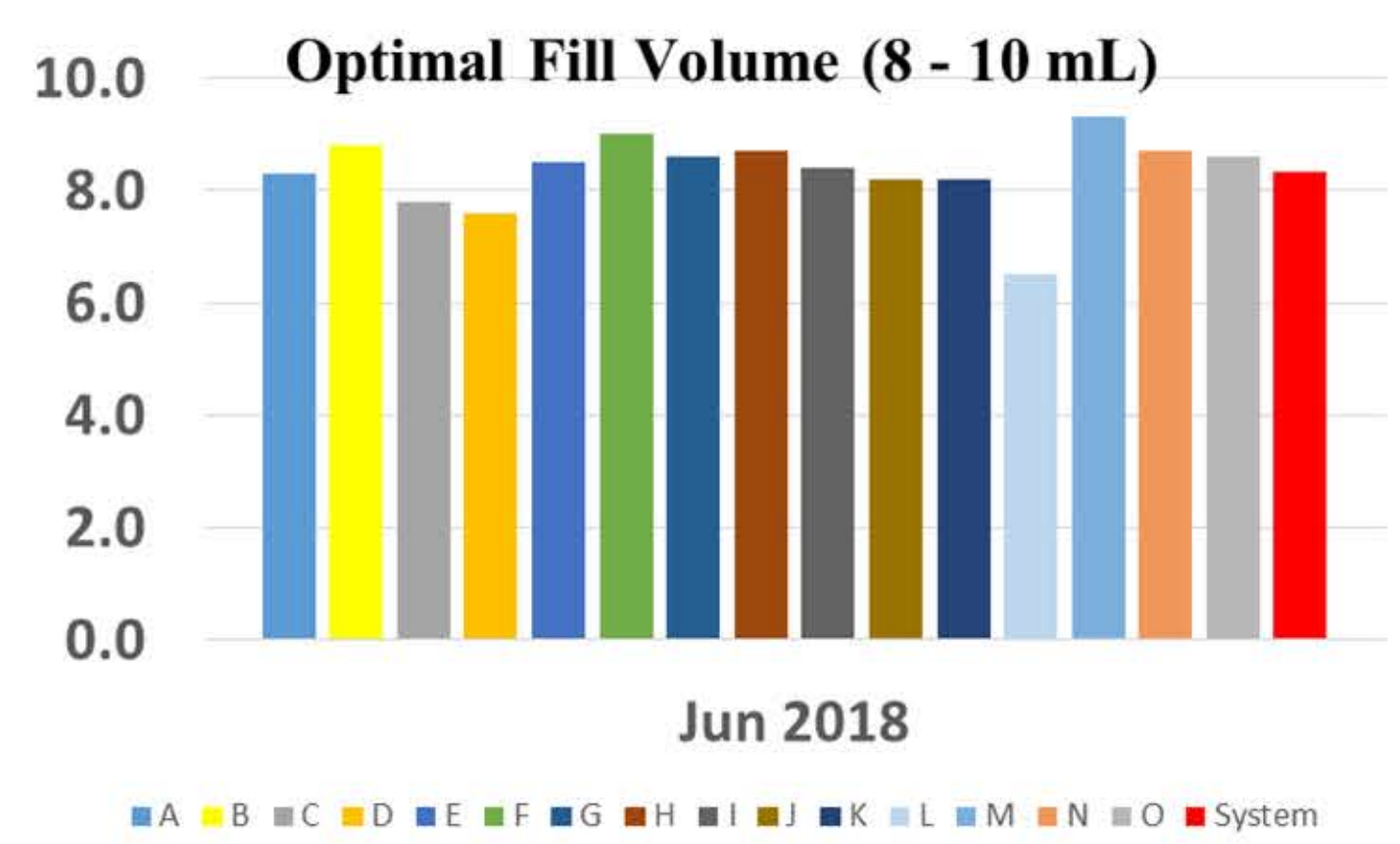
**Background:** A blood culture is the detection and isolation of blood-borne organisms... Improperly filled blood culture bottles can result in a false negative culture due to decreased test sensitivity.

**Intervention:** Laboratory collaborates with various units via buddies, orientations, PICG, and CQC meetings to educate staff on the importance of proper collection technique.

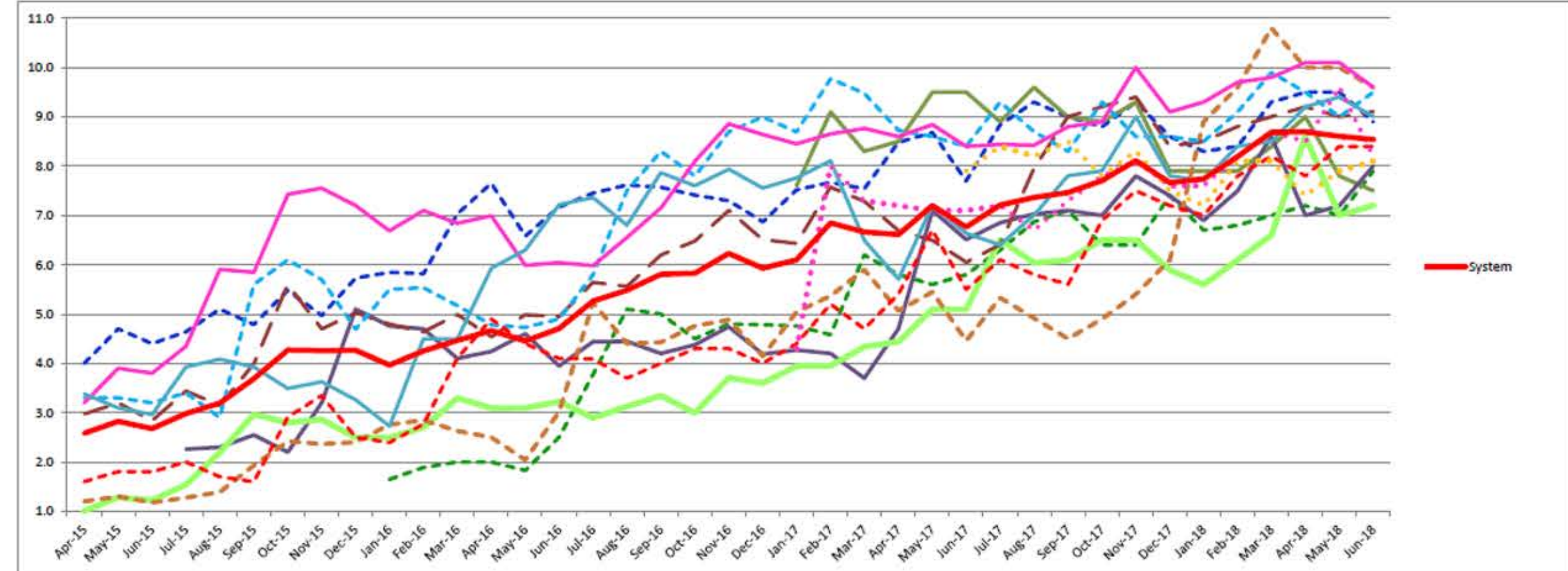
**Results:** The overall volume increased from an average of 2.4mL in early 2015 to an average of 4.0mL by December 2015.

## RESULTS

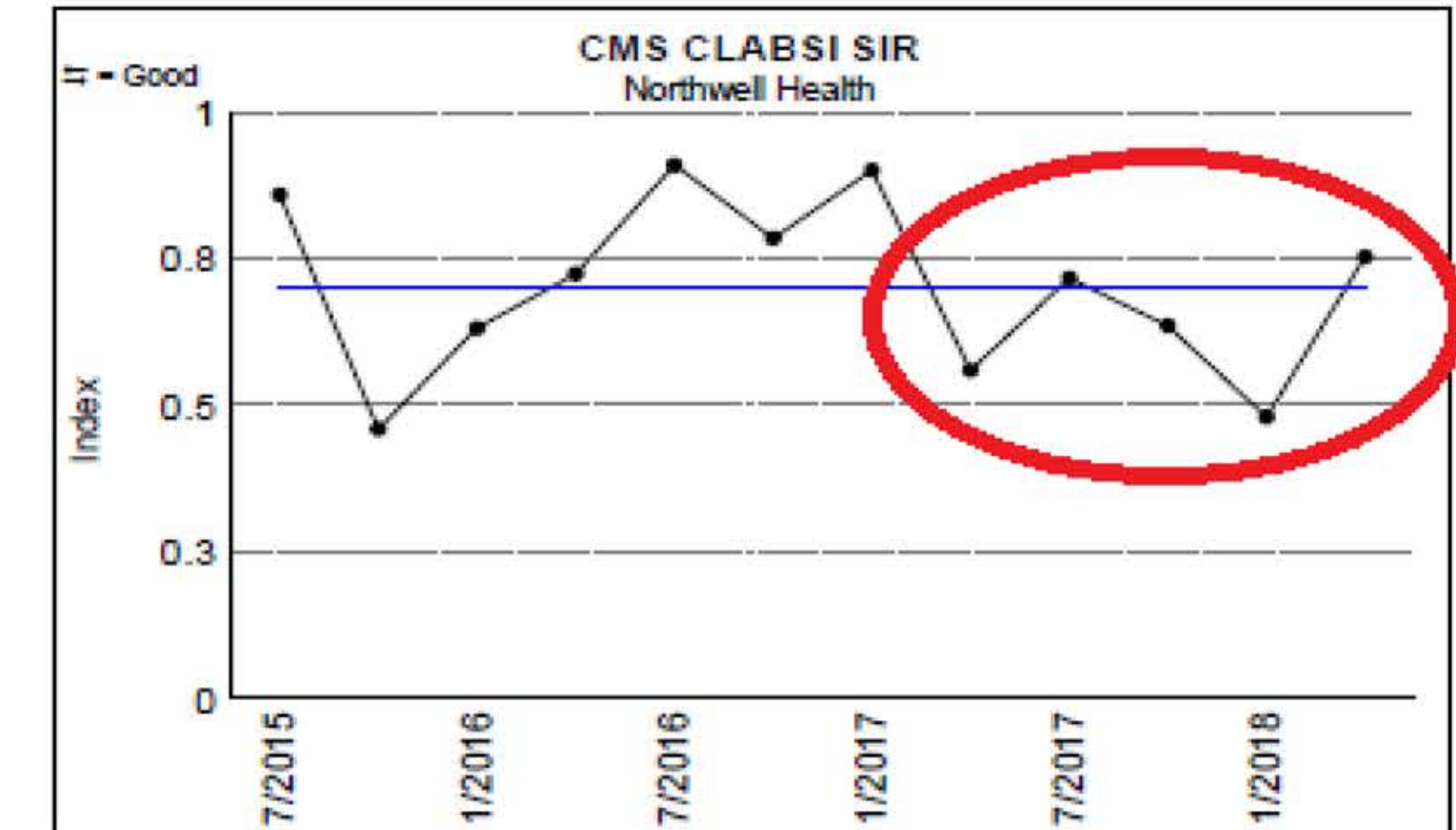
### Improved Hospital Blood Culture Fill Volumes



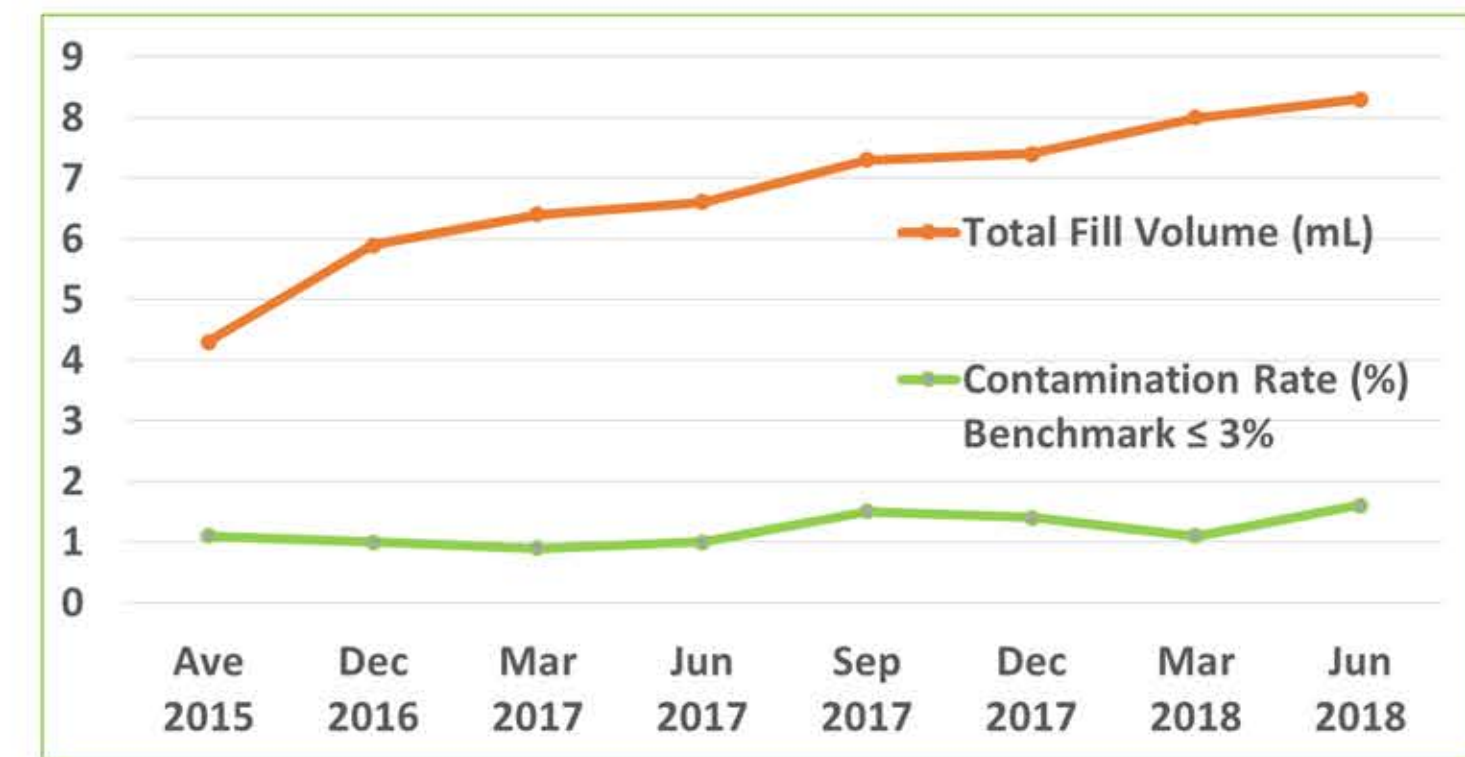
### Improved ED Blood Culture Fill Volumes (4.3mL to 8.5mL)



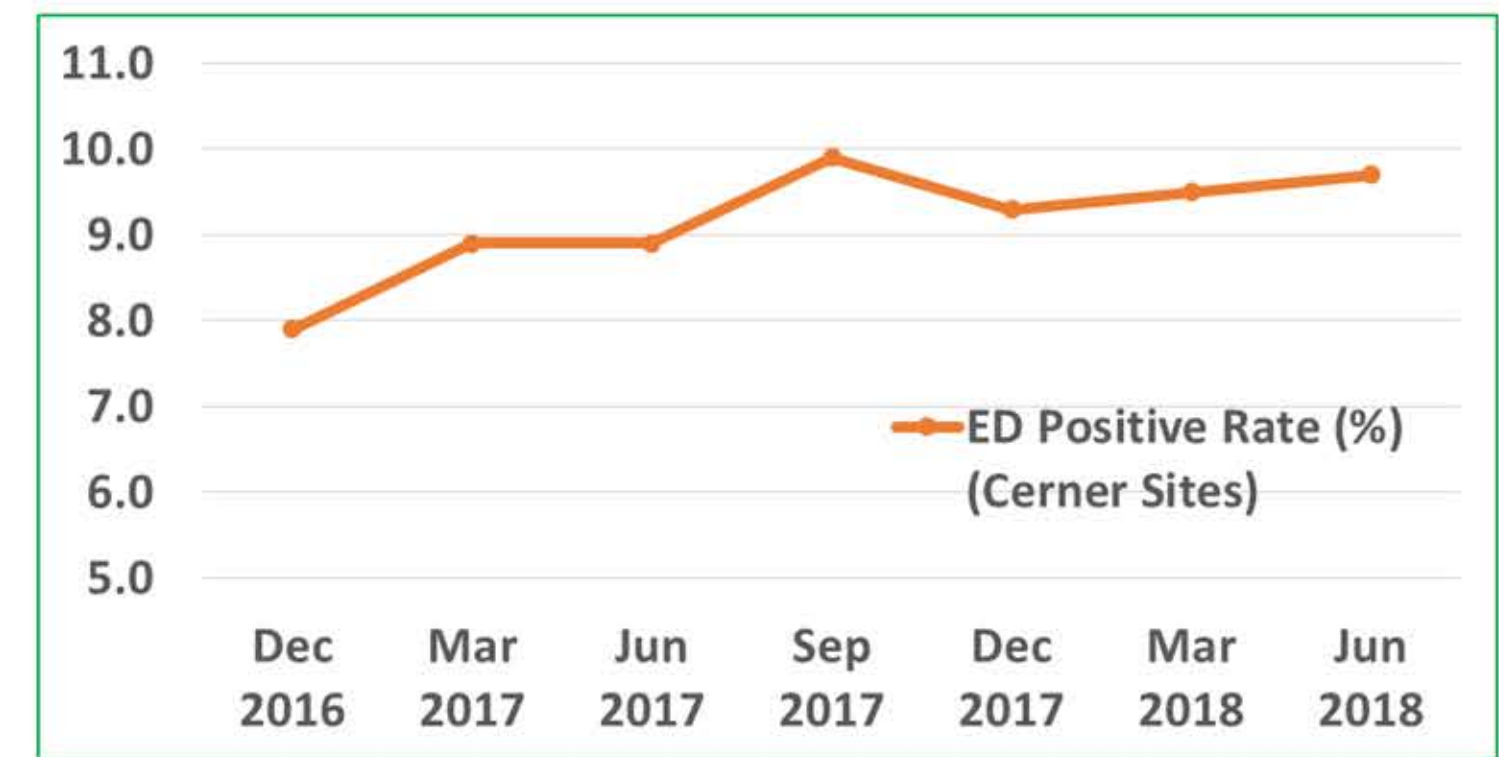
### Joint Efforts Potentially in Reducing System HAI



### Achieving Optimal Fill Volume and Maintaining Quality Performance



### Improved Positive Rates Reducing Admitted ED Patient HAI



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