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Effects of Initial Specimen Diversion on Blood Culture Contamination Rates in the Emergency Department

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Effects of Initial Specimen Diversion on Blood Culture Contamination Rates in the Emergency Department

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BACKGROUND

- Blood cultures are the gold standard for diagnosing septic patients
- Blood stream infections cost \$25 billion annually nationwide
- Contaminated blood cultures affect patient plan of care – hospital admission, length of stay, antibiotic administration, cost
- Contamination rates increase in high stress environments such as the emergency room
- National benchmark is a blood culture contamination rate below 3%

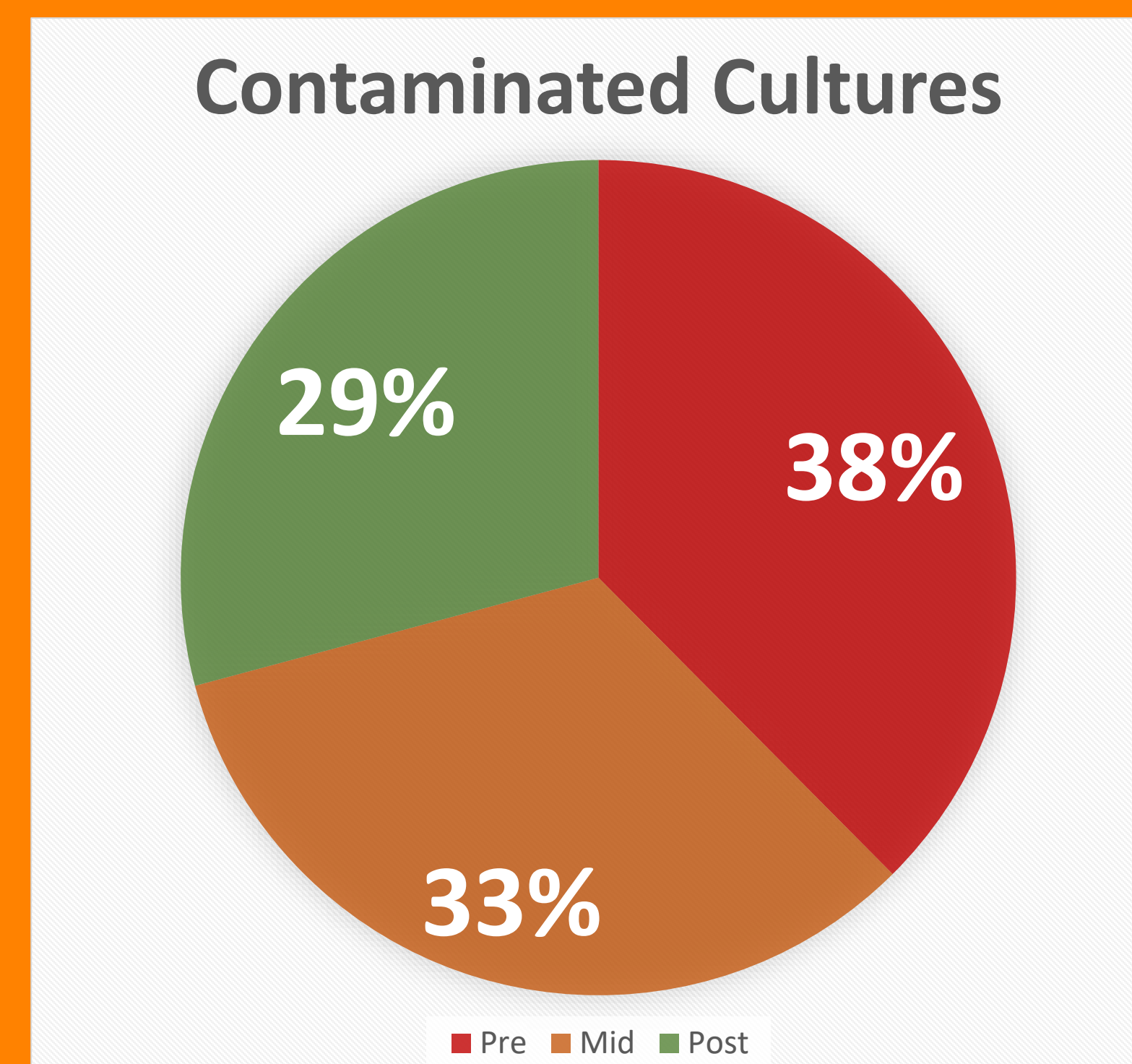
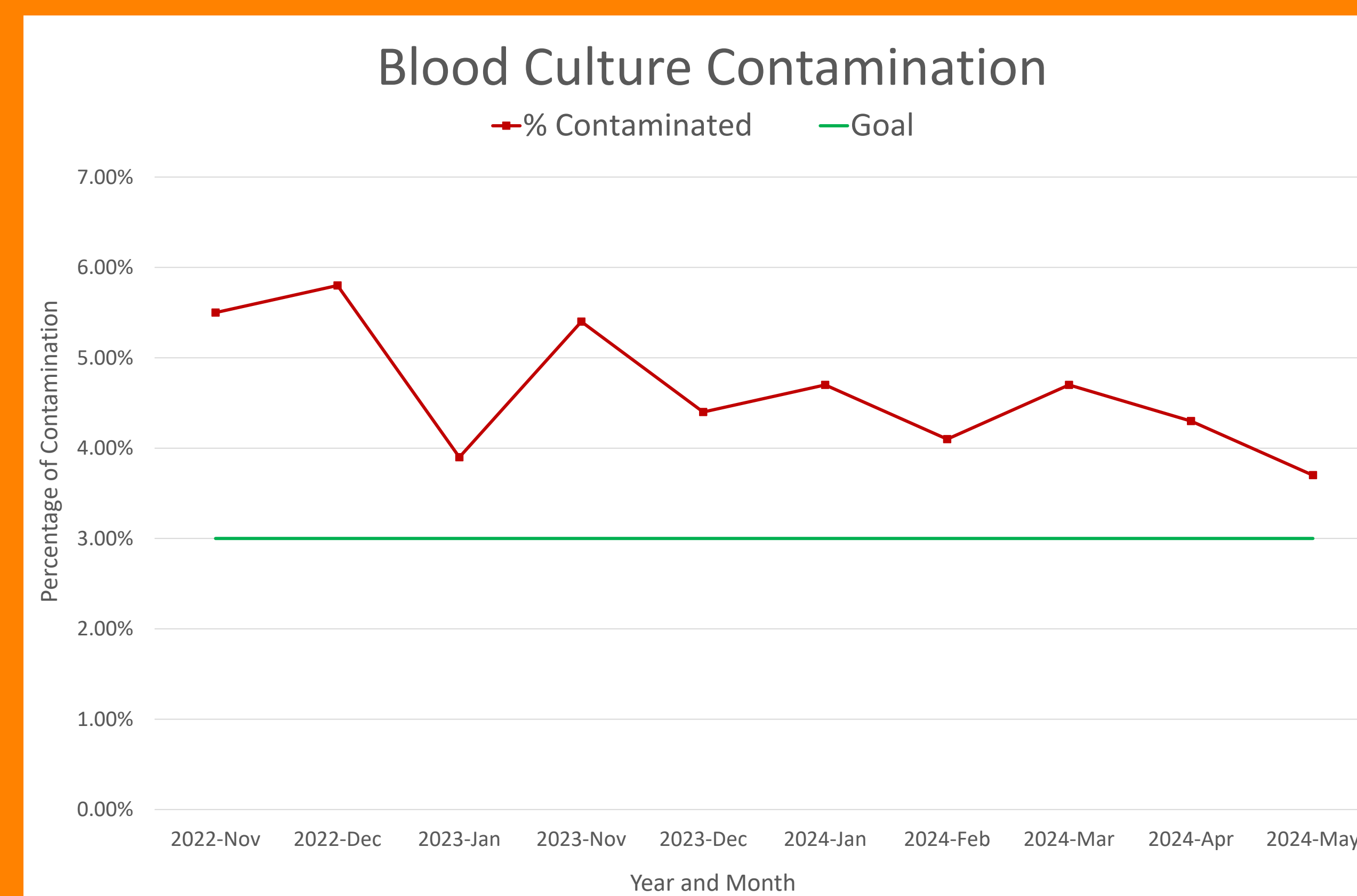
LOCAL PROBLEM

- The site for this evidence-based quality improvement project is a 38 bed Middle Tennessee emergency department.
- About 1,000 blood cultures are drawn monthly by nurses, techs, and phlebotomist in the ED.
- The blood culture contamination rate in October 2023 prior to project initiation was 5.3%.
- Project Aim:
 - By May 31, 2024, blood culture contamination rates will be below the national benchmark of 3%

METHODS

- This project used the Evidence-Based Practice Improvement Model as the framework.
- Current literature show a correlation between initial specimen diversion and decreased blood culture contaminations.
- Three time periods were studied: pre-hospital intervention, post-hospital initial specimen diversion, and post-DNP education and intervention.
- In-person education was developed to improve staff compliance.
- Blood culture contamination rates were monitored monthly and guided practice change through Plan-Do-Study-Act (PDSA) cycles.
- Outcome measures of hospital admission and length of stay were reviewed for each time group.

Blood culture contamination rates were decreased after staff received in person education on initial specimen diversion.



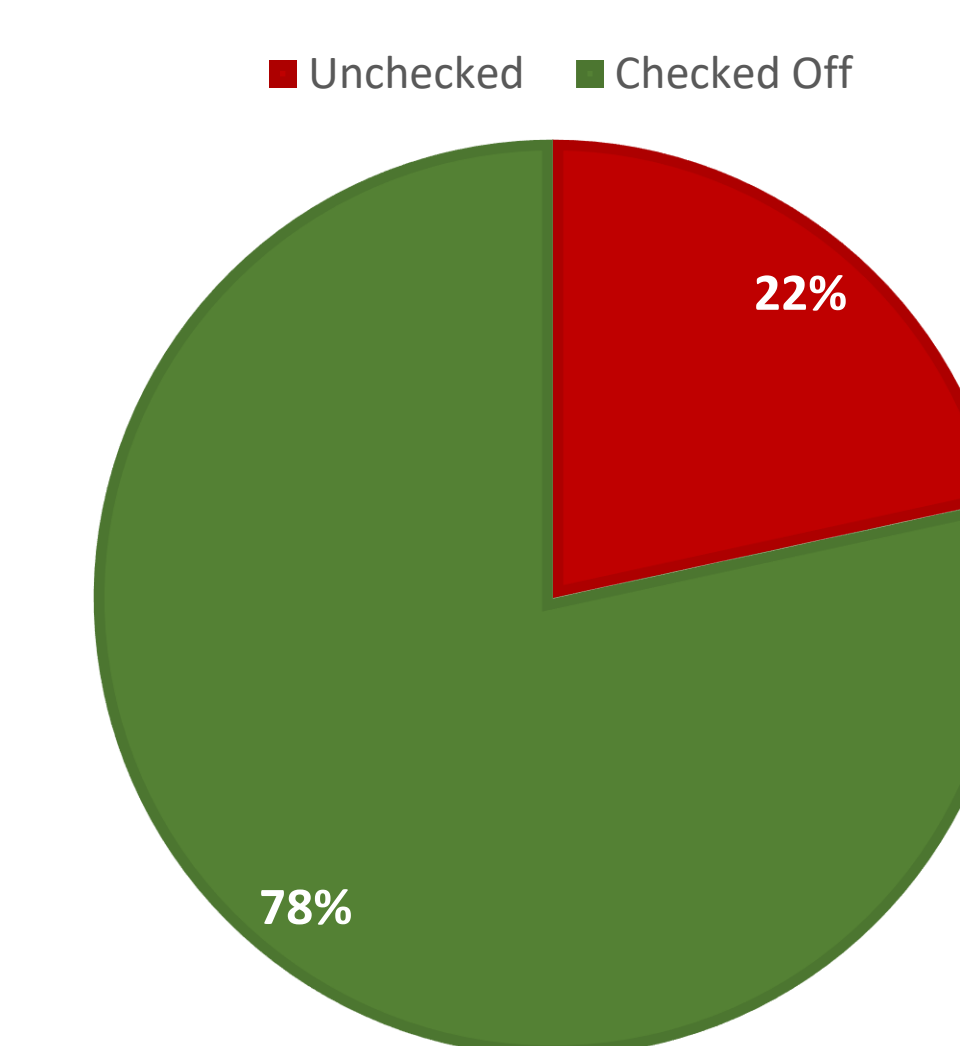
INTERVENTIONS

- Two-week in person education period
- PowerPoint presentation
- Inservice Flyers
- Reminder Flyers
- PDSA Cycles every two to four weeks
- Staff re-education as indicated from PDSA cycles

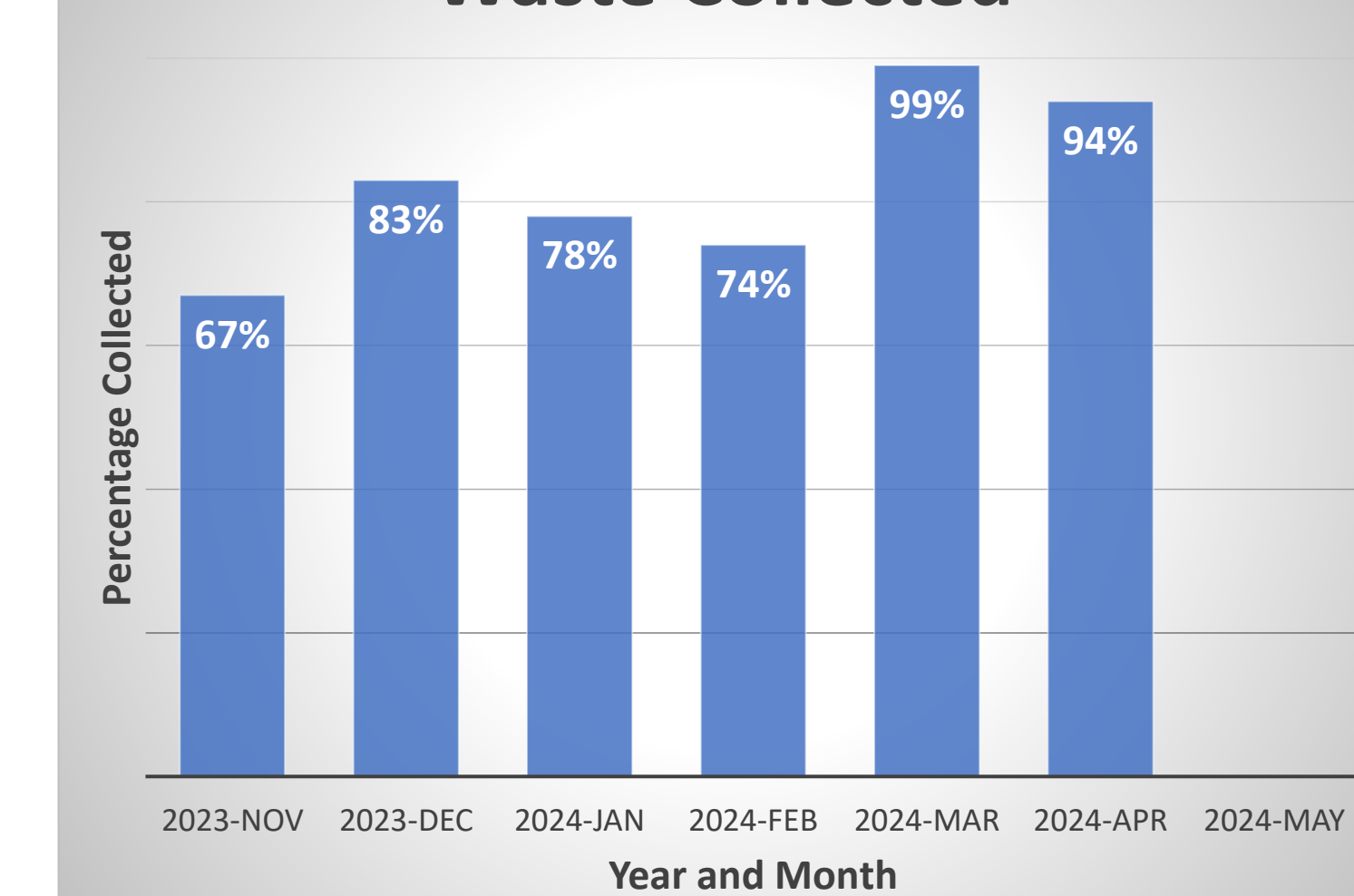
RESULTS

- 78% of clinical emergency staff received in-person education.
- Waste collection rates increase after the in-person education.
- Blood culture contaminations decreased from 4.7% in January 2024 to 3.7% in May 2024.
- This decrease did not reach the project aim, but a clinical significance was noted in contamination decrease.

STAFF EDUCATION



Waste Collected



CONCLUSIONS

- Providing in-person education on initial specimen diversion had a clinical significance on the decrease of blood culture contamination rates.
- This intervention can be used on more units through out the hospital to improve blood culture contamination rates.
- Sustainability includes in-person education for new staff members and frequent re-education.