

# Quality Initiative: Reducing Blood Culture Bottle Contamination Rates

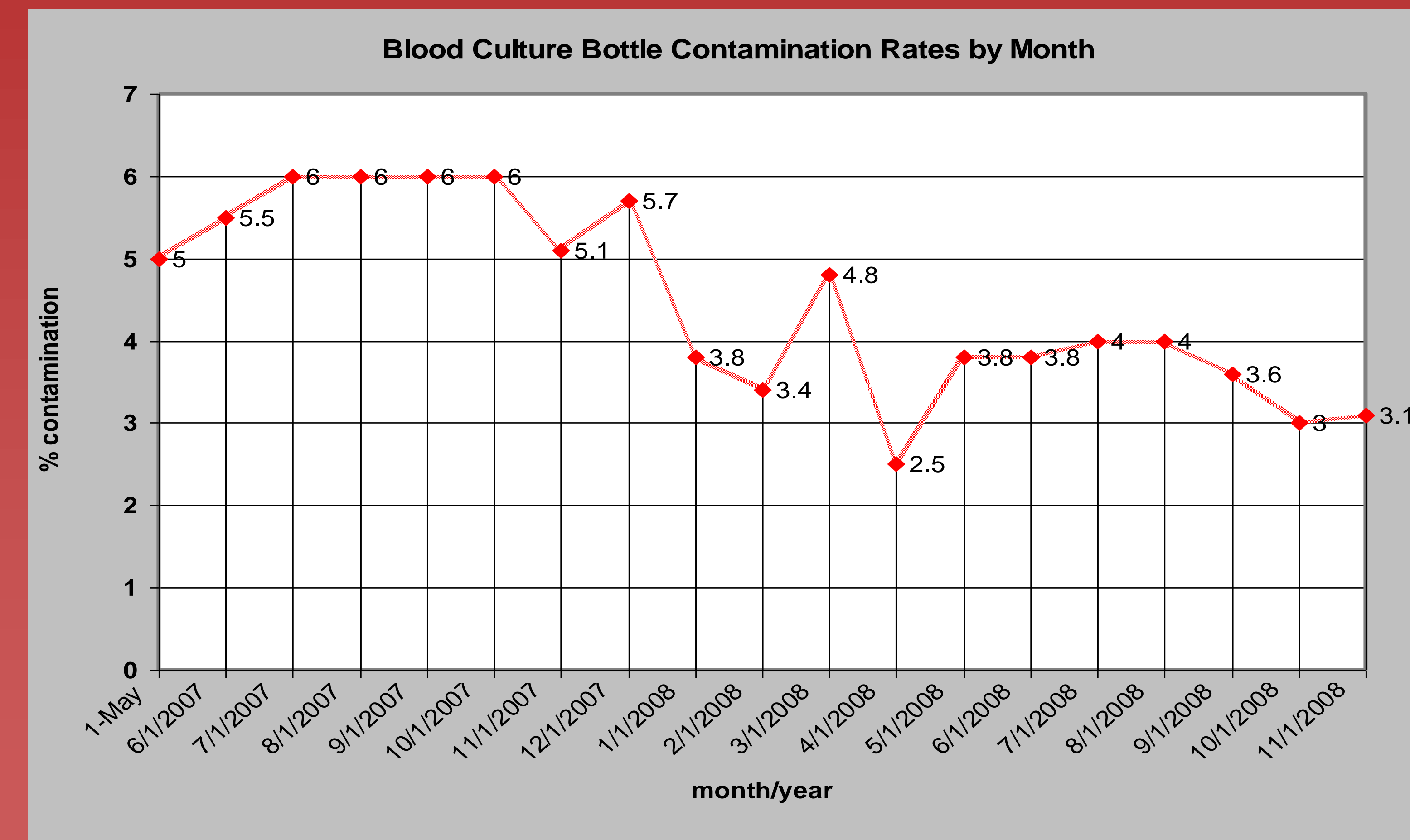
## Simple strategies can improve quality outcomes

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### A

#### Quality Related Issues:

- Blood culture contamination rates were found to be consistently elevated (5 – 6%) on blood culture bottles collected in the Emergency Department. (% rates above 3.0 suggest collection practice issues)
- The contaminated blood culture specimens were having a negative impact on the ability to clearly target the organism and determine required antibiotic therapy.
- The poor quality of blood cultures was negatively effecting patient outcomes.



### 1

#### Patient Education and Chloraprep

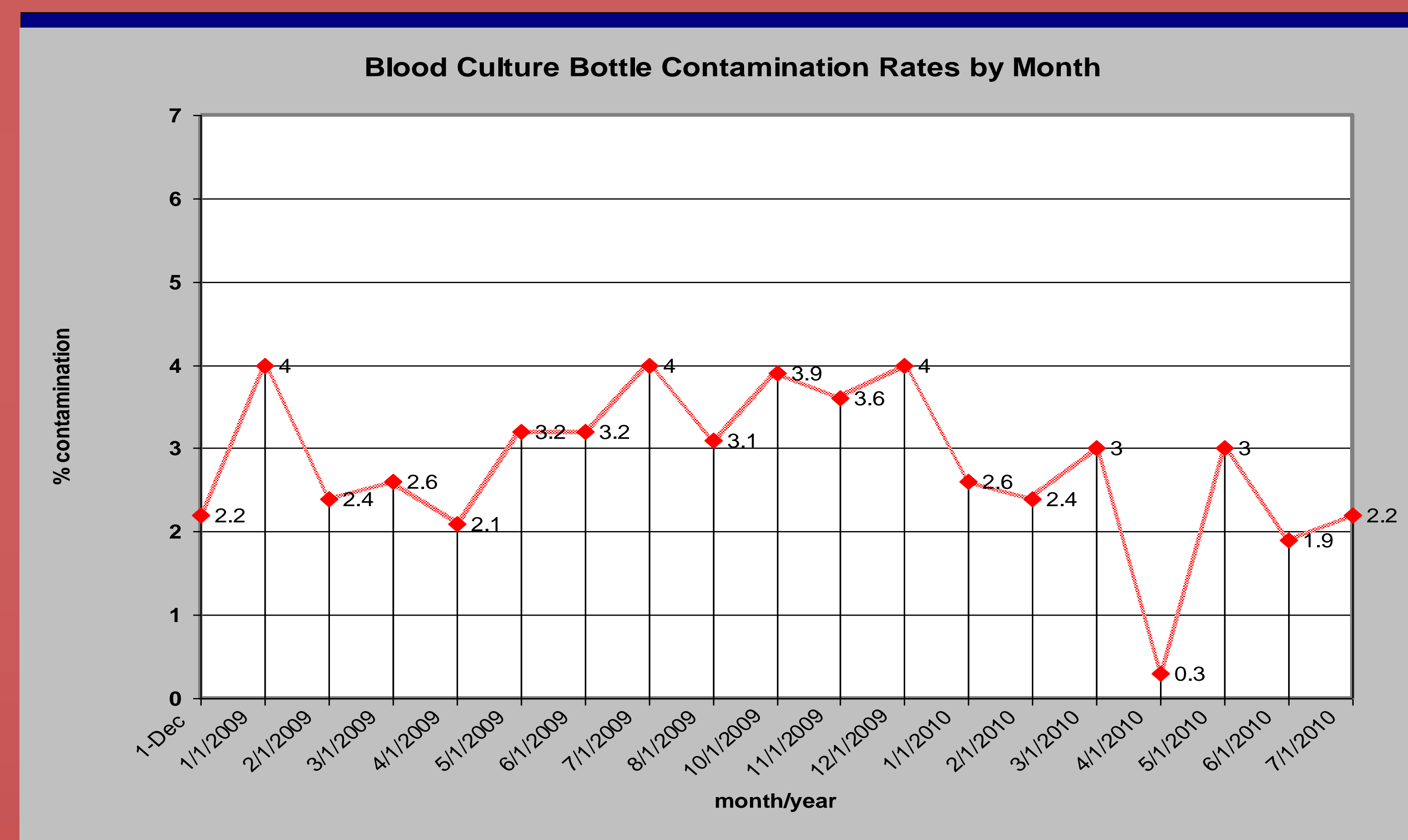
- (May 07 – Dec 07) 5% - 6% contamination rates
- (Dec 07) Intense month long re-education of 140 staff on proper blood culture collection technique
- (Jan 08 – Mar 08) Significant reduction in contamination rates (3.4% -4.8%) but still remains above the 3.0%.
- (Mar 08) Replaced Iodine with Chloraprep cleanser for cleaning the collection site and the bottle tops prior to inoculation.
- (Apr 08 – Nov 08) Chloraprep helped to decrease contamination rates further but rates continued between 2.5% and 4.0%. Re-education of staff continued without further improvement.



### B

#### Why were contamination rates so high?

- Were staff collecting the blood cultures using the correct technique?
- Was the equipment contaminated at the time of use?
- Is the environment of the ED contributing to the contamination issues.
- Is iodine the best choice of skin and bottle top cleanser?



### 2

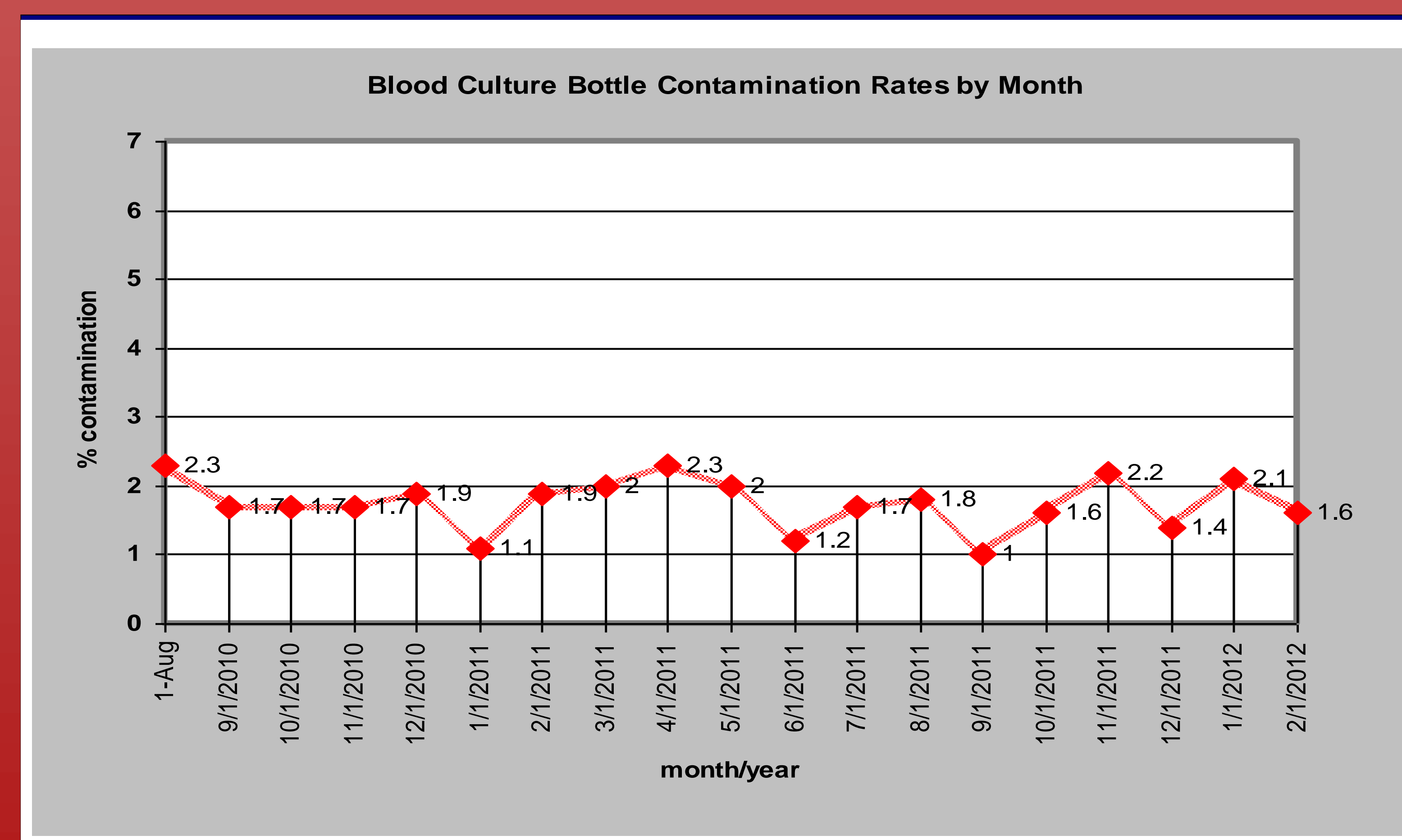
#### Drilling down to the root of the problem...

- (Nov 08) Contaminated blood culture bottles now traced to the individual collector. Each staff member was assigned an individual ID number to place on all specimens collected.
- (Dec 08 – Dec 09) Provided education specifically to identified staff causing contamination. Demonstrated to management that contamination was being created by the same staff each month (7 -10 staff). Department management team implemented a disciplinary plan for noncompliant staff.
- (Jan 10) Disciplinary action plan instituted for continuous contamination issues.

### C

#### Setting the Stage for discovery and intervention.

- Laboratory staff were already tracking the blood culture contamination rates of the ED. Data was requested monthly by the ED SDI in order to follow changes in percentage rates.
- Each ED staff member was assigned a 4 digit identification number that they place on every laboratory specimen they collect. Laboratory personnel will now document ED laboratory ID numbers that are associated with every contaminated blood culture.
- Literature research revealed that Chloraprep cleanser was more effective than iodine in cleansing the draw site as well as the tops of the blood culture bottles.
- Blood culture collection education program reviewed to assure accuracy and ease of comprehension. Chloraprep cleanser replaced iodine as the required collection site and bottle top cleansing solution in the educational material.



### 3

#### Success!!

- Jun 10 to current date 1.0% to 2.3% contamination rates consistently!

#### Lessons learned

- Employ the help of other departments that can provide data to support action and results.
- Education must be clear and delivered in different formats, multiple times, and documented for each employee.
- Management must be committed and involved from an planning, educational, and disciplinary standpoint.
- For some, practice and culture changes do not come easily and are can be resistant to practice changes or changes to complacency.
- Continued success comes from continuous monitoring, education, and intervention.