Reducing Blood Culture Contamination and Sustaining the Gain

Baylor Regional Medical Center at Plano

Finance Pillar

Baylor Regional Medical Center at Plano

Rationale for Project Selection

- Blood culture contamination is a long standing, difficult challenge most hospitals face.
- In publications, research has found contaminated blood cultures resulted in an additional $3,000 - $5,000 in average cost per case.
- Contaminated blood culture cases have additional charges associated with unnecessary antibiotics, extended length of stay, returns to the Emergency Department (ED) or physician's office for additional testing.

AIM Statement

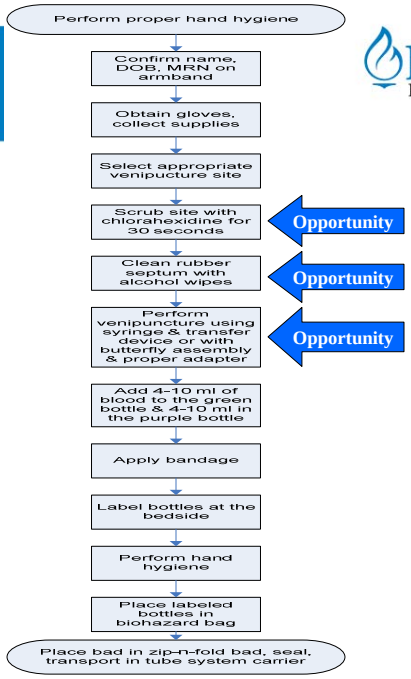
Original AIM Statement: In order to prevent waste and rework, and to improve physician satisfaction, we will reduce blood culture contamination rate from 3.6% to 2.0% within four months (August 2007) through a transparent approach to best practices.

NOTE: The "time bound" portion of the AIM statement was perpetually revised until the goal rate of 2% was met and sustained. Improvement beyond that has continued through diligent attention to the process.

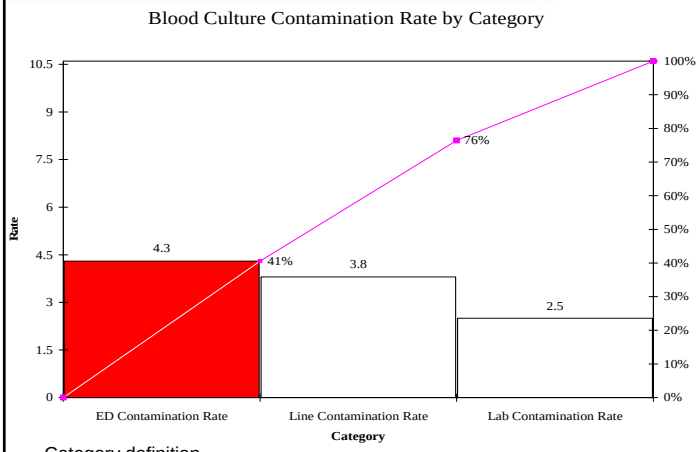
Team Membership

Role	Member
Executive Sponsor	Ellen Pitcher, CNO/COO
Team Leader	Allen Stanton, Director Laboratory
Members	Aubre Tijerina, ED Supervisor
	Raquel Facunla, Phlebotomy Supv
	Mohiuddin Faruk, Phlebotomist
	Anthony Arris, ED Technician
	Kim Newman, Infection Control Practitioner
Facilitator	Pat Cooper, Director Healthcare Improvement

Modeling



Prioritization



Category definition

- ED Contamination Rate: ED staff draw their own blood cultures.
- Line Contamination Rate: RN draw cultures from indwelling lines.
- Lab Contamination Rate: Lab staff draw cultures from all other patients.

Analysis of Key Leverage Point:

Forty-one percent of blood culture contamination rate was attributed to the ED. Thus, ED was targeted as the primary site for improvement work.

Metrics

Leading indicator: Each occurrence of a contaminated blood culture

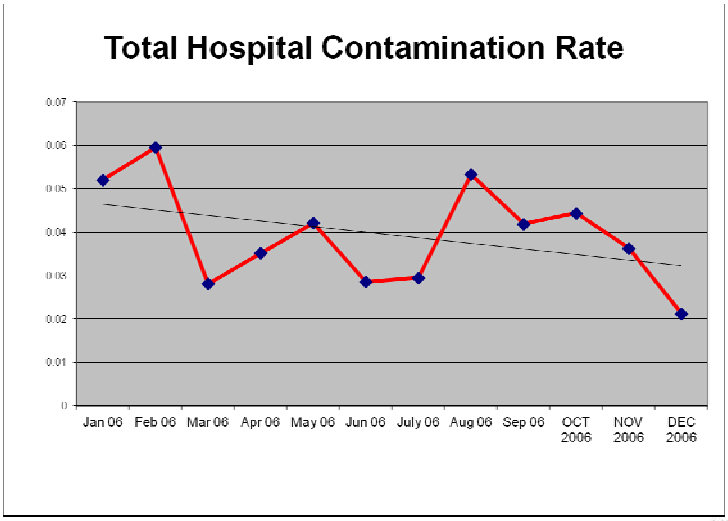
Lagging indicator: Blood culture contamination rate (%)

Financial metric: Dollars wasted due to blood culture contamination

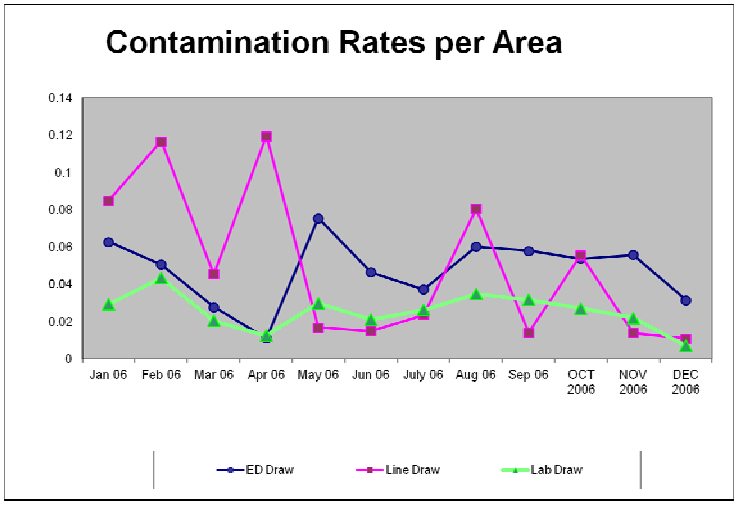
Lessons Learned

- Break the problem down; Do Improvement Cycles
- Keep the data FRONT and CENTER.
- Enlist a Champion for each area.
- Persist! Recognize that when you think you have the problem solved, you probably don't!
- Match skill sets to the task.
- Use competition among team members to get better results overall. Buy Pizza!
- Find best practices and discourage (or ban!) other methods.
- Show others how you accomplished your goal!

Where We Started



Where We Started



Getting Started

First, we (laboratory) had to put our own house in order.

Rapid Cycle Improvements prior to multidisciplinary team formation: Lab Driven Process

BAYLOR Health Care System

Plan: Educate and retrain lab staff on appropriate technique to prevent blood culture contamination. Jan 2006

Do: One-on-one observation of phlebotomist to evaluate effectiveness of education and training. Mar 2006

Check: Supv retrained each phlebotomist who had a contamination rate over 2% in any given month. May 2006

Act: Distribute monthly blood culture contamination rates. Jul 2006

Act: Post blood culture contamination rates by phlebotomist on communication board. Jan 2007

Spread: Provide feedback to ED on their contamination rates and each occurrence. Apr 2007.

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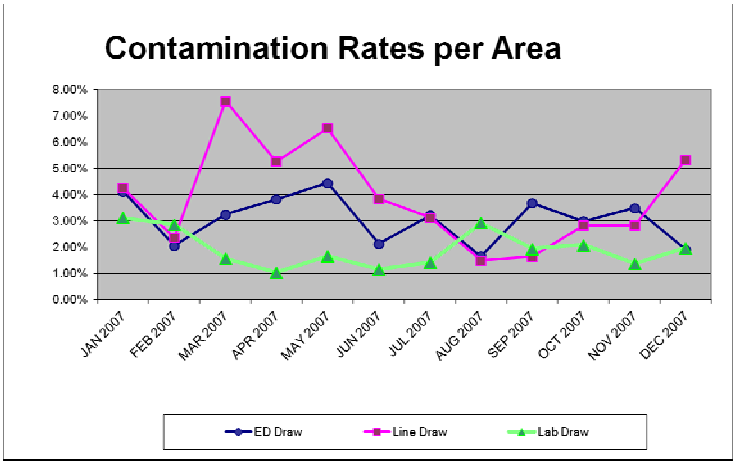
Starting to See What is Possible

BAYLOR Health Care System



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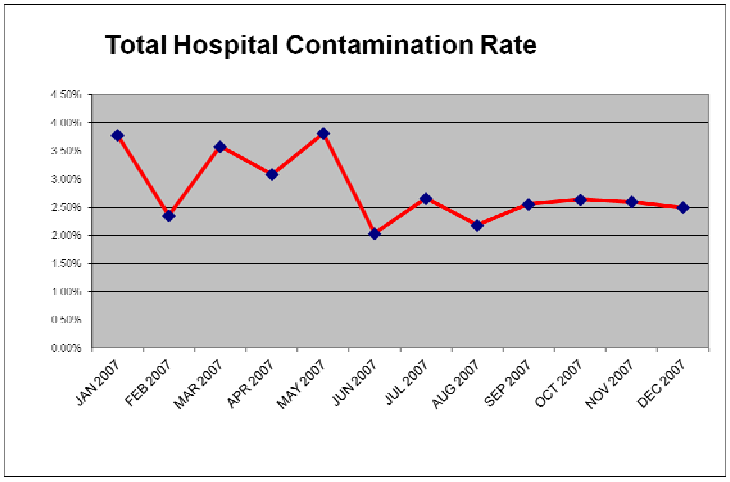
Anchoring the Line



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Multidisciplinary Performance Improvement Team's 1st Intervention

Plan: Improve competency of staff in E/D to perform BC technique appropriately.

Do: Trained all E/D nursing staff on proper scrub prep and collection technique. April 2007

Established Supertrainers (E/D techs) 1st Qtr 2008

Station phlebotomist in ED during peak hours. 4th Quarter 2008

Check: Significant positive impact realized from phlebotomist presence in ED. Blood culture contamination rate decreased from 3.42% in Sept '08 to 2.95% in Dec '08.

Act: Blood culture contamination rates posted on ED communication boards to increase awareness and provide staff feedback. Jan 2009

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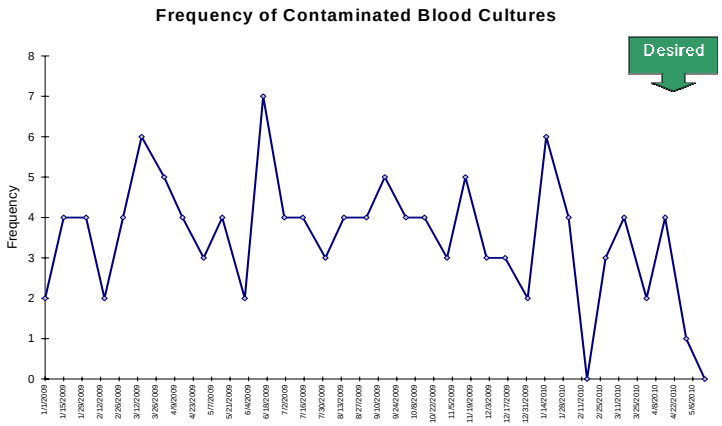
Leading Indicator



Contaminated blood cultures are identified and tracked on a daily basis, the above graph reflects frequency of occurrence on a bi-weekly basis.

Multidisciplinary Performance Improvement Team's 2nd Intervention

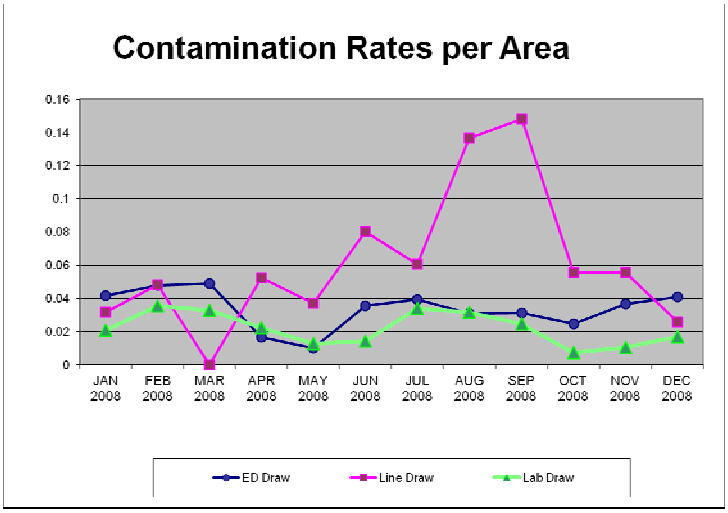
Plan: During non-phlebotomist hours, centralize blood culture collections to ED techs and charge nurses. Apr 2009

Do: To verify competency, an ED tech, who was a former phlebotomist, "checked-off" all ED techs and ED charge nurses through training and direct observation of their collection process.

Check: Blood culture contamination rate cut in half to 1.71% by April '09, then to 1.52% in Jun '09.

Act: Limiting the number of staff collecting specimens and enhancing their skill set continued to drive down the blood culture contamination rate.

What Does Competition Do?



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Multidisciplinary Performance Improvement Team's 3rd Intervention

Plan: Provide real-time individual feedback to ED staff on contaminated specimens. May 2009

Do: Lab began providing copy of blood culture bottle on any contaminated specimen to nurse manager.

Check: Blood culture contamination rate 1.15% in May '09.

Act: ED Supervisor hardwired process of discussing each contaminated case with staff member responsible for drawing specimen.

Internal Spread: Blood culture collection technique included in skills fair for all ED techs and nurses to verify competency. September 2009

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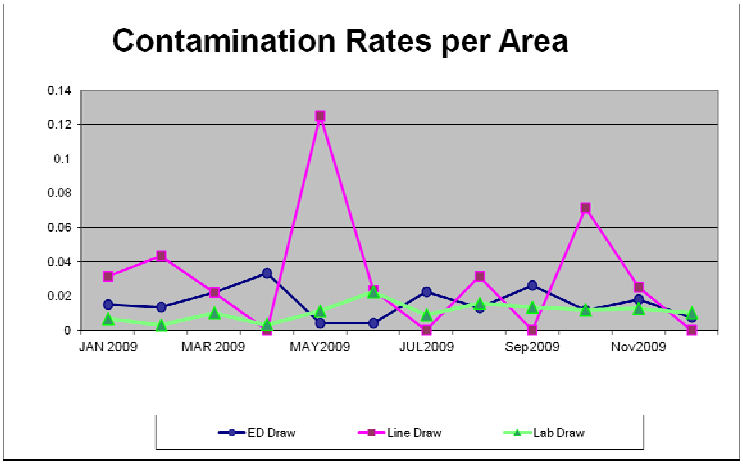
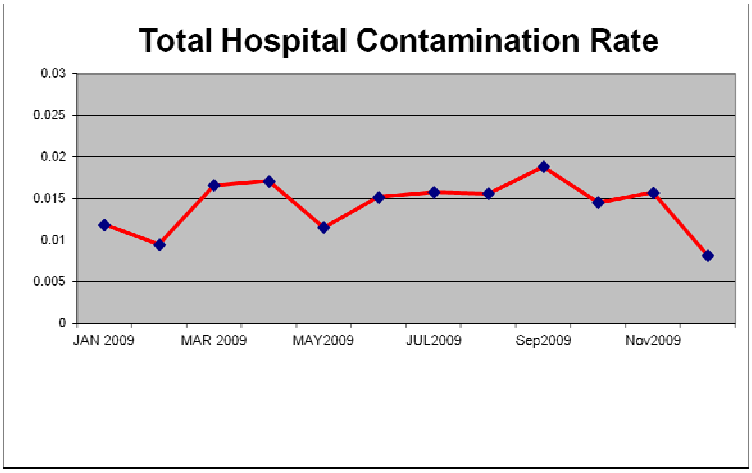
Had to Buy Pizza More Often!



Have We Made Progress?



Rapid Cycle Improvements prior to multidisciplinary team formation: Lab Collaborating with Nursing

Internal Spread: Take improvement work to nursing units.

Plan: Revise line draw policy to reduce line associated blood culture contamination rates. May 2007

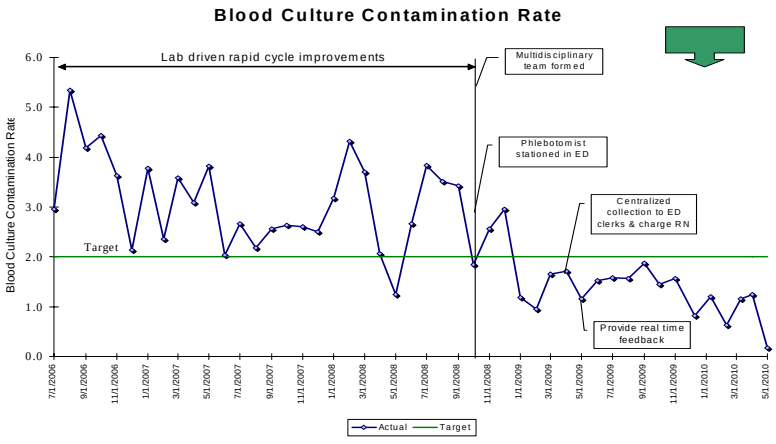
NOTE: Line draws are blood cultures taken from indwelling lines by nurses on the inpatient units.

Do: Kick-off the "Scrub the Hub" campaign. Require cap change on lines prior to drawing specimen.

Check: Line blood culture contamination rate decreased from 6.5% in May 2007 to 3.1% in July 2007.

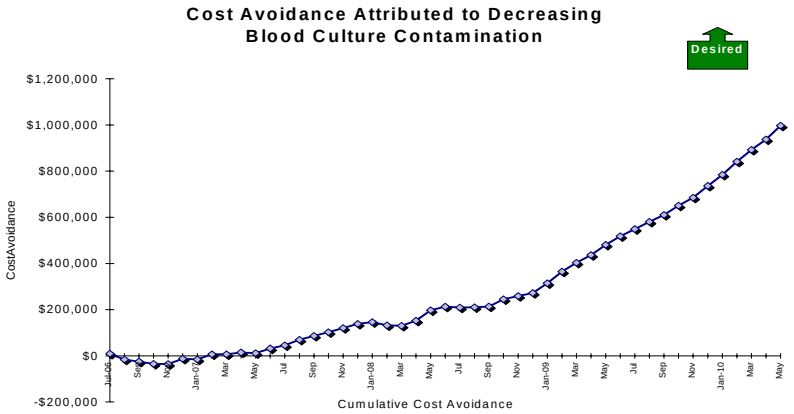
Act: Educated M.D.'s on CDC recommendations, began enforcing requirement to obtain written MD order for all line-drawn specimens. March 2008

Lagging Indicator



Blood culture contamination rate has been sustained at lower than 2.0% since January 2009!

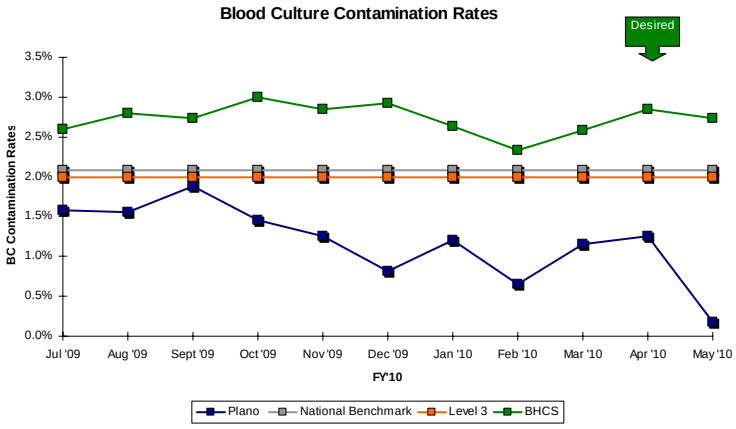
Financial Metric



An estimated cost avoidance of $997,091 from FY'07-FY10

NOTE: A conservative rate of $3,000 per case was used to estimate cost avoidance.

Comparative Data



BRMCP is performing significantly below national benchmark and BHCS performance.

Spread

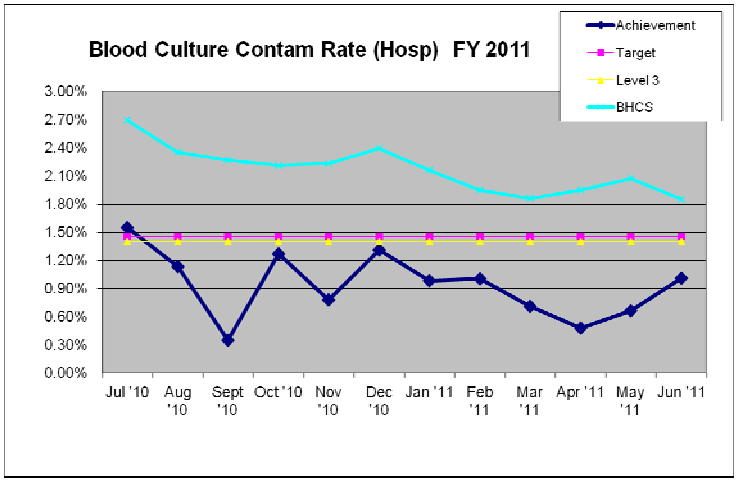
Internal Spread:

- Lab improvement work to reduce blood culture contamination rates was spread to the Emergency Department and inpatient nursing units.

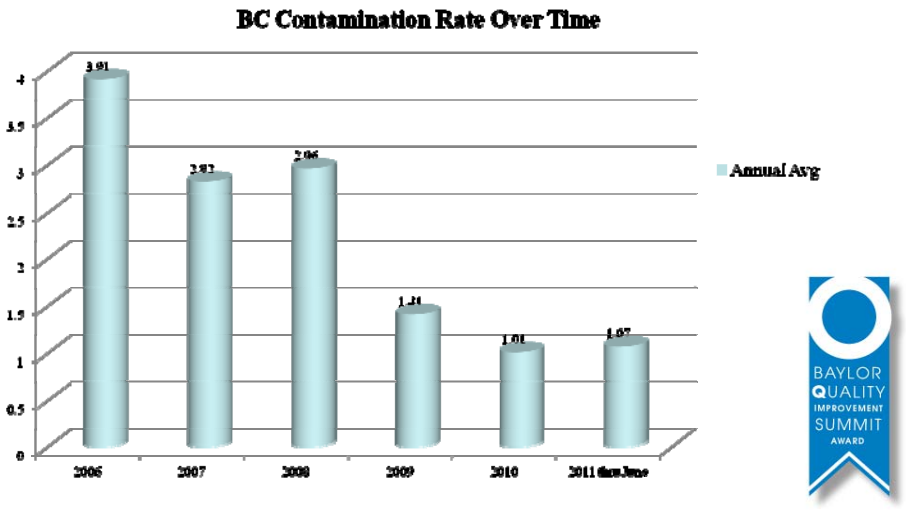
External Spread:

- Presentation of improvement work on blood culture contamination rates to Lab Council in September 2008 and May 2010.
- Offered to go "on the road" to any lab or ED who may be interested in hearing our story about "sustaining the gain".
- Presented poster session at IHI in December 2010.

How Does this Affect Your Peers?



From Beginning to End



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