

Infection Prevention: Highlights from Massachusetts Hospitals

For the past two years, the Massachusetts Coalition for the Prevention of Medical Errors (the Coalition) and the Massachusetts Hospital Association (MHA) have been offering programming to support the prevention of hospital-acquired infections throughout the Bay State.

Massachusetts hospitals have made infection prevention a top priority for patient safety and quality improvement; executive and clinical leadership at 100% of acute-care hospitals have signed on to participate in this initiative. With financial support from the Massachusetts Department of Public Health (DPH), the Betsy Lehman Center for Patient Safety and Medical Error Reduction, and participating hospitals themselves, our program has offered strategies and tools from local and national experts.

Staff from every acute care hospital in Massachusetts have participated in one or more Coalition/MHA infection prevention sessions, including expert conference calls and collaborative learning sessions. Many have also served as presenters, contributing to an atmosphere of learning and sharing.

We are proud to be a part of the system of state-wide supports for hospital infection prevention, along with our colleagues from the Massachusetts DPH, Betsy Lehman Center, Masspro, and the Eastern Massachusetts Healthcare Initiative.

In the pages that follow, the Coalition and MHA are pleased to present a sample of the infection prevention successes from Massachusetts hospitals across the state. If you are a consumer, use this guide to see what hospitals in your area are doing to prevent hospital-acquired infections. If you are a provider, look for ideas that you can incorporate into your own infection prevention efforts.

Congratulations and thanks are due to all of these hospitals for their commitment and continuing efforts to create the safest possible environment for their patients.

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Baystate Medical Center – Hospital-Acquired Infection Reduction

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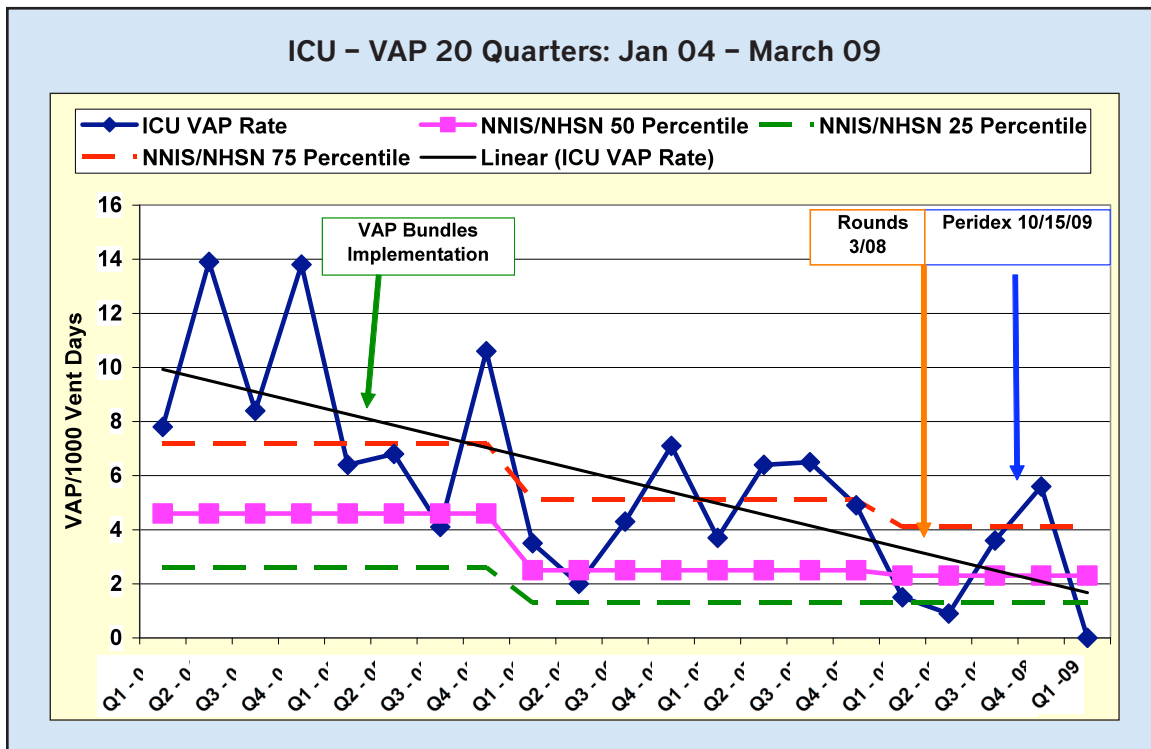
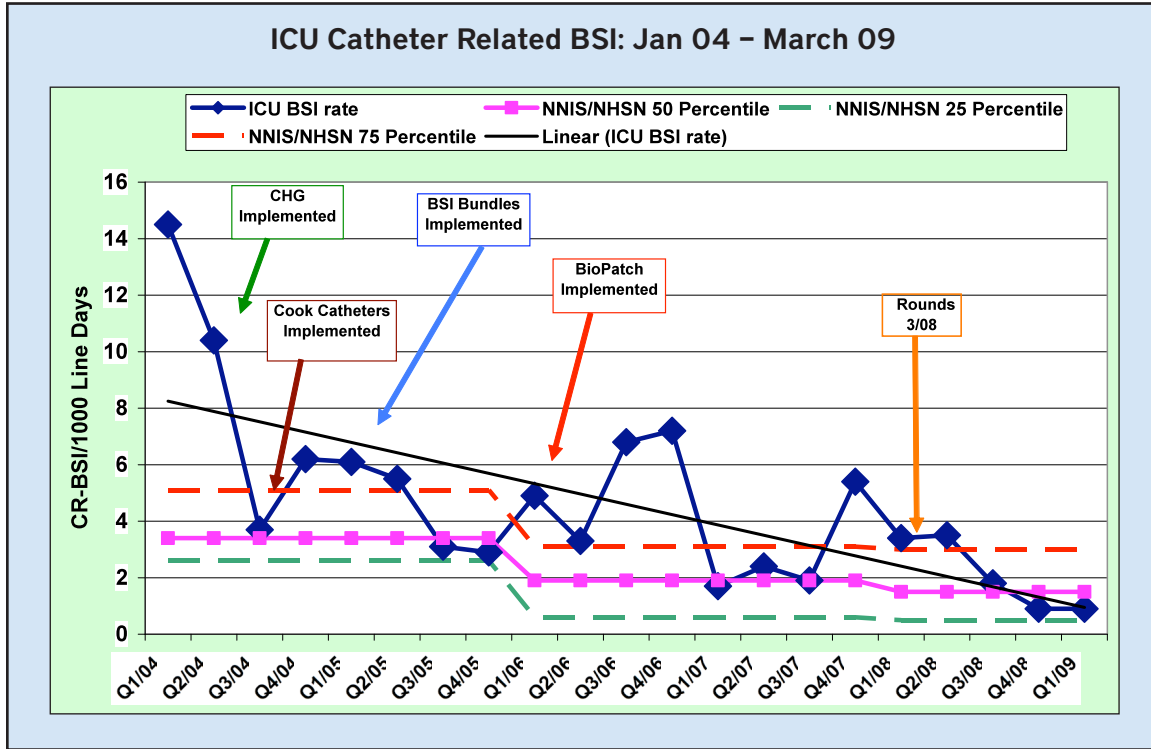
Infection or Practice Targeted:

Teams and engagement of staff in critical care areas to reduce Hospital-Acquired Infections (HAIs)

Infection prevention and performance improvement rounds in critical care areas empower staff to engage in infection prevention activities. Team rounds started in 2008 after positive deviance education and continue to show improvement in patient safety with interventions employed.

Results:

Reduction in HAI for ICU



Do These Results Reflect the Whole Hospital or Specific Units?

Adult ICU

Describe Briefly the Changes Made to Achieve These Results:

Monthly infection prevention performance improvement rounds are scheduled in the adult Intensive Care Unit (ICU) to identify issues with HAI reduction. Rounds are posted to let staff know and to engage them in the multidisciplinary rounds. Rounds include staff education, questions, feedback on HAI reduction practices and observation of barriers or gaps in processes. Those present on rounds include unit management, MDs, RNs, Pharmacy, Respiratory Therapy and any other discipline that is in the unit at the time. Minutes from rounds are written and follow up is performed to completion. Some issues identified are hospital wide and generate subgroups or other committees to handle or manage issues that are bigger than the unit itself.

Most Important Lessons Learned From This Work:

Unit staff engagement in HAI prevention processes helps to promote the team effort in patient safety

- Unit staff are aware of issues that occur more so than outside consultants
- Validating unit staff concerns help them to be part of the solution and emphasizes that their input is valued
- Engaging front line staff helps to share the responsibility for follow up

Seeing improvement in issues they identify lets them know that their feedback is important to the process.

Baystate Medical Center – Neonatal Intensive Care Unit (NICU)

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Infection or Practice Targeted:

- Reducing the incidence of hospital-acquired infections must be a unit goal
- Motivating staff to make a difference and see positive changes

Results:

Zero Central Line-Associated Blood Stream Infections (CLABSI) in NICU for >300 days, one Ventilator Associated Pneumonia (VAP) in 4 years, 100% compliance with before and after care hand hygiene compliance.

Do These Results Reflect the Whole Hospital or Specific Units?

NICU / CCN specific

Describe Briefly the Changes Made to Achieve These Results:

All staff are engaged in prevention activities for HAIs. Practice Standards must be implemented, understood and followed by all staff members.

Practice standards to reduce Catheter-Related Bloodstream Infections (CRBSI)

- Sterile Technique is used when changing all IV's infused through central lines and TPN's
- IV ports prepped using alcohol and friction for 1 to 2 minutes prior to medication administration
- Gloves worn when giving IV meds
- Initial PICC Lines dressings changed after 24 hours from insertion if bloody
- IV Lines to be kept away from diaper area
- Gloves to be worn when changing diapers
- Hands washed after removing gloves and before feeding
- Aggressive medical management to remove central lines as soon as possible

Practice standards to reduce Ventilator Associated Infections (VAP)

- Keep the head of the bed (HOB) elevated 15-30 degrees
- Closed in-line suction used on all vented patients
- Separate system for oral suctioning
- Vent circuits changed every 7-days
- Keep circuit connected during position changes
- Keep water drained from ventilator tubing
- Aggressive medical management to extubate as soon as possible

Staff plus environmental services are responsible for the clean, safe environment: Environmental Practice Standards

- Clean countertops every 4 hours with a disinfectant solution
- Minimize clutter at the bedside
- Remove any unnecessary equipment including IV Pumps

Hand hygiene became the binding force and the key to our latest success after all other measures were implemented. We teach our parents, family members, visitors, and ourselves how important it is. Reports include details on compliance for MDs, PAs, NNP, support staff (RTs, etc) as well as bedside nursing staff. Implement a strong hand hygiene program.

- Hand sanitizers placed at all patient bedsides and on all computer mobile devices
- Monitoring is conducted for hand hygiene compliance
- Audit results are shared with the staff

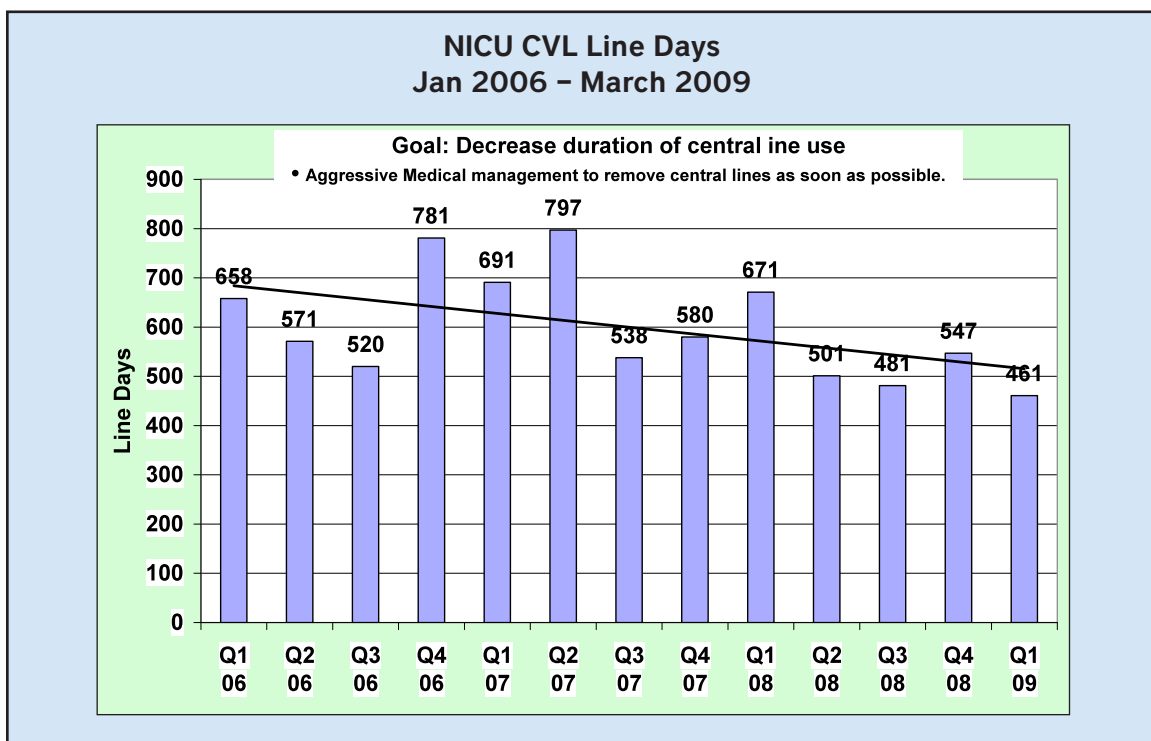
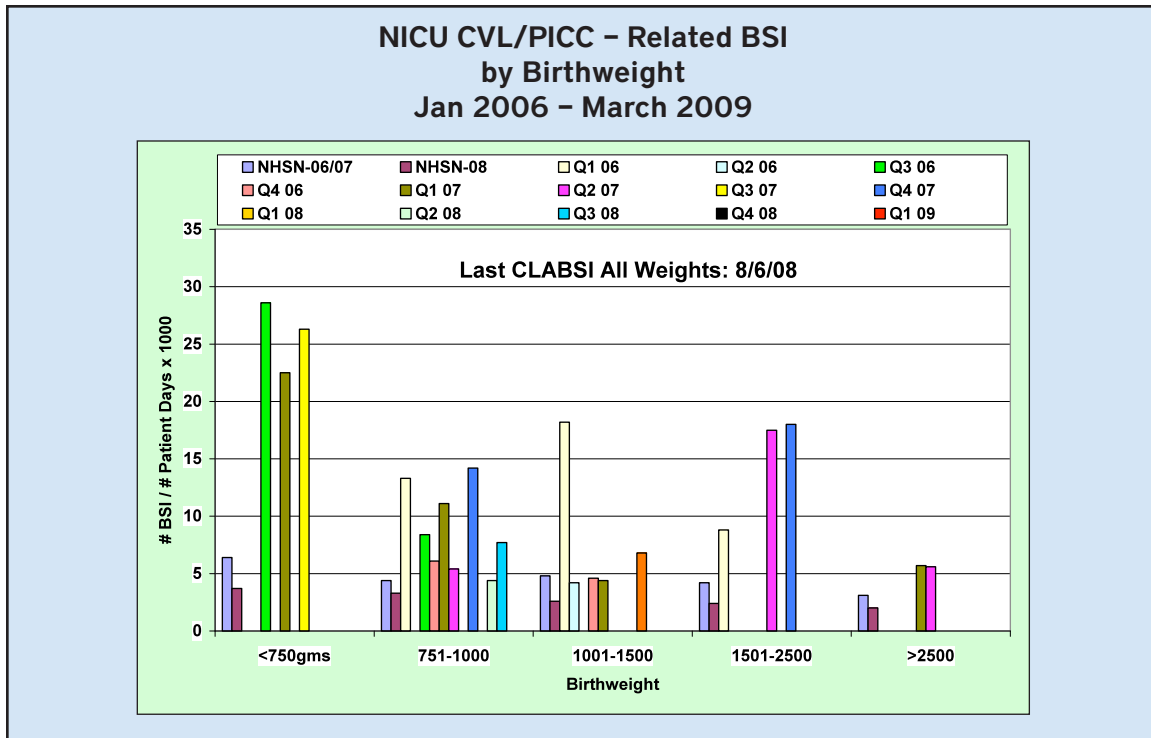
- “Knock on the Door”: Hand Hygiene Practice Model introduced
- Screen savers on the unit computer depict prompts as reminders to staff to perform hand hygiene

Engagement includes sharing results and improving our care; the babies thank us.

- In our unit we have a small “Wipe Off Board”
- Infection Control keeps the board updated
- The board is visible for everyone to see including family members
- The board has actually started to bring out a competitive flavor

Most Important Lessons Learned From This Work:

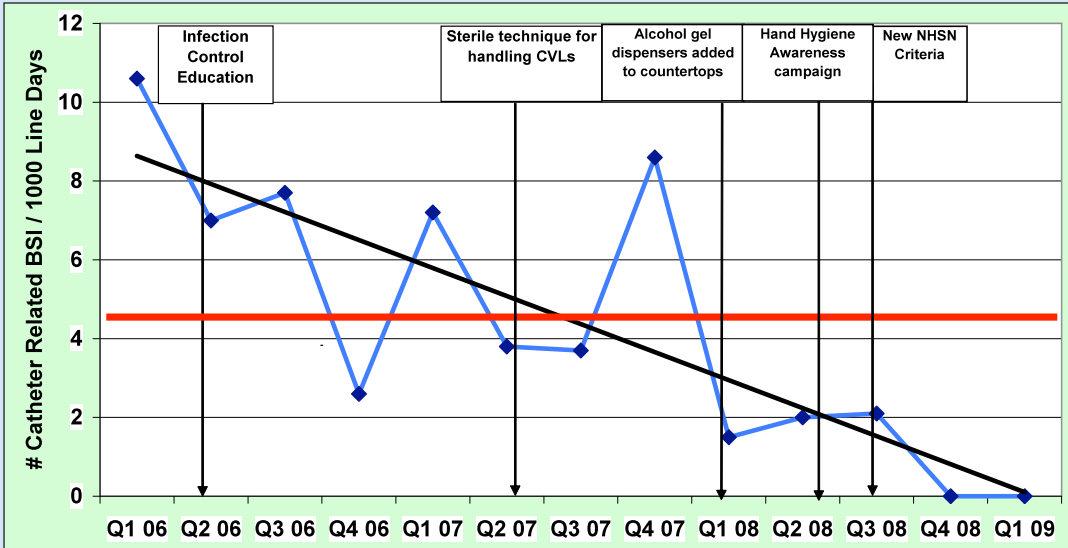
Motivating staff and engaging them at all levels to improve patient safety. Knowledge is power, and a real time reflection of how we are doing helps to ‘put a face’ on why we are doing what we are doing.



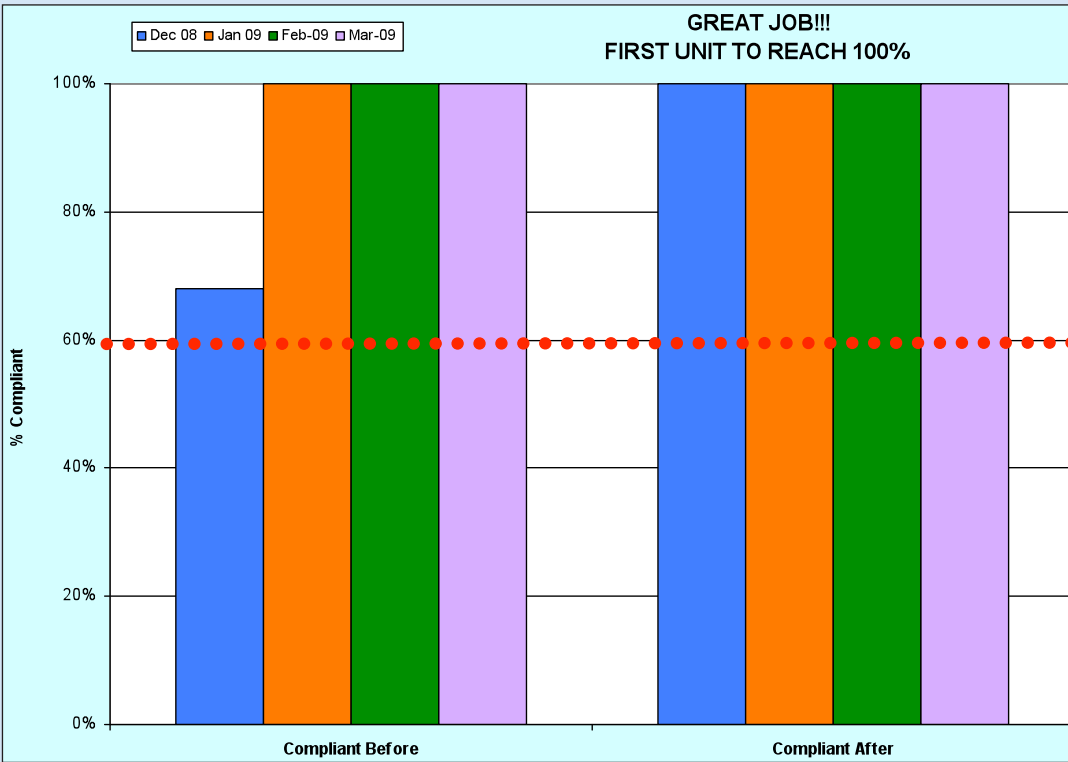
NICU UC/CVL/PICC Related BSI
 Cumulative Birth Weight
 Jan 2006 - March 2009

>300 days since last CLABSI 8/6/08

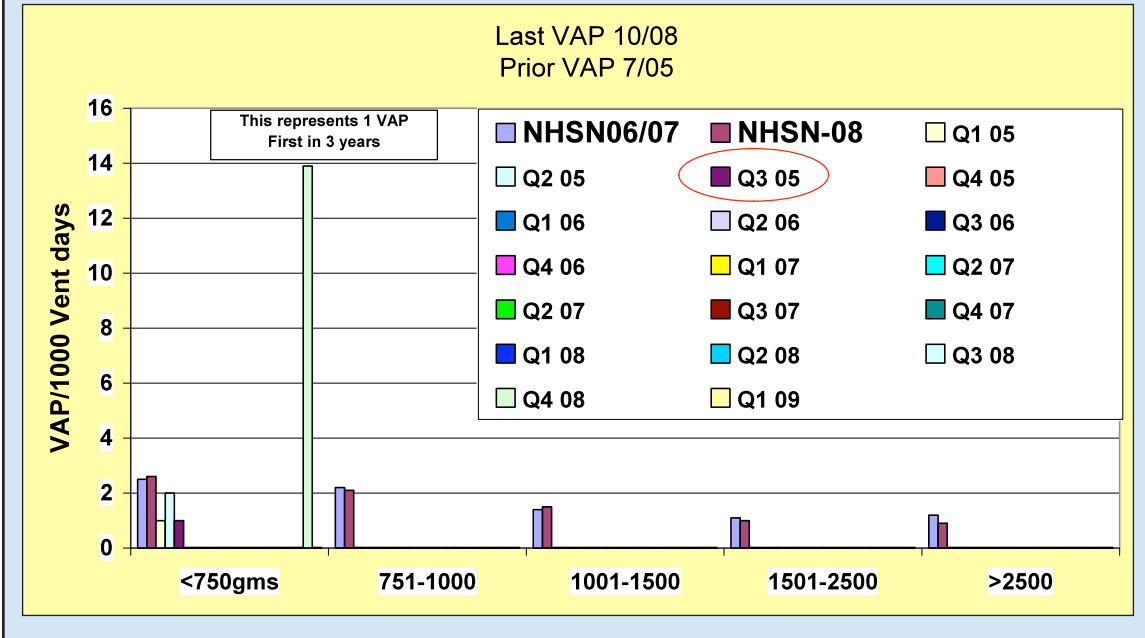
2007-08 Mean = 4.5
 NHSN 75th percentile = 6.6
 NHSN 50th percentile = 2.5
 NHSN 25th percentile = 0.5
 Trendline = Black



NICU
 Hand Hygiene Compliance Rate



NICU VAP Rate by Birthweight Jan 2005 – March 2009



Baystate Franklin Medical Center – Ventilator Associated Pneumonia

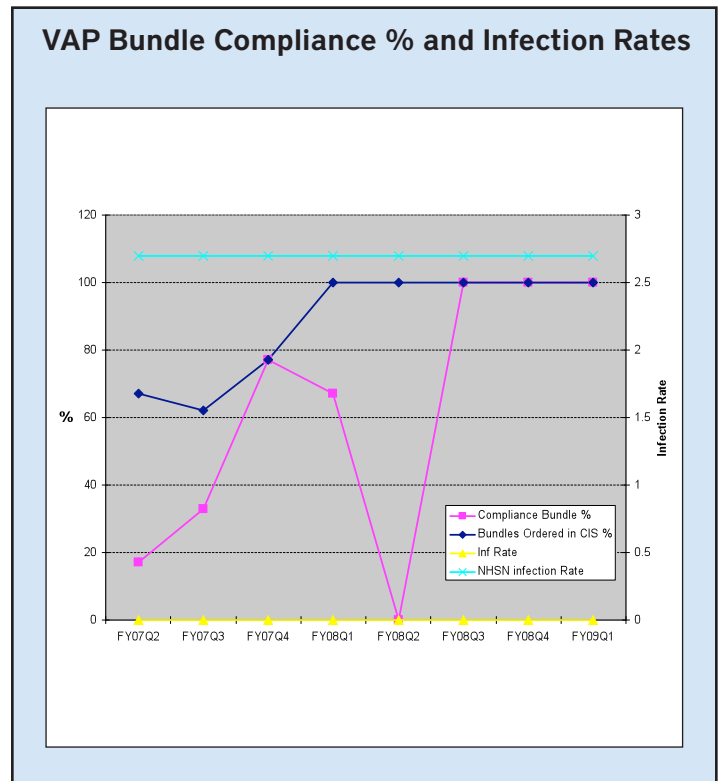
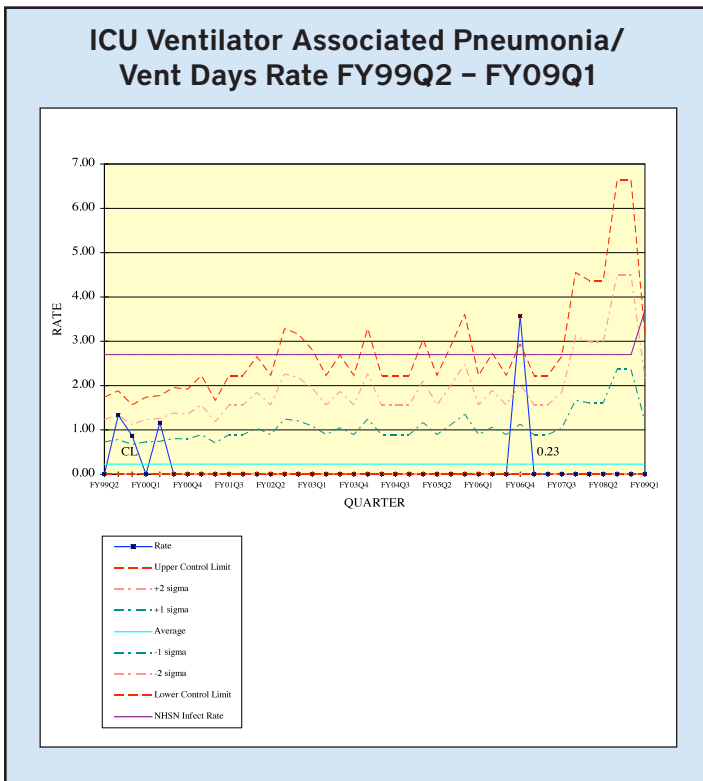
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Infection or Practice Targeted:

Ventilator Associated Pneumonia (VAP)

Results:

Since 2001, there has been one instance of VAP at BFMC. VAP-prevention bundle implementation was January 2007. To date there have been no additional cases.



Do These Results Reflect the Whole Hospital or Specific Units?

ICU only. ICU is the only unit that has ventilated inpatients.

Describe Briefly the Changes Made to Achieve These Results:

- A multidisciplinary team began meeting in the summer of 2006 to implement the Institute for Healthcare Improvement (IHI) VAP bundle which included an assessment of the practice at that time.
- Education regarding the IHI bundle for VAP was completed
- Developed data collection tool
- Developed VAP care set for electronic medical record
- Extensive communication to medical staff and hospital staff involved in care of ventilated patients
- Ongoing monitoring of practice, use of the bundle and clinical documentation occurred
- A bright yellow sticker on the progress notes is used to flag delivery of the vent bundle in ICU
- Feedback process in place if bundle not ordered in and/or not documented in clinical record
- Implementation of the entire IHI bundle was January 1, 2007

Most Important Lessons Learned From This Work:

- Making it possible for frontline healthcare workers involved in the care of ventilated patients to actively participate on the performance improvement team was key for this work to be successful.
- Strong committed physician leader to support the project.
- Sharing progress and success frequently with team and hospital after the implementation of the IHI VAP bundle.

Baystate Franklin Medical Center – Hand Hygiene

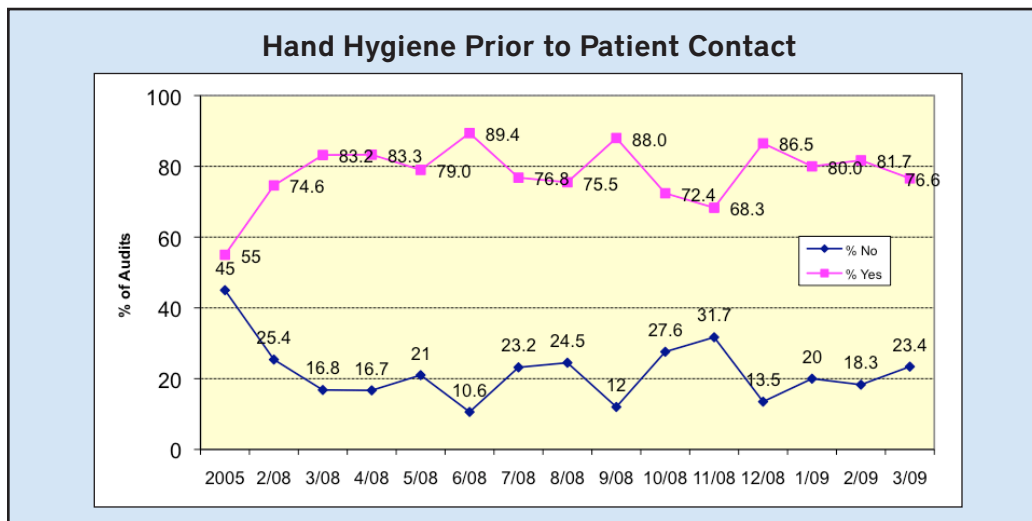
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Infection or Practice Targeted:

Hand Hygiene

Results:

Hand hygiene compliance rates have steadily risen from approximately 55% to over 75% before and after patient/environment contact since 2004.



Do These Results Reflect the Whole Hospital or Specific Units?

These results represent sixteen clinical units in the hospital.

Describe Briefly the Changes Made to Achieve These Results:

- A multidisciplinary Hand Hygiene Quality Action Team (H2 QAT) chartered in July, 2004. Baseline observation data as well as a self assessment data gathered.
- Three trials completed to determine effect of various approaches to education about hand hygiene on three clinical units.
- Hospital-wide clinical implementation in March 2005 required departments to include hand hygiene data in their department performance improvement plan.
- Completed first successful outreach program with five local elementary schools in fall 2005 and replicated it for another three years with eight more elementary schools in our county.
- Since March 2008, implemented Baystate Health's Hand Hygiene Task Force interventions which have renewed BFMC's energy to improve hand hygiene compliance.

Most Important Lessons Learned From This Work:

- Use a staff-awareness hand hygiene survey tool to gather data.

- Use data to plan for high-impact interventions to increase compliance.
- Provide a Hand Hygiene Manager Toolkit which supports customization to meet the specific hand hygiene needs of their unit.
- Plan for unit-based champions to act as role models and educational resources.
- Hold staff accountable for their personal practice of hand hygiene compliance.
- Share hand hygiene compliance rates frequently with frontline healthcare providers and hospital leaders.
- Work in conjunction with community partners to create colorful, fun posters to remind healthcare providers, patients, students and visitors about the importance of hand hygiene.

Beth Israel Deaconess Medical Center – Ventilator Associated Pneumonia

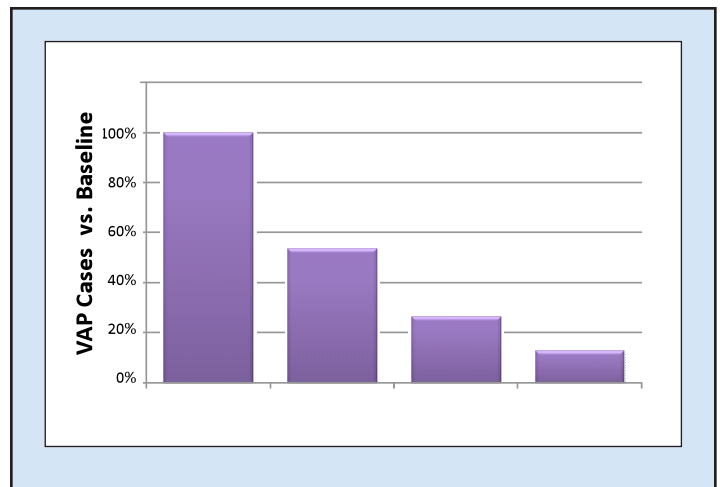
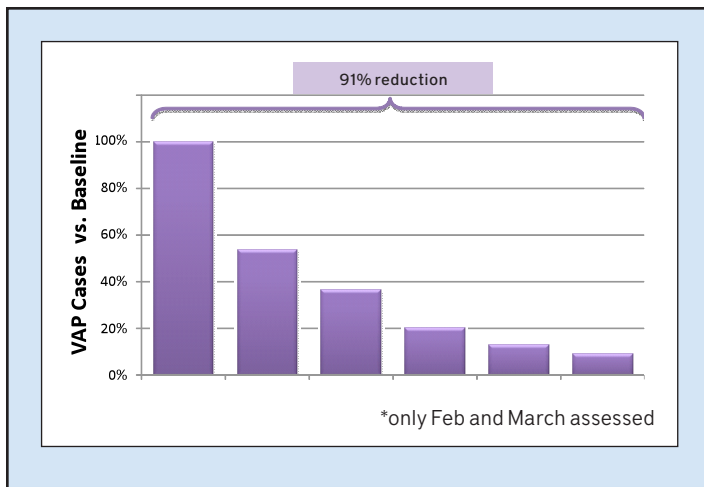
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Infection or Practice Targeted:

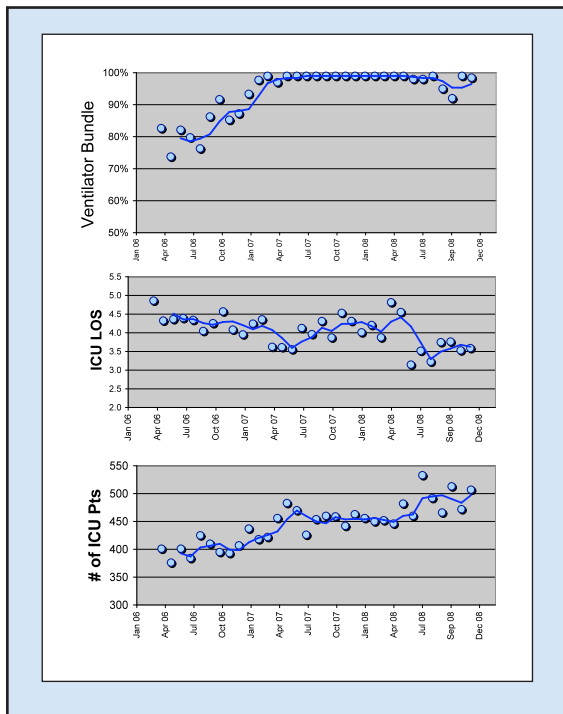
Ventilator Associated Pneumonia

Results:

Reduction of VAP rates by about 90% (see run chart). We have seen progressive reduction year-over-year during this three-year effort. Achievement of high reliability (99-100%) application of the ventilator bundle did NOT result in elimination of VAP. Progressive reductions were seen with improvements in oral care and with the addition of chlorhexidine decontamination.



In addition, improvement in ventilator-associated pneumonia prevention strategies was temporally associated with increased ICU throughput (in a stable number of beds), apparently mediated through a reduced length of stay.



As we increased VAP bundle compliance ...

... our ICU length of stay went down ...

... and ICU throughput increased.

Do These Results Reflect the Whole Hospital or Specific Units?

We collect process measures in all ICUs, and sample VAP rates in four ICUs.

Describe Briefly the Changes Made to Achieve These Results:

We found that highly reliable implementation of the Institute for Healthcare Improvement Ventilator Bundle was associated with reductions in VAP rates. However, even consistent 99-100% implementation of the Ventilator Bundle did not result in elimination of VAP. Therefore, we focused on improving oral care. This resulted in further reductions of VAP rates, but did not result in elimination. Next, we added oral decontamination with twice-daily chlorhexidine. This resulted in further reductions of VAP rates. Leadership of this work included physicians, nurses, and respiratory therapists.

Most Important Lessons Learned From This Work:

Probably the most important single intervention was dedication of a Clinical Nurse Specialist to the work.

Brigham and Women's Hospital – Hand Hygiene

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Infection or Practice Targeted:

Hand hygiene and prevention of hospital acquired infection

Results:

The hospital audits departmental performance measures and the Emergency Department (ED) was doing poorly, showing 36% compliance. The ED developed a multi-disciplinary Quality Improvement campaign and the results were spectacular. From February 2008 to February 2009, the rates climbed from 36% to 96%. Since February 2009, the monthly results remain above 90%.

Do These Results Reflect the Whole Hospital or Specific Units?

Emergency Department only

Describe Briefly the Changes Made to Achieve These Results:

- Gathered key stakeholders (leaders with employee influence)
- Identified barriers (lack of equipment, lack of education and understanding of the problem)
- Excited the staff with campaign
- Robust auditing with real-time feedback

Most Important Lessons Learned From This Work:

The importance of robust auditing, feedback and gathering the key stakeholders.

Cambridge Health Alliance – Ventilator Associated Pneumonia

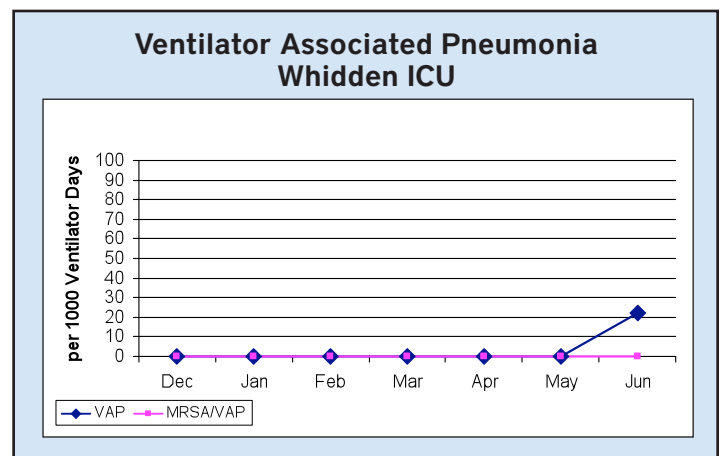
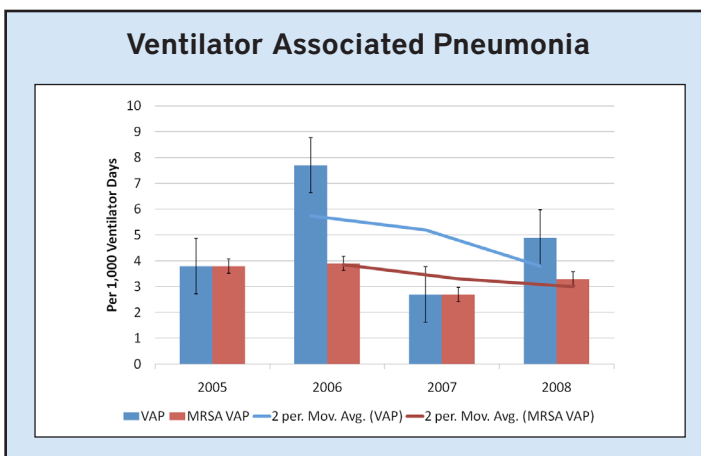
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Infection or Practice Targeted:

From Jan-Jun 2009 our team will reduce MRSA VAP to no more than 1 case in the Whidden ICU.

Results:

Baseline



Do These Results Reflect the Whole Hospital or Specific Units?

These are the results for the Whidden ICU. Plans are to learn from this unit and share with the Cambridge ICU using the “Discovery and Action” dialogue to see what the staff feels will work best for them.

Describe Briefly the Changes Made to Achieve These Results:

Team members – it was felt that all staff that touched the patient in any way should be part of our team. Members include Nursing, Respiratory, Housekeeping, Infection Prevention, Quality Management, Medical Staff and Campus Leadership.

Changes that have been implemented:

- Reached out to Senior Leadership and Medical Staff
- More robust monitoring of HOB elevation and compliance with hand hygiene and contact precautions
- Precaution Stop signs developed for room entry and exit delineating the appropriate order for donning/removing personal protective equipment and hand hygiene.
- Respiratory Therapy documented level of HOB on vent sheets, corrected the patient's position if not > 30 degrees and alerted the nursing staff to any deficiency.
- Information for visitors in multiple languages
- Coat racks for visitors in lounge for those going into precaution rooms
- Discussions and continued education with staff
- Weekly rounds with more staff nurse involvement (empowerment)
- Larger barrels in rooms for disposal of gowns
- Trial of subglottic suction ET tubes
- ED involvement in piloting subglottic ET tubes
- Ventilators numbered for easy identification
- Monitoring of reintubation rate
- Housekeeping adopted the Shine program to monitor cleaning technique and shared this with Respiratory for assessing the quality of ventilator surfacing cleaning.
- Oral Care Policy revised
- Signs above beds to inform visitors not to adjust head of bed and other disciplines to return bed to 35 degrees after treatment.
- Investigate and work on the process for Sedation Vacation
- New – Daily rounding: Charge Nurse and Respiratory Therapist

Most Important Lessons Learned From This Work:

- Involvement of all disciplines is essential.
- Listening to staff for their ideas
- Active intervention (coaching) is effective
- Reserve time to meet on a regular basis and have leadership communicate that the project is an institutional priority
- Communicate, display and discuss all process and outcome measures with all stakeholders
- Beneficial to participate in this Coalition effort

Cape Cod Hospital – Ventilator Associated Pneumonia

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Infection or Practice Targeted:

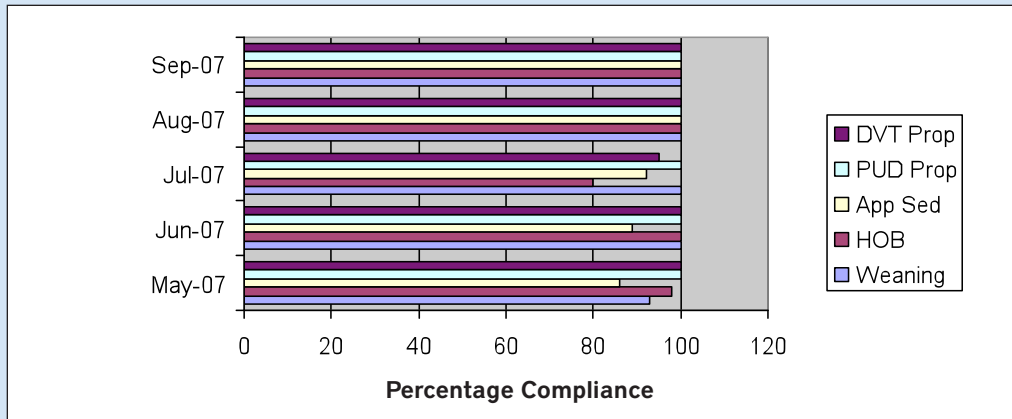
VAP

Results:

Unit	2005 VAP Mean rate (14/1395)	2006 VAP Mean Rate / Dev. Util (13/1628) Dev Util 0.44	2007 VAP Rate / Dev Util (0/1252) Dev Util 0.4 (1252/3160)	2008 Jan-Dec VAP Rate/Dev Util (0/1377) Dev Util 0.5(1377/3054)	CDC NHSN Mean
ICU	10.0 (14/1395)	8.0 (13/1628) Dev Util 0.44	0.0 (0/1252) Dev Util 0.4 (1252/3160)	0.0 (0/1377) Dev Util 0.5(1377/3054)	5.1
CCU	7.3 (6/820)	3.9 (3/760) Dev Util 0.33	1.7 (1/591) Dev Util 0.3 (591/2224)	1.7 (1/577) Dev Util 0.3(577/2086)	4.4
CSICU	8.0 (4/499)	3.5 (2/575) Dev Util 0.4	3.7 (2/542) Dev Util -0.4 (542/1284)	0.0 (0/888) Dev Util 0.6 (888/1439)	7.2

Unit	Rate 2006	Expected # VAP 2008 applying 2006 rates	Actual # VAP 1/08-12/08	Cost Avoidance @ \$40,000 / VAP and Lives Saved (30% mortality rate)
ICU	8.0	11	0	\$440,000 and 3 lives saved
CCU	3.9	2	1	
CSICU	3.5	3	0	\$120,000 and 1 life saved
Total		16	1	\$ 560,000 - \$40,000 = \$520,000 cost avoided and 4 lives saved

VBC Pre-TICU vs. Post TICU
Cape Cod Hospital VAP Bundle Compliance 5/07 – 9/07



Do These Results Reflect the Whole Hospital or Specific Units?

ICU, CCU, CSICU

Describe Briefly the Changes Made to Achieve These Results:

The team learned of the success of the VHA Transformation of the ICU (TICU) program in increasing VAP Bundle Compliance (VBC) and reducing VAP rates in other hospitals. The TICU program engages staff in measuring Ventilator Bundle Compliance (VBC) utilizing web-based software that provides real time feedback via reports benchmarking VAP rate / VBC with comparable hospital ICUs. In addition, quarterly content calls, educational programs, listserv and a share and learn site is provided for staff.

In April 2007 we joined the program, educated staff and began measurement of ICU mortality rate, percent of patients with Length of Stay (LOS) > 7 days, Average ICU LOS, Average number of ventilator days, optimal pain management, and VAP rate / VBC.

Most Important Lessons Learned From This Work:

We believe that the success we have experienced is directly attributable to the commitment of our ICU Team to VAP reduction by participation in the VHA TICU Program. The program has facilitated engagement of our entire ICU Team in measuring our VBC and has provided real time feedback of our performance allowing us to correct issues as they occur and celebrate successes. We believe that this model can be replicated in other facilities to reduce VAP and thereby increase patient safety.

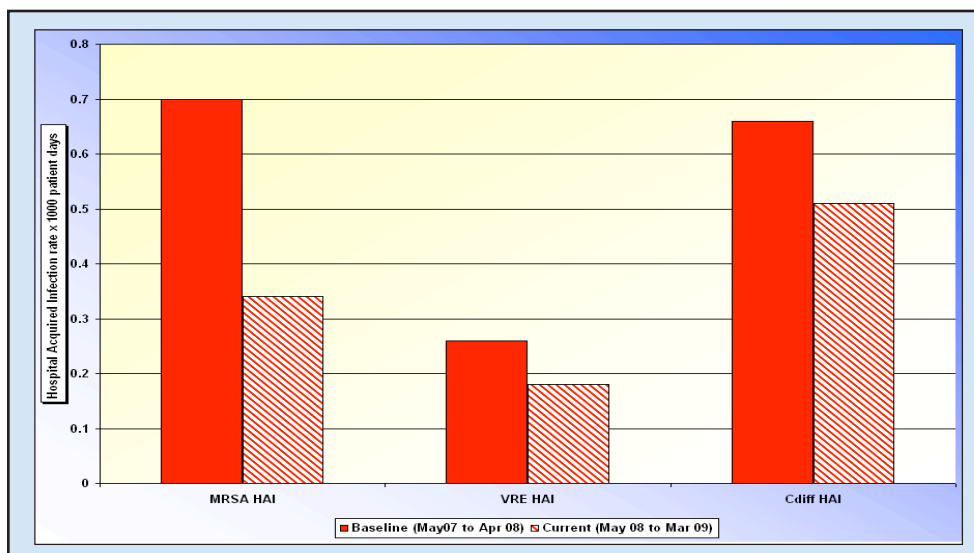
Caritas Christi Healthcare System – Methicillin-Resistant Staph.Aureus (MRSA)

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Infection or Practice Targeted:

Reducing Multi-Drug Resistant Organism (MDRO) Hospital Acquired Infections

Results:



Do These Results Reflect the Whole Hospital or Specific Units?

The results above represent the infection rates of the whole hospital system.

Describe Briefly the Changes Made to Achieve These Results:

The Caritas Christi Healthcare aim is to reduce hospital acquired infections from MRSA, Vancomycin-Resistant Enterococci (VRE) and C.difficile by 30% over 18 months in specific hospital pilot locations (including intensive care units and possibly identified medical/surgical care unit) by adopting both the primary driver strategies for prevention of transmission and infection as designed by the IHI Impact community. Once the pilot period is concluded and all tests of change have validated the intended outcome, these tested processes will be spread to all Caritas inpatient units to maximize the intent to eliminate hospital acquired infections from MRSA, VRE and C. difficile at all Caritas hospitals by 2010.

In May 2008 all the Caritas presidents signed a pledge and designated a project leader and team members for specific roles outlined by an expert panel. The expert panel developed change packages around four specific interventions which include:

- Identify patients with active surveillance cultures (ASC)
- Contact precaution standards for infected/colonized patients
- Decontamination of the environment and equipment
- Hand hygiene
- Processes to eliminate central line and ventilator associated infections (already in place).

On May 20, 2008, the designated team members and senior leadership along with representation from Board of Trustees gathered for a kick-off meeting. The elements of each change package were presented to the sites and binders with details to implement were distributed to local project leaders. Following the kick-off meeting the local project leaders met monthly with the Caritas Christi HAI project leader/data manager to discuss barriers to implementation, successes and results. The sites also completed a monthly senior leader report which includes compliance rates with each intervention and infection rates. Graphs of the process measures and outcome measures are distributed to the local teams, senior leadership and posted on the intranet.

Most Important Lessons Learned From This Work:

Important lessons learned from implementing the HAI initiative include:

- Senior leadership/staff/MD buy-in is key to success
- Be open to tweaking the process to accommodate for different populations
- Project leaders are instrumental to ensuring maintaining positive results

Cooley Dickinson Hospital – Methicillin-Resistant Staph. Aureus (MRSA)

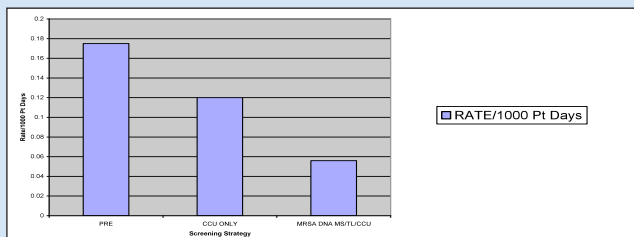
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Infection or Practice Targeted:

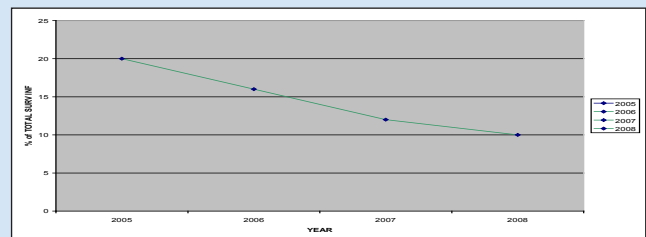
Reduce transmission of MRSA on med-surg, telemetry and critical care units.

Results:

Compared with the one year prior to any MRSA screening program (Q3 '06-Q2 '07), during the MRSA DNA PCR screening period there was a **68% drop** in rate of Surveillance MRSA infections*.

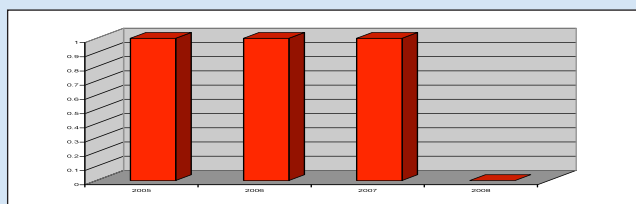


While the total number of Surveillance Infections* dropped between 2007 and 2008, the percent attributable to MRSA dropped faster.

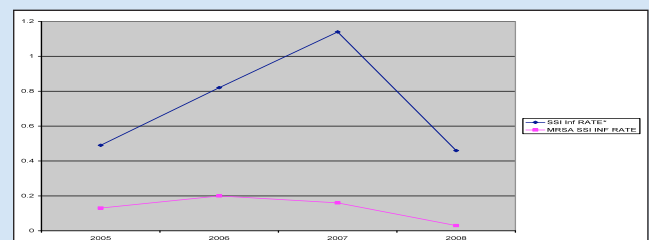


MRSA Surveillance Infection Deaths

For the first time in 4 years, in 2008 there were NO deaths due to Surveillance MRSA* Infections.



The total Surgical Site Infection rate (# Inf/100 procedures) dropped 60% from 2007 to 2008 while the MRSA SSI rate declined 81%.



Do These Results Reflect the Whole Hospital or Specific Units?

- These results reflect same day and in-patient surgery, and patient care on med-surg, telemetry and critical care units.

Describe Briefly the Changes Made to Achieve These Results:

- Hand hygiene campaign with signage, screen savers, education, observations and feedback
- Improved environmental cleaning
- Continued use of contact precautions with cohorting of patients (decision tree developed to assist with bed assignment process)
- Maintenance of list of MDRO patients with alert on medical record
- Active surveillance cultures of ED patients prior to admission via Polymerase Chain Reaction (PCR) testing with results available within 1 – 2 hours
- Screening for Staph. aureus and MRSA for all total pre-op joint replacement patients with bactroban for positive MSSA/MRSA; hibiclens showers X5 days for MRSA; and Sage CHG wipes (whole body) the night before and morning of surgery for ALL joint replacement patients.
- Volunteers assemble swabs and patient teaching materials in small biohazard bags which are then used to send specimens to lab
- Quarterly data posted in all patient care units, environmental services
- Instructions on preventing Surgical Site Infections (SSIs) mailed to surgical patients pre-op

Most Important Lessons Learned From This Work:

- It takes a village to prevent infections
- Continuous feedback and communication are critical

Emerson Hospital – Catheter-Associated Urinary Tract Infections (CAUTI)

Virginia Caples, RN, CNOR, (978) 287-3211; vcaples@emersonhosp.org

Infection or Practice Targeted:

Catheter-Associated Urinary Tract Infections (CAUTI)

Results:

From July through December 2008, we had an average of 666 device days per month and an average of 9.5 infections each month with a 14% infection rate. From January through April 2009, we had an average of 613 device days per month with 5.5 infections and an infection rate of about 9%.

Do These Results Reflect the Whole Hospital or Specific Units?

All units

Describe Briefly the Changes Made to Achieve These Results:

In late December we began the “CAUTI task force”. The task force included the quality and patient safety nurse, a nurse educator, a practice council/educator nurse, the NSQIP nurse and the Infection Preventionist. We began looking at the practice of Foley usage and care of the Foley catheters once they were inserted. We realized that Foley catheters were placed for convenience in some cases. This was a practice that we wanted to stop.

The task force began by reaching out to the care givers for feedback on Foley usage and patient needs and outcomes. We performed an extensive literature search surrounding catheters and costs of infections. It seemed that Foley care and practice at the bedside at Emerson Hospital was in line with the current literature. We realized that we needed to decrease device days and increase awareness surrounding this need. We began to educate the nurses and spoke to many of the physicians about Foley usage and the need to minimize device days in order to help minimize infection rates.

We have a physician champion (who just happens to be an urologist) and we are educating staff and physicians alike. We meet formally every other week but we also perform “huddles” with staff on the floors about once a week. As you can see from our recent data, the device days have dropped as have the infection rates. We will begin to implement the “Foley Removal Protocol” soon which will allow nurses to remove a Foley catheter if and when certain criteria are met. We hope that this will eliminate unnecessary device days and drive infection rates down even further.

Most Important Lessons Learned From This Work:

Teamwork, teamwork, teamwork!

Emerson Hospital – Central Line Associated Blood Stream Infections (CLABSI)

Virginia Caples, RN, CNOR, (978) 287-3211; vcaples@emersonhosp.org

Infection or Practice Targeted:

Central Line Associated Blood Stream Infections (CLABSI)

Results:

From January through August 2008, we had 5 CLABSI's in the CCU. (rate=2%)

We have had 714 infection-free device days and 242 total days without a CLABSI in the CCU (rate =0%)

Do These Results Reflect the Whole Hospital or Specific Units?

CCU

Describe Briefly the Changes Made to Achieve These Results:

We began an extensive reeducation program through the efforts of the infusion nurse, CCU nurse educator and the Infection Preventionist. We met with staff (all new orientees went through a rigorous and intense process surrounding central lines) regarding the insertion and care of lines. We would meet briefly (huddle) a few minutes at a time every week or so to see what was working and what we needed to improve upon.

I credit the infusion nurse, the educators, the staff, and MD's in this endeavor. What a huge pat on the back they deserve. We will begin to utilize our central line insertion checklist as of June 15, 2009 to continue to ensure quality patient care surrounding the insertion of all central lines.

Most Important Lessons Learned From This Work:

Teamwork, teamwork, teamwork!

Fairview Hospital – Reduction of Multi-Drug Resistant Organism

Geraldine A. McQuoid, RN, MA, MSN, ICP, (413) 528-2663; gmcquoid@bhs1.org

Infection or Practice Targeted:

Reduction of MDRO's

Results:

All healthcare facilities are faced with setting protocols for the prevention and the management of Multi-Drug Resistant Organisms (MDRO's) – in particular MRSA. Fairview Hospital embarked on a partnership with our local long term care facilities to reduce MDROs in the hospital by reducing transmission in the long term care facilities. As the program began, Fairview's Infection Control Practitioner performed a MRSA PCR swab on all residents of the long term care facilities. Results were shared with the facilities and then entered into Fairview's electronic data base, identifying the residents who were positive as "VIP". Education was provided to staff of the long term care facilities on treatment of colonized residents, prevention and containment strategies. This occurred over a 3-month period. Colonization rates on admission to the hospital have dropped from 22% to 15% for the first quarter of 09, and have continued to drop since then. Fairview bed utilization, time management, and use of equipment for admitted MDRO patients has improved by 50%. This collaborative effort has further decreased the chance of a hospital-acquired MRSA infection; Fairview's MRSA rate is far below state and federal benchmarks.

Do These Results Reflect the Whole Hospital or Specific Units?

Whole Hospital

Describe Briefly the Changes Made to Achieve These Results:

1. Support/buy in from Senior Management!
2. Extensive education to long term care staff and FVH staff on infection prevention and control.
3. Stringent Hand Hygiene program for patients, families and staff.
4. Environmental control and cleanliness

Most Important Lessons Learned From This Work:

MDRO's/MRSA rates can be reduced in long term care settings, in the community population and in the hospital thru early identification, treatment and isolation.

Health Alliance – Ventilator Associated Pneumonia

Gail E. Cormier, RN, (978) 466-2552; gcormier@healthalliance.com

Infection or Practice Targeted:

Decrease in VAP occurrences and increase compliance with VAP Bundle.

Results:

HealthAlliance Hospital started to include information regarding VAP on its Quality Dashboard for the Board of Trustees in February 2006. Comparison to national data showed that VAP rates in 2007 were high (90th percentile) and that there was significant opportunity for improvement.

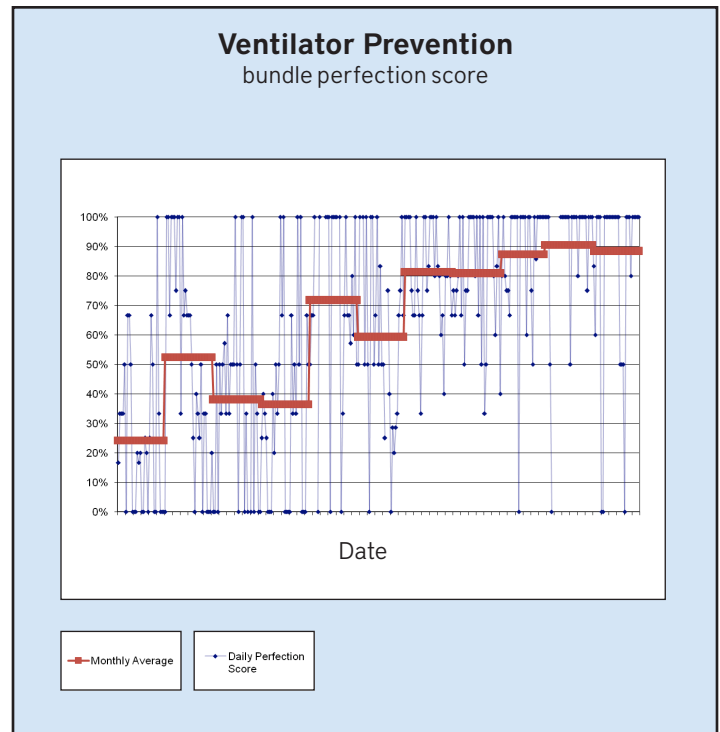
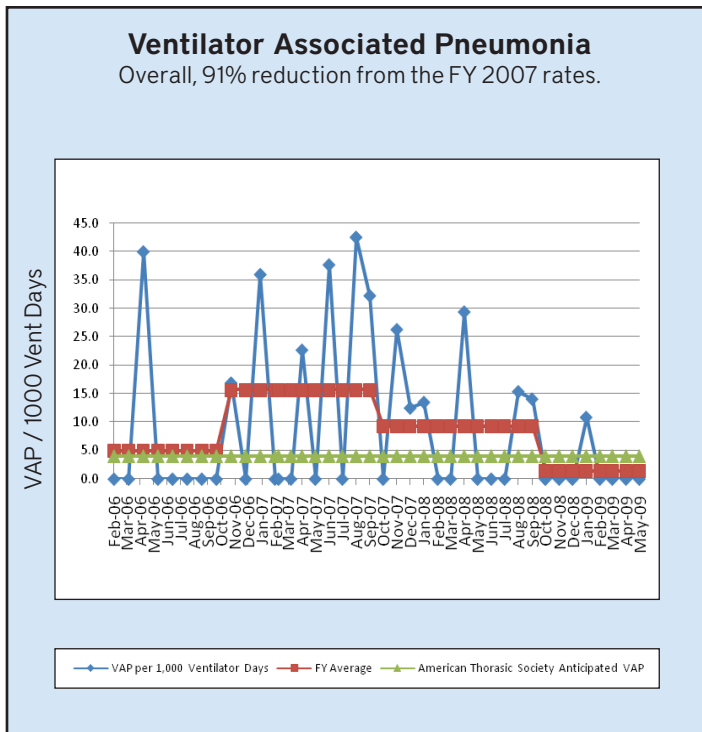
Rates of VAP increased in FY 2007. This coincides with the increasing complexity of cases in the CCU, increasing CCU census, and increases in the use of ventilators related to the development of an Intensivist Program.

- FY 2007 had VAP rates of 15.7 VAP/1000 Ventilator days. This rate has decreased to 2.7 in FY 2009 to date, which is a 91% rate reduction.
- There have been several instances in which the CCU has gone over 100 days with no VAP occurring. As of June 16, 2009 we are 162 days VAP free.

VAP Bundle Compliance Rates

- The IHI has defined a VAP bundle which included four interventions: Elevation of the Head of the Bed, Daily "Sedation Vacations" and Assessment of Readiness to Extubate; Peptic Ulcer Disease Prophylaxis; and Deep Venous Thrombosis Prophylaxis

- Perfect scores for Bundle Compliance measure whether all VAP interventions have been successfully delivered to each patient. These rates have been reported since June 2008 and have shown significant improvement, increasing from 24% to 91%.
- Though monthly averages have improved, there is still significant daily variability, indicating that the processes have not yet been fully incorporated into daily practice.



Do These Results Reflect the Whole Hospital or Specific Units?

This reflects our Critical Care Unit.

Describe Briefly the Changes Made to Achieve These Results:

The VAP Quality Improvement Team began meeting in May 2007. Meetings have occurred both on a regularly scheduled basis, as well as Root Cause Analysis meetings being scheduled following each episode of Ventilator Associated Pneumonia. Members of the committee include the CCU Intensivist as the MD Champion (who is very vested as he is co-chair of the CCU committee), Nursing Director of CCU, Director and staff of Respiratory, Nursing Staff RN, CCU Educator and Infection Control Coordinator. Discussion of VAP bundle are included in the Critical Care Team meetings that occurs each day on each patient.

The VAP team has implemented multiple changes since May 2007 relating to clinical practice, equipment use, patient/family education, and data collection, in an effort to eliminate VAP.

- A change in product was made to using Hi-Lo Evac Endotracheal Tubes
- A change in practice was made with the surgeons to place oral-gastro tubes vs. naso-gastric tubes unless not clinically indicated in surgery if the patient will remain ventilated - In addition to the nursing staff documenting the HOB elevation of 30-45 degrees, Respiratory Therapy also documents how they found the HOB on their assessment sheets
- A VAP poster board is posted in the CCU with bundle compliance results and days since the last VAP for staff
- Travel ventilators have been purchased and will allow transport of vented patients without breaking the circuit
- VAP results have been linked into the CMO and CNO job performance evaluation
- Results are reported up through the organization via a dashboard to the Board of Trustee level.

Most Important Lessons Learned From This Work:

The need for accountability on all levels of the organization to be successful

Heywood – Methicillin-Resistant Staph. Aureus (MRSA)

Jeannie Sanborn, RN, MS, CIC, (978) 630-6490; san.j@heywood.org

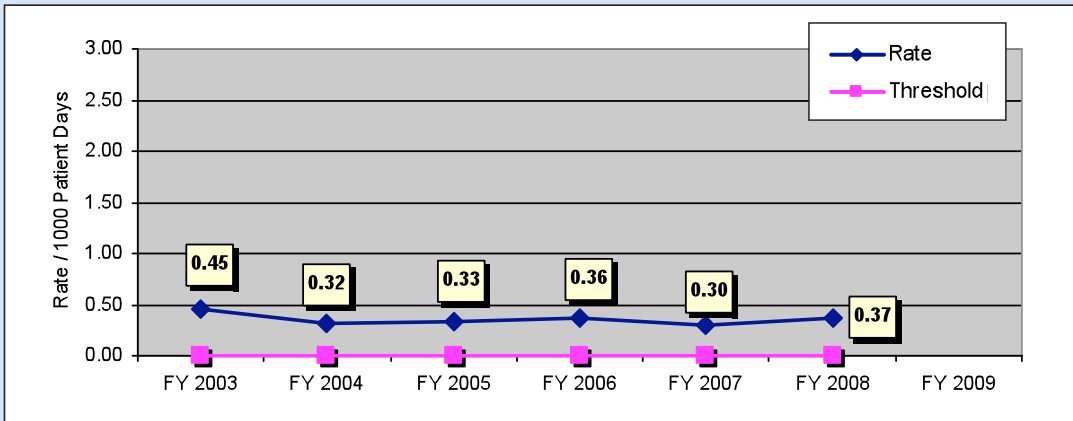
Infection or Practice Targeted:

Methicillin-Resistant Staph. Aureus (MRSA)

Results:

Since 2003, nosocomial MRSA rates have declined from .45 to .37 in 2008, despite a substantial increase in inpatient admissions with community acquired MRSA.

Nosocomial MRSA: A Seven Year Perspective



Do These Results Reflect the Whole Hospital or Specific Units?

Whole hospital

Describe Briefly the Changes Made to Achieve These Results:

- For every patient on isolation, environmental services clean high-touch surfaces twice a day.
- Manager of environmental services developed cleaning checklist, and uses it for quality improvement.
- Do not currently cohort infected patients. Infected patients are isolated; do cohort colonization.
- In October 2008 created PIT crew (Preventing Infections Together). This multidisciplinary group came together to brainstorm. Improved hand hygiene. Improved cleaning of medical equipment.

Most Important Lessons Learned From This Work:

Great teamwork is key to success. Need to get everybody to own infection prevention. TEAM – Together Everyone Achieves More.

Lawrence General Hospital – Employee Influenza Vaccination Rate

Tina Jablonski, RN, (978) 683-4000, ext 2611; christine.m.jablonski@lawrencegeneral.org

Infection or Practice Targeted:

Employee Influenza Vaccination Rate

Results:

Flu Season 2005 – 2006: 873 employees vaccinated
 Flu Season 2006 – 2007: 889 employees vaccinated
 Flu Season 2007 – 2008: 1,139 employees vaccinated
 Flu Season 2008 – 2009: 1,169 employees vaccinated

Do These Results Reflect the Whole Hospital or Specific Units?

Whole hospital

Describe Briefly the Changes Made to Achieve These Results:

- Utilized an existing “captive audience” situation. Offered vaccination during mandatory training at our annual Safety Fair.
- Increased nurse availability for injections-EC staff & infection control nurse.
- Improved efficiency & increased advertising-utilized hospital volunteers.

Most Important Lessons Learned From This Work:

- Team approach with support from senior administration works best.
- Change the talk from reward to responsibility.

Lawrence General Hospital – Ventilator Associated Pneumonia

Nancy Correa, RN, (978) 683-4000, ext 2420; nancy.e.correa@lawrencegeneral.org

Infection or Practice Targeted:

Prevention of Ventilator Associated Pneumonia

Results:

September 2007 to February 2008: ventilator days = 754, patients = 136, VAP cases = 5

September 2008 to February 2009 ventilator days = 521, patients = 137, VAP cases = 0

Do These Results Reflect the Whole Hospital or Specific Units?

Two Critical Care Units.

Describe Briefly the Changes Made to Achieve These Results:

- Instituted intensivist model for management of ventilator.
- Daily sedation vacation.
- Nursing staff and respiratory therapists empowered to initiate spontaneous breathing trial based on assessment criteria.

Most Important Lessons Learned From This Work:

- It takes a team
- Consistent physician assessment

Lowell General Hospital – Hand Hygiene

Amy Courtney, RN, BSN, MPH, (978) 937-6570; acourtney@lowellgeneral.org

Infection or Practice Targeted:

Lowell General Hospital started a Hand Hygiene Task Force August 2008 to increase hand hygiene awareness and compliance throughout the facility.

Results:

At the end of FY 2008 (September) our hand hygiene compliance, before and after care, was 45% housewide. For FY 2009 (October 08 through the present) our hand hygiene compliance is up to 66%.

Do These Results Reflect the Whole Hospital or Specific Units?

Statistics are tracked by unit and reported to staff by unit and housewide. The above stats are representative of the entire hospital.

Describe Briefly the Changes Made to Achieve These Results:

The Gel-in Gel-out campaign was started in August 2008. Pins with the logo were distributed to all staff during Infection Prevention Week and Nursing Skills Day. A short write-up in the weekly newsletter introduced the new campaign and educated staff about the importance of hand hygiene.

During the Infection Prevention part of new nurse orientation, all new staff take the hand hygiene skills test and are given a Gel-in Gel-out button to wear with their ID badge. Also, staff is educated about hand hygiene, disinfection and precautions. During hospital wide orientation all staff is educated about hand hygiene, disinfection and precautions. During Infection Prevention Week in October the Hand Hygiene Task Force set up a table outside the cafeteria. A fact-filled poster was available and hand sanitizer samples were distributed. Staff was also able to take the hand hygiene skills test to assess their thoroughness.

During the winter holidays, the Hand Hygiene Task Force put together holiday gift bags filled with hand sanitizer samples. The theme was “Hand hygiene doesn’t take a holiday.” The Hand Hygiene Task Force had a table during Nursing Skills Day in March 2009. All staff took the Hand Hygiene Skills test. Also, a poster was available to read. Last summer the CDC “Hand Hygiene Saves Lives” video was made available to all patients through the Skylight Video Program. All patients have access to this video in their room via their TV.

Quarterly, unit and housewide statistics, broken down by discipline, are presented to staff and leadership to show them how they are doing. Throughout the year, the most improved units receive recognition.

Most Important Lessons Learned From This Work:

- Leadership buy-in is essential to making improvements.
- Visual demonstrations drive the point home. The hand hygiene skills test has been very well received by all. When they take the test and see the spots they missed on their hands it really opens their eyes.
- A catchy logo allows staff to remind their colleagues in a non- threatening manner to perform hand hygiene.
- Make it fun and keep the message out there.
- Presenting statistics to staff and management makes it personal and real.
- Positive reinforcement through recognition makes staff feel appreciated and encouraged to do better.

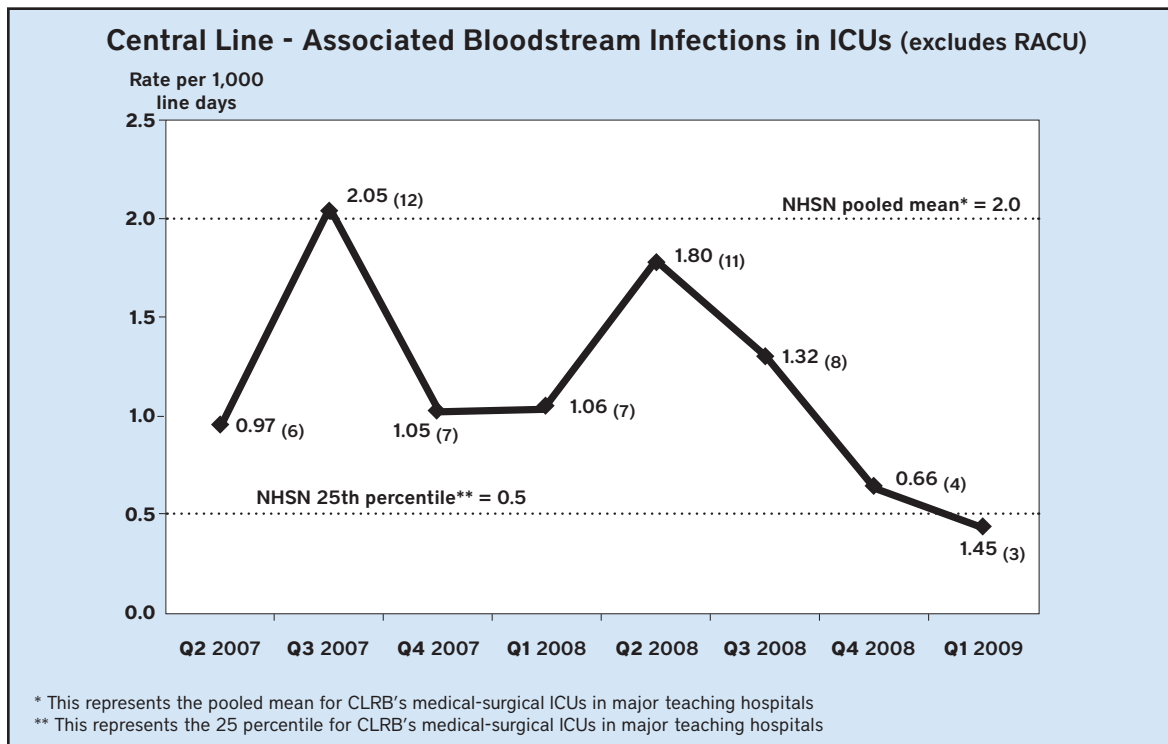
Massachusetts General Hospital – Central Line Related Blood Stream Infections

Suzanne Sokal, MSPH, (617) 724-8263; ssokal@partners.org

Infection or Practice Targeted:

Central Line Related Blood Stream Infections

Results:



Do These Results Reflect the Whole Hospital or Specific Units?

BSI rates are reported for ICU patients; however, the practice changes required to reduce the infection rate for ICU patients had to be adopted everywhere a line was placed and maintained to achieve these results.

Describe Briefly the Changes Made to Achieve These Results:

Generally, leadership activities involved defining the “what” of the change initiative, developing the approach to change, and partnering with unit leadership to recruit front line staff. Front line staff were selected by their direct supervisors based on a “job description” for project participation. In this project, the “what” included: a checklist with an observer trained in sterile technique, a standard kit or cart, a handoff procedure, appropriate maintenance practices, and a feedback and learning tool.

Front line staff activities focused on the “how” of the change initiative. In the case of placement activities (checklist, observer, kit and handoff), rapid prototyping was used for both the initial design phase (in four units) and validation phase (in nine units). All units started each week using the same tools and procedure and were allowed to modify all elements to fit their needs over the course of the week. At the end of every week, unit representatives met to debrief on the prior week’s experience and develop one standard to apply on their next line insertion. In this way practices converged and diverged until consensus was reached across all participating units (5 weeks for the design group and 2 for the validation group).

For maintenance practices, an educational packet was designed with in-situ training and practice audits. Finally, rapid prototyping was used for the development of the infection investigation tool.

Most Important Lessons Learned From This Work:

- How a problem is framed has a significant impact on if and how it will be solved.
- Separating the “what” from the “how” is critical and the skills required to answer these questions are often possessed by different stakeholder groups.
- Rapid prototyping is fast and effective when end users are involved, debriefs are prompt and routine and tools are updated quickly.

Massachusetts General Hospital – Hand Hygiene

Judy Tarselli, RN, (617) 726-6330; jtarselli@partners.org

Infection or Practice Targeted:

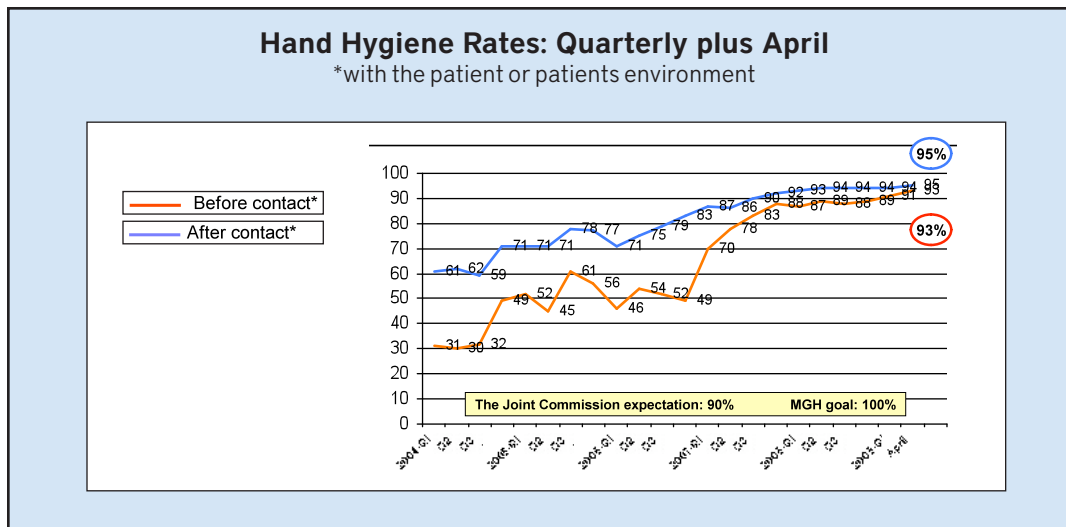
Hand Hygiene

Results:

MGH achieved hand hygiene compliance rates of “91/94” in the first quarter of 2009 – that is, 91% before contact with the patient or patient’s environment, and 94% after contact.

The hospital’s baseline rates were 8% before contact (2002) and 47% after contact (2000). Compliance improved after a comprehensive improvement effort was launched hospitalwide in 2004, but the rates still did not reach “90/90” until 2007 when the annual bonus for employees was

tied to that achievement. Since then, MGH has achieved monthly rates of “90/90” on a fairly regular basis, and first quarter of 2009 marked its first-ever “90/90” quarter. A hospitalwide celebration was held to recognize that accomplishment.



Do These Results Reflect the Whole Hospital or Specific Units?

Hospitalwide

Describe Briefly the Changes Made to Achieve These Results:

MGH developed a comprehensive and successful Hand Hygiene Program through a multidisciplinary approach and strong leadership support. The program includes education, point-of-use product availability, unit-based Champions, solid goals, compliance surveys, feedback, rewards, publicity, outreach, and patient and visitor involvement.

It is presently tackling “The Last 10%” by encouraging all employees to “Look around” at the actions of others, and to “Speak up” to prevent or correct noncompliance. Patients and visitors are also included in the improvement efforts.

The hospital’s ultimate goal is to achieve a perfect “100/100” – and many units have already proven that it can be done.

Most Important Lessons Learned From This Work:

It is possible to achieve hand hygiene improvement through a multidisciplinary effort and strong leadership support. Lasting success requires a cultural change, which MGH defined as follows: “Hand hygiene should be a habit that is so strong it is often done without thinking, and failure to use hand hygiene should be easily noticed and worthy of intervention.”

Mercy Medical Center – Ventilator Associated Pneumonia

Kathleen Hutchins, RN, (413) 748-9849; kathleen.hutchins@sphs.com

Kevin Sullivan, RN, (413) 748-9383; kevin.sullivan@sphs.com

Infection or Practice Targeted:

To reduce Ventilator Associated Pneumonia (VAP) in the Mercy ICU.

Specifically our performance improvement project was developed to address our above average VAP rates when compared to the NNIS benchmark of 8.5. We wanted to determine the effectiveness of combining a stringent oral care protocol with a ventilator bundle to prevent VAP in our ICU. Prudently for fiscal reasons, our other goal was to evaluate the oral care product we had selected to utilize. Nursing was vocal in their request that it would be essential for them to have the appropriate supplies if they were to be successful in following a stringent oral protocol. They felt that the product had to be compact, easy to store, all inclusive and quick and manageable in accomplishing good, effective oral care. We had agreement with management to trial a new product, along with the associated increased costs, for a total of six months.

Results:

At Mercy, our VAP rates have been calculated and recorded since Jan 1997. Our annual average VAP rates over this 8 year period ranged from a high of 19.19 in 1999 to a low of 10.01 in 2002. Prior to initiating our VAP quality improvement project in May of 2005, our 2004 annual rate was 12.6.

The number of VAP cases decreased immediately after implementation of the protocol. Our rate for the 6 month trial was decreased to 3.17 (3 cases), with the last 3 months of that 6 month period resulting in zero VAPs for 3 months in a row.

Summary of results:

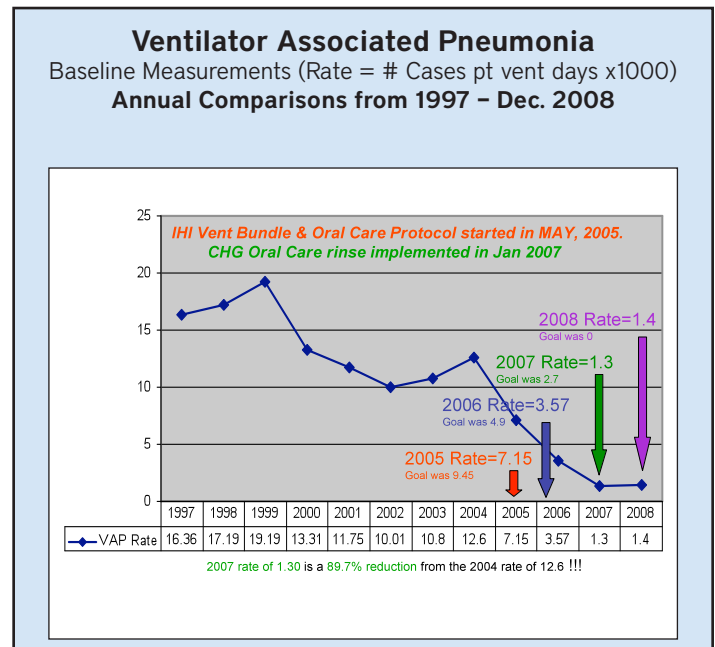
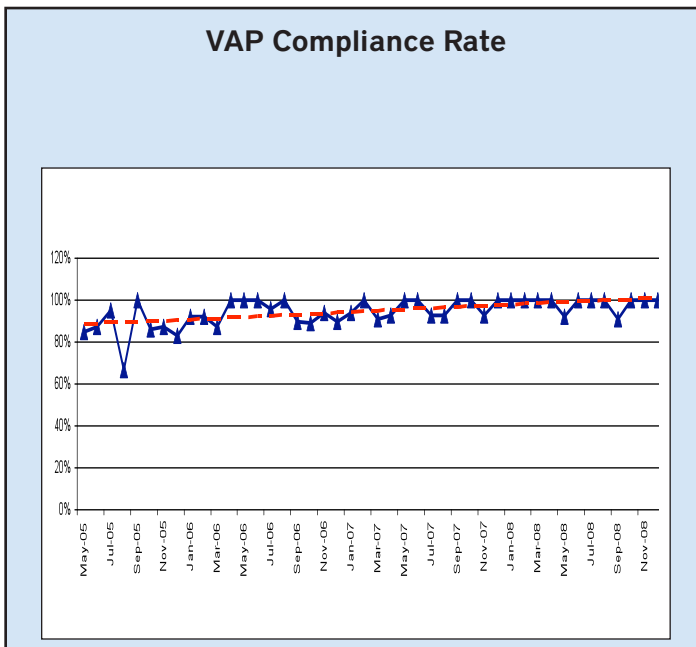
Baseline 2004 rate = 12.6 (26 VAP cases)

2005 rate = 7.15* (14 cases)

*Prior to implementing, the Jan-April 2005 rate was 12.04 (9 cases).

*Post implementation, the May-Dec 2005 rate was 4.12 (5 cases).

2006 rate = 3.57 (7 cases).
 2007 rate = 1.3** (2 cases) **this is an 89.7% reduction in rate from 2004 to 2007!
 2008 rate = 1.4 (2 cases).
 2009 rate = 0.



Do These Results Reflect the Whole Hospital or Specific Units?

All ventilated patients are cared for in the ICU at Mercy so these results reflect only this one unit.

Describe Briefly the Changes Made to Achieve These Results:

- (2/05) Began to share our VAP rates with the frontline staff and began educating why VAP bundles and stringent oral care was so important.
- (3/05) Allowed nursing to come up with the solutions for the problem and acted on their suggestions.
- (3/05) Heavily involved the unit's Critical Care Committee in all steps of the project.
- (5/05) Officially began to track VAP bundle compliance weekly, intervened in real-time when something was not in compliance, and role-modeled to nursing how to gain compliance.
- (4/05) Formalized a written Q4hr oral care protocol, including teeth brushing and deep oropharyngeal suctioning Q12hrs.
- (5/05) Implemented a new product to make this protocol actually feasible for the front line staff to accomplish.
- Daily Goal sheets were implemented in 9/04 but were revised and reinforced heavily in 7/05. These Goal Sheets included the components of the Vent Bundle and oral care protocol.
- (6/05) Continued education and reinforcement during multidisciplinary rounds.
- (6/05) Had a physician champion who was present on most days and who helped to reinforce several components of the bundle with nursing/respiratory (i.e. the sedation vacation & HOB components).
- (10/05) Physician champion was also willing to address noncompliance by other physicians.
- (10/05) Per Respiratory Therapy standards, the frequency of changes of ventilator inline suction setups went from daily changes to PRN changes.
- (11/05) Critical Care Committee and Administration formally accepted & approved the continued use of the oral care product.
- (1/06) Celebration in ICU congratulating the dedication of the staff & the wonderful results.
- (4/06, 8/06) Re-education to staff on our oral care protocol and products, emphasizing 100% compliance.
- (1/07) Began trialing the use of a Q12hr CHG oral rinse as part of our oral care protocol.
- (2/08) VAP abstract and poster presentation accepted for the Association for Professionals in Infection Control (APIC). Presented at APIC in 6/08.
- (3/09) The American Journal of Infection Control has agreed to publish our article entitled "Ventilated-associated pneumonia and oral care: A successful quality improvement project".

Most Important Lessons Learned From This Work:

- To include the front-line staff (nurses) in the process from the very beginning including identifying the problem, owning the problem, and resolving the problem.
- To empower them with the ability and motivation to make recommendations and follow through and adapt with the necessary changes. They have to "see" it as their problem and recognize that they do have the ability to change it and to feel good about their improvements
- To have management support the nurses' recommendations, specifically the increased immediate costs involved in implementing a new product (prepackaged oral care kits).
- To have a physician champion who was willing to reinforce with staff the bundle components on a frequent basis. He was also willing to support nursing and follow-up and address other physicians who were not as compliant.

- To have one consistent person who continues the auditing process and acts immediately on fixing any issues that arise before the outcomes are affected. Even though the rates are very good and have been sustained, it is crucial to have someone who will keep the fire alive. Re-education is constant.

MetroWest Medical Center – Ventilator Associated Pneumonia

Evelyn Mello, BSMT (ASCP), MS,CIC, (508) 650-7295; evelyn.mello@mwmc.com

Infection or Practice Targeted:

Ventilator Associated Pneumonia

Results:

Baseline(Pre-VAP Bundle) → 2004 = 4 (2.8 per 1000 ventilator days)

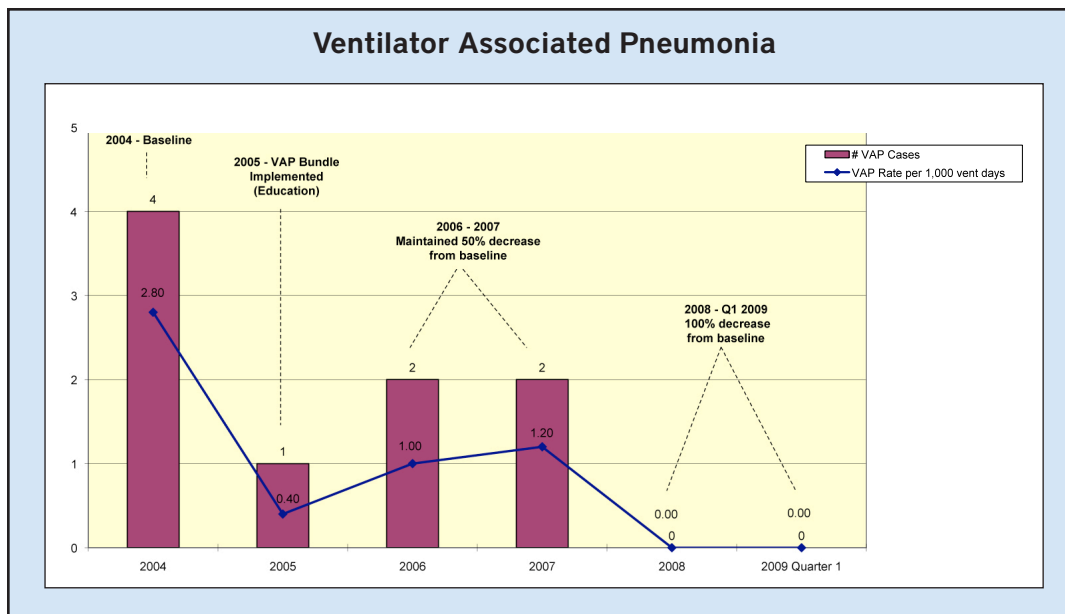
VAP Bundle Educ./Implementation → 2005 = 1 (0.4 per 1000 ventilator days)

2006 = 2 VAP cases (1.0 per 1000 vent .days)

2007 = 2 VAP cases (1.2 per 1000 vent. days)

In 2006 and 2007 maintained 50% decrease from baseline (2004)

2008 → Quarter 1-2009 = 0.0, 100% decrease from baseline.



Do These Results Reflect the Whole Hospital or Specific Units?

Medical-Surgical ICU/CCU1

Describe Briefly the Changes Made to Achieve These Results:

Changes were multifactorial, including collaborative and diligent work amongst ICU/CCU staff nurses, managers, clinical coordinators, resp. therapist, intensivist, pulmonologist, infectious disease physicians, quality management coordinators, and infection control practitioners. Approaches included education and implementation of VAP bundle interventions.

- Introduction of VAP Bundle during the IHI 100,000 Lives Campaign
- Development of Ventilator Bundle Checklist
- Posting of VAP Bundle Signage on patient's door
- Implementation of chlorhexidine mouthwash in fall 2008
- Active involvement of ICU/CCU Clinical Coordinators & Respiratory Therapist to ensure VAP Bundle is being observed and documented
- Sedation vacation embraced by Intensivist

Most Important Lessons Learned From This Work:

Teamwork equals positive outcome and quality patient care!

Milford Regional Medical Center – Reducing Indwelling Catheter Use to Reduce UTI

Kimberly Knox, RN, BA, MHA, (508) 422-2304, kknnox@milreg.org

Infection or Practice Targeted:

Reduction in the placement/use of indwelling catheters

Results:

This initiative was introduced to the ED staff in March 2009. The February 2009 data represents the baseline before the education was implemented.

Rates of Straight vs. Indwelling Catheter Use Among ED Patients Who Were Catheterized

	Feb 09	Mar 09	Apr 09
Straight Catheters	27%	25%	42%
Indwelling Catheters	73%	75%	58%

Do These Results Reflect the Whole Hospital or Specific Units?

Emergency department

Describe Briefly the Changes Made to Achieve These Results:

- ED Nurse Educator hosted the ED March 2009 Skills Fair
- Staff given overview of catheter use in ED and implications for patients with certain diagnosis
- Developed new template for documentation of insertion and indication for indwelling catheter
- Indications for indwelling foley insertion are now posted in the stock room where the foley kits are located. Staff need to “lift” the indications list in order to access and obtain the foley kit
- This information will also be included in the upcoming ED newsletter to staff

Most Important Lessons Learned From This Work:

Realization of the number of indwelling catheters utilized during emergency room visits and determining reasons for their utilization.

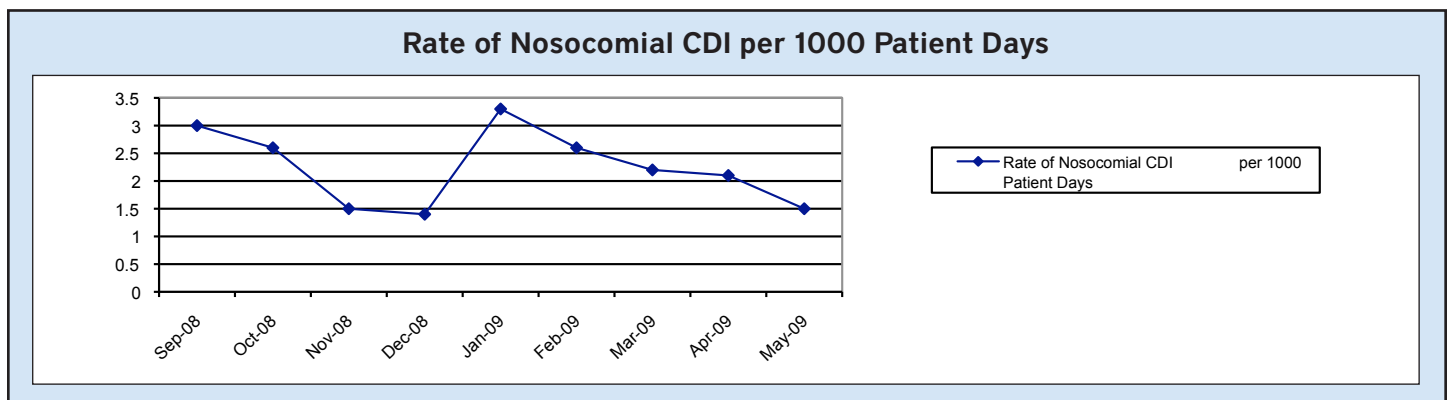
Milford Regional Medical Center – Hand Hygiene to Reduce C. Difficile Infection

Kimberly Knox, RN, BA, MHA, (508) 422-2304, kknnox@milreg.org

Infection or Practice Targeted:

Hand hygiene to reduce C.Difficile infections

Results:



Do These Results Reflect the Whole Hospital or Specific Units?

Targeted one Medical-Surgical-Oncology unit

Describe Briefly the Changes Made to Achieve These Results:

Reduction in C.Difficile was also introduced to the ED staff at their Springs Skills Fair. In conjunction with WHO Handwashing Campaign on May 5, 2009 the HAI team created a poster campaign for the 5 Moments for Hand Hygiene, staffed an informational hand hygiene table in the cafeteria to answer staff, patient and visitor questions, and also asked staff to sign hand hygiene pledges. Support from Nurse Manager – consistent information given to staff and patients.

Most Important Lessons Learned From This Work:

Get data before making assumptions. It takes a team approach to investigate areas for improvement and develop plans to improve.

Mount Auburn Hospital – Employee Influenza Vaccination Program

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Infection or Practice Targeted:

Employee Influenza Vaccination Program

Results:

Baseline: 52% Improvement: 71%

Do These Results Reflect the Whole Hospital or Specific Units?

Employee Vaccination Program is hospital wide

Describe Briefly the Changes Made to Achieve These Results:

The program started in 2005-2006 Flu season

When the influenza vaccination administration rate was 52%, a team from Employee Health and Infection Prevention set up a Flu Vaccination Clinic at the annual Quality & Safety Fair. Each year more staff were available to give flu shots. The vaccinations increased, however it was getting increasingly difficult to determine if we were vaccinating our employees or physicians' staff. An issue was the illegibility of signatures. By the 2008-2009 season, we were able to develop a system of preprinted consent sheets and worked with Payroll to get an absolute employee number. As of the 2008-2009 season, MAH vaccinated 1,533 employee and an estimated 170 plus employees received vaccination elsewhere. The total of all employees vaccinated were 1,703, for a total of 71% of employees vaccinated.

As of 2008 we had established a new tracking system and had a real number of active employees. Infection Prevention provided informational posters, bug signs, spoke one-on-one with staff and with managers, encouraged vaccinated employees to tell colleagues what they thought were the benefits of the flu vaccination for them, and an RN visited all of the inpatient and ancillary departments daily with her flu vaccination cart, which turned out to be very effective.

Most Important Lessons Learned From This Work:

- Teams work, and administrative support is paramount
- Engaging staff and management
- Education in a creative manner. Power point presentations incorporating statements from staff
- Reminders: "Dispelling myths around Flu vaccine", "Did you get your Flu vaccinations yet?", "Why get the Flu vaccine?", "You can't get the Flu from the Flu vaccine"
- Pictures of the influenza virus in living color has been helpful
- Staff buy-in
- Education, education, education!

Mount Auburn Hospital – Hand Hygiene

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Infection or Practice Targeted:

Hand Hygiene

Results:

Baseline: 70% observed Improvement: 95% observed

Do These Results Reflect the Whole Hospital or Specific Units?

In and Out Hand Hygiene is hospital wide program including medical staff.

Describe Briefly the Changes Made to Achieve These Results:

Hospital wide initiative started at administrative and Medical Staff Executive level. Physician's, nurses, chiefs, Respiratory Therapy, Rehab Services, specialty unit staff, Outpatient and Emergency Department monitor compliance with intervention if necessary. Front line staff, as well as medical staff, monitor and intervene.

What made this work so well?

What has made this work so well is that accountability comes from the top down. It started with the Medical Staff Executive Committee, along with the physician Chair of Quality and backing from senior administration, buy-in from physicians, Nursing, PT, OT, Respiratory. It is a coordinated hospital-wide effort. It is an expectation that staff will use hand hygiene IN and OUT and as needed.

Most Important Lessons Learned From This Work:

- Teams work, and medical staff and administrative support is paramount
- Engaging staff and management
- Units are competitive and want the best rates possible
- Hand out bottles of CalStat, raffles for prizes for Hand Hygiene awareness
- Education in a creative manner. Power point presentations incorporating statements from staff
- Staff buy in and act as monitors along with physicians and other disciplines
- Education, education, education!

Mount Auburn Hospital – Ventilator Associated Pneumonia

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Infection or Practice Targeted:

Zero VAP Team

Results:

Baseline: 1 VAP in 12 months for MICU and 4 VAP in 12 months for SICU

Improvement: Sustained Zero VAPs for 12 months on MICU and 8 months on SICU

Do These Results Reflect the Whole Hospital or Specific Units?

Critical Care Pavilion (MICU and SICU)

Describe Briefly the Changes Made to Achieve These Results:

Ongoing program since 2006.

- Integrated Infection Prevention with Quality and Safety in the hospital
- Did Root Cause Analysis (RCA) on all VAPs
- Implemented daily goals sheets with checklists to assure daily application of bundle

A team with ICU nurses, pulmonologist, intensivists, respiratory therapist monitor for full VAP Bundle. The team has identified issues through surveys of staff and their practice related to care of the endotracheal tubes, and highlighted practice that needed to be changed. This included a requirement for hand hygiene and glove usage for all room entry.

Staff and Intensivists are very involved in daily monitoring for VAP.

The staff monitor for and document the VAP Bundle. It is the expectation of physicians, nurses and respiratory therapists that they maintain the Bundle and tell others what they found. Communication is key. An anonymous survey was sent out which identified areas for improvement, and changes were made immediately. The survey worked.

Most Important Lessons Learned From This Work:

- Teams work and Administrative Support is Paramount
- Engaging staff and management
- Units are competitive and want the best rates possible
- Staff buy in
- Education, education, education!

New England Baptist Hospital – Blood Pressure Cuffs Cleaning

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Infection or Practice Targeted:

Methicillin-resistant Staphylococcus aureus (MRSA), Staphylococcus aureus and Vancomycin-resistant Enterococci (VRE) are capable of surviving for days to weeks on environmental surfaces. Some healthcare facilities have implemented the use of disposable blood pressure (BP) cuffs in an effort to prevent cross-contamination of multiple drug resistant organisms, which can add substantial costs. A prospective study was conducted in June 2008 to evaluate the level of bacterial contamination on 30 BP cuffs and 8 pneumatic tourniquet cuffs used in surgical procedures that require the temporary occlusion of blood flow in the extremity. An infection control measure was implemented to disinfect the equipment with an quaternary/isopropyl alcohol germicidal surface cloth.

Results:

Contact plates were applied to the center portion of the BP cuff and pneumatic tourniquet that touches the patients' skin during use. The colony forming units (cfu) were recorded, as well as the identification of the microorganisms that were found on the equipment.

There was one BP cuff (3.3%) which grew out Staphylococcus aureus. None had MRSA and VRE. Four of the 8 tourniquets grew <9 cfu and 9 of the 30 BP cuffs (30%) grew <10 cfu of bacillus species or Coagulase negative staph.

Organisms	BP Cuff	Pneumatic Tourniquets
S.aureus	1/30 (3.3%)	0/8 (0%)
MRSA	0/30 (0%)	0/8(0%)
VRE	0/30 (0%)	0/8 (0%)
CNS, Bacillus	< 10 cfu 9/30 (30%)	< 9cfu 4/8 (50%)

Do These Results Reflect the Whole Hospital or Specific Units?

This project reflected the Department of Nursing and Radiology Department at New England Baptist Hospital.

Describe Briefly the Changes Made to Achieve These Results:

A surface cleaning with germicidal cloths that are active against Staphylococcus aureus, MRSA and VRE on non-disposable BP cuffs and pneumatic tourniquets appears sufficient to reduce contamination to safe levels between patient use. The cleaning procedure should be done just before each use to prevent cross contamination from shared equipment. Each Dinamapp (BP cuff, oximeter probe, thermometer) now has a container of alcohol sanicloths in the basket attached to the equipment for each use and cleaning.

Most Important Lessons Learned From This Work:

Significant bacterial colonization may occur on surfaces of non-disposable blood-pressure cuffs. Contamination of blood-pressure cuffs can be particularly problematic in intensive care units and operating rooms, where the cuffs are commonly exposed to blood and other bodily fluids, thus making the cuffs a possible source of infection if reused. With the increasing recognition that contamination of blood-pressure cuffs can be a source of infection, it has been recommended that, where possible, a sterilized cuff, or an unused disposable cuff, be dedicated to each patient upon arrival at a hospital and that the cuff follow the patient around in the hospital. However, dedicating a cuff to each patient requires a large number of cuffs, thereby making the practice expensive. Moreover, it is procedurally difficult to insure that the cuff follows the patient's movements in the hospital. Disposable cuffs are available as a possible solution, but disposable cuffs also lead to substantial additional expense. Consequently, hospital staff commonly reuse blood-pressure cuffs on different patients without cleaning the cuffs between patients. This small scale study was undertaken to evaluate the effectiveness of an infection prevention measure to have staff perform surface cleaning BP cuffs with germicidal wipe before each patient use. Results indicate low levels of exogenous contamination on the cuffs and no multiple drug resistant microorganisms.

New England Baptist Hospital – Surgical Site Infections (SSI)

Maureen Spencer, RN, M.Ed, CIC, (617) 754-5332; Mspence@nebh.org

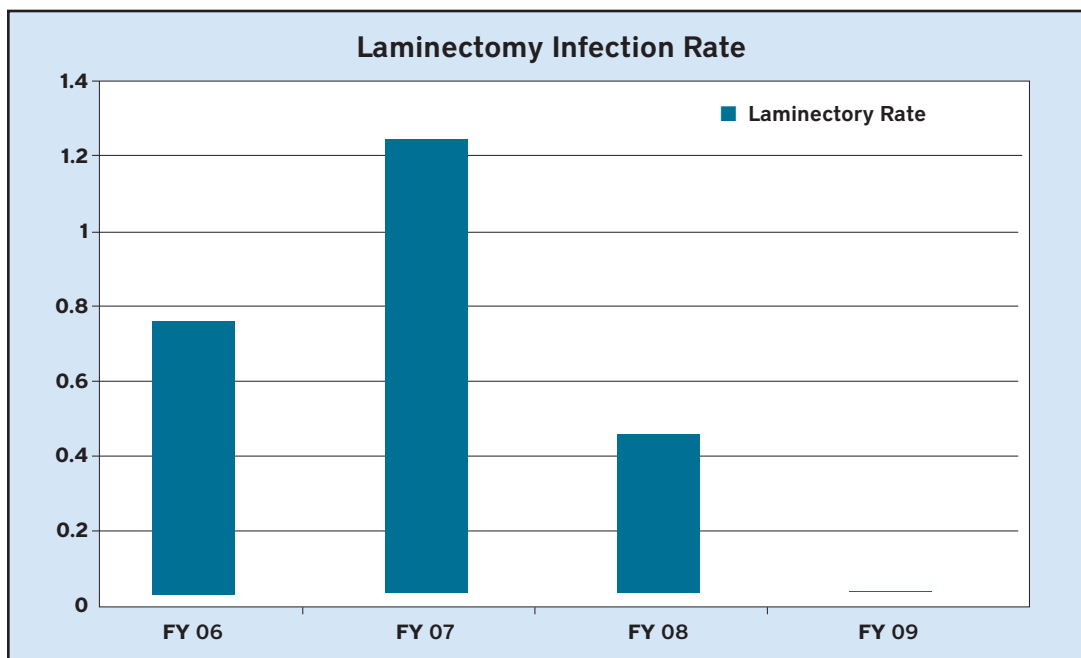
Infection or Practice Targeted:

Surgical site infection (SSI) rate following laminectomy surgery increased from 0.8% in FY07 to 1.3% in FY08, while the spine fusion infection rate decreased from 1.1% to 0.4%. This led a team on an investigation to study what practices were different between the two types of surgery that were causing a higher SSI rate following laminectomy surgery.

Results:

The purpose of the team was to investigate factors leading to a higher rate of SSI following laminectomy surgery. The team worked together over 18 months to conduct a case control study and analyze risk factors for the development of surgical site infections (SSI) after the administration of locally administered methylprednisolone steroid medications during surgery. The reason methylprednisolone was used in this manner was to reduce swelling, pain and scarring of nerves following decompressive laminectomy surgery and enhance patient recovery and reduce pain.

In FY2007 the rate was 1.3% and was reduced to 0.5% in FY2008. It is currently 0% in FY2009 (through April).



Do These Results Reflect the Whole Hospital or Specific Units?

This project reflected the Spine Service at New England Baptist Hospital.

Describe Briefly the Changes Made to Achieve These Results:

The team met and reviewed the case control study results and determined that the practice of locally administering depomedrol might be adversely affecting the local immune defenses and increasing the risk of SSI. Therefore, they recommended the practice be stopped or used with

extreme caution. In September, 2007, the Chief of the Spine Section sent a letter to spine surgeons requesting they cease the routine instillation of local steroids for pain management.

The Chief of Spine Section, spine surgeons, department of research and infection control participated in a well designed case control study to determine whether this practice was influencing the higher infection rate. A medical record review of 148 controls and 55 SSI in spine surgery were analyzed. The results demonstrated that the use of methylprednisolone was associated with a 7 fold higher infection rate, especially in patients who were obese and diabetic. A scientific poster on the study was presented at the 2009 Society of Hospital Epidemiologists of America (SHEA) Annual Conference.

Most Important Lessons Learned From This Work:

Infection control must be closely involved with surgical services and kept abreast of new practices or techniques that may be associated with a higher risk of infection. The instillation of any medications into sterile spaces carries a risk of contamination and the instillation of steroids is known to adversely affect local immune response.

In this situation, the infection control manager learned of the practice of locally administered steroids while attending a research symposium where this was discussed. This led to the development of a case control study with the department of research to systematically study whether there was a correlation. The use of sound research methods and team work are essential to infection control investigations.

Quincy Medical Center – Catheter-Related Blood Stream Infections (CRBSI)

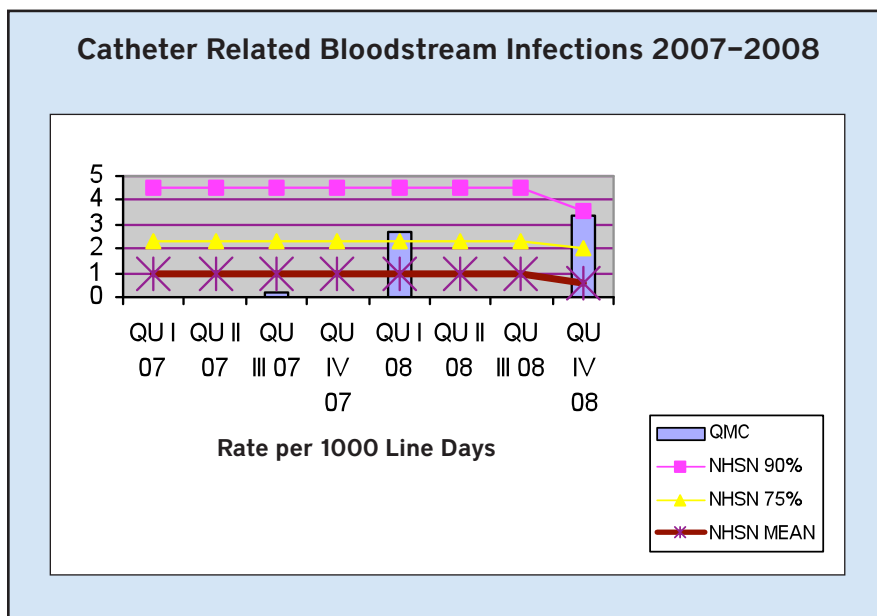
Deborah Hylander, MSN, RN, CIC, COHN-S, (617) 376-5571; dhylander@quincymc.org

Infection or Practice Targeted:

Catheter-Related Blood Stream Infections (CRBSI)

Results:

The 2007-2008 incidence rate of 0.76 without risk stratification, represents 2 cases of CRBSIs (cases per 1000 line days) and was marginally above the NHSN mean for coronary care units (0.6).



Do These Results Reflect the Whole Hospital or Specific Units?

ICU

Describe Briefly the Changes Made to Achieve These Results:

Engaging the organization in the process: practitioners and leadership

- Rates & data are published & shared
- Cases are reviewed by Critical Care Committee & unit staff

Education:

- IHI bundle
- Medical & nursing measures to decrease infection risk
- Presentations at leadership meetings (Joint Commission National Patient Safety Goal #7)
- Hand hygiene

Newest interventions:

- Education for leadership on standards

- 3.15% CHG
- STHM dressings with sealed edges
- CVL Procedure note
- IV necessity evaluations (PICC utilization)

Most Important Lessons Learned From This Work:

- “It takes a village!”
- Leadership must be educated on standards

Quincy Medical Center – Hand Hygiene and Contact Precautions

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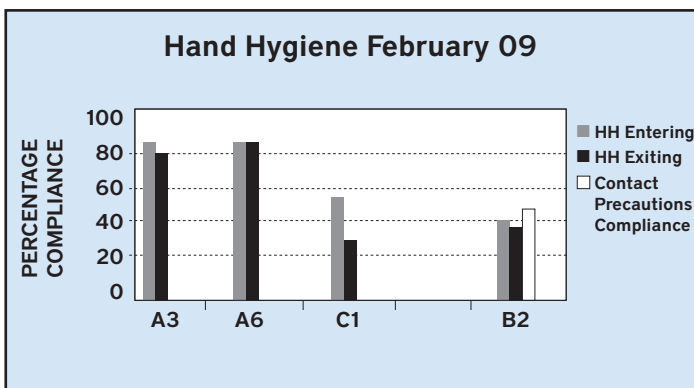
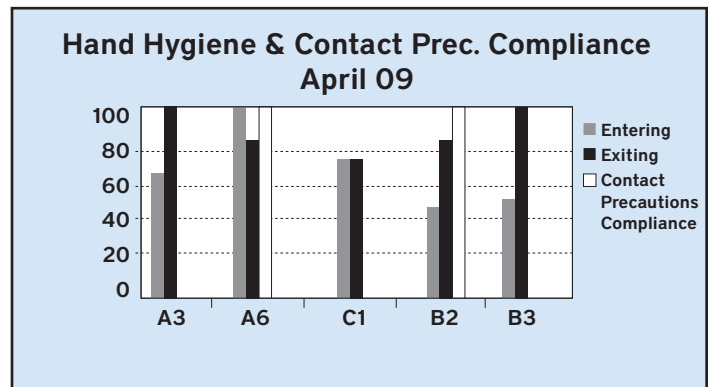
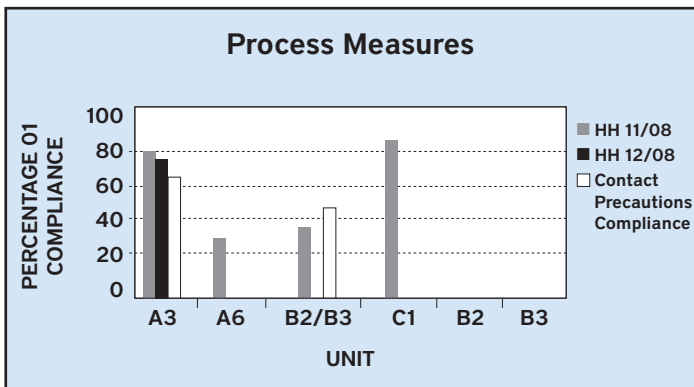
Infection or Practice Targeted:

Hand Hygiene and Contact Precautions

Results:

The most recent data demonstrates remarkable increase in compliance for exiting rooms, but offers some room for improvement in entering. At this point, we are seeing success and are staying this course.

All staff have become increasingly comfortable with professionally approaching others about failure to comply with our policy and standards. The concept that “We are all responsible for patient safety and infection prevention” is being imbedded into our culture.



Do These Results Reflect the Whole Hospital or Specific Units?

The results reflect all inpatient units but all departments involved in those units are included.

Describe Briefly the Changes Made to Achieve These Results:

We have assigned independent teams to do direct observations of hand hygiene practice and compliance with contact precautions. Daily monitoring is also done and documented by unit managers. Data is collected and trended monthly by unit and in aggregate.

Daily clinical oversight, in addition the following interventions, has triggered improvement:

- Education begins upon hire. Hand hygiene & infection prevention are taught in orientation and monitored continuously
- Employees and staff are educated that clean hands are a patient right
- “Infection prevention” is included as an agenda item at all staff meetings in all units
- Hand hygiene compliance and strategies are routinely discussed at bi-monthly leadership meetings
- Every department within the facility is expected to monitor hand hygiene & contact precaution compliance and to collect and submit data
- We developed an “RN Daily Practice Review Form” to identify and highlight expected standards and practices, allow for data collection on compliance, and organize clinical oversight

- A book on Joint Commission National Patient Safety Goal #7 has been organized with our action plan, data, and progress
- Data from direct observations is trended and shared with all staff
- Infection rates are routinely shared with all staff
- We have reviewed and revised all HAI prevention policies as indicated
- We devised a “Manager’s Status Board” which mimics the electronic staff nurse status board to include specific infection prevention interventions with reminders
- We have encouraged dialogue between all staff and employees regarding the expectation for compliance with hand hygiene
- We increased numbers and availability of alcohol disinfectant pumps throughout the facility

Most Important Lessons Learned From This Work:

- Leaders and supervisors cannot hold staff accountable for practice until they are thoroughly familiar with the standards and policies themselves. It was a revelation to realize that some leaders did not fully understand what the expectations for compliance were. We had to take the time to re-educate our Leadership team about our policies, the indications for hand hygiene, and the correct methods.
- Availability of hand hygiene resources is paramount to compliance. Staff are unable to practice appropriate hand hygiene when soap, paper towels or alcohol are not available. Education and collaboration with Environmental Services about their role in improving patient outcomes by ensuring availability of resources for all staff helped improve our compliance rates. Increasing the volume of resources available in many areas, based on needs identified by the staff, also improved compliance.
- While analyzing our data, we realized that simply assessing opportunities for hand hygiene and measuring compliance (November – December 2008) was not providing us with sufficient information to make improvements. We began to better understand specific areas for improvement when we observed “entering” and “exiting” room opportunities separately, modeled after established data collection tools being utilized (i.e. IHI).

Tufts Medical Center – Hand Hygiene

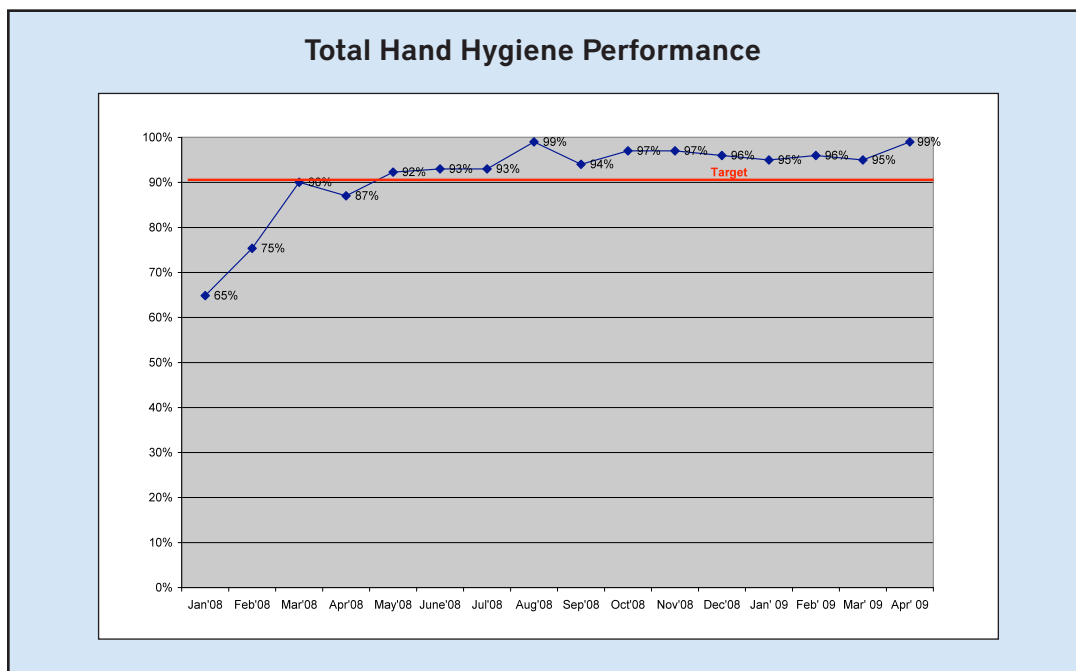
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Infection or Practice Targeted:

Hand Hygiene

Results:

Baseline performance at 65-75% (this baseline actually reflects improvement over previous baseline (established in 2002) but was still not at target. Post improvement results were greater than 90%. This has been sustained for 12 consecutive months.



Do These Results Reflect the Whole Hospital or Specific Units?

Whole hospital

Describe Briefly the Changes Made to Achieve These Results:

- Utilized various visual cues throughout the medical center (posters, buttons, screensavers) to remind staff to perform hand hygiene. Continue to rotate visual cues (so they do not become background).
- Involved patients/visitors in our hand hygiene program through development of hand hygiene brochures provided at admission and hand

- hygiene posters/tabletops targeted at visitors in strategic locations. Protect our Patients program is available via grant from APIC.
- Additional hand hygiene dispensers installed in public areas throughout medical center, not just patient care areas.
- Revised and distributed hospital policy on hand hygiene based on latest CDC guidelines. Approval via several high level committees and final presentation/distribution at managers meeting by Chief Medical Officer (CMO).
- Discontinued indirect measurement (product usage) to focus resources on direct measurement (observations). Increased observations significantly to greater than 1000 per month. Departmental “quality champions” identified who will take responsibility for monitoring and improving performance within their respective domain. Began widespread distribution of data (monthly to all personnel from CMO) instead of just via Infection Control and other Quality Improvement committees. Added direct/immediate feedback to observer role.
- Second hospital wide hand hygiene campaign rolled out (posters, stickers, floor mats, etc.) Involvement/support of CMO and VP of Public Affairs allowed development of materials via a marketing firm. Content was directed at staff (certain content was placed in staff areas only), patients, and visitors. Content included pictures of hospital leadership reminding staff about hand hygiene and is a blend of fun/catchy slogans as well as scientific facts.
- Utilizing grant money, developed unit level Hand Hygiene Campaign for MICU and NICU. Hand hygiene education, a written fact sheet, and a review of hand hygiene policy and expectations were incorporated into physician (attending and house staff) and nursing orientation to these units. The education was provided by ICU leadership. Attending physician used an early morning hospitality cart (with donuts) as he educated ICU staff concerning hand hygiene and many other quality requirements. The idea for a fact sheet and hospitality cart was borrowed from networking with Cedars Sinai.

Most Important Lessons Learned From This Work:

- Senior Leadership’s support, and resources, matter.
- Training, and sometimes retraining, of observers is necessary/important.
- Being an observer is an educational experience and has a positive impact on one’s own hand hygiene performance.
- Multifaceted approach (visual reminders, direct feedback, sharing of performance data, etc.) is important to reach and sustain target.

UMass Memorial Medical Center – Central Line Associated Blood Stream Infections

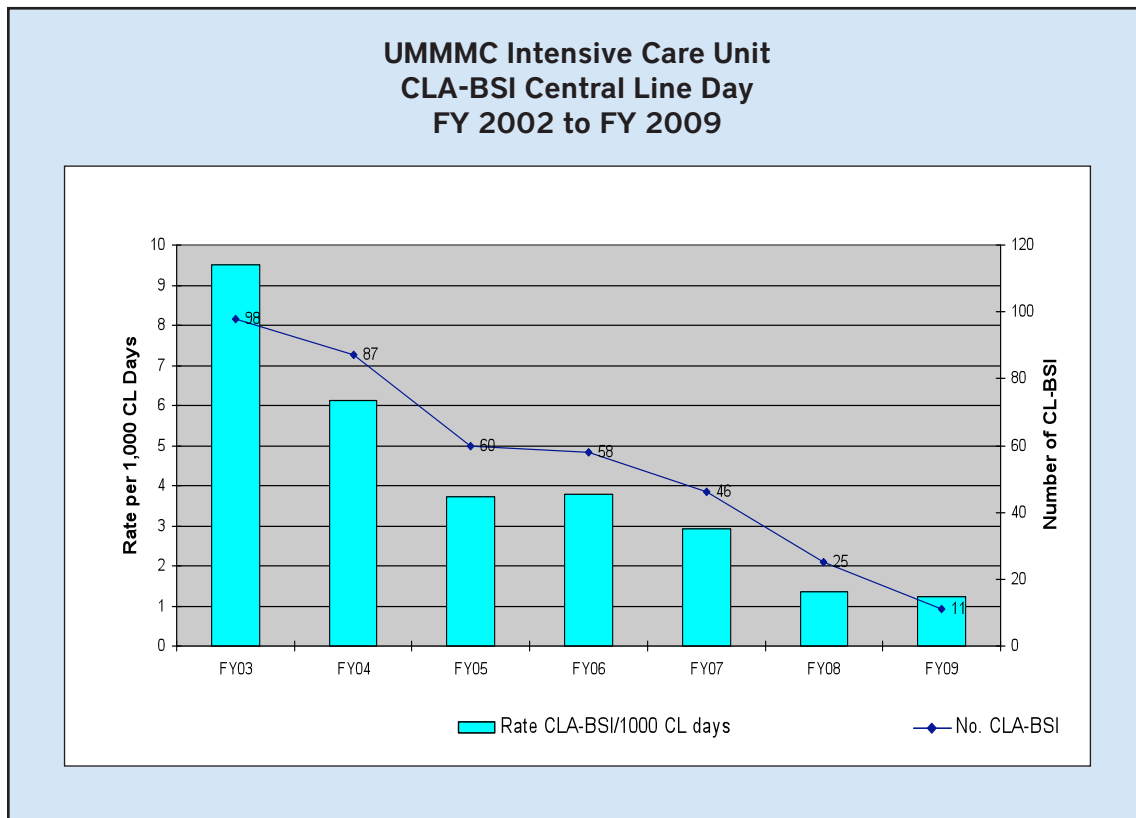
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Infection or Practice Targeted:

Central line BSIs in ICUs

Results:

Since fiscal year 2003 there has been a progressive decrease in the annual incidence of central line bloodstream infections in the adult and pediatric ICUs at the UMass Memorial Medical Center (UMMMC) with an 87% decrease over the entire period, including a 67% decline since FY06.



Do These Results Reflect the Whole Hospital or Specific Units?

The results reflect changes in infection rates in 7 adult and one pediatric ICU at the two UMass Memorial Campuses

Describe Briefly the Changes Made to Achieve These Results:

UMMMC has been tracking CLABSIs in ICUs since the 1990's. Beginning in July 2003 the use of a central line checklist was piloted in a single ICU, with a significant reduction in infections noted in the ICU during the subsequent year.

In 2004, a Critical Care Operations Committee (CCOC) that oversees care in all UMMC ICUs was created and in 2005 a taskforce was created to extend this work to all ICUs with representation from all ICUs, the infection control department, and the microbiology laboratory. The use of a checklist, central line cart, full barrier precautions, and physician and staff education was implemented. Additional measures to decrease central line infections that have been subsequently implemented:

- FY2006 – use of Chlorhexidine impregnated dressings on all central lines
- FY2006 – monthly presentation by infection control department to the CCOC committee on CLABSI rates in each ICU
- FY2006 – educational presentations and discussions with front line staff in each ICU on CLABSI in rotation with other CCOC quality initiatives
- FY 2007 – on line education of all ICU physicians and staff on preventing central line infections
- FY2007 – routine use of antimicrobial impregnated central line catheters begun when catheter placed in ICU
- FY2007 – “High risk” lines identified through ICU electronic medical record with automatic notification of ICU director, ICU nurse manager, infection control staff, and CCOC director (high risk lines include those placed in emergency department and at femoral site)
- FY2008 – a reduction in CLABSI rates in the ICUs was made a hospital goal for UMMC with financial implications for hospital senior administration as well as CCOC director and ICU directors
- FY2008 – education on proper blood culture collection technique provided to all ICU staff
- FY2008 – each CLABSI treated as a “critical” event with a follow up review meeting held with ICU unit director, ICU nurse manager, infection control department staff, and CCOC leadership
- FY2008 – an atlas of dressing options for central line catheters placed at internal jugular site was created for situations where individual patient's anatomy made it difficult to maintain an intact dressing
- FY2009 – the rate of contaminated blood cultures collected in individual ICUs is reported back to individual ICUs

Most Important Lessons Learned From This Work:

Sustained reductions in central blood stream infections are achievable but require continuing ongoing quality improvement measures beyond the checklist.

Winchester Hospital – Reduce Hospital-Acquired Multi-Drug Resistant Organisms

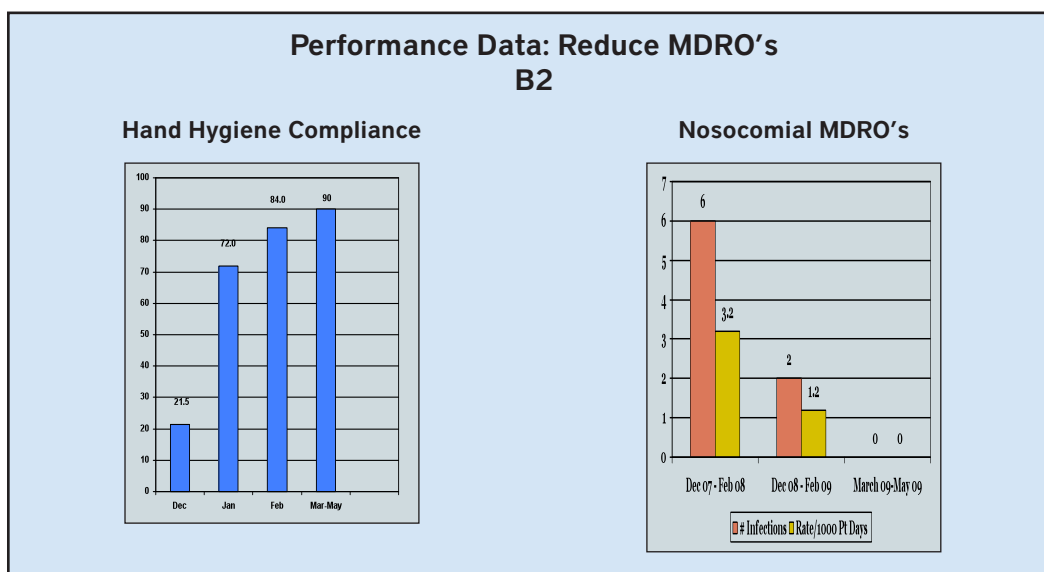
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Infection or Practice Targeted:

Reduce hospital acquired multidrug resistant organisms by 50% in one year in the course of three phases: Improving Hand Hygiene, Isolation Precautions, and Environmental Cleaning - each phase lasting 3-4 months.

Results:

Our first phase of 3 months was focusing on improving hand hygiene. Our results improved from 21% compliance to 84% compliance. The infection rate from December 2008 to April 2009 has also been declining. We are now in Phase 2, improving isolation practices. Our baseline rate was 50% and after discovery and action dialogues, teaching, and reinforcement we are now at 100% compliance. This has also hopefully contributed to our infection rate of zero for March-May 2009.



Do These Results Reflect the Whole Hospital or Specific Units?

The results reflect one unit, B2, a medical surgical infectious disease unit.

Describe Briefly the Changes Made to Achieve These Results:

- More Purell dispensers
- More visible cleaners
- Holders for wipes and in increased locations
- Communication with housekeeping concerning cleaning with bleach for C difficile
- Role modeling to other personnel
- Posters and signs
- Change of shift “huddles” for improved communication
- Discussion with physicians concerning the project and to get their buy-in.

Leadership strategies included

- “Early and often” communications regarding the project in hospital newsletters
- The team reported to the board of directors on the project
- Infection prevention specialist reported data and successes to the entire B2 unit via e-mail

Most Important Lessons Learned From This Work:

- Team must be front line worker driven, and include all disciplines and all shifts.
- Bi-weekly check-ins are needed to keep up momentum and create action plans.
- Executive Sponsor is critical to the project for supporting the team with press, accolades, resources, and to answer questions and provide support.
- Get the “worst offenders” on board first and make them part of the team.
- Once you move into the next phase of a project, don’t forget the previous phase and continue to monitor compliance.