

VAP Prevention - Making Rapid Change by Focusing on Key Targets

A State Collaborative Experience
February 23, 2011



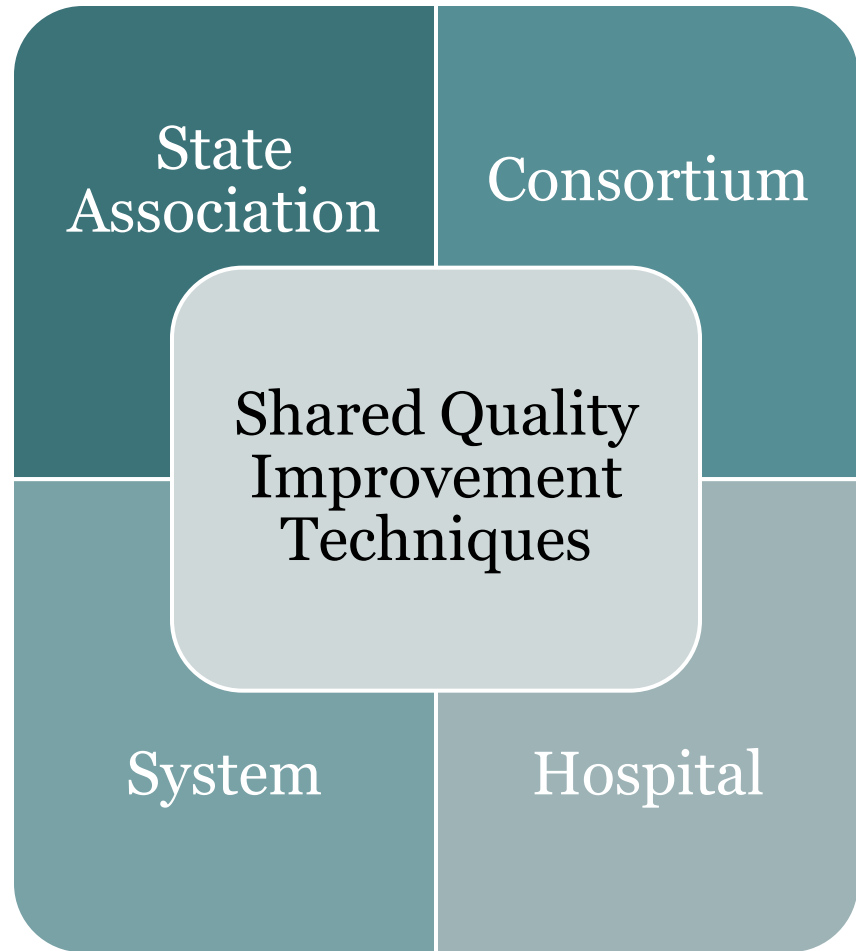
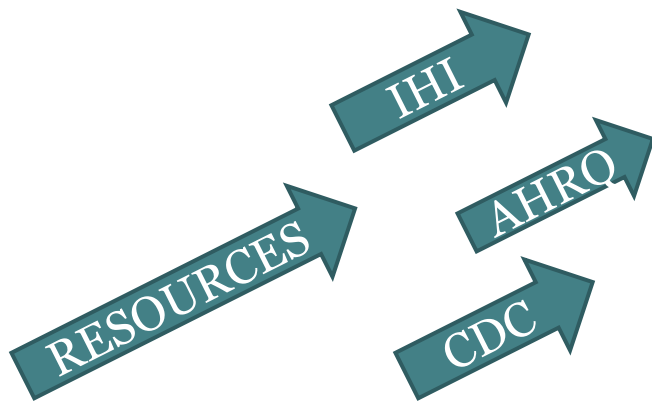
Why Ventilated-Associated Pneumonia (VAP) ?

- Completed a two-year critical care quality improvement initiative



- Participated in the Institute for Healthcare Improvement's (IHI) Critical Care IMPACT Project
- Limited large scale VAP initiatives
- Small Funding Source – Targeted at Reducing Infections

Portability

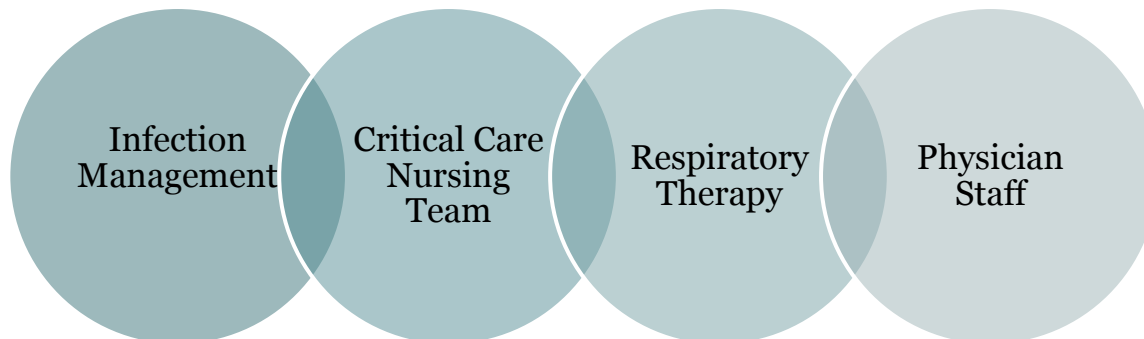


Leadership

- Advisory Committee
- Champions
- Point (Administrative/Clinical) Project Lead
- Data Collection Point or Lead
- Administration Point



LOTS OF SUB-GROUP LEADS and STAFF



Project Advisors

Champions and Mentors

- Two Critical Care Medical Directors
(IHI Critical Care Project, Passionate, Pragmatic)
- One Leading Epidemiologist
(Well respected in the field of quality improvement and infection management)
- NYS Department of Health – Manager and Infection Control Practitioner (ICP)
(Well respected and actively working with hospitals)
- Three ICP – Recognized experts from our hospitals

Plan



Take the necessary time to do a comprehensive plan...
you can adjust along the way but the vision and outline is key

Guiding Principles and Rationale

Flexibility

CHOICES

- # of critical care units participating
- # of bundle elements
 - 1-2 and expand
 - Monitor individually
 - Monitor the composite

NO CHOICE:

- Outcome Data
 - Utilize the CDC's National Safety Healthcare Network (NSHN) to track VAP rates
 - Provide collaborative with temporary NSHN data access to VAP information
- Process Data (based on above decision)
 - Submit monthly process measures into HANYS Web-based data collection system

Phase I

Regional VAP Start-Up Meetings across the State

- Seven sites... geographically spread across the state
- Participants: Hospital VAP Team (up to six members)
- Five Hours (Faculty Presentations on Collaborative Methodology, VAP bundles, and Action Planning Break-out Sessions)

Phase I

Tool Kit

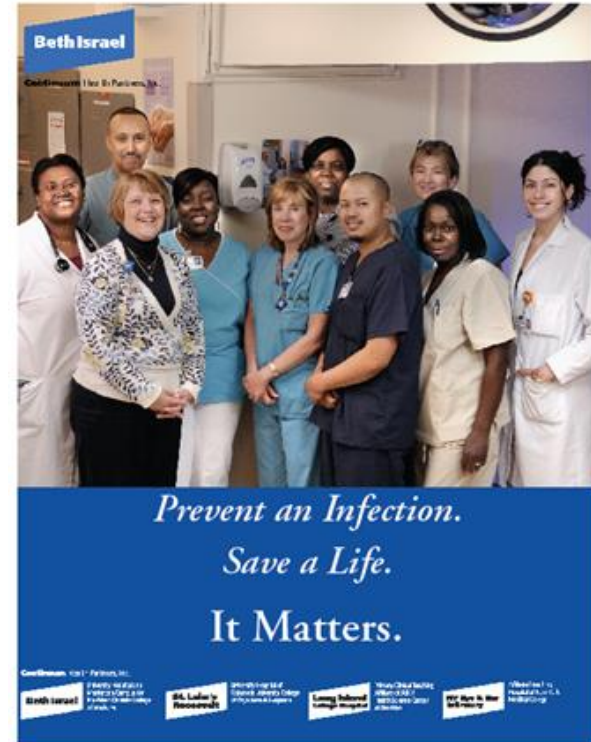
- Tab I: Advisory PowerPoint educational presentations
- Tab II: Action Plan Tool and suggestion guidelines
- Tab III: Data Measurement specifications, guidelines, templates, and examples
- Tab IV: Resources such as research papers, tools, materials, posters, documentation tools from advisor and faculty hospitals and the Institute for Healthcare Improvement (IHI)

Introduction Presentation

Critical Care Medical Director Advisor(s)



University of Rochester
Medical Center




Beth Israel Medical Center

Introduction

- Clinical Research and Evidence
- Readiness: Leadership/Critical Care/Hospital
- Data Measurement: Process and Outcome
- Details on Each Bundle Element (Process Step)
 - Rationale
 - Science
 - Techniques to facilitate change and sustainability
- Special time and attention on “New VAP bundle” Elements
 - Original Five Bundle for IHI 100K Lives Campaign
 - Three new Bundle elements introduced
- Medical Centers – shared their data and achievements
- Benefits: patient, quality, cost




Action Plan: Template Guide Examples

PROCESS STEP (VARIABLE)	BEST PRACTICE MODEL EXAMPLE AND/OR DEFINITIONS	TEAM'S CURRENT STATUS OR PROCESS
 <p>Oral Care</p>	<ul style="list-style-type: none"> Develop critical care oral care protocol. Approvals per hospital guidelines (critical care committee, nursing practice, Medical staff, etc.) Suction Toothbrush BID (Example: 8-8) with Perox-A-Mint Solution Suction swabs every four hours. Apply mouth moisturizer to oral mucosa Oral swabs every two hours (on the even hours) to clean mouth and teeth Replace suction liner, tubing, and Yakauer every 24 hours @..... Yakauer covered at all times <p>Other considerations</p> <ul style="list-style-type: none"> Keep patient hydrated as evidence by _____ Set up "shared responsibility" model Closed suction catheter – continuous covered – (mega studies showed no trends in best practice) - Changed per hospital track record (every 24, 48. . . . hrs) 	
Elevated HOB	<ul style="list-style-type: none"> Install visual cues in your unit <ul style="list-style-type: none"> On bed On wall Keep HOB elevated 30-45 degrees <ul style="list-style-type: none"> (HOB bed alarms – JCReminders.com) Use triangle devices Empower all members of the team to raise the bed or alert the nurse ASAP Empower the staff, patient, and family to be vigilant monitors Include HOB assessment on daily rounds Add HOB position check on every two-hour nurse assessment flow sheet Add HOB position check on every three-hour respiratory therapy flow sheet Take pressure ulcer precautions: Elevate relief to sacral areas and heels Collect HOB bundle element data and provide feedback to staff Display HOB compliance graphs with all VAP graphs in prominent locations 	
PUD Prophylaxis	<ul style="list-style-type: none"> Include peptic ulcer disease prophylaxis as part of your ICU order admission set and ventilator order set. Make application of prophylaxis the default value on the form Include peptic ulcer disease prophylaxis as an item for discussion on daily multidisciplinary rounds Empower pharmacy to review orders for patients in the ICU to ensure that some form of peptic ulcer disease prophylaxis is in place at all times on ICU patients Post compliance with the intervention in a prominent place in your ICU to encourage change and motivate staff 	

Action Plan: Template Guide Examples

PROCESS STEP (VARIABLE)	BEST PRACTICE MODEL EXAMPLE AND/OR DEFINITIONS	TEAM'S CURRENT STATUS OR PROCESS
DVT Prophylaxis	<p><i>The Surviving Sepsis Campaign Guidelines were produced after a thorough review of the literature including peptic ulcer disease prophylaxis. They conclude, "H2 receptor inhibitors are more efficacious than sucralfate and are the preferred agents. Proton pump inhibitors have not been assessed in a direct comparison with H2 receptor antagonists and, therefore, their relative efficacy is unknown. They do demonstrate equivalency in ability to increase gastric pH." Dellinger RP, Carlet JM, Masur H, et al. Surviving Sepsis Campaign guidelines for management of severe sepsis and septic shock. Crit Care Med. Mar 2004;32(3):858-873.</i></p> <ul style="list-style-type: none"> • Develop hospital or critical care DVT prophylaxis screening and prevention (Note: > ¾ of admitted patients are likely high risk which validates the need for standing admission orders) • Standing order set (pre-printed or automated) critical care admission orders. Include deep venous prophylaxis as part of your ICU order admission set and ventilator order set. Make application of prophylaxis the default value on the admission and ongoing orders • Admission and daily nursing risk assessment, with follow up for physician orders • Develop risk scale and corresponding interventions (exclusions should be documented) • Include deep venous prophylaxis as an item for discussion on daily multidisciplinary rounds. • Empower pharmacy to review orders for patients in the ICU to ensure that some form of deep venous prophylaxis is in place at all times on ICU patients. Perhaps a pharmacy alert system • Collect data • Post compliance with the intervention in a prominent place in your ICU to encourage change and motivate staff. 	
Sedation Vacation	<p>Goal: Sedation vacation at least once daily to assess for readiness to wean</p> <ul style="list-style-type: none"> • Strategically determine the best time for weaning trials at your hospital. 5 am, 8 am, etc. <ul style="list-style-type: none"> ◦ Certainly can go to two sedation vacation a day per hospital's process ◦ Various other low/no sedation options • Implemented Daily Sedation Vacation <i>Example protocol</i> <ul style="list-style-type: none"> ◦ Eligibility: <ul style="list-style-type: none"> ▪ IV sedation - GSC < 13 - Retain CO2 when vent support reduced ◦ Exclusions: <ul style="list-style-type: none"> ▪ Open abdominal wound with fascia note closed - Intracranial pressure of > 20 unless MD ok ▪ Severe desaturation while on FIO2 ≤ 90%, unless MD Ok • Vacation Process <ul style="list-style-type: none"> ◦ If patient is in pain, administer analgesic prior to vacation ◦ If patient becomes agitated/delirious during with no sedation, give bolus and re-start IV at ½ the rate ◦ Titrate rate to MAAS score of 2-3 ◦ <u>FETANYL</u> <ul style="list-style-type: none"> ▪ Stop IV fentanyl ◦ <u>PROPOFOL</u> <ul style="list-style-type: none"> ▪ Decrease propofol rate in ½ ▪ After 30 minutes, if patient not overly agitated/delirious, stop the drip ◦ <u>BENZODIAZAPINES</u> <ul style="list-style-type: none"> ▪ Stop IV benzo drip • Implement standard ventilator sedation/analgesia order set 	<div data-bbox="1624 1253 1785 1329" style="border: 1px solid black; padding: 5px; text-align: center;">2008</div>

Action Plan: Template Guide Examples

PROCESS STEP (VARIABLE)	BEST PRACTICE MODEL EXAMPLE AND/OR DEFINITIONS	TEAM'S CURRENT STATUS OR PROCESS
<p>Reduce Sedation</p> <ul style="list-style-type: none"> - Oral - Bolus - Intermittent 	<p>Culture change = Sedation is Harmful: It predisposes patients to VAP due to</p> <ul style="list-style-type: none"> o Inhibiting coughing - Inhibiting activity/mobilization - Decreasing immune function - Promoting aspiration <ul style="list-style-type: none"> • Accelerates patient de-conditioning • Prolongs vent time. . . • Promotes skin breakdown • Correlated to post ICU PTSD <p>Goal: reduce sedation, SBT, ideal intermittent versus continuous sedation, and weaning and discontinuation ASAP</p> <p>Sedation Protocol;</p> <ul style="list-style-type: none"> • Set minimal sedation criteria • Use sedation scoring • After vacation, re-start sedation at a fraction of pre-rate (1/2,) • Make sure you are not sedating when you really are treating other symptoms. <ul style="list-style-type: none"> o Pain – consider analgesics <ul style="list-style-type: none"> ▪ Enteral as able ▪ Scheduled no prn ▪ Intermittent vs. continuous ▪ Avoid narcotics if possible o Agitation (MAAS, SAS, RASS) – consider depacon (comes orally and parentally), contraindicated in liver failure o Delirium-Severe Agitation (CAM) consider seroquel (50-100mg, 1-2 times a day, orally) , zyprex (5 to 10 mg, 1-2 times a day oral or IM) or haldol o Anxiety (GAD 7), consider klonapin .5 – 1 mg (24hrs) or low dose ativan 1mg not to exceed 4 mg (24hrs) o Alcohol Withdrawal (CIWA) – consider low-dose benzos o Sleep – consider trazodone (orally 100 mg @ 8 pm with one repeat at 10 pm) or zolpidem (5mg at HS) <p><i>See sedation vacation for more protocols and best practices above</i></p>	
<p>Weaning Protocols</p>	<ul style="list-style-type: none"> • Circuitry should not be routinely changed – no evidence based standard via mega analysis of multiple studies of current practice maximum duration is not know. Use hospital track record - one time per week 	
<p>Activity Mobility</p> 	<p>Impact of respiratory, psychological status, immunity, on and on is improved</p> <ul style="list-style-type: none"> • Be aware and minimize adverse events <ul style="list-style-type: none"> o Falls to knee o ↓ or ↑ systolic change o Desaturation o Biggest: Provider Fear <p>Patient can be ambulated with low to Moderate dose vasopressors</p> <p>Advance mobility using progressive Algorithm Level as Pt. tolerates. Reassess q 12 hours</p> <p>Exclusion criteria for advancing mobility level:</p> <ul style="list-style-type: none"> • Lobar collapse or atelectasis, excessive secretions and/or: • $FiO2 \geq 50\%$ with $Peep \geq 10$ • $SaO2 \leq 90\%$ at rest or $\leq 88\%$ with activity 	

Resource Examples

Has your patient had a **Sedation Vacation** today?

SEDATION VACATION IS A COMPONENT OF THE VENTILATOR BUNDLE.

SEDATION VACATION IS AN ICU STANDARD OF CARE FOR PATIENTS ON A MECHANICAL VENTILATOR

If your patient meets the criteria for **Sedation Vacation** today and has not had a **Sedation Interruption**

....

Their risk for **Mortality** within the Next **TWO WEEKS** has just increased **By 10%**

ZAP VAP

Prevent Ventilator Associated Pneumonia

What?

The ventilator bundle is a group of evidence based practices that, when implemented together for all patients on mechanical ventilation, result in dramatic reductions in the incidence of ventilator-associated pneumonia

Who?

Every patient who is intubated and on a ventilator should be placed on the VAP Protocol

unless specific contraindications are documented.

Why?

- 🔥 VAP is the leading cause of complications related to mechanical ventilation
- 🔥 VAP prolongs time spent on the ventilator
- 🔥 VAP adds an estimated cost of \$40,000 to a typical hospital admission

How?

Initiate VAP "Bundle"

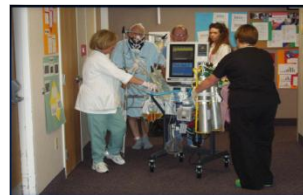
- 🔥 Elevate head of bed to 30 degrees
- 🔥 Daily "Sedation vacation" for daily assessment of radiation to extubate
- 🔥 Peptic ulcer disease (PUD) prophylaxis
- 🔥 Deep vein thrombosis (DVT) prophylaxis

What Else Can We Do?

- 🔥 Strict hand washing and wear gloves during all care being given
- 🔥 Oral care every 2 hours
- 🔥 Turn patient every two hours
- 🔥 Hold tube feeding in supine position
- 🔥 Use sterile solution for irrigation
- 🔥 Drain circuit condensate before moving/turning
- 🔥 Keep ambu bags clean and disinfected

It's the RIGHT THING TO DO FOR PATIENT SAFETY!!!

100K
lives

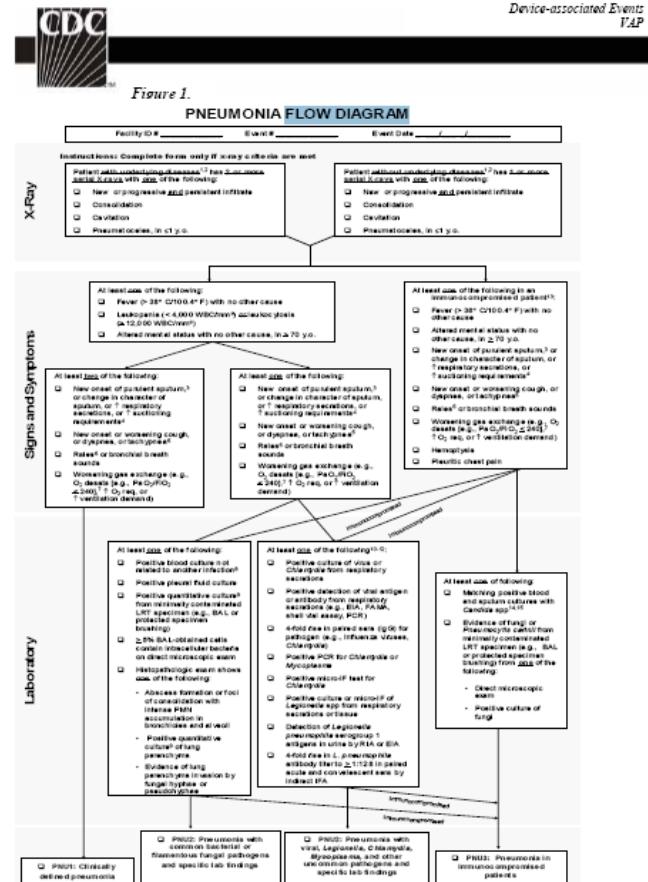


The First Bump

Positive Unintended Consequences

The Center for Disease Control
National Healthcare Safety
Network (NHSN)

Win: Standardizing the VAP
definition in NYS



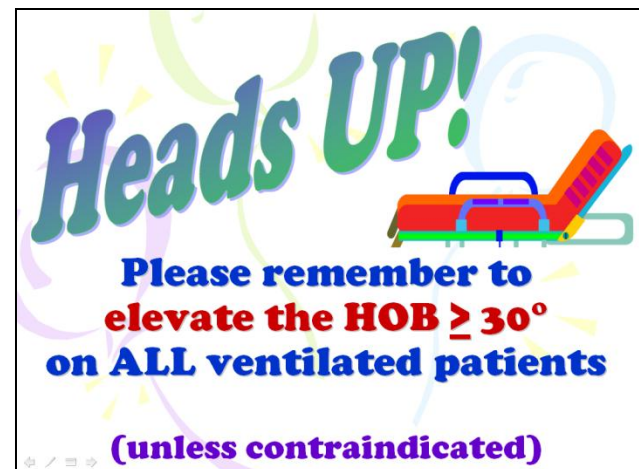
VAP Definition Standardization

- Mary Andrus, BA, RN, CIC - CDC Division of Healthcare Quality Promotion
 - Extensive review and education of CDC NSHN criteria
 - Case Studies
 - VAP FAQs
 - Use and Practice with the Pneumonia Algorithm
 - Data Collection
- Carole VanAntwerpen, BA, RN, CIC - NYS Department of Health – Hospital Infection Reporting Division
- Infection Control Practitioners from Advisory Committee

*Reinforced by Physician Advisors on calls,
at consulting points, in ongoing presentations,
and on site visits*

Collaborative Best Practice Webinars

- DVD for use with physicians/hospital staff
 - 4 minute Critical Care VAP Patient Rounds
- From large level I trauma academic hospitals to small rural hospitals... what is working
 - Best Practices
 - Data
 - Tools (checklists, etc.)
 - Signage
 - Culture
 - Team-work
 - ! Critical Care Rounds

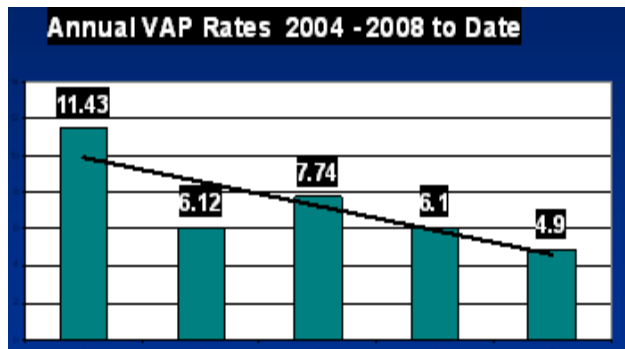


Erie County Medical Center

Collaborative Best Practice Webinars

Significant Emphasis on New Bundle Elements

ORAL CARE



Blinded Data
Another Medical Center

Got to ZERO

ACTIVITY/MOBILITY

St. Peter's
HEALTH CARE SERVICES

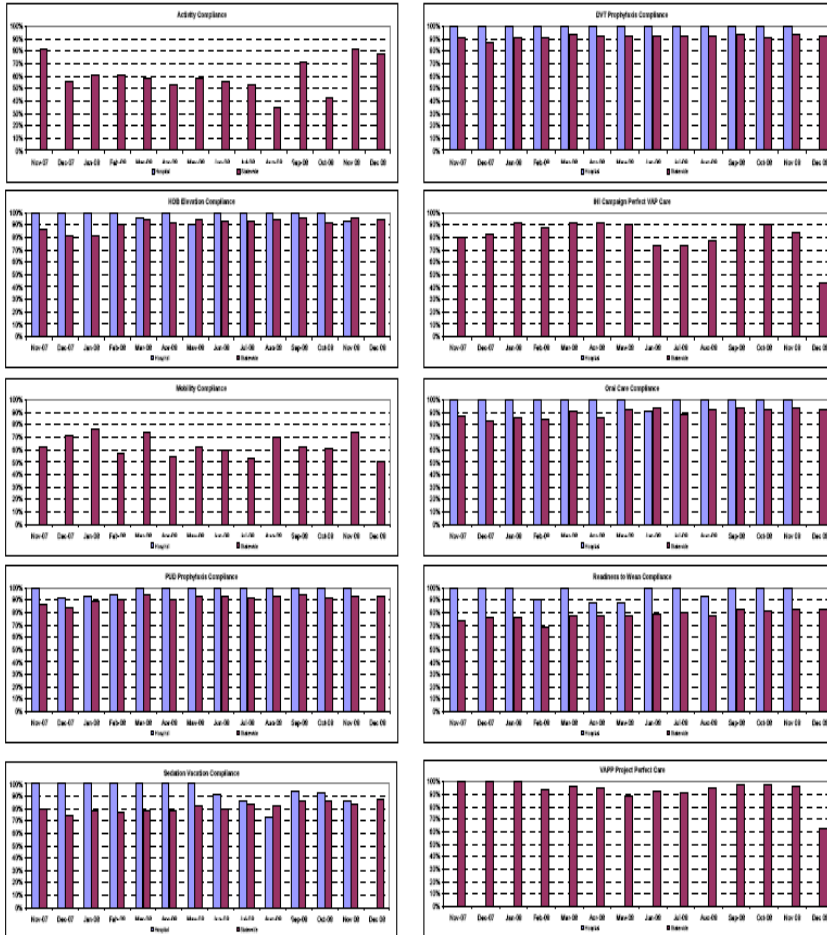
Role of PT and OT

- Daily participation in Interdisciplinary Rounds
 - Discuss patients' readiness to increase activity/mobility
 - Make suggestions for safe mobility progression, positioning, equipment, ROM
- Development of Advanced Level ICU Competency/Education program for PT/OT department
- Participate in early mobility program development

Lots of Creativity!

Monthly Hospital-Specific Data Reports

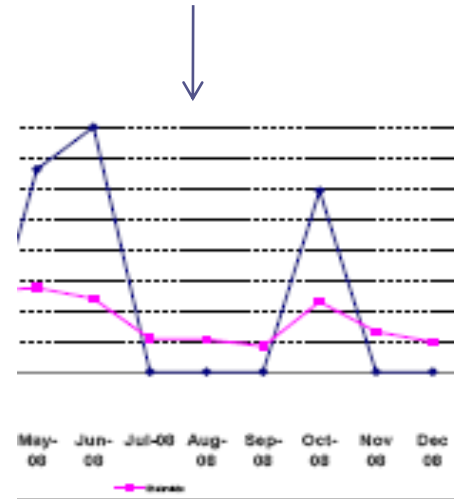
VAP Comparative Measure Report



Process



Outcome (VAP Rate)



Guest Faculty: Intermountain Health

Terry P. Clemmer, MD

- Director CCM
- Professor of Medicine, University of Utah School of Medicine
- Vicki Spuhler, RN, MSN
 - Nurse Manager, Respiratory Critical Care

LSD Hospital

Pivotal Decision Point

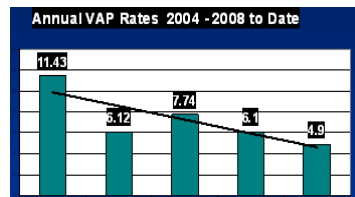
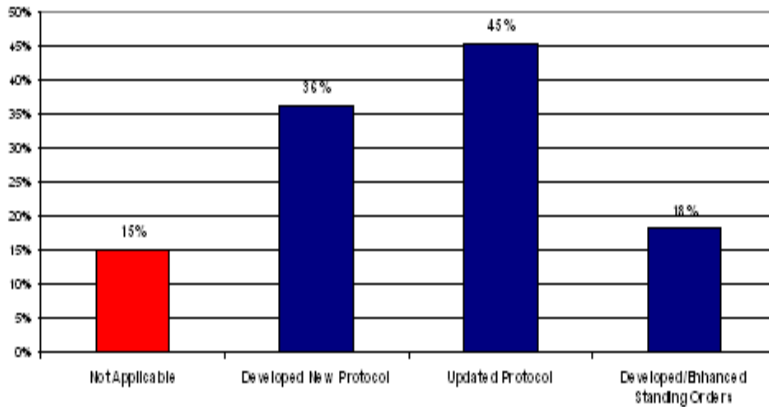
Extent to December, 2008
Set and Promote Stretch Goal:

Decrease VAP rate to < 1 event
per 1000 ventilator
days in Quarter 4, 2008

Findings

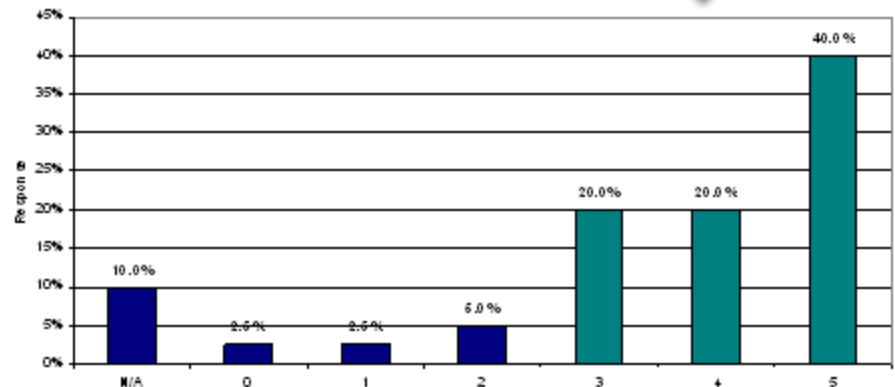
Incredible wide-spread positive experiences adding “Oral Care Protocols:

Oral Care

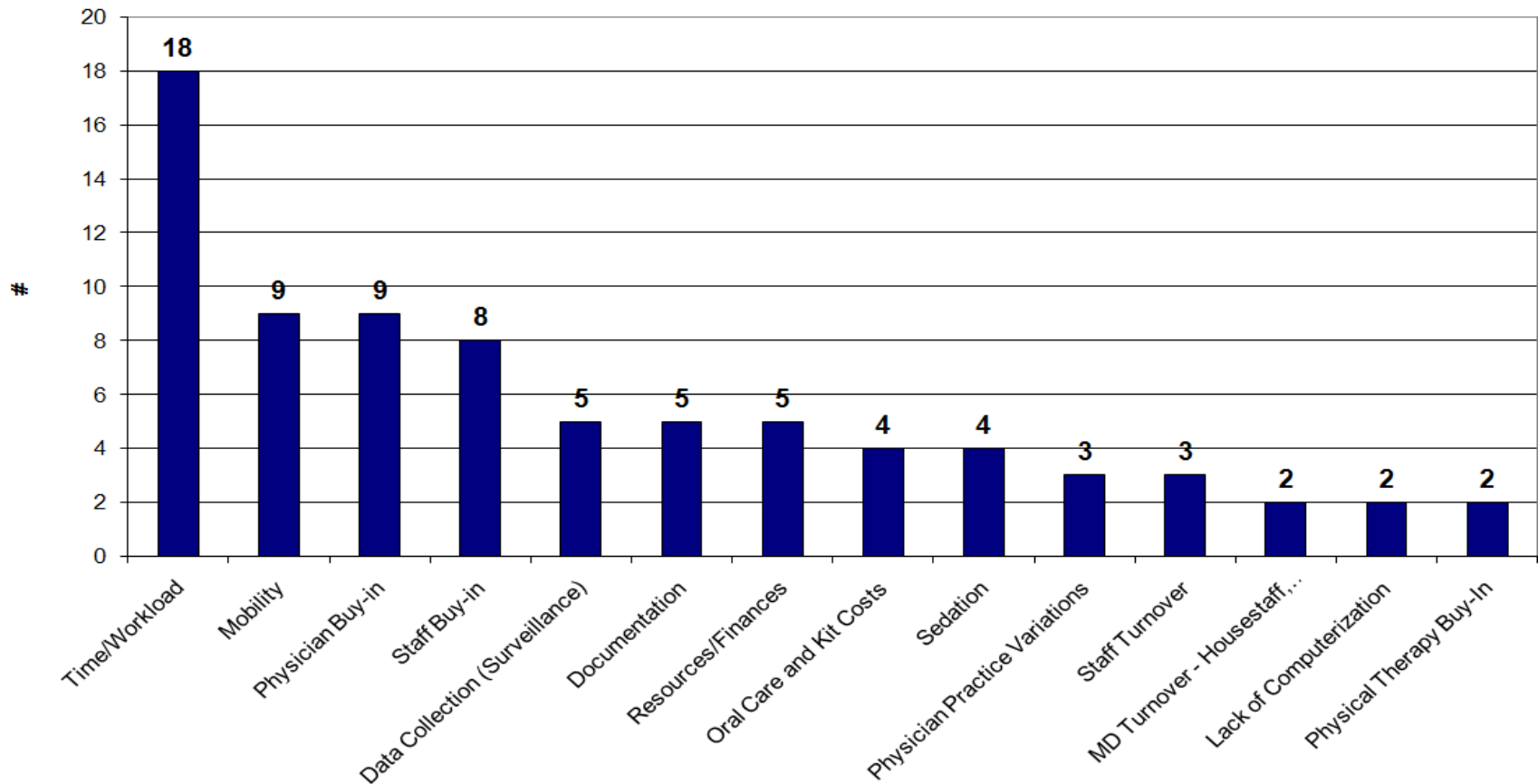


Q4
Zero

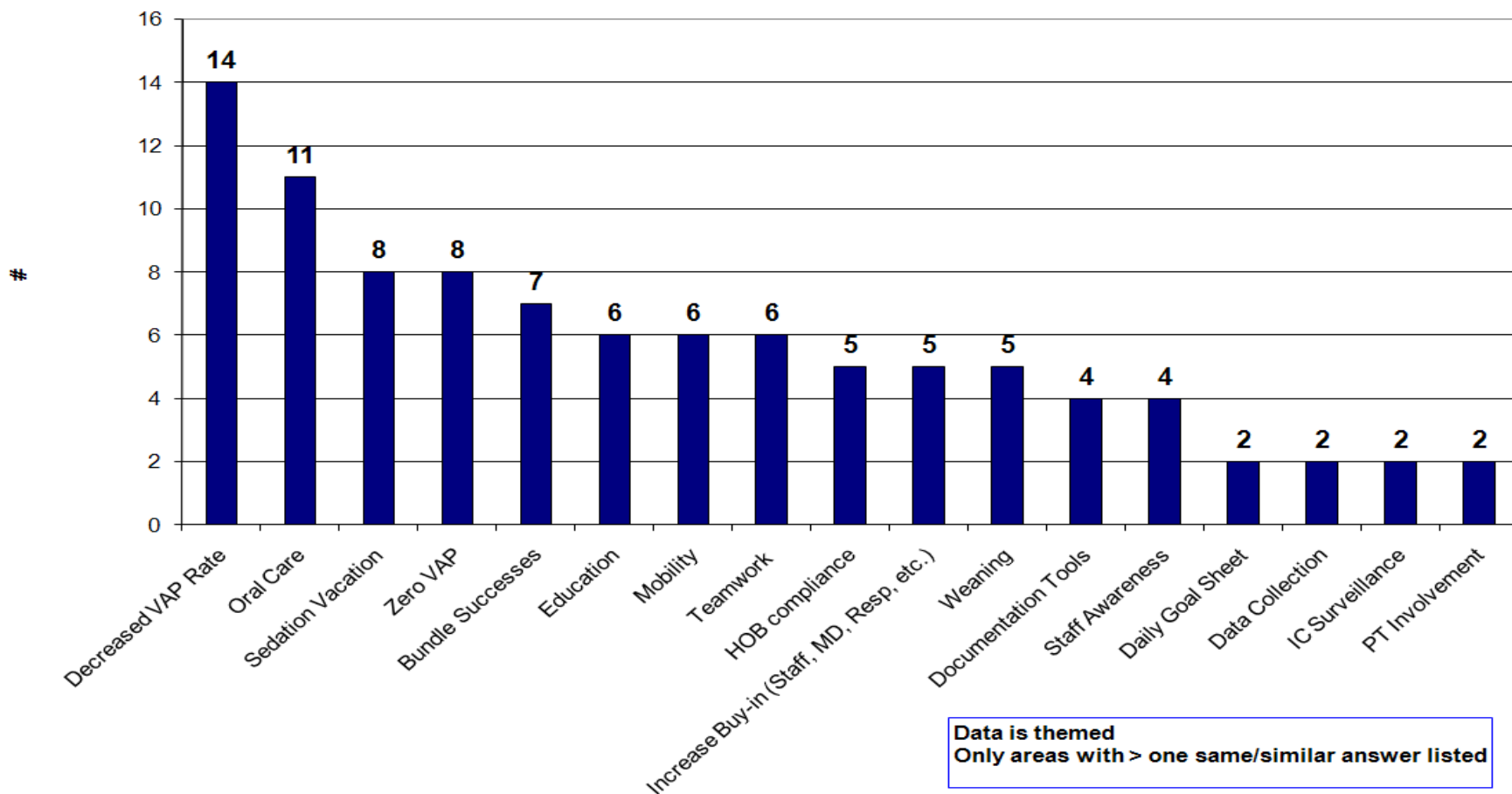
Oral Care



Top Barriers to Reducing VAP Rates

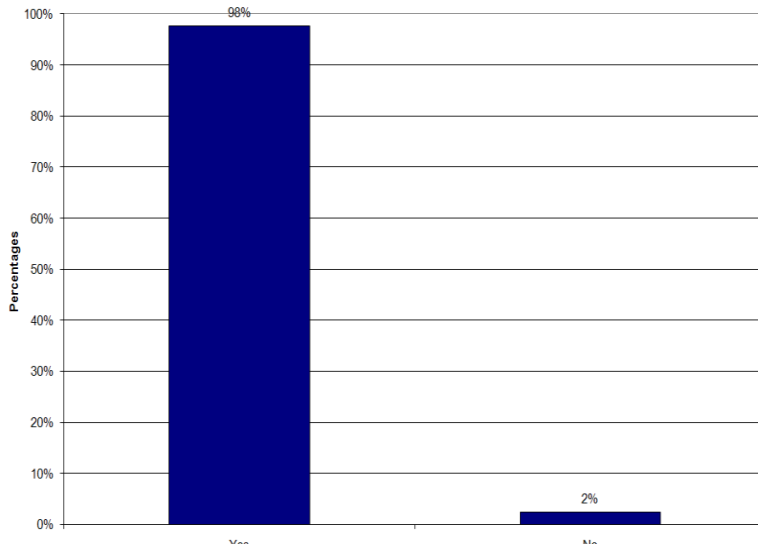


Top Areas of Success

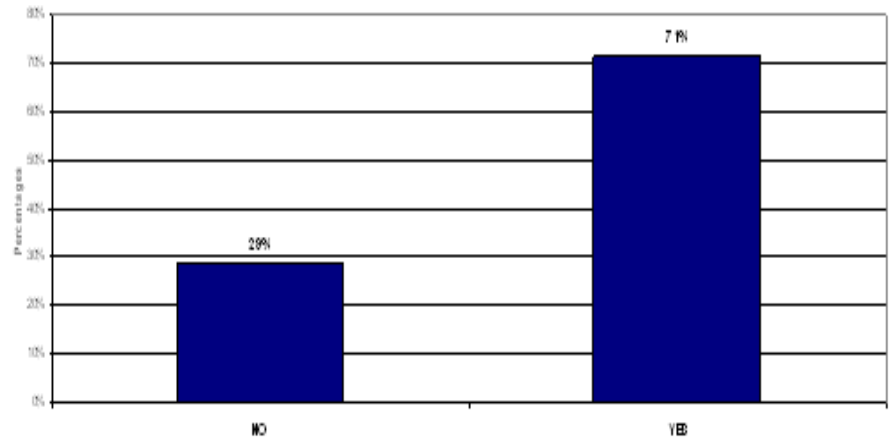


Post Collaborative

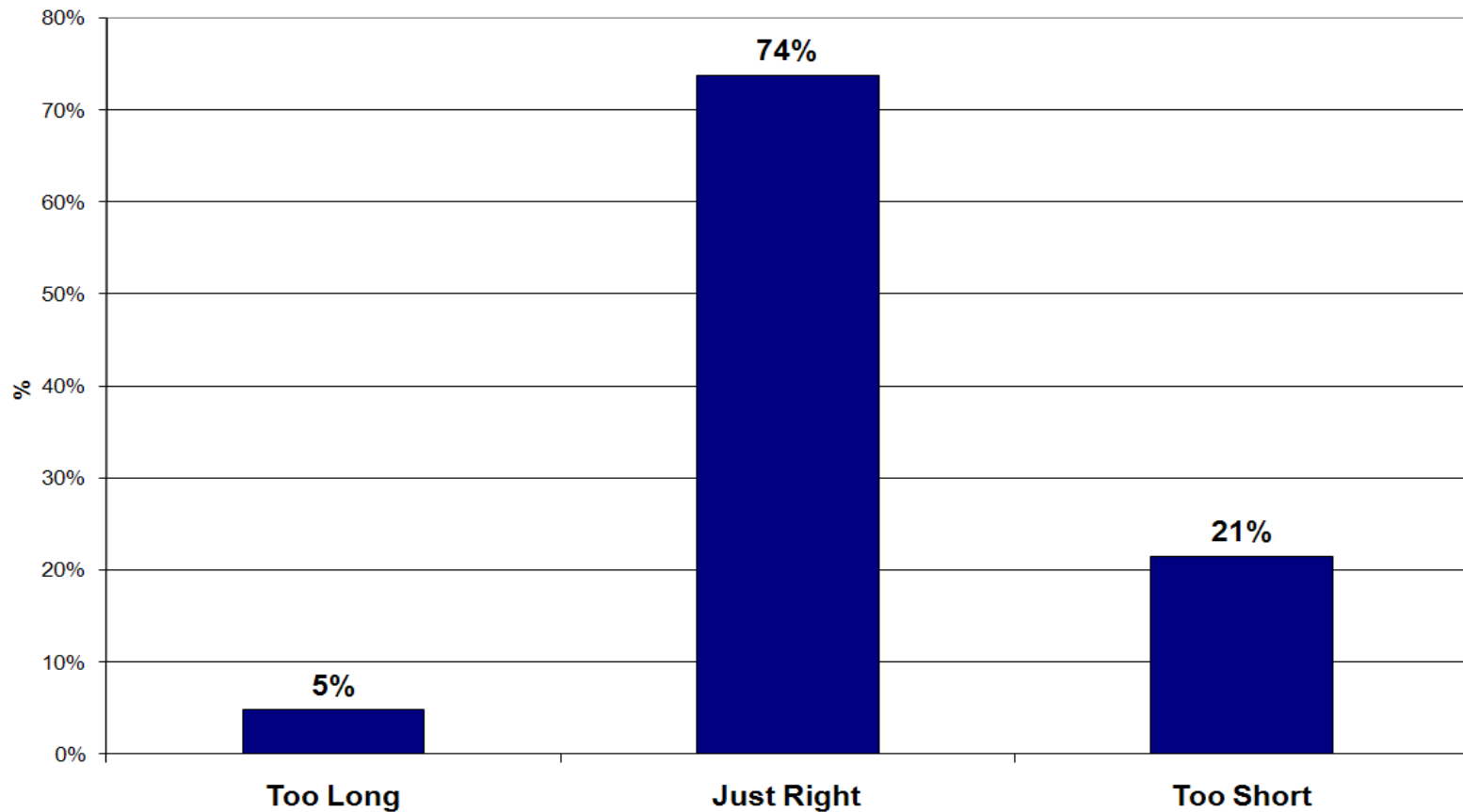
Are you planning further improvements?



Are you going to continue to enter VAP data into the CDC NHSN database after the VAPP Project ends?

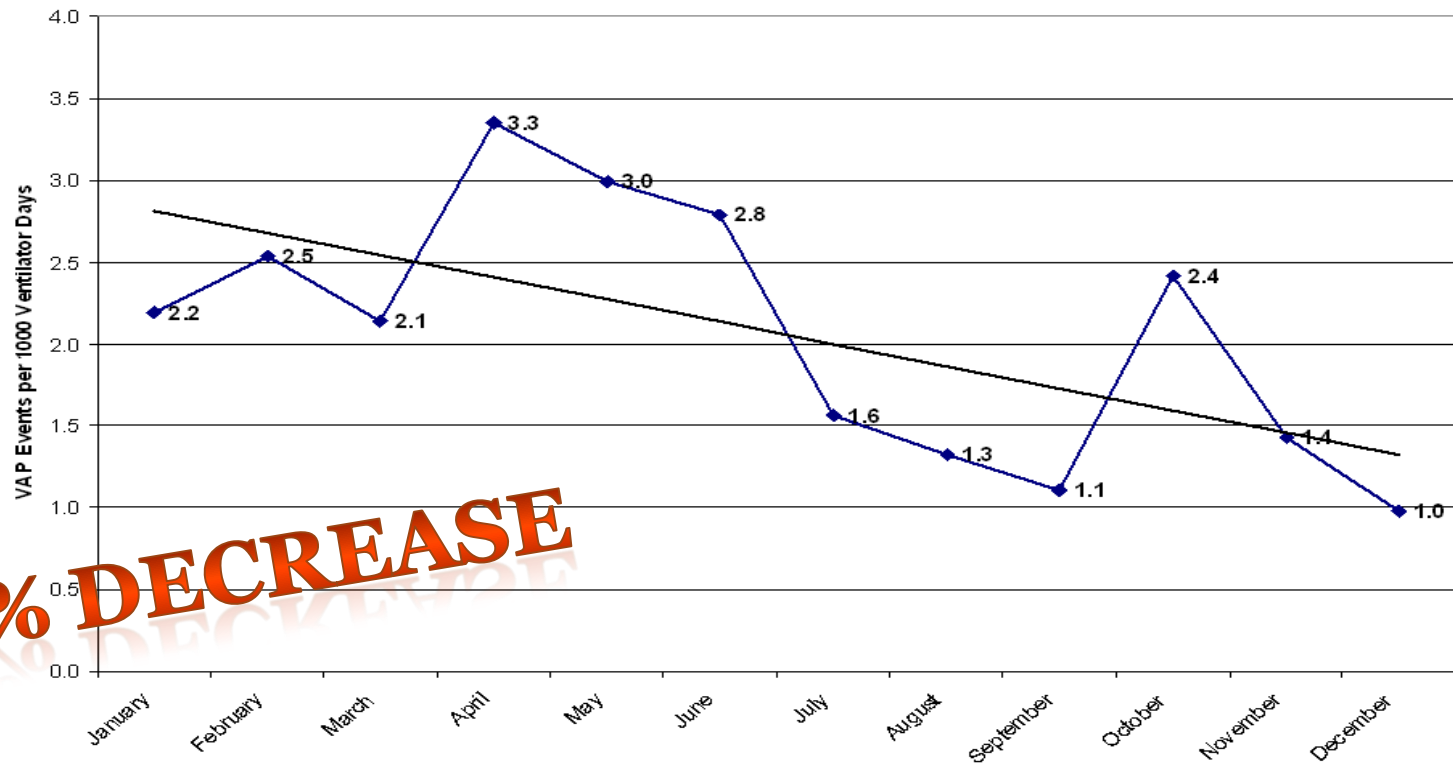


Year Long Collaborative



The Bottom-Line

VAPP Project - 2008 VAP rates



36% DECREASE

Comments

"Participation in the HANYS VAP reduction project heightened awareness in our organization and served as a stimulus for direct, positive action in reducing VAPs. The comparative data and webinars are widely discussed at our hospital."

**Ken Steier, M.D., Associate Medical Director/PSO,
Director of Clinical Effectiveness/Pulmonary Care
Unit, Nassau University Medical Center**

"Physician champions who have instituted these practices in their own organizations serve as testimonials to the power of process improvement. The regional educational sessions were wonderful!"

**Linda Greene, Infection Control Supervisor
Rochester General Hospital**

"Participation in the HANYS VAP prevention project helped speed process changes to further reduce health care associated infections in our region. Having local experts to guide the program enabled us to achieve buy-in from physicians, nurses, and respiratory caregivers."

**Brian Koll, M.D., Chief Infection Control and Hospital Epidemiologist,
Beth Israel Medical Center-Milton and Carroll Petrie Division**