Metric Magic: Creating synergy between indicators, priorities, and mandates

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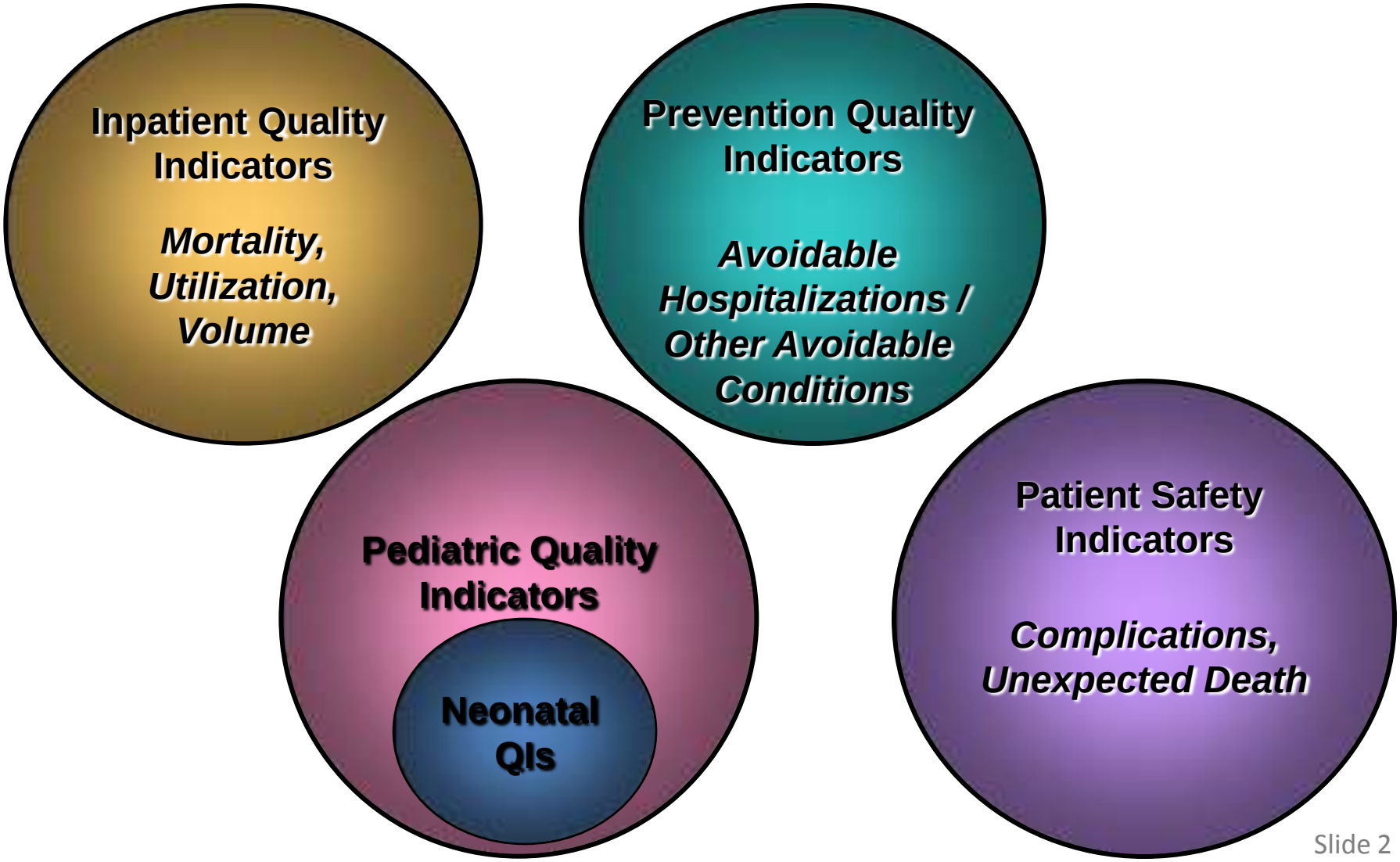
AHRQ Quality Indicators



Patient Safety Indicators (PSIs)

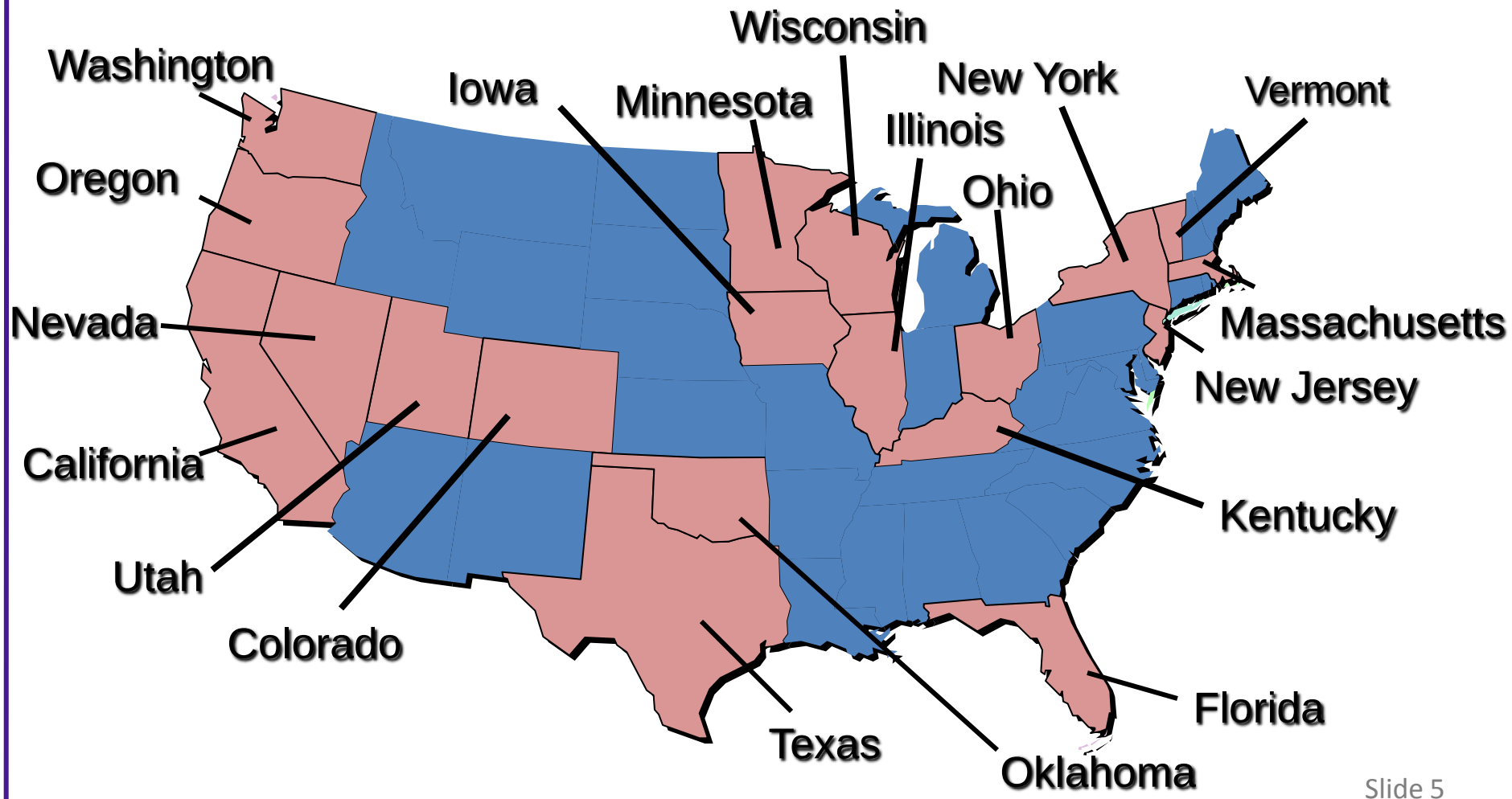
- Death in low mortality DRGs
- Pressure ulcer
- Death among surgical inpatients with treatable serious complications
- Foreign body left during procedure *
- Iatrogenic pneumothorax *
- Central line associated bloodstream infection *
- Postoperative hemorrhage or hematoma
- Postoperative hip fracture
- Postoperative physiological and metabolic derangement
- Postoperative PE or DVT
- Postoperative respiratory failure
- Postoperative sepsis
- Postoperative wound dehiscence *
- Transfusion reaction *
- OB trauma – vaginal delivery with instrument
- OB trauma – vaginal delivery without instrument

* Also offered as area-level indicators

General uses of the AHRQ QIs

- Hospital quality improvement efforts
- Hospital association/council and vendor reports (Premier, HealthGrades)
- Aggregate reporting: National, state, regional
  - National Healthcare Quality / Disparities Reports
  - Commonwealth Fund's Health Performance Initiative
- Research and policy evaluation
- Pay for performance (P4P) by hospital
  - CMS - Premier Demo
  - Anthem of Virginia, The Alliance (Wisconsin)
- Hospital level public reporting
  - Currently: Statewide public reporting *(upcoming slide)*
  - Upcoming: CMS Hospital Compare, including VA medical centers
- Hospital profiling: Public reporting and P4P
  - Blue Cross / Blue Shield of Illinois

Over half (60%) of the US has access to a public report in their state (n=19) that uses the AHRQ QIs



Centers for Medicare & Medicaid Services (CMS) Hospital Compare

Hospital Compare is a public report of 4,500+ hospitals produced by CMS

Several AHRQ QIs (below) will be added by Dec. 2010

Individual measures

- Death among surgical inpatients with serious treatable complications
- Iatrogenic pneumothorax
- Postoperative wound dehiscence
- Accidental puncture or laceration
- AAA repair mortality
- Hip fracture mortality

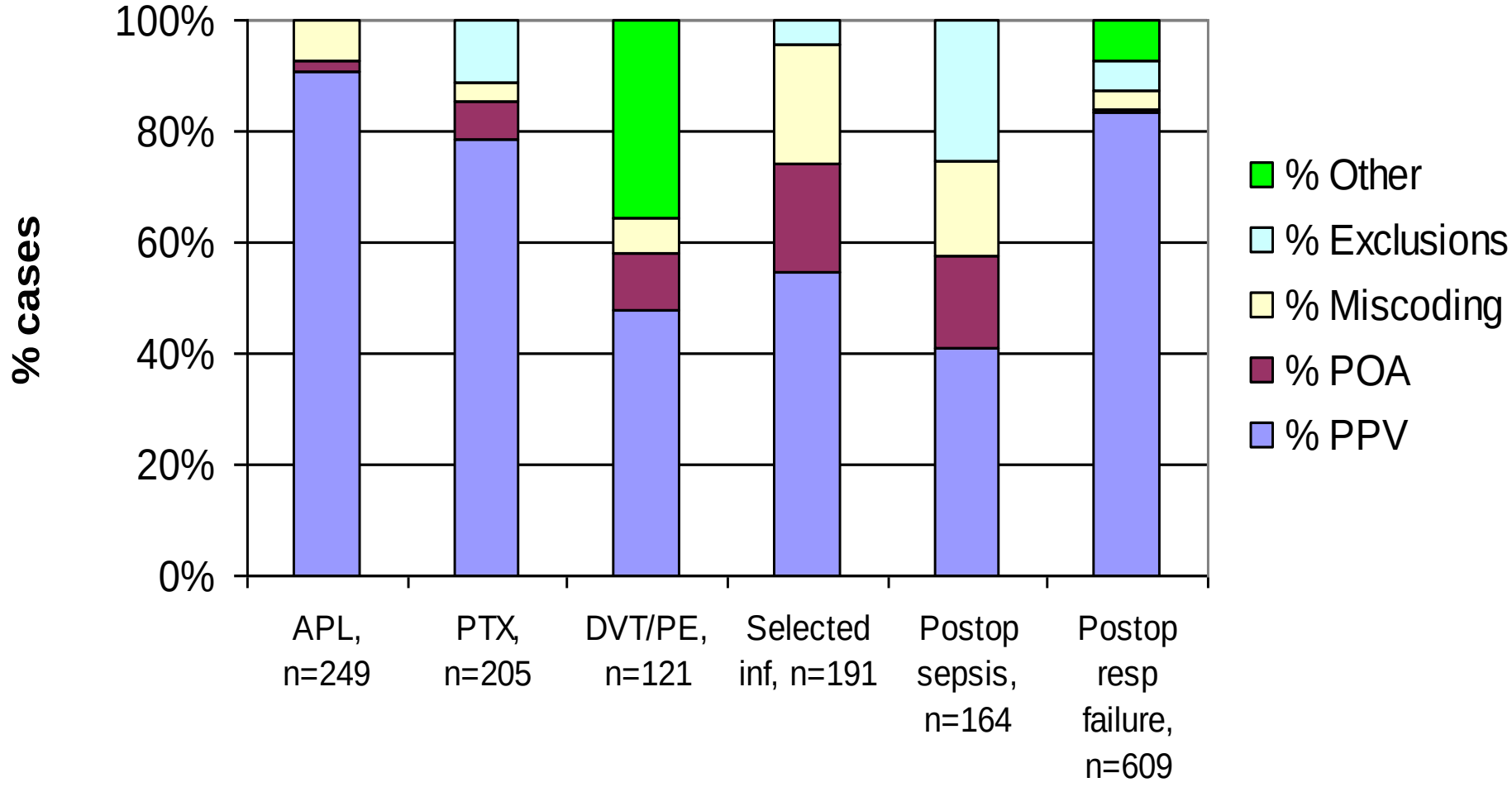
Composites

- Patient safety for selected indicators
- Mortality for selected conditions

PSI Validation Methods

- Gather evidence on the criterion validity of the PSIs based on medical record review as “gold standard”
- Improve guidance about how to interpret & use the indicators, and evaluate potential refinements
- Retrospective cross-sectional study design
- Volunteer sample of 47 partners (78% nonprofit, nonreligious) plus parallel study of 28 VA hospitals by Rosen et al.
- Sampling based on administrative data using AHRQ QI software to generate desired sample size locally (30 per hospital) and nationally (240 per PSI) from 2006-7
- VA sampled 112 cases per PSI nationwide from 28 randomly selected hospitals (4 per hospital) from FY 2003-7
- Coordinated with UHC on Clinical Benchmarking Projects (involving volunteer AMCs) for Postop DVT/PE, Postop Respiratory Failure, and Pressure Ulcer.

Summary of PPV estimates from community hospitals



Implications of validation work

- Coding changes are needed to enhance PPV for some indicators
  - AHRQ proposed new codes for DVT (adopted)
  - CMS proposed new code for catheter-associated bloodstream infection (adopted)
  - New codes needed for postoperative sepsis
- "Present at admission" data will substantially improve PPV of multiple PSIs
  - New PSI software release (V4.1) "requires" POA or estimates its mean value at the hospital level
- With these changes, most PSIs should have high PPV
- Data on sensitivity (false negatives) are still needed, but preliminary data raise concerns for Pressure Ulcer and Selected Infections

Moore Demonstration Project

- Goal 1: To develop a collaboration with 3 northern CA hospitals to collaboratively review cases flagged by PSIs
- Goal 2: To provide information useful for improving coding and quality of care in the future
- Retrospective cross-sectional design
- Consecutive sampling using AHRQ QI software to identify up to 100 cases of ≥4 PSIs at each hospital (10/07-2/09)
- "Present on admission" (POA) logic was used in V3.2, March 2008 software to reduce false positives
- Each hospital identified RN or MD abstractors, who were trained to use "root cause" PSI tools and guidelines
- Coordinating center (UC Davis) entered data from paper forms, identified discrepancies, and performed descriptive analysis of opportunities for QI

PSI 6: Iatrogenic pneumothorax Opportunities for improvement

- Watch for inadequate documentation, such as “rule out” pneumothorax without alternative diagnosis established after study (CXR or CT)
- Increase use of “bedside” ultrasound guidance during placement of central venous catheters, especially in the OR, ICU, and ED (proven to reduce iatrogenic injury during IJ placement)

PSI 7: CVC-related bloodstream infection
Opportunities for improvement

- Identify tunneled catheters that are infected at admission and code as POA
- Minimize use of femoral venous catheters, which are associated with higher rates of infection
- Remove catheters at earliest opportunity consistent with patient safety

PSI 9: Postoperative hemorrhage/hematoma
Opportunities for improvement

- Logic of indicator may capture both intraoperative and postoperative hemorrhage (especially if bleeding persists after surgery)
- Impact of true positive cases was significant (i.e., most returned to OR), but opportunities for improvement are unclear

PSI 10: Postoperative physiologic/metabolic Opportunities for improvement

Postoperative renal failure requiring dialysis

- Earlier recognition of renal failure may be beneficial
- Evaluate use of nephrotoxic medication, especially NSAIDs in postoperative setting
- Review ionic contrast documentation & use

Postoperative diabetic complications

- Tighter blood sugar control and monitoring in type I DM post-operatively
- Consider insulin drips instead of implanted pumps and/or SQ in the immediate postop period

PSI 11: Postoperative respiratory failure Opportunities for improvement

- Avoid using 96.04 code when intubation is an expected part of procedure
- Two cases of oversedation leading to respiratory complications
- Reasons for re-intubation or prolonged ventilation were often not documented
- Some patients probably could have been extubated earlier (and would then not have counted as respiratory failure)
- Several cases had massive blood loss which seemed to precipitate postoperative respiratory issues

PSI 12: Postoperative DVT/PE Opportunities for improvement

- Watch for inadequate documentation, such as "rule out" DVT or PE without alternative diagnosis established after study
- Use new ICD-9-CM codes to capture chronic VTE
- More timely (day 0) use of pharmacologic prophylaxis may be beneficial, especially for perioperative patients at intermediate risk and without contraindications (consider adequacy of mechanical prophylaxis alone)

PSI 15: Accidental puncture or laceration
Opportunities for improvement

- Occasional overcoding of intraoperative bleeding or other routine events as APL
- Most true positive cases had extenuating circumstances, although some were probably preventable with earlier conversion of laparoscopic to open abdominopelvic surgery, or use of Doppler ultrasound to identify structures
- Hospitals with inexperienced operators performing technically difficult procedures may experience patterns of similar events

Acknowledgments and references

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- VA team: Amy Rosen, Ann Borzecki, Haytham Kaafarani, Kathleen Hickson, Sally MacDonald, Kamal Itani, Marlena Shin, Qi Chen
- UHC team: Joanne Cuny, Pradeem Sama, Michael Silver

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Metric Magic: Creating Synergy between Indicators, Priorities and Mandates

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Associate Professor
Director of Surgical Quality

Surgery and the Public's Health

- 234 m surgeries annually: Exceeds Childbirth
- Surgical Complications= 11% Disease Burden
- 50% of Surgical Complications Preventable

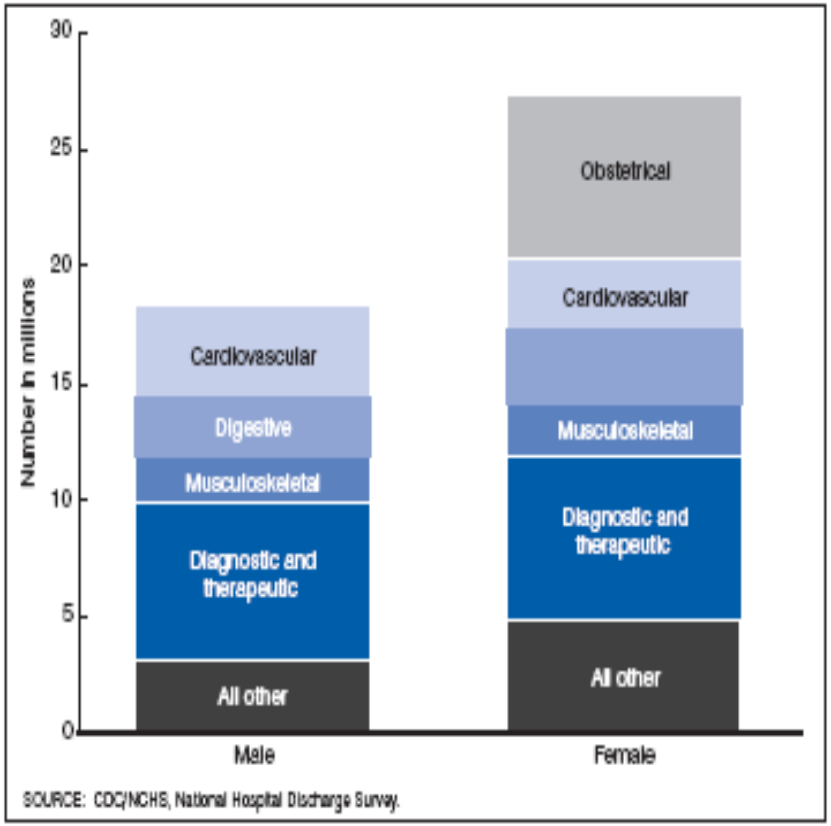
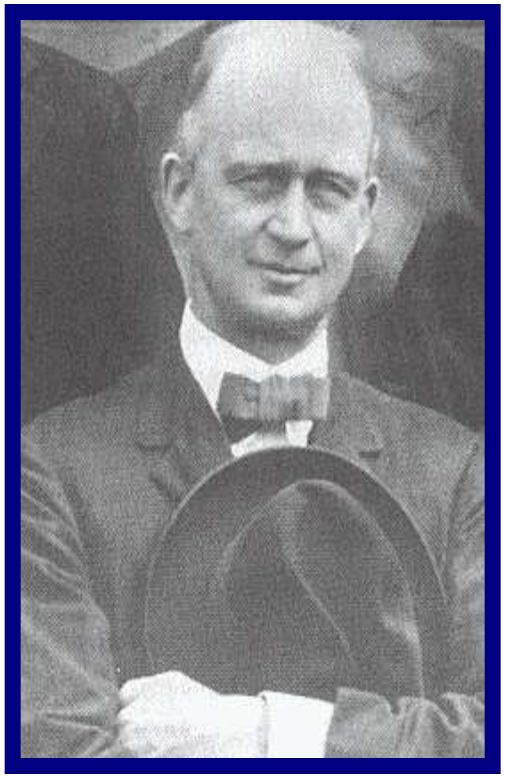


Figure 4. Number of all-listed inpatient procedures by sex: United States, 2006

Back to the Future



Ernest Codman
1869-1940

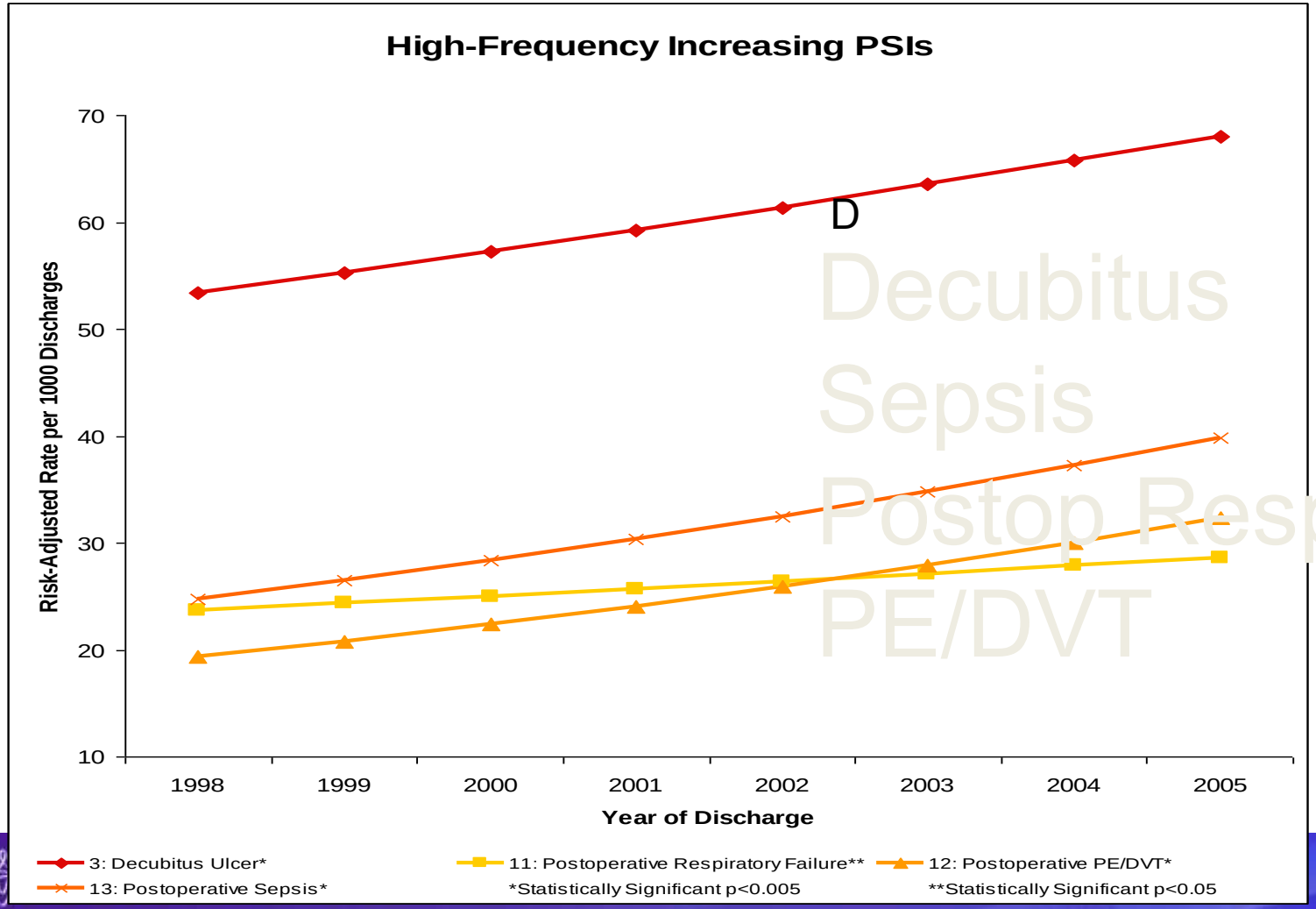
"…every hospital should follow every patient it treats, long enough to determine whether or not the treatment has been successful…and if not, why not…"

"…I am called eccentric for saying in public that hospitals, if they wish to be sure of improvement,

1. Must find out what their results are
2. Must compare their results with those of other hospitals…"
3. Must analyze their results, to find their strong and weak points.

-Codman 1917

National PSI Rates
Morton 2010



Data: Engaging Your Surgeons

- Leadership & Transparency
- Target Areas of Improvement: Consistent, Benchmark, Prioritize
- Data Drive Discussion
  - Denial
  - Anger
  - Bargaining
  - Depression
  - Acceptance

PSIs: Quality Diagnostic Tool

2007 Quality Improvement and Patient Safety Scorecard

Patient Safety Indicators - Rate per 1,000

Overall Performance Rankings

PSI	2005 Rate per 1,000 SHC Overall	2005 Rate per 1,000 UHC Median	2005 SHC Rank	2006 Rate per 1,000 SHC Overall	2006 Rate per 1,000 UHC Median	2006 SHC Rank	Oct 2006 - Sep 2007 Rate per 1,000 SHC Overall	Oct 2006 - Sep 2007 Rate per 1,000 UHC Median	Oct 2006 - Sep 2007 SHC Rank
Death in Low Mortality DRG	1.70	0.50	119/122	1.60	0.40	125/132	0.60	0.50	57/
Failure to Rescue	134.50	110.60	94/121	141.50	107.60	113/132	127.20	107.20	55/
Decubitus Ulcer	10.90	28.10	12/122	10.90	22.40	9/132	17.40	23.50	26/
Foreign Body	0.10	0.10	65/122	0.30	0.10	103/132	0.10	0.20	21/
Iatrogenic pneumothorax	1.70	0.90	108/122	1.60	0.90	116/132	1.90	1.10	82/
Selected Infection due to Medical Care	4.80	3.80	77/122	4.00	3.60	74/132	4.90	4.10	49/
Post Op Hip Fracture	0.35	0.00	92/120	0.20	0.00	75/132	0.20	0.20	49/
Post Op Hemmorage/Hematoma	3.50	3.10	84/120	4.80	3.90	91/132	5.90	4.70	81/
Post Op Phys/Metabolic	1.70	2.00	54/120	1.80	1.80	68/131	2.60	2.50	79/
Post Op Respiratory Failure	11.20	12.70	47/120	10.10	12.20	47/131	11.40	15.70	24/
Post Op PE or DVT *	18.90	15.60	84/120	17.20	16.70	73/132	18.50	20.10	35/
Post Op Sepsis *	9.90	10.70	56/120	9.10	10.70	52/131	10.30	13.40	36/
Post Op Wound Dehiscence	0.60	2.20	26/118	3.80	2.10	107/131	4.20	2.50	73/
Accidental Puncture or Laceration	7.20	5.00	82/122	8.20	5.00	104/132	8.90	6.30	46/
Transfusion Reaction	0.00	0.00	1/122	0.00	0.00	1/131	0.00	0.00	1/

* Run charts attached

Comments:

The ARHQ indicators are surrogate measures for how well care is delivered based on complication rates. Overall our performance shows tremendous opportunity to improve our standings and requires focused efforts to drill down on the data and look for causal relationships.

Priority PI Initiatives include:
Sepsis
Post Op DVT
Iatrogenic Pneumothorax

The Clinical Documentation program will establish a consistent baseline for how complications are assigned.

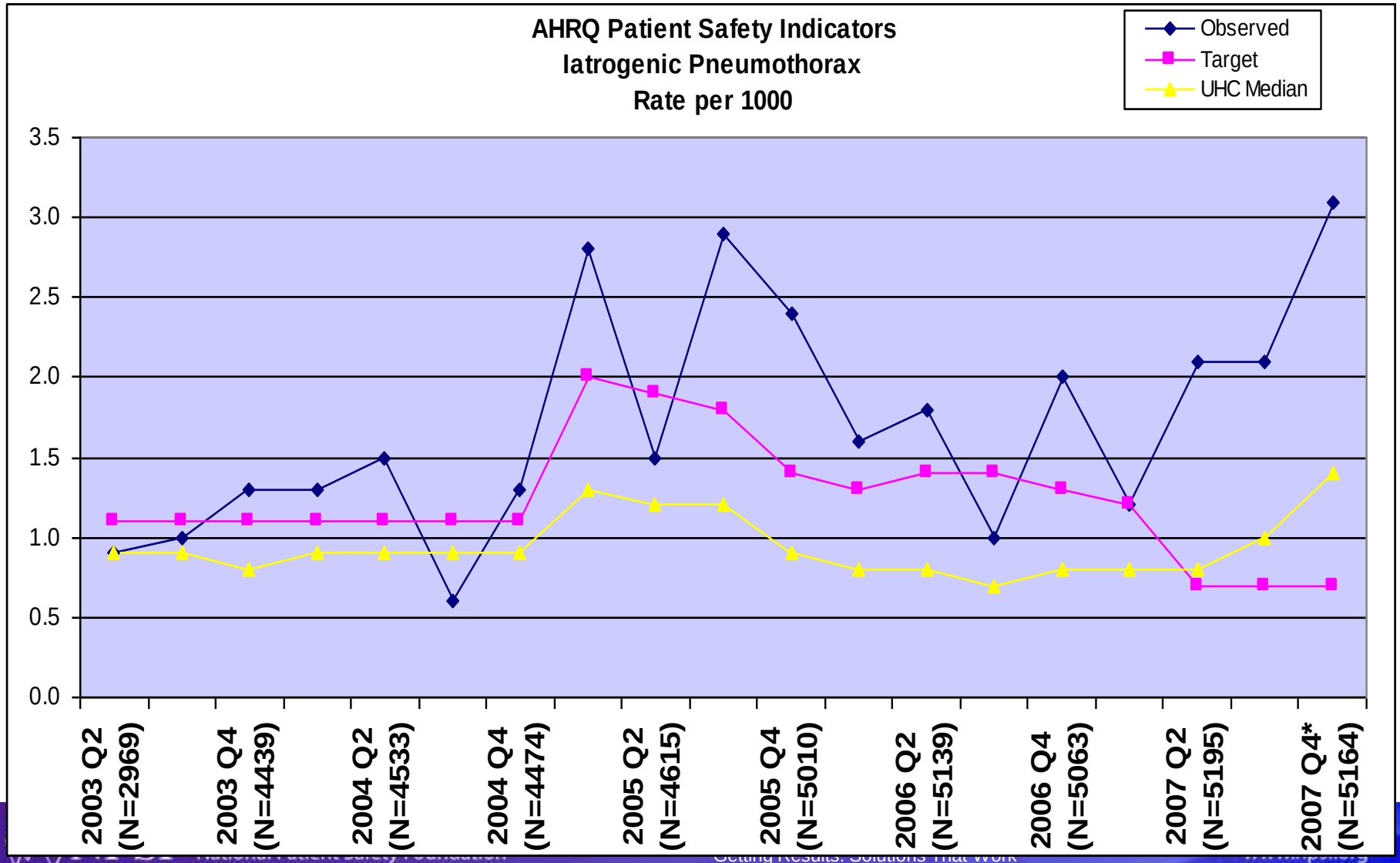
Strategic Clinical Initiatives:

Iatrogenic Pneumothorax

Postop DVT/PE

Postop Hemorrhage or Hematoma

UHC Benchmark: IAP

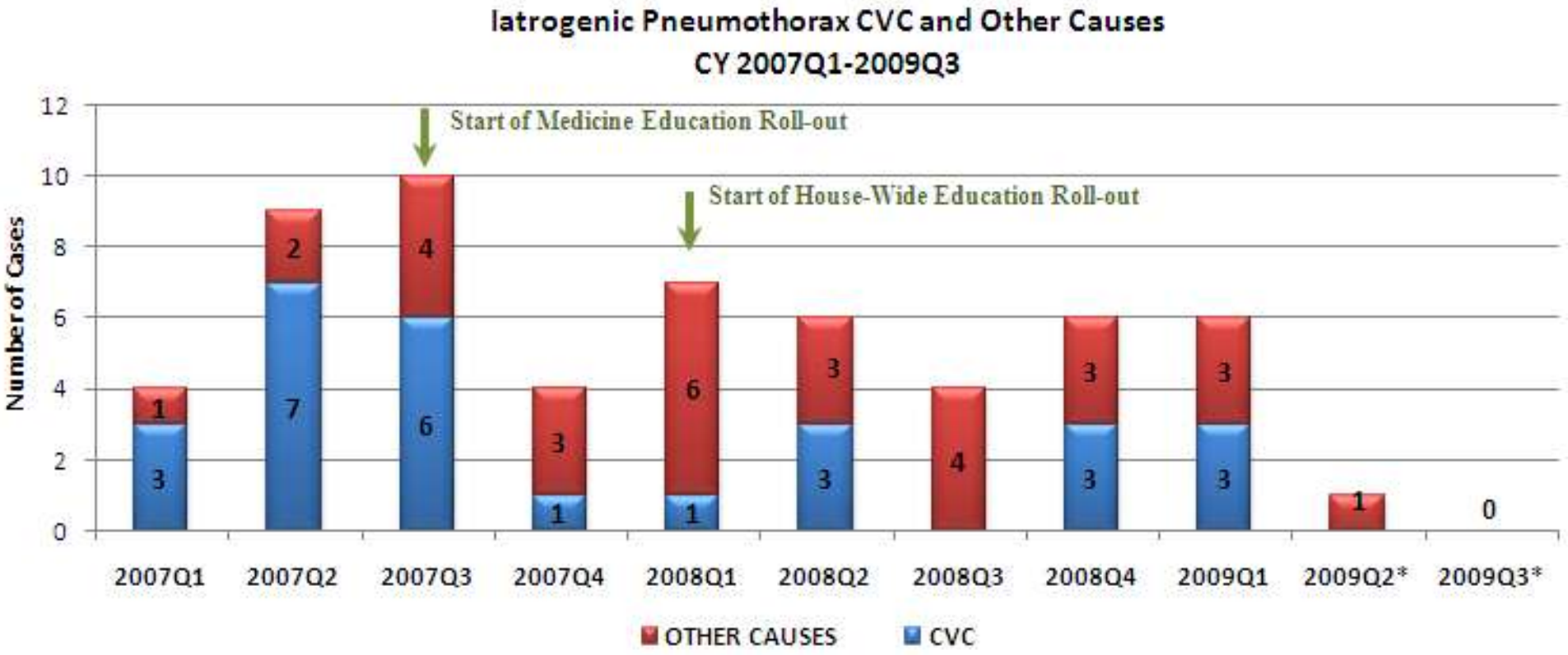


Action Plan

GOAL: Reduce the rate of iatrogenic pneumothorax (IAP) from central venous catheterization (CVC) by 50% by 6 months.

Action	Agent	Timeline
Promote ultrasound-guided internal jugular (IJ) catheterization as the method of choice for CVC Limit use of subclavian approach to: • access to the neck is limited (e.g., trauma/code resuscitations) • patients with suspected neck injuries • lack of other available sites	• L. Shieh to revise CVC Website Curriculum & Simulation Program to further promote IJ approach • Drs. Maggio, Williams, Mihm & Lee to educate ED, OR & General Surgery. Drs. Mihm, Riskin and Daniels to educate ICU. Dr. Shieh to educate B2 & D1. • I. Tokareva to develop & distribute educational materials to reinforce	Start Jan 22 & ongoing
Require all medical & surgical interns to complete CVC Website Curriculum & Simulation Program during orientation ("Bootcamp" for surgical interns)	• Drs. Shieh, Maggio, Williams, Mihm & Lee • Monitor quarterly IAP rates for impact	June 30

Iatrogenic Pneumothorax (IAP) Data

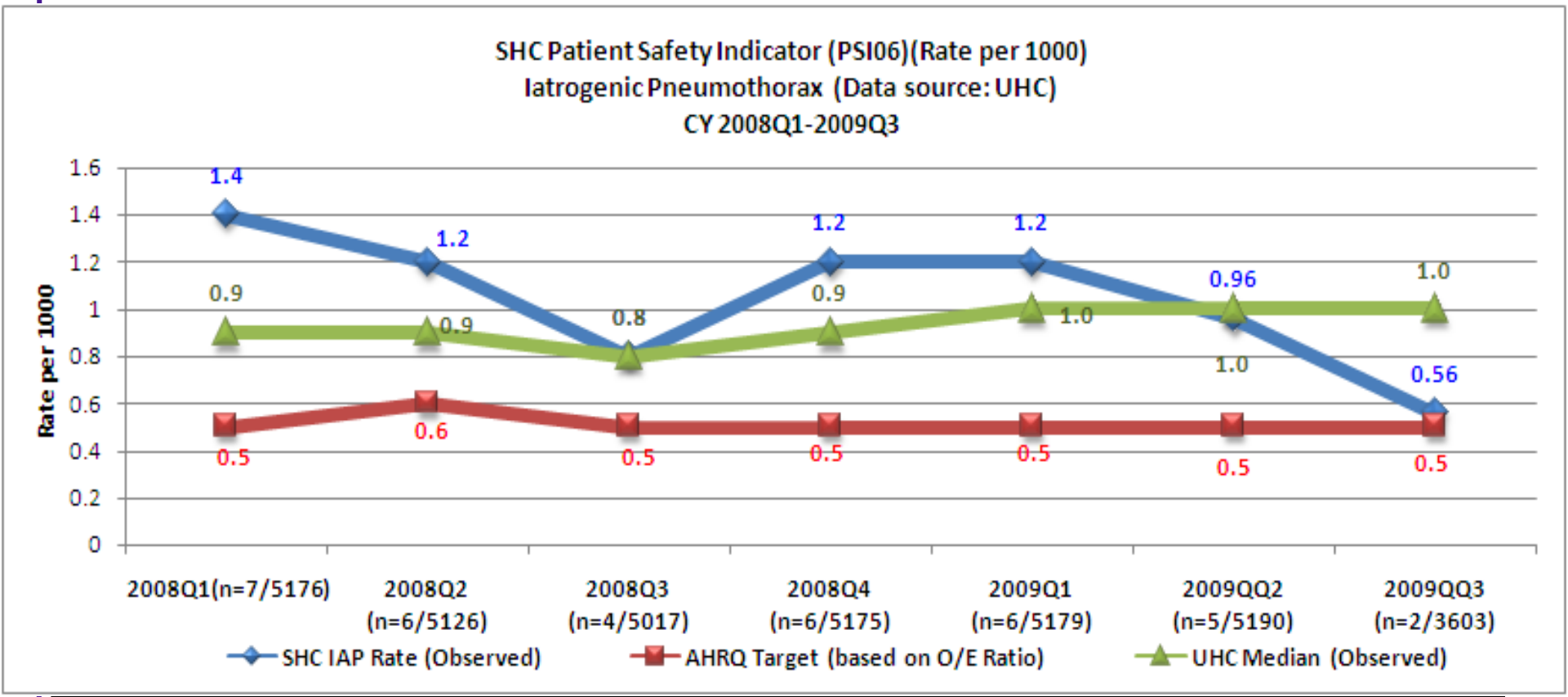


Findings

- CY 2007Q1-2009Q3 46% (27/59) of IAP were due to CVC line insertion and 54% (32/59) due to other causes: surgery, feeding tube placement and EP procedures. 12% (7 of 59) of patients expired

* Total of 6 cases are pending coding review

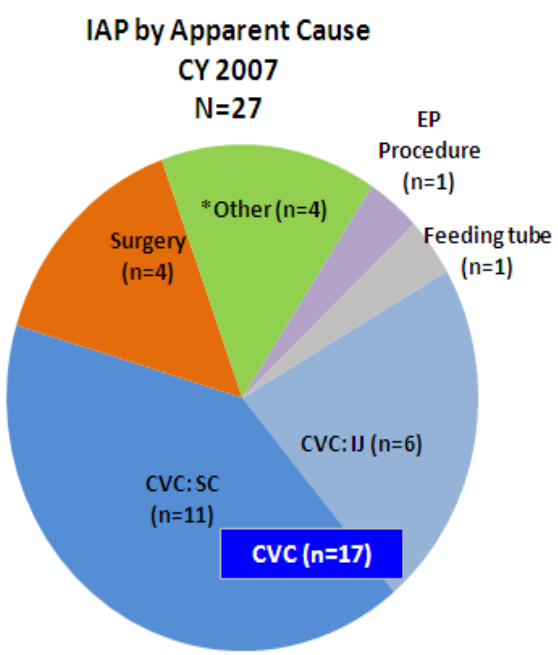
Iatrogenic Pneumothorax (IAP) Data

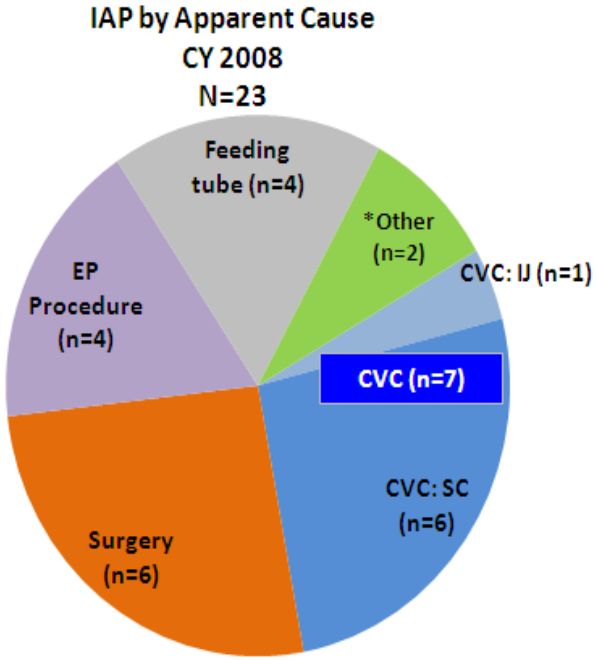


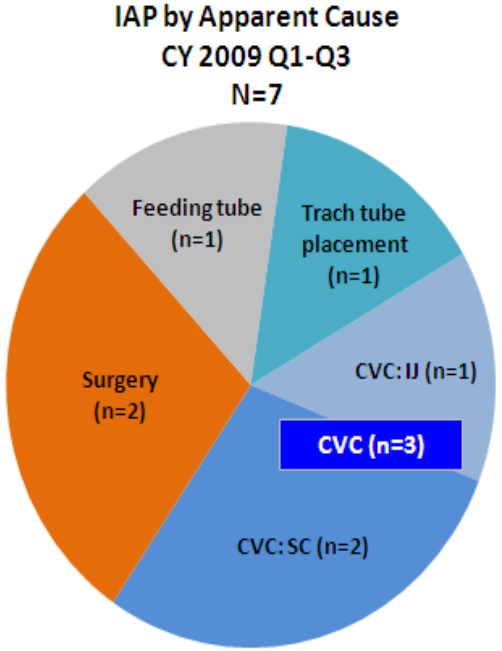
Findings

- Overall SHC IAP rate per 1000 discharges is trending down
- The best performance occurred in 2009Q3 with SHC IAP rate of 0.56 per 1000 inpatient discharges, but this remains slightly above target. Please note that if 2 cases in 2009Q3 are recoded and removed, SHC IAP rate would be at zero.

Iatrogenic Pneumothorax (IAP) Data







Findings

- Overall IAP CY 2007-2009 rate is trending down
- 70% of CVC cases were due to SC (19/27)

* Other – infrequent causes of IAP (occurred 1 time per service per cause)

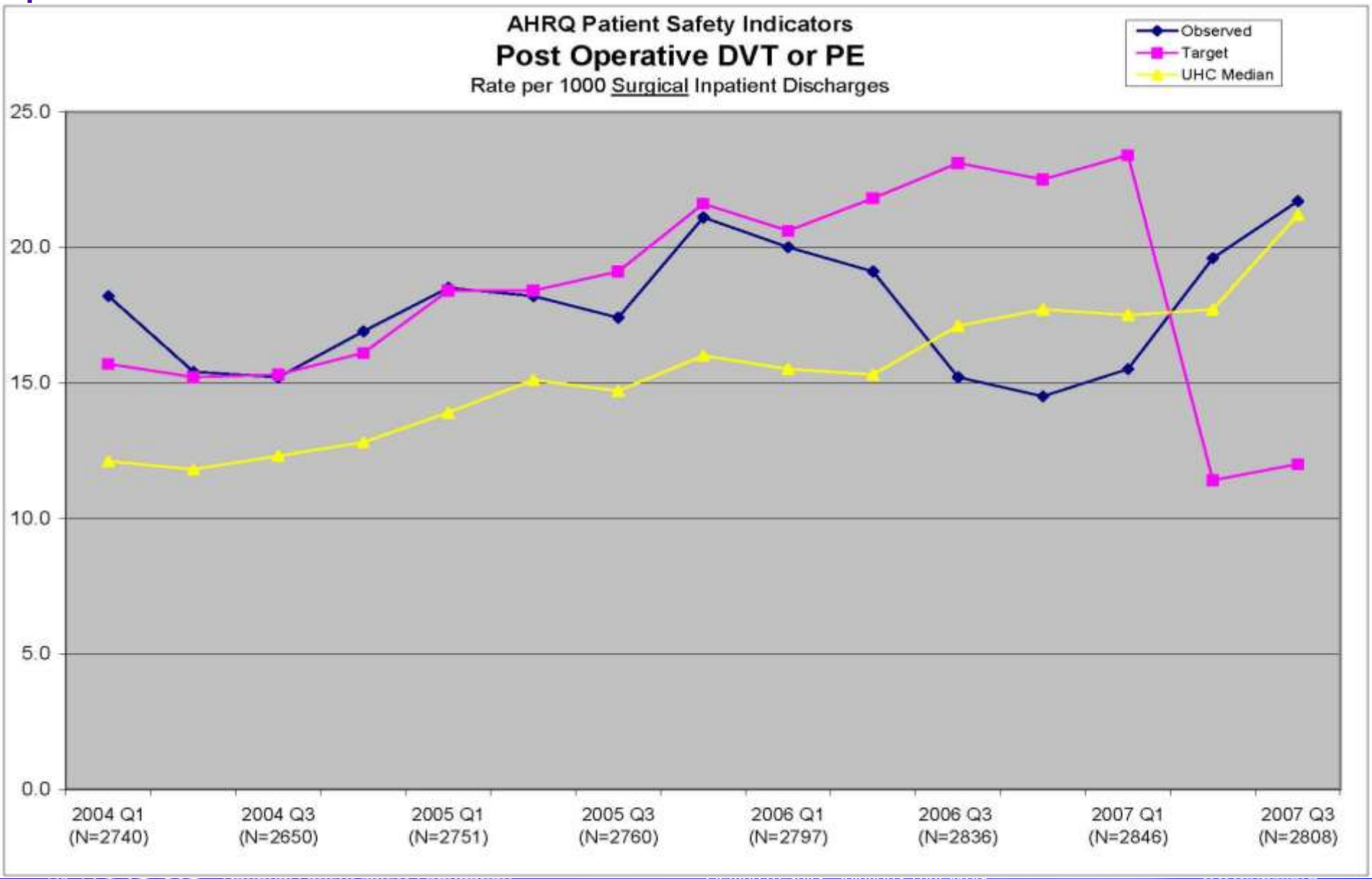
IAP Key Improvements

- Ultrasound-guided IJ as the 1st choice for CVC placement
- Increased ultasound availability
- Supervision requirement
- Simulation and CVC curriculum
- Cortrak device for feeding tube placement in ICU

Next Steps

- Develop a trigger rate for focused review of Iatrogenic Pneumothorax
- Finalize Epic report demonstrating overall compliance to the CVC Procedure Note completion – IAP team Jan 2010
- LEVERAGE RESULTS
  - In collaboration with the Infection Control Department, develop a process to improve CVC documentation – 2010Q1

UHC Postop DVT/PE Measure



Action Plan for DVT/PE

Goal: Reduce the rate of DVT & PE by 25% by December 2008.

Action	Agents	Timeline
Monitor concurrent MD ordering practices of DVT prophylaxis & educate/reinforce Epic order sets.	Quality Specialist to audit 10 charts/wk of General & Ortho Surgery pts & educate MDs.	Begin Feb 1
Review concurrent DVT/PE cases for adherence to DVT prophylaxis guidelines monthly.	Quality Specialist to perform audit based on monthly report of + radiology tests.	Feb 18
Examine & present results from concurrent monitoring & audit & NSQIP data to providers.	P. Pilotin & K. Bashaw to discuss results with Chairs of General & Orthopedic Surgery.	Feb 25
Educate physicians to DVT guidelines and order sets.	P. Pilotin to develop/distribute materials of DVT guidelines & screen shots of Epic DVT order set.	Feb 15
Establish rules & rates for DVT/PE cases for individual MD profiles.	Quality Dept to establish rules & rates in Midas.	March 31
Refine DVT prophylaxis guidelines for medical patients.	K. Posley to review/revise guidelines.	Feb 1

Concurrent Surgical Audit

- Concurrent audit started in Feb 08; conducted by Quality Specialist 24 hours after surgery on:
  - Orthopedic surgery
  - General surgery patients
- "Risk level" of patient is assessed by Quality Specialist & compliance determined based on current order
- Surgical DVT Prophylaxis must be ordered and 1st drug dose given within 24 hours after surgery
- If no order or inadequate order, a "fix-it" ticket is placed in medical record so MD can order or revise prophylaxis

DVT

DVT Prophylaxis "Fix it Ticket"

Today's Date: _____
Patient Name: _____
MRN: _____
Unit: _____
Attending MD: _____
Resident: _____

Dear Physician:

As soon as possible, please either:

- Order DVT Prophylaxis:
  Pharmacologic agent
  Mechanical compression

OR

- Document a contraindication to DVT Prophylaxis.

Thank you for providing quality care to your patient!

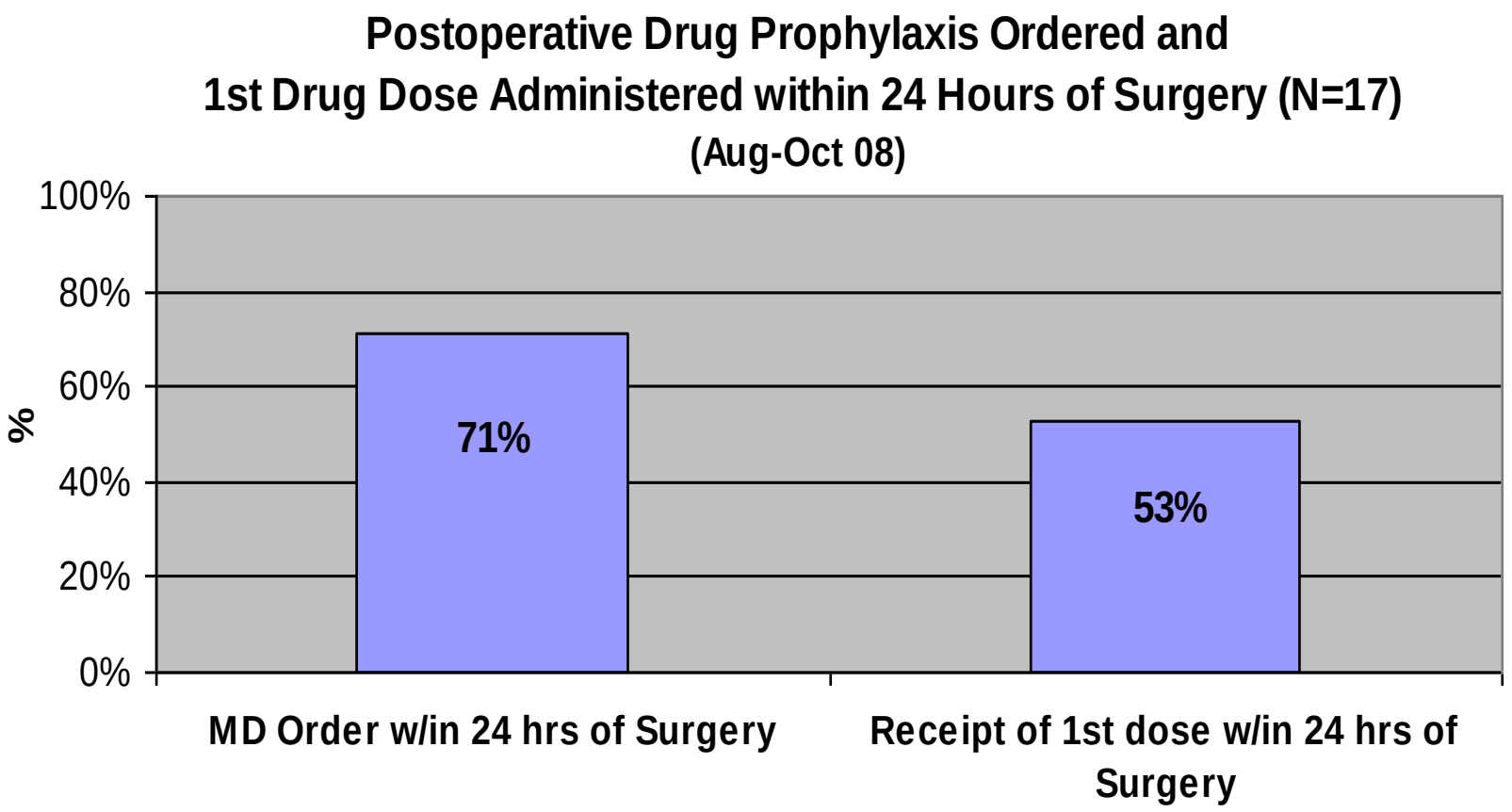
Any questions?

Please call our DVT Prophylaxis Specialist:

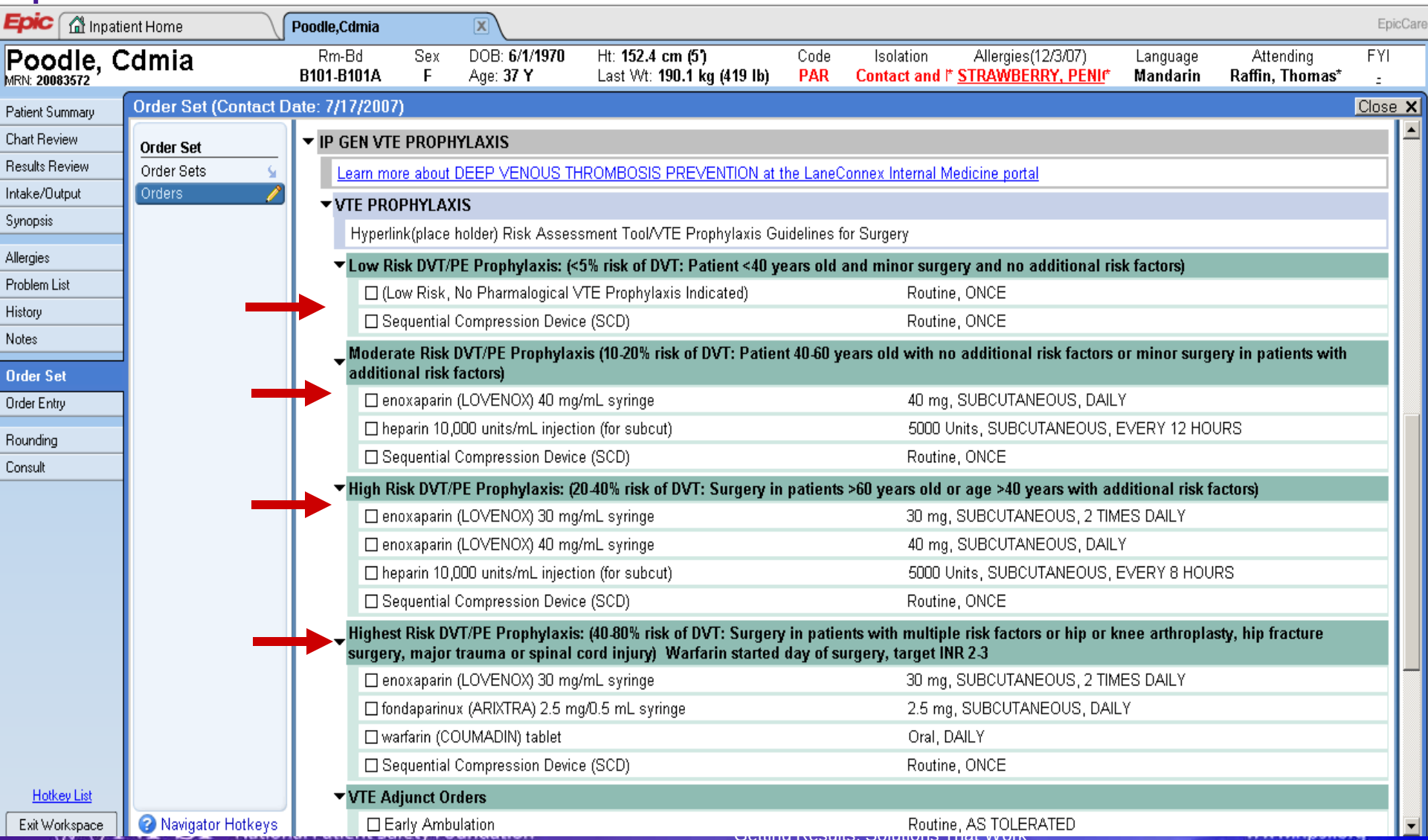
Julie Wahlig, RN MA at Ext. 1-6180 or Pager 16621

STANFORD HOSPITAL & CLINICS

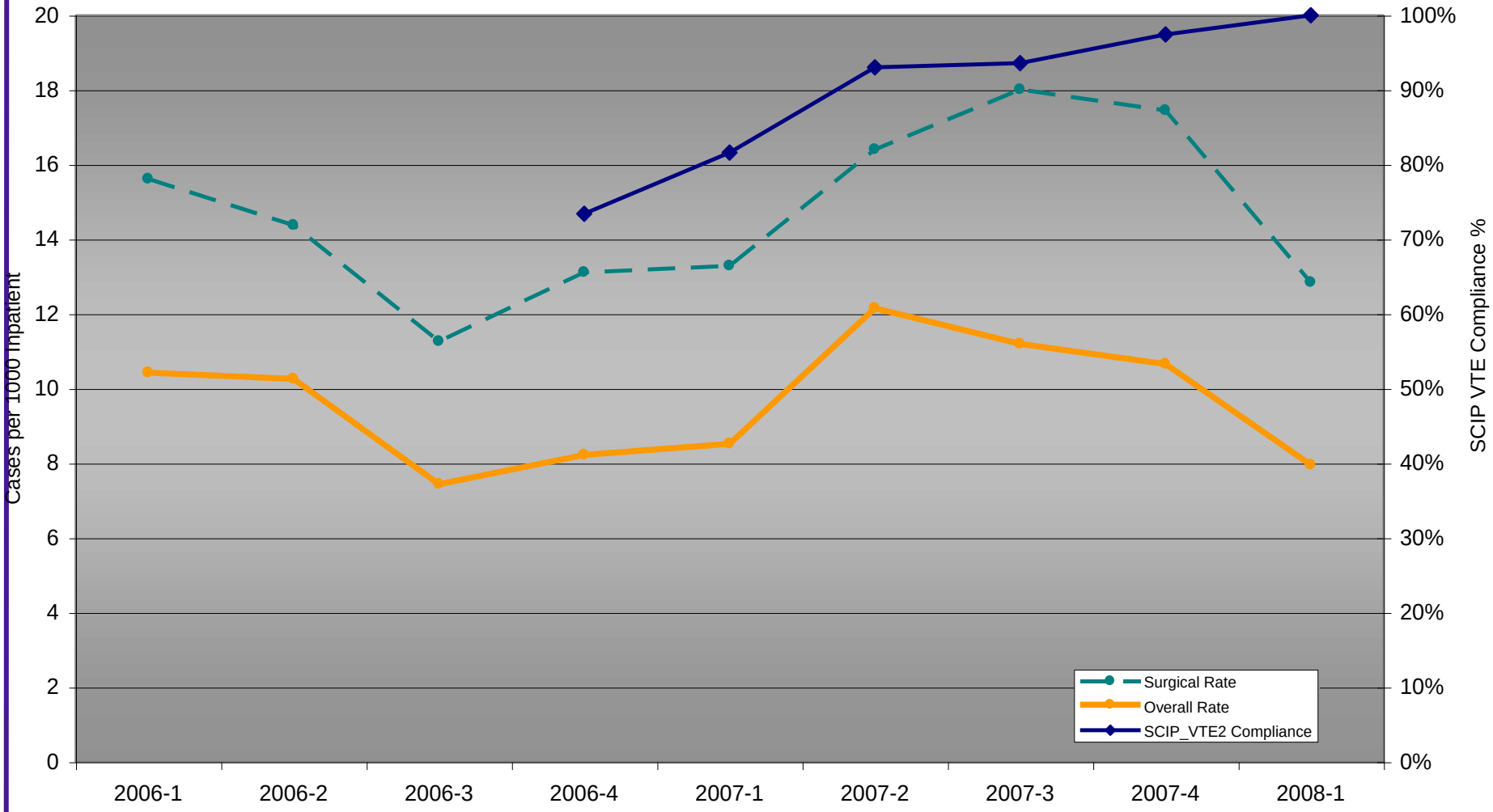
Retrospective Surgical Audit (⊕ radiology test)



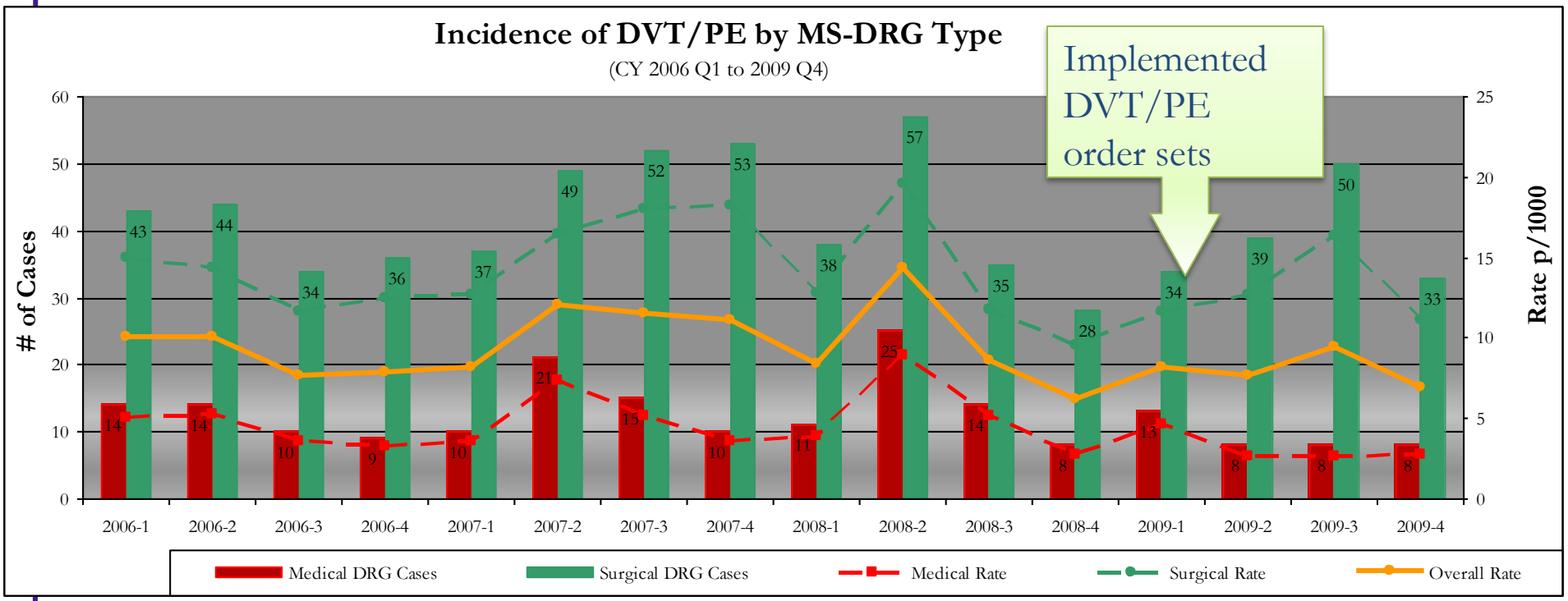
DVT/PE Risk Assessment in Epic



Incidence of DVT/PE by DRG Type with SCIP VTE Compliance
(Qtr 1 06 to Qtr 1 08)



Incidence of Medical and Surgical Cases

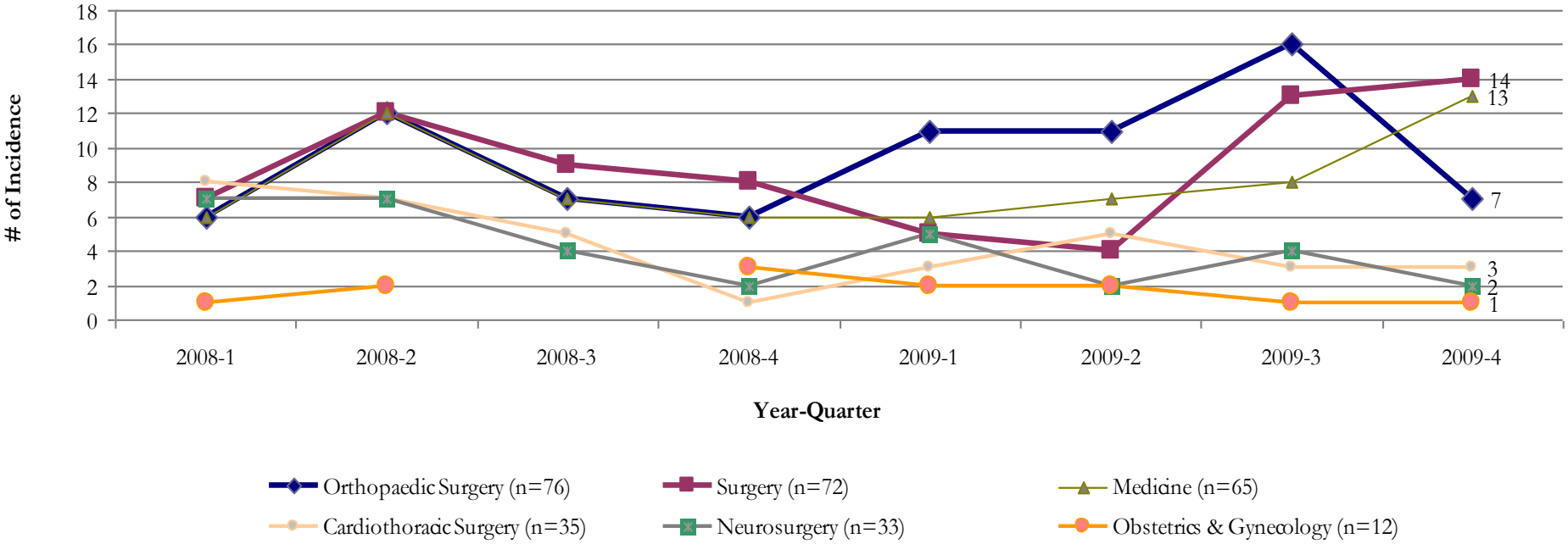


Findings/Actions

- Overall incidence of hospital-acquired DVT/PE reflects a downward trend
  - Medical MS-DRGs -Remains unchanged
  - Surgical MS-DRGs -Decrease
- Review process for fall out cases expanded to identify improvement opportunities

DVT Prophylaxis needs to be ordered <u>within</u> 24 Hours of Hospital Admission or document a contraindication.

DVT/PE by Top Departments



Findings / Actions

- Surgery department incidence of DVT/PE is up; reviewed at their PPEC
- Orthopaedics incidence increased as a result of scanning pts for DVT/PE; routine scans stopped 10/2009
- Individual department/physician incidence will be tracked over time for trends and reviewed at the respective PPECs

Multidisciplinary Team Improvements

- Revised VTE prophylaxis order set (#1289) on 2/26/09
  - Facilitates seamless documentation of medical decision making, including:
    - VTE risk stratification
    - Decision regarding pharmacologic prophylaxis
    - Documentation of contraindications to pharmacologic prophylaxis if they exist

VTE Prevention Saves Lives.

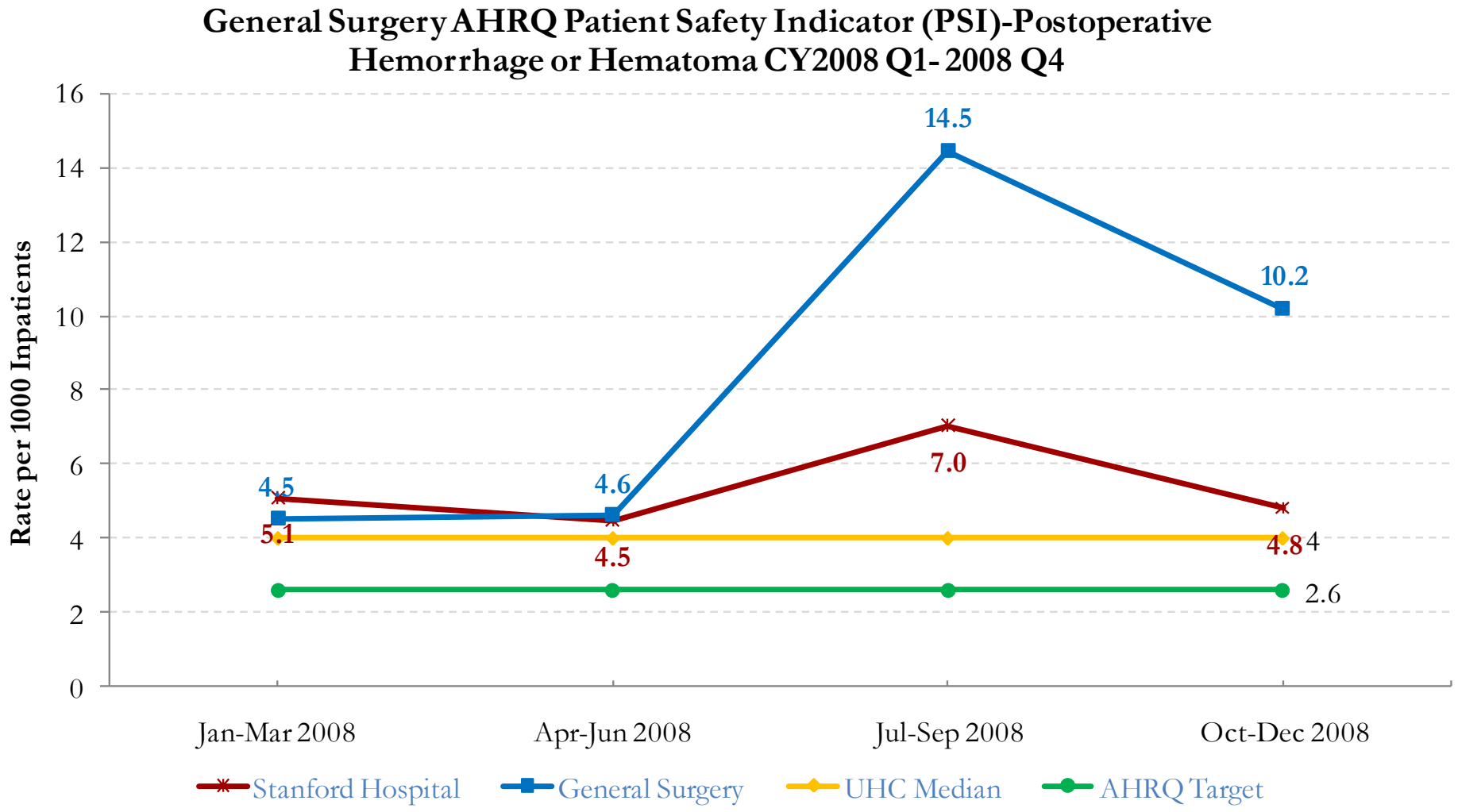
Stanford is focused on reducing the incidence of hospital-acquired DVT/PE for all our patients.

Next Steps

Strategies to improve patient screening and physicians' prescribing habits are needed.

- Leverage Epic reports to provide real time data
- Services Roles
  - Monitor compliance with Order set (#1289)
  - Address non compliance with the order set
- Review DVT/PE Cases at Professional Practice Evaluation Committees (PPEC)
  - Analyze fallout cases to evaluate current practices
  - Appropriateness of drug agent, drug dose and drug frequency
  - Identification of common trends in treatment/care

Postoperative Hemorrhage or Hematoma

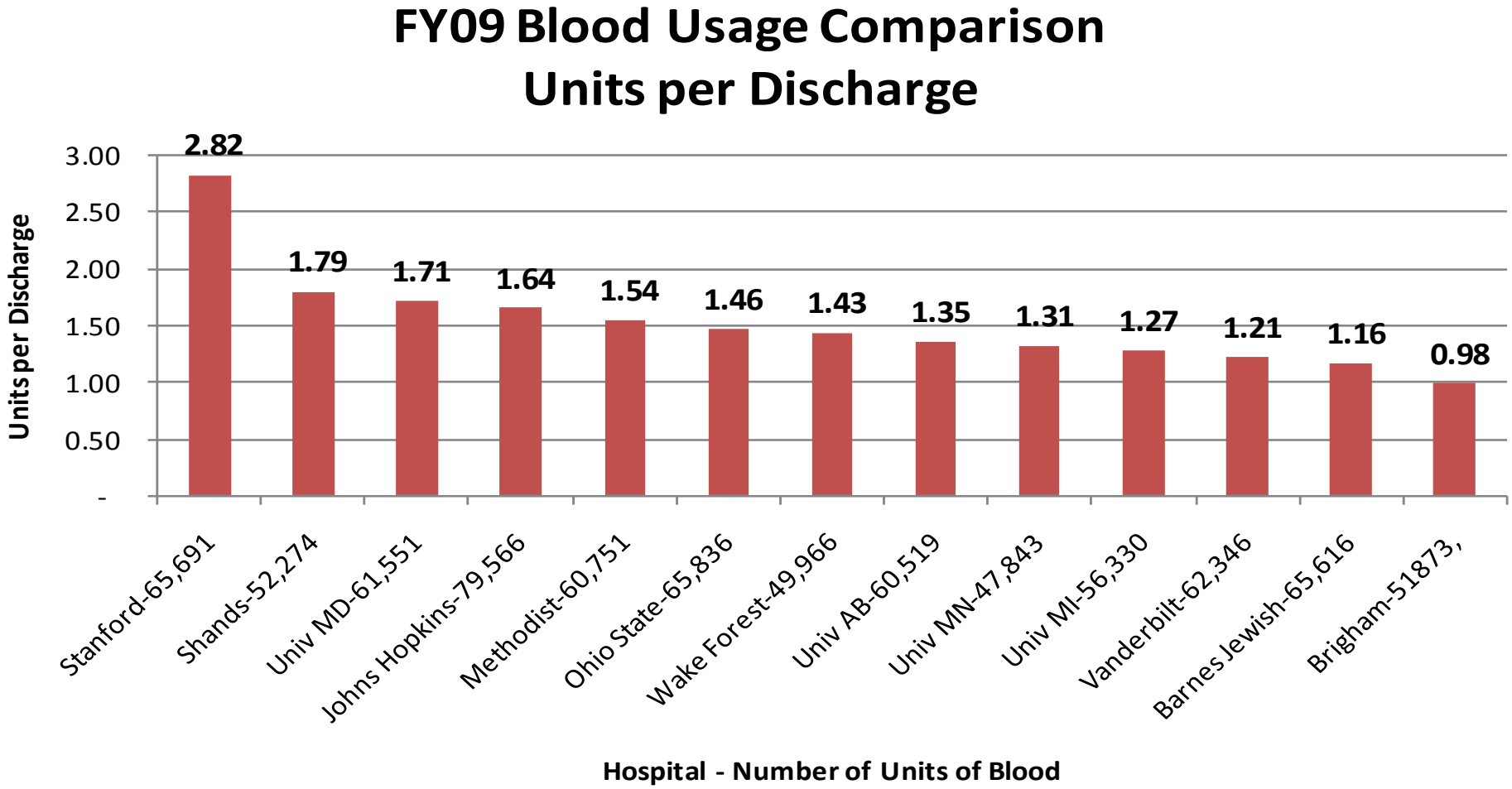


Transfusion

- Importance
  - Complications (Infections, CA Recurrence)
  - Preventable
  - Cost
- Prevention
  - Review Cases for Pattern Recognition
  - Equipment Review
  - Establish Best Evidence for Transfusion

Comparison to other UHC Hospitals –FY2009

Compared to other hospitals, SHC uses > 1 unit of blood per discharge



Red Blood Cell Transfusions

- August 2008 – September 2009

Hemoglobin

Measure	Units	%
<= 7	1,495	10%
7.1-8	3,720	26%
>8	9,239	64%

Red Blood Cell Transfusions

Intervention:

There will be an alert that pops up (only when the Hb is >7g/dl) when ordering RBC in EPIC that states the following:

"Your patient has a normal blood pressure and the last hemoglobin was ### on January 4, 2010 12:20 PST. Strong evidence suggests that in hemodynamically stable, non-bleeding patients a hemoglobin threshold of 7 g/dl (or 8 g/dl in acute coronary syndromes/post cardiac surgery) can decrease transfusion requirements and avoid adverse outcomes. Single unit transfusions are usually preferable. This guideline was endorsed by the Stanford Critical Care Committee & the Blood Transfusion Task Force.

(http://journals.lww.com/ccmjournal/Abstract/2009/12000/Clinical_practice_guideline_Red_blood_cell.19.aspx)"

Conclusion

Easily Available AHRQ PSI Data Guide Quality Improvement That Can Be Benchmarked, Measured, and Leveraged