



AHRQ/HRET Audio Conference Series for State Hospital Associations:

Quality Indicators and Their Use in
Improving Quality of Care and
Patient Safety

May 18, 2010



Audio Conference Presenters

- **John Bott:** AHRQ Quality Indicators Measure Expert, Center for Delivery, Organization and Markets
- **H. Joanna Jiang, PhD:** AHRQ Senior Social Scientist, Center for Delivery, Organization and Markets
- **Patrick S. Romano, MD, MPH:** Professor of Medicine and Pediatrics, UC Davis Division of General Medicine
- **Stephen Hines, PhD:** Vice President, Research, HRET (moderator)



Audio Conference Overview

- John Bott will provide background information on the QIs as well as their general uses
- Dr. Patrick Romano will discuss a variety of the PSIs and how they can be used to improve quality at the hospital level
- Joanna Jiang, PhD, will discuss the inception of a toolkit based on the QIs
- Steve Hines, PhD, will discuss next steps with HRET regarding the QIs and will open the Q&A session
- Please see Appendix A (slide 61) and Appendix B (slide 70)



AHRQ Quality Indicators 101: Background and Introduction to the AHRQ QIs

*John Bott, Contractor, Agency for Healthcare Research
and Quality*

May 18th, 2010



AHRQ Quality Indicators (QIs)

- Developed through contract with UCSF-Stanford Evidence-based Practice Center and UC Davis
 - Healthcare Cost and Utilization Program (HCUP) data used in measure development, maintenance & improvement
 - Currently HCUP data consists of 43 states containing over 90 of hospital discharges
- Use existing hospital discharge data, based on readily available data elements, e.g.:
 - ICD-9-CM* diagnosis & procedure codes, Diagnosis Related Groups (DRG), Medicare DRGs, Major Diagnostic Categories (MDC), sex, age, procedure dates, admission type, admission source, discharge disposition, discharge quarter, point of origin, present on admission
- Incorporate a range of severity adjustment methods, including APR-DRGs** and comorbidity groupings

* International Classification of Diseases, Ninth Revision, Clinical Modification

** All Patient Refined - Diagnosis Related Groups

AHRQ Quality Indicators

Inpatient QIs

*Mortality,
Utilization,
Volume*

Prevention QIs

*(Area Level)
Avoidable
Hospitalizations /
Other Avoidable
Conditions*

Pediatric QIs

**Neonatal
QIs**

Patient Safety QIs

*Complications,
Unexpected Death*

*See App. A
for list of
measures*



Features of the AHRQ QIs

■ Public Access

- All development documentation and details on each indicator available on Web site
- Software available to download at no cost
 - Documentation and software at:
www.qualityindicators.ahrq.gov
- Standardized indicators: Hospitals can replicate data
- Can be used with any administrative data, e.g. HCUP, MEDPAR*, State data sets, payer data, hospital internal data
- Indicator maintenance and updates
- Tools and technical assistance

* Medicare Provider Analysis and Review (Medicare administrative inpatient data)



Features of the AHRQ QIs (cont.)

- National benchmarks:
 - National Healthcare Quality Report
 - National Healthcare Disparities Report
 - HCUPnet

- Scope
 - Over 90 individual measures
 - Each measure can be stratified, e.g.: race, age, sex, provider, geographic region
 - Include priority populations and areas, e.g.: child health, women's health (pregnancy and child-birth), diabetes, hypertension, patient safety, preventive care



Current limitations & challenges

- Outcomes data less actionable than processes
- Limited clinical detail
- Risk adjustment challenges
- Accuracy hinges on accuracy of documentation and coding
- Data potentially subject to gaming
- Time lag of the data



Recent improvements

- Composite measures
 - Developed composite measures for the IQIs, PSIs, PQIs and PDIs
- Risk adjustment based on administrative data
 - Additional risk adjustment methods for AHRQ QIs
- Updated literature reviews
 - Completed IQIs, PDIs and PSIs
- Reporting template
 - Tested and refined
- National Quality Forum review and endorsement of a number of the QIs
 - See App. B for list of NQF endorsed measures
- Use of present on admission and point of origin data



General uses of the AHRQ QIs

- Hospital quality improvement efforts
 - Individual hospitals & health care systems, such as:
 - Banner Health (a multi-hospital system in AZ)
 - Norton Healthcare (a multi-hospital system in KY)
 - Baycare Health System (a multi-hospital system in FL)
 - Ministry Health Care (a multi-hospital system in WI)
 - Hospital association member based reports, such as:
 - University Healthsystem Consortium
 - Dallas - Fort Worth Hospital Council
 - Premier (note: Premier participating in CMS pay for performance demonstration, which includes AHRQ QIs)



General uses of the AHRQ QIs

- Aggregate reporting: National, state, regional
 - National Healthcare Quality / Disparities Reports
 - Commonwealth Fund's Health Performance Initiative

- Research
 - Tracking quality of care for populations over time and across areas
 - Tracking disparities in care over time and across areas
 - Comparing quality between different types of hospitals or hospital systems (e.g., size, volume, teaching status, ownership, accreditation, critical access status)
 - Evaluating impact of interventions to reduce costs or improve quality (e.g., resident work hours reform, electronic health information systems, hospital mergers and consolidations)



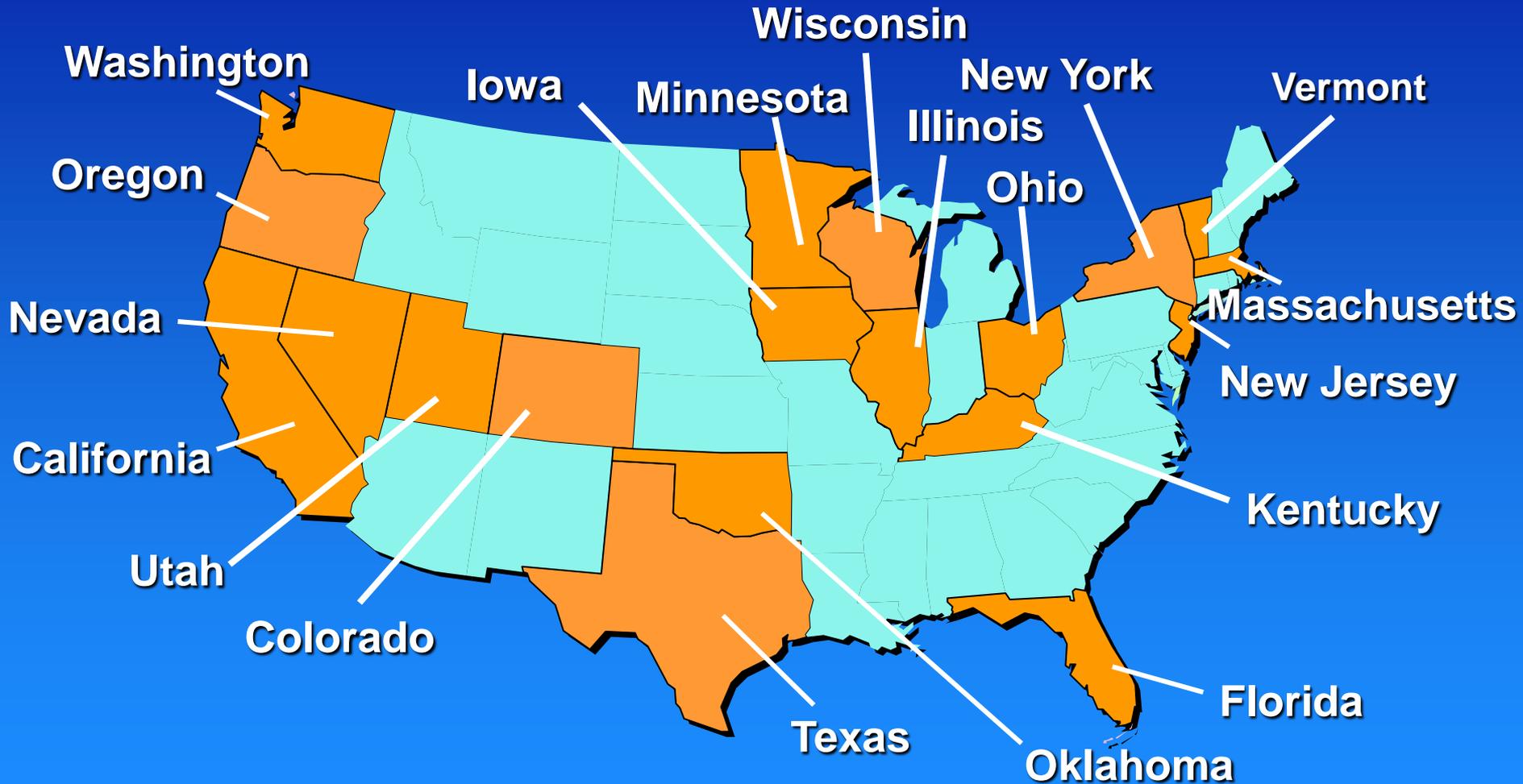
General uses of the AHRQ QIs

- Value based purchasing / pay for performance (P4P)
 - CMS - Premier Demo
 - Anthem of Virginia
 - The Alliance (Wisconsin)

- Hospital level public reporting
 - Currently: Statewide public reporting (*upcoming slide*)
 - Upcoming: CMS Hospital Compare, including Veterans Affairs medical centers (*upcoming slide*)

- 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 that use the AHRQ QIs



AHRQ QIs appear in public reports in 19 states



Centers for Medicare & Medicaid Services (CMS) Hospital Compare

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

A number of AHRQ QIs (below) to be added 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

(See next slide for measures within each composite)



CMS Hospital Compare (cont.)

- Composite: Patient safety for selected indicators
 - Pressure ulcers
 - Iatrogenic Pneumothorax
 - Central venous catheter-related bloodstream infections
 - Postoperative hip fracture
 - Postoperative pulmonary embolism or DVT
 - Postoperative sepsis
 - Postoperative wound dehiscence
 - Accidental puncture or laceration

- Composite: Mortality for selected conditions
 - AMI mortality
 - CHF mortality
 - Acute stroke mortality
 - GI hemorrhage mortality
 - Hip fracture mortality
 - Pneumonia mortality



AHRQ QI measurement work: Where we are at

- Release of Windows QI version 4.1
 - Estimate the release of the software in late June 2010

- In progress
 - Emergency Preparedness
 - PQI measure development for the Medicaid Home and Community Based Services Population
 - Assessment of PQIs for pay for performance

- Recently began
 - Efficiency measure development
 - Care coordination measure development
 - Emergency dept. PSI measure development
 - Emergency dept. PQI measure development
 - Refinement activity: Present on admission

- Near Future
 - Refinement Activity: Lab values



For more information...

- Web site: <http://qualityindicators.ahrq.gov>
 - QI documentation and software are available
 - Sign up for AHRQ QI listserv

- Support E-mail: support@qualityindicators.ahrq.gov

- Support Phone: (888) 512-6090 (voicemail)

- Staff: Mamatha Pancholi Mamatha.Pancholi@ahrq.hhs.gov
John Bott John.Bott@ahrq.hhs.gov



How the AHRQ Quality Indicators are Used to Drive Quality Improvement at the Hospital Level

Patrick S. Romano, MD MPH
UC Davis Center for Healthcare Policy and Research

Hospital Research and Education Trust
May 18, 2010



Moore Demonstration Project (MDP)

- 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
- UC Davis entered data, identified discrepancies, and performed descriptive analysis of opportunities for QI



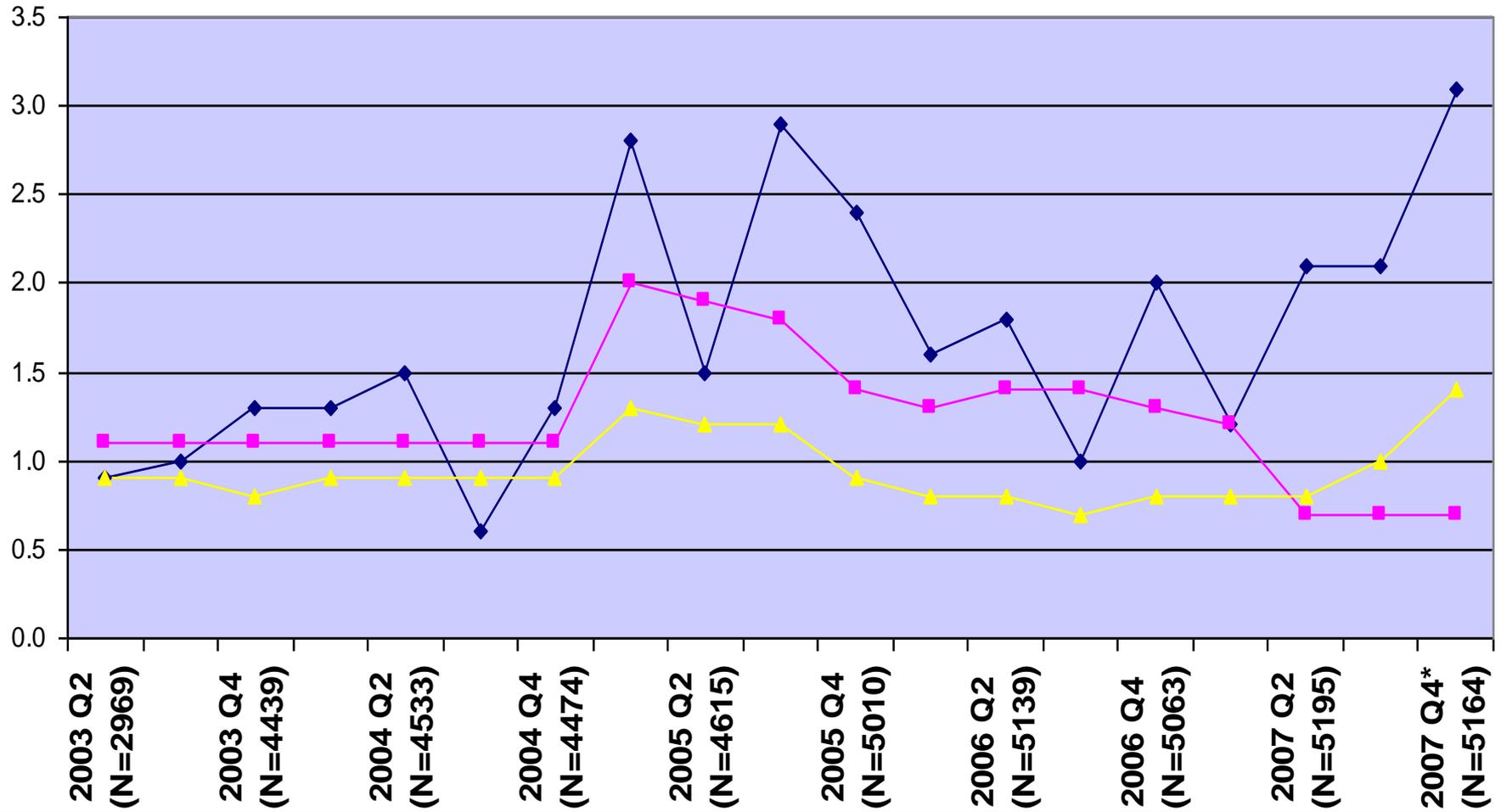
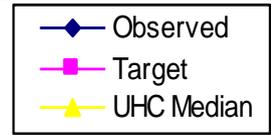
PSI 6: Iatrogenic pneumothorax MDP opportunities for improvement

- 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)



Case study: Iatrogenic pneumothorax

AHRQ Patient Safety Indicators
Iatrogenic Pneumothorax
Rate per 1000





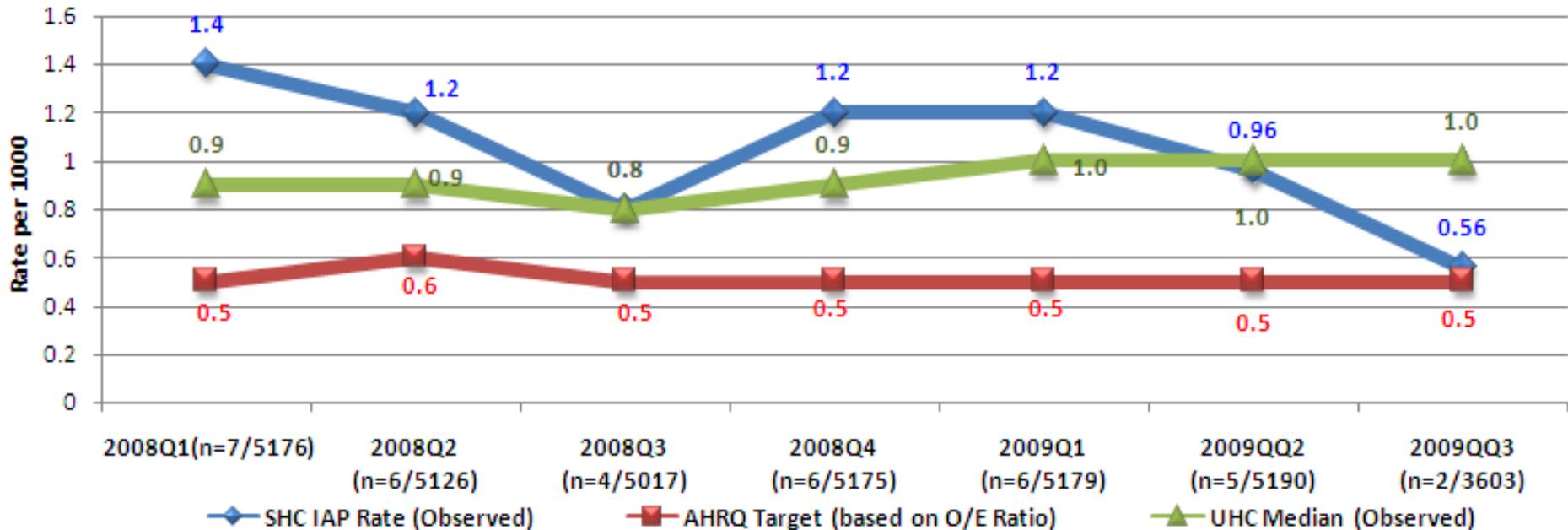
Action Plan for Iatrogenic Pneumothorax

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

Action	Agent	Timeline
<p>Promote ultrasound-guided internal jugular (IJ) catheterization as the method of choice for CVC</p> <p>Limit use of subclavian approach (with faculty supervision) to:</p> <ul style="list-style-type: none"> • access to the neck is limited (e.g., trauma/code resuscitations) • patients with suspected neck injuries • lack of other available sites <p>Ensure availability of ultrasound equipment</p>	<ul style="list-style-type: none"> • 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 	<p>Start Jan 22 & ongoing</p>
<p>Require all medical & surgical interns to complete CVC Website Curriculum & Simulation Program during orientation (“Bootcamp” for surgical interns)</p>	<ul style="list-style-type: none"> • Drs. Shieh, Maggio, Williams, Mihm & Lee • Monitor quarterly IAP rates for impact 	<p>June 30</p>

Iatrogenic Pneumothorax (IAP) Data

SHC Patient Safety Indicator (PSI06)(Rate per 1000)
 Iatrogenic Pneumothorax (Data source: UHC)
 CY 2008Q1-2009Q3

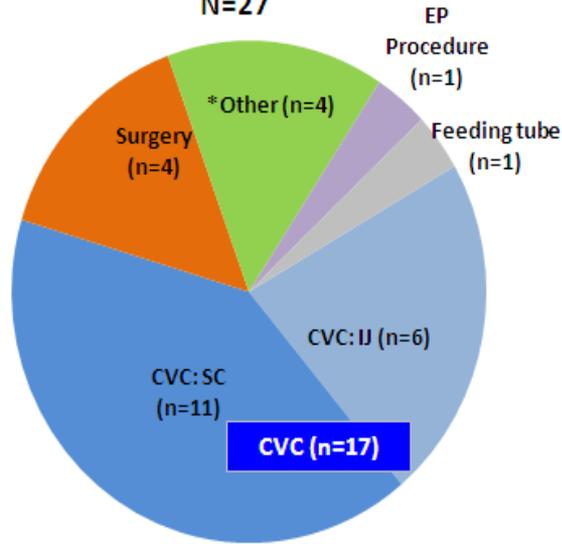


Findings

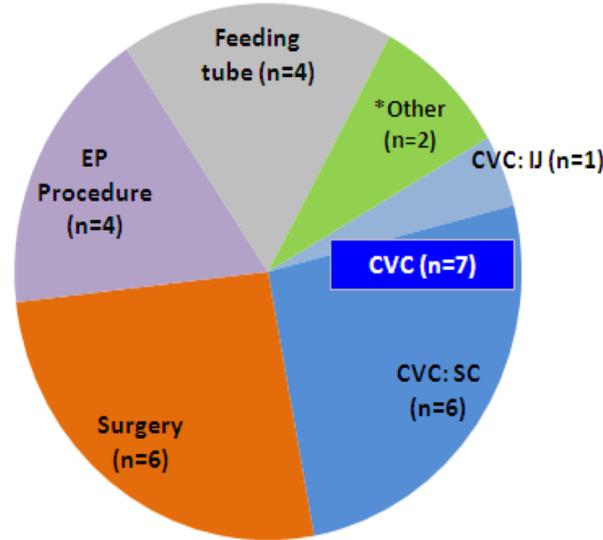
- Overall SHC IAP rate per 1000 discharges is trending down
- The best performance occurred in 2009Q3 with SHC IAP rate of 0.56 per 1000 inpatient discharges, but this remains slightly above target. Please note that if 2 cases in 2009Q3 are recoded and removed, SHC IAP rate would be at zero.

Iatrogenic Pneumothorax (IAP) Data

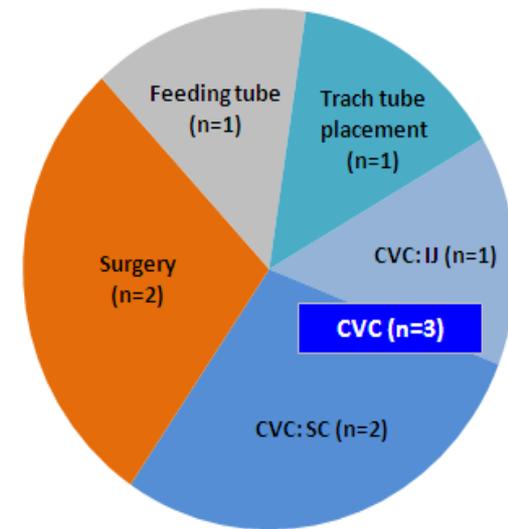
IAP by Apparent Cause
CY 2007
N=27



IAP by Apparent Cause
CY 2008
N=23



IAP by Apparent Cause
CY 2009 Q1-Q3
N=7



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)



From one AMC to the nation

- About 14 pneumothoraces were prevented at one AMC in CY 2009
- Extrapolating from RCT findings and 2004 HCUP data, at least 1725 of the 14729 reported pneumothoraxes among hospitalized adults in nonfederal hospitals and at least 431 of 3682 additional outpatient-acquired but hospital-treated pneumothoraxes could have been prevented through universal use of ultrasound during IJ cannulation
- Each pneumothorax adds (on average) 4.4 inpatient days and \$17 312 in hospital charges



PSI 7: CVC-related bloodstream infection MDP 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



Case study: CVC-related bloodstream infection

ORIGINAL INVESTIGATION

Use of Simulation-Based Education to Reduce Catheter-Related Bloodstream Infections

Jeffrey H. Barsuk, MD; Elaine R. Cohen, BA; Joe Feinglass, PhD; William C. McGaghie, PhD; Diane B. Wayne, MD

Background: Simulation-based education improves procedural competence in central venous catheter (CVC) insertion. The effect of simulation-based education in CVC insertion on the incidence of catheter-related bloodstream infection (CRBSI) is unknown. The aim of this study was to determine if simulation-based training in CVC insertion reduces CRBSI.

Methods: This was an observational education cohort study set in an adult intensive care unit (ICU) in an urban teaching hospital. Ninety-two internal medicine and emergency medicine residents completed a simulation-based mastery learning program in CVC insertion skills. Rates of CRBSI from CVCs inserted by residents in the ICU before and after the simulation-

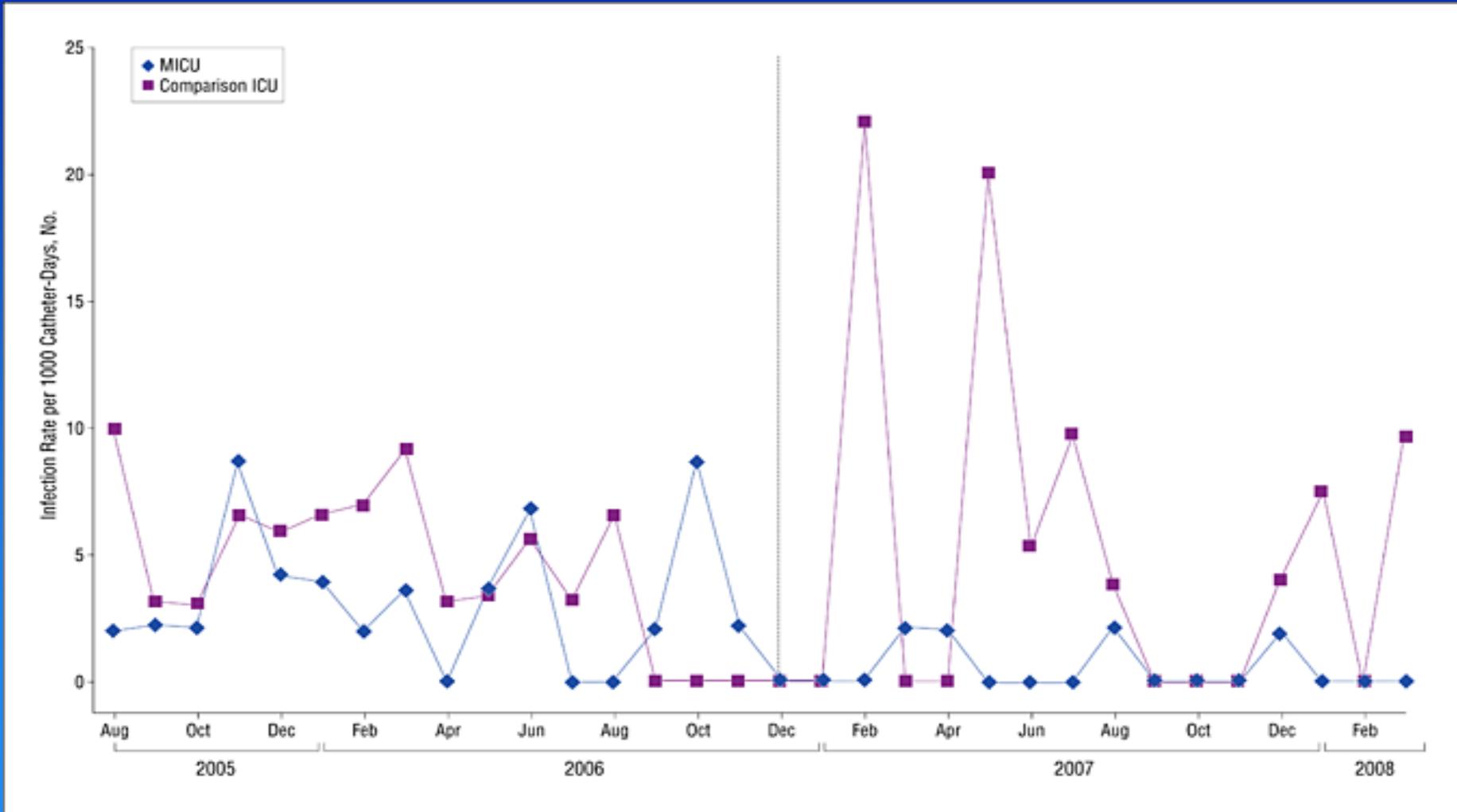
based educational intervention were compared over a 32-month period.

Results: There were fewer CRBSIs after the simulator-trained residents entered the intervention ICU (0.50 infections per 1000 catheter-days) compared with both the same unit prior to the intervention (3.20 per 1000 catheter-days) ($P = .001$) and with another ICU in the same hospital throughout the study period (5.03 per 1000 catheter-days) ($P = .001$).

Conclusions: An educational intervention in CVC insertion significantly improved patient outcomes. Simulation-based education is a valuable adjunct in residency education.

Arch Intern Med. 2009;169(15):1420-1423

Case study: CVC-related bloodstream infection



Barsuk, J. H. et al. Arch Intern Med 2009;169:1420-1423.



PSI 9: Postoperative hemorrhage/hematoma MDP 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



Case study from one AMC

AHRQ PSI	Coding problem	Definition problem	Potential Clinical Issue
Pneumothorax	5 (12%)	0 (%)	38 (88%)
Postoperative Hemorrhage or Hematoma	3 (8%)	10 (26%)	26 (67%)
Postoperative PE / DVT	12 (30%)	0 (0%)	28 (70%)



PSI 10: Postoperative physiologic/metabolic MDP 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 MDP 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)



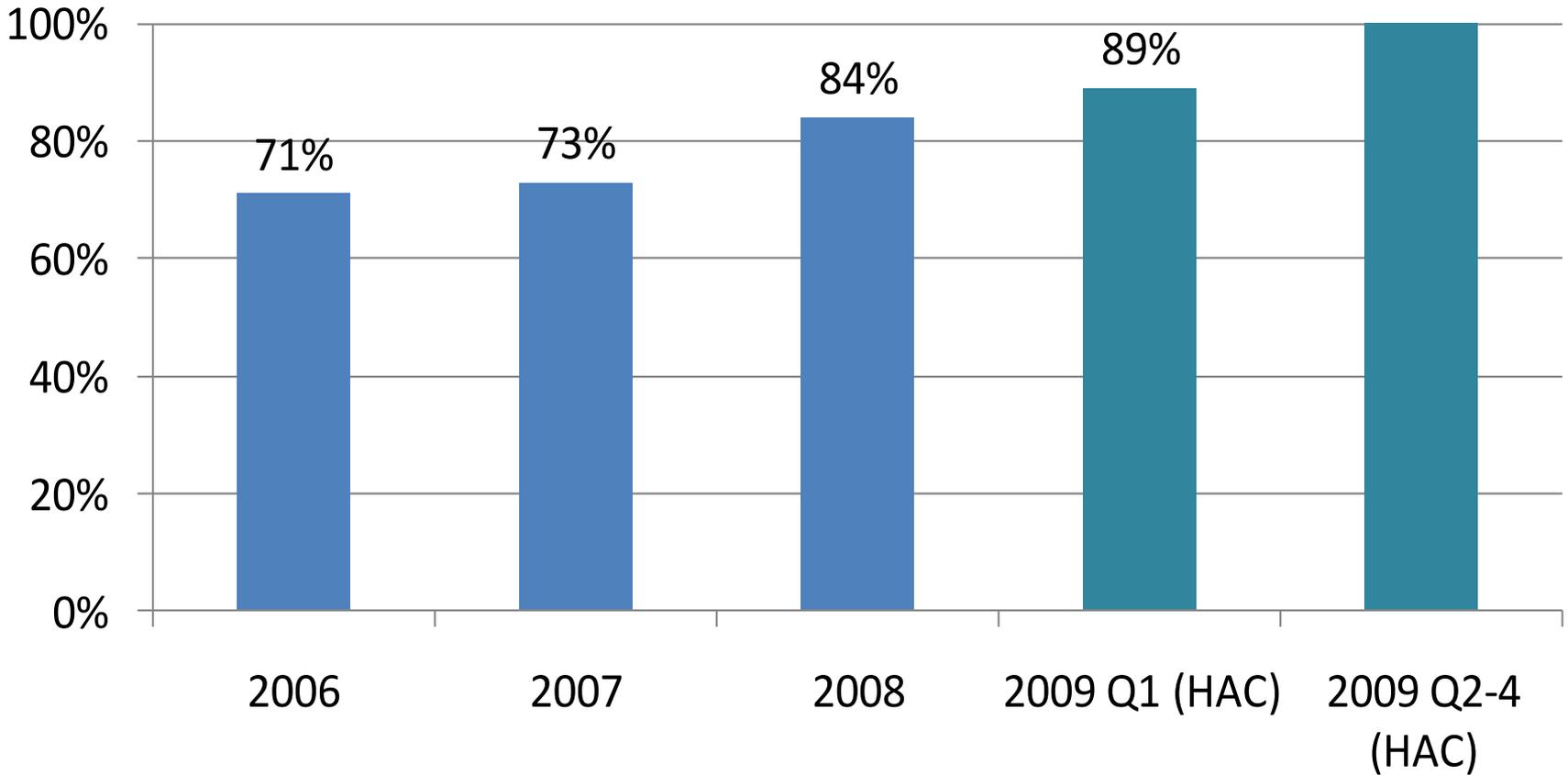
PSI 12: Postoperative DVT/PE MDP opportunities for improvement

- 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)



Case study: Postop DVT/PE Coding Accuracy

Coding Accuracy

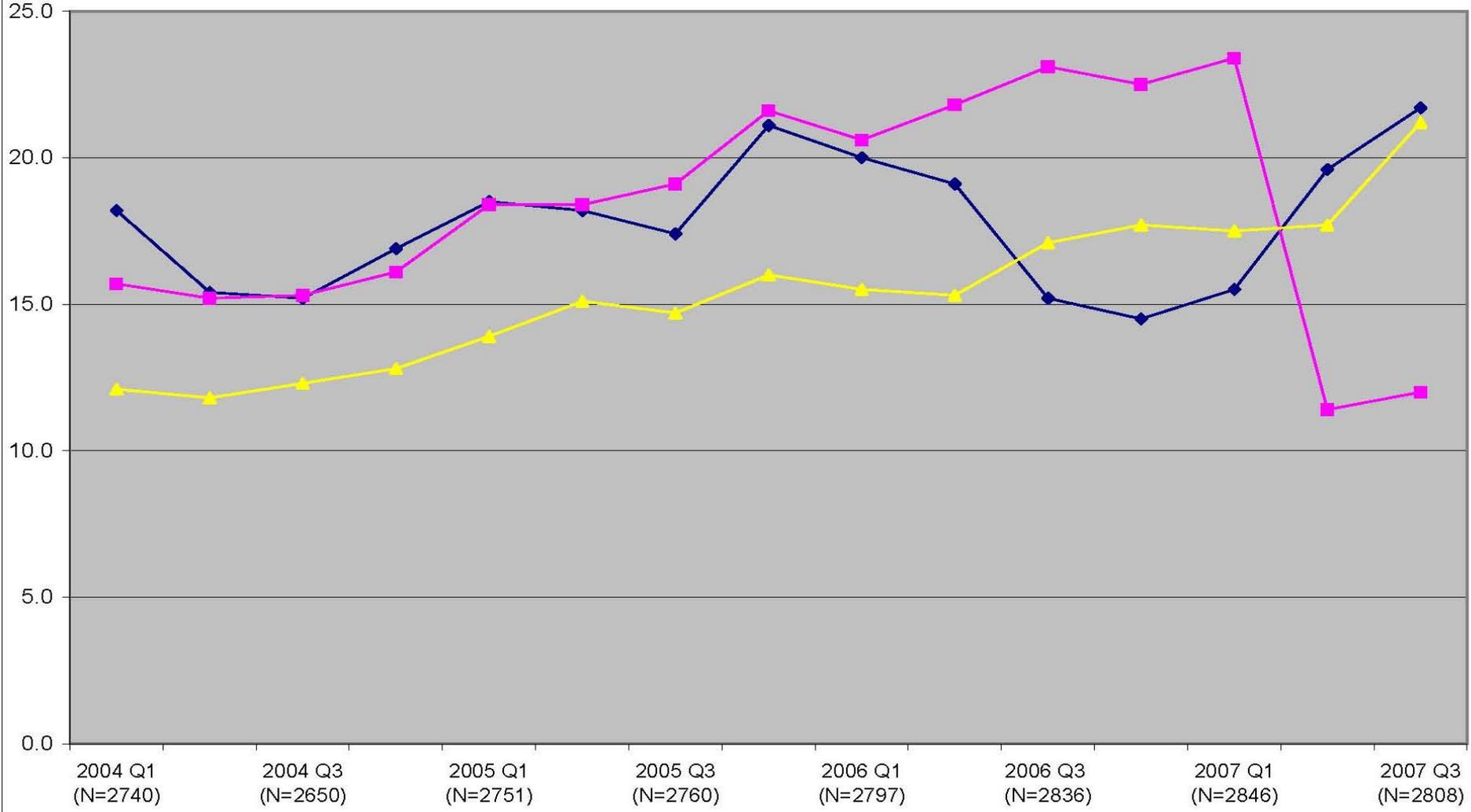




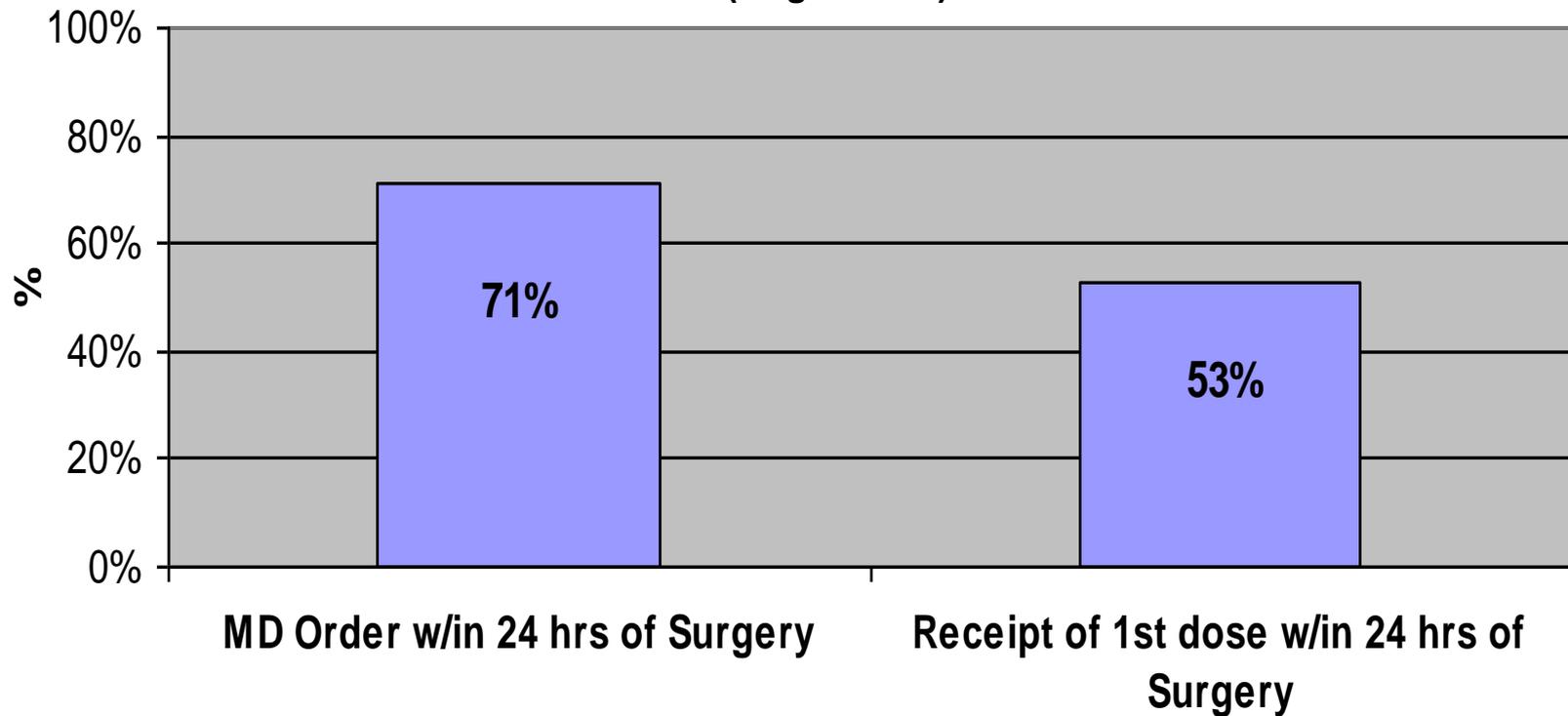
Case study: Postoperative DVT/PE

AHRQ Patient Safety Indicators
Post Operative DVT or PE
Rate per 1000 Surgical Inpatient Discharges

Observed
Target
UHC Median



Postoperative Drug Prophylaxis Ordered and 1st Drug Dose Administered within 24 Hours of Surgery (N=17) (Aug-Oct 08)





Action Plan for Postoperative 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 and 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

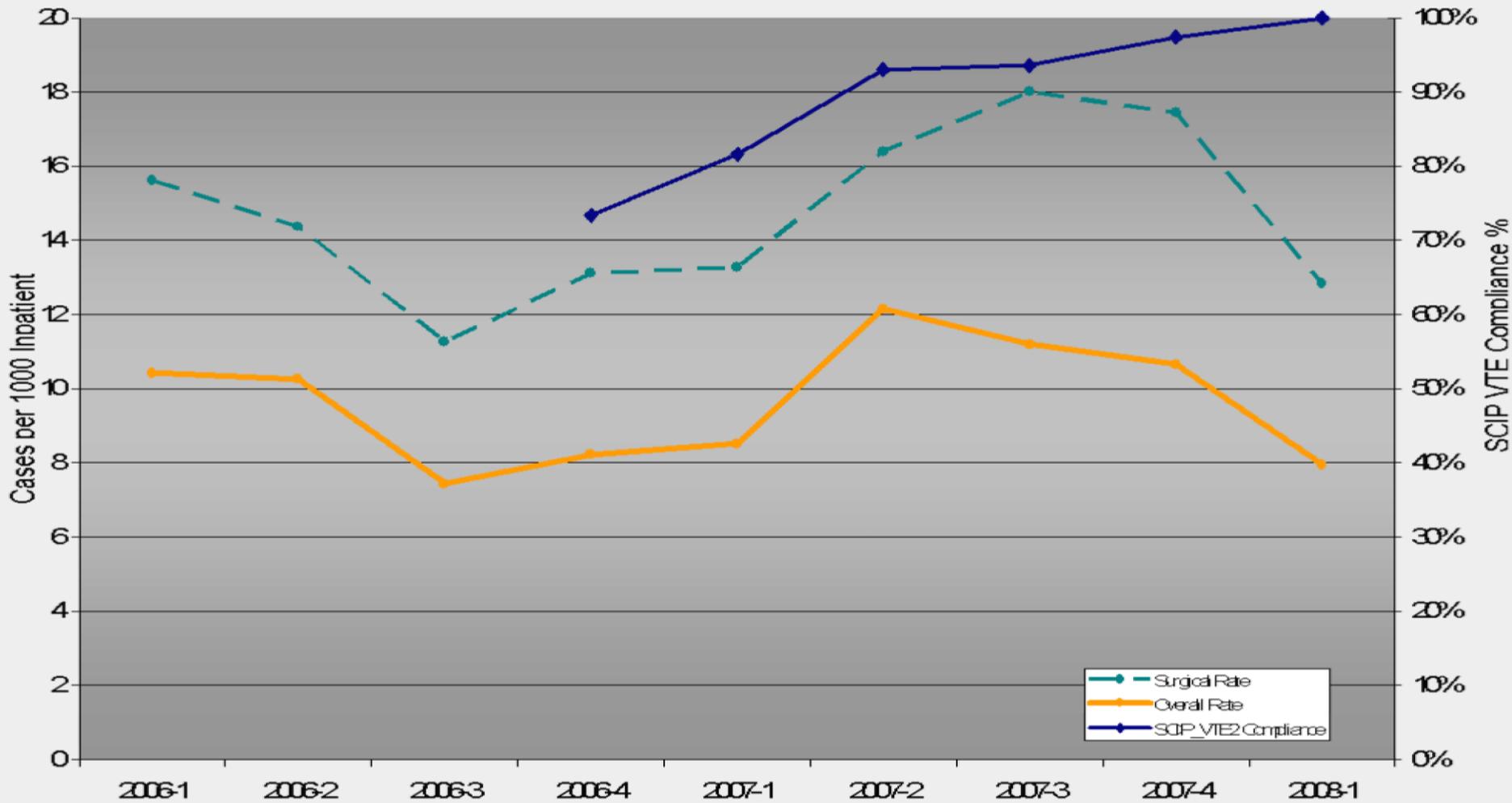
OR,

- 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

Incidence of DVT/PE by DRG Type with SCIP VTE Compliance
 (Qtr 106 to Qtr 108)





DVT/PE Risk Assessment in Epic

Epic Inpatient Home Poodle, Cdmia X EpicCare

Poodle, Cdmia MRN: 20083572

Rm-Bd: B101-B101A Sex: F DOB: 6/1/1970 Age: 37 Y Ht: 152.4 cm (5') Last Wt: 190.1 kg (419 lb) Code: PAR Isolation: Contact and Precautions Allergies(12/3/07): STRAWBERRY, PENICILLIN Language: Mandarin Attending: Raffin, Thomas* FYI: .

Order Set (Contact Date: 7/17/2007) Close X

Order Set

- Order Sets
- Orders

IP GEN VTE PROPHYLAXIS

[Learn more about DEEP VENOUS THROMBOSIS PREVENTION at the LaneConnex Internal Medicine portal](#)

VTE PROPHYLAXIS

Hyperlink(place holder) Risk Assessment Tool/VTE Prophylaxis Guidelines for Surgery

Low Risk DVT/PE Prophylaxis: (<5% risk of DVT: Patient <40 years old and minor surgery and no additional risk factors)

<input type="checkbox"/> (Low Risk, No Pharmacological VTE Prophylaxis Indicated)	Routine, ONCE
<input type="checkbox"/> Sequential Compression Device (SCD)	Routine, ONCE

Moderate Risk DVT/PE Prophylaxis (10-20% risk of DVT: Patient 40-60 years old with no additional risk factors or minor surgery in patients with additional risk factors)

<input type="checkbox"/> enoxaparin (LOVENOX) 40 mg/mL syringe	40 mg, SUBCUTANEOUS, DAILY
<input type="checkbox"/> heparin 10,000 units/mL injection (for subcut)	5000 Units, SUBCUTANEOUS, EVERY 12 HOURS
<input type="checkbox"/> Sequential Compression Device (SCD)	Routine, ONCE

High Risk DVT/PE Prophylaxis: (20-40% risk of DVT: Surgery in patients >60 years old or age >40 years with additional risk factors)

<input type="checkbox"/> enoxaparin (LOVENOX) 30 mg/mL syringe	30 mg, SUBCUTANEOUS, 2 TIMES DAILY
<input type="checkbox"/> enoxaparin (LOVENOX) 40 mg/mL syringe	40 mg, SUBCUTANEOUS, DAILY
<input type="checkbox"/> heparin 10,000 units/mL injection (for subcut)	5000 Units, SUBCUTANEOUS, EVERY 8 HOURS
<input type="checkbox"/> Sequential Compression Device (SCD)	Routine, ONCE

Highest Risk DVT/PE Prophylaxis: (40-80% risk of DVT: Surgery in patients with multiple risk factors or hip or knee arthroplasty, hip fracture surgery, major trauma or spinal cord injury) Warfarin started day of surgery, target INR 2-3

<input type="checkbox"/> enoxaparin (LOVENOX) 30 mg/mL syringe	30 mg, SUBCUTANEOUS, 2 TIMES DAILY
<input type="checkbox"/> fondaparinux (ARIXTRA) 2.5 mg/0.5 mL syringe	2.5 mg, SUBCUTANEOUS, DAILY
<input type="checkbox"/> warfarin (COUMADIN) tablet	Oral, DAILY
<input type="checkbox"/> Sequential Compression Device (SCD)	Routine, ONCE

VTE Adjunct Orders

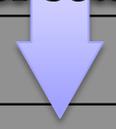
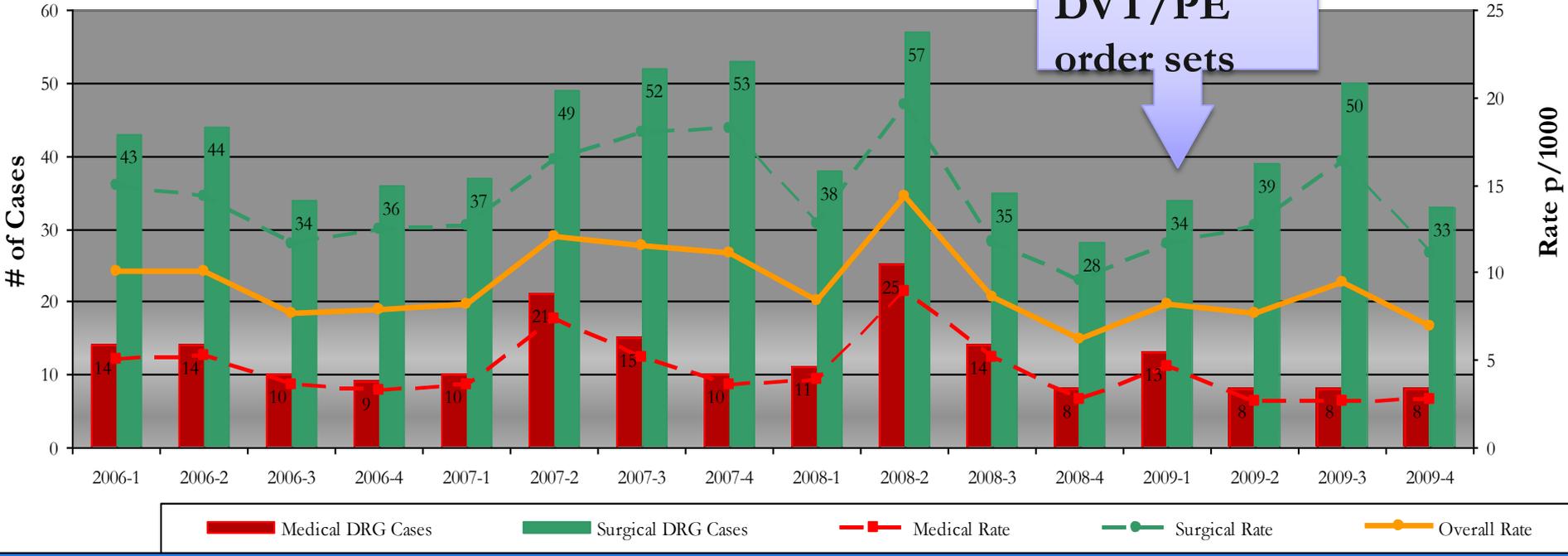
<input type="checkbox"/> Early Ambulation	Routine, AS TOLERATED
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Case study: Too soon to declare victory

Incidence of DVT/PE by MS-DRG Type
(CY 2006 Q1 to 2009 Q4)

Implemented
DVT/PE
order sets

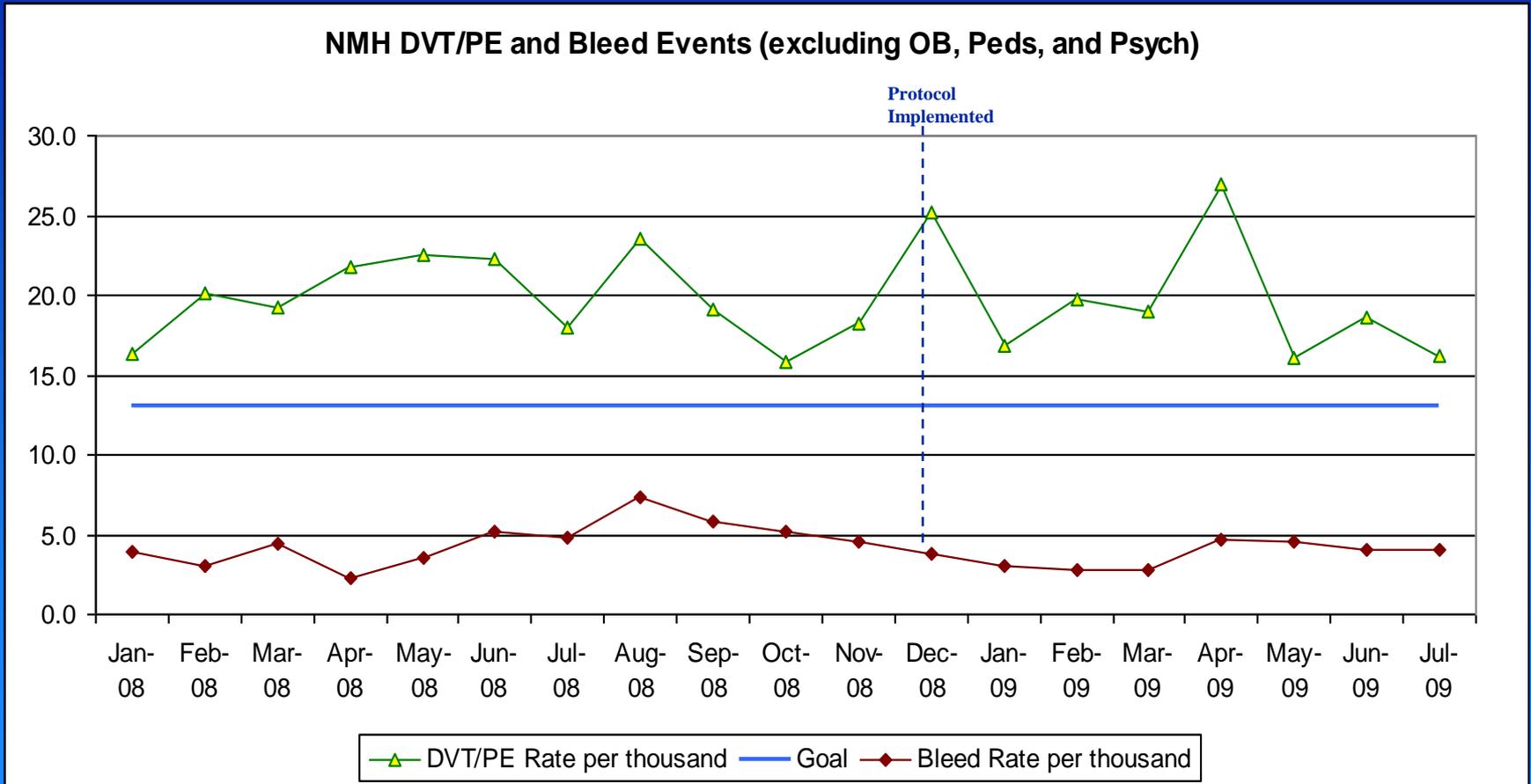
Findings/Actions

- ❑ Overall incidence of hospital-acquired DVT/PE reflects a downward trend
- ❑ Review process for fall-out cases expanded to identify improvement opportunities
- ❑ Leverage Epic reports to provide real time data
- ❑ Monitor compliance with order set and address non compliance



Case study from another AMC

AMC



Source: EPSI Coded Diagnosis Data

Excludes patients with DVT/PE Present on Admission

Bleeding Data represents patients that had a bleeding complication due to an anticoagulant



PSI 15: Accidental puncture or laceration MDP 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

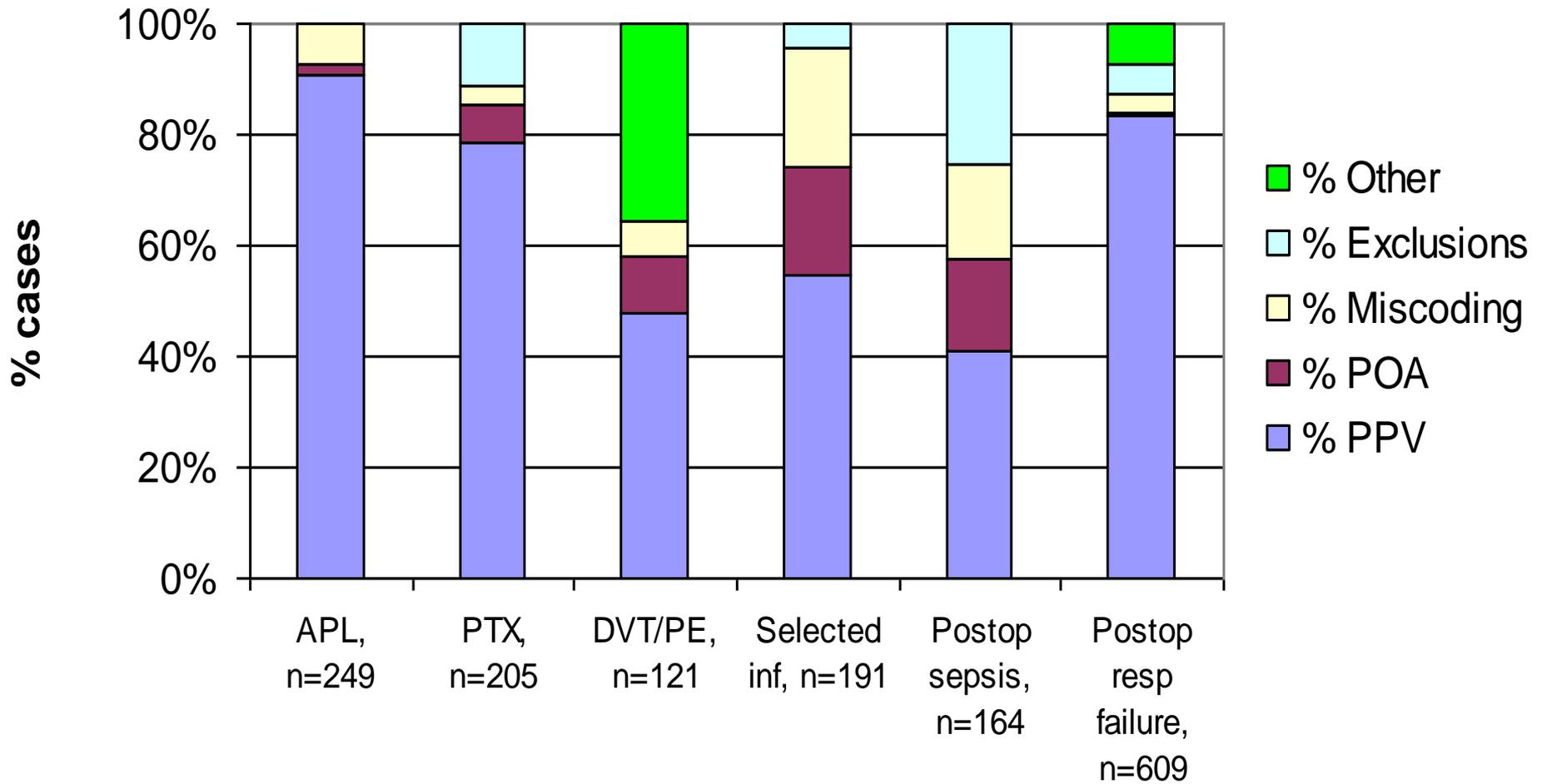
- AHRQ Quality Indicators project team: Mamatha Pancholi, John Bott
- Gordon and Betty Moore Foundation
- UC Davis: Garth Utter, Banafsheh Sadeghi, Pat Zrelak, Ruth Baron, Richard White
- MDP partners: Stanford University Medical Center, San Francisco General Hospital, Sutter Roseville Medical Center
- UHC team: Joanne Cuny, Pradeem Sama, Michael Silver and Cynthia Barnard (Northwestern University Medical Center), Martha Radford (NYULMC)
- Utter GH, et al. Positive predictive value of the AHRQ Accidental Puncture or Laceration Patient Safety Indicator. *Ann Surg* 2009; 250(6):1041-5.
- Sadeghi B, et al. Cases of iatrogenic pneumothorax can be identified from ICD-9-CM coded data. *Am J Med Qual* 2010; 25(3);211-7.
- White RH, et al. How valid is the ICD-9-CM based AHRQ Patient Safety Indicator for postoperative venous thromboembolism? *Med Care* 2009; 47(12):1237-43.
- White RH, et al. Evaluation of the predictive value of ICD-9-CM coded administrative data for venous thromboembolism in the United States. *Thromb Res* 2010; Epub ahead of print.
- Zrelak PA, et al. Positive predictive value of the AHRQ Patient Safety Indicator for Central Line Associated-Bloodstream Infection. *J Healthcare Qual*; in press.
- Utter GH, et al. Detection of Postoperative Respiratory Failure: How predictive Is the AHRQ Patient Safety Indicator? *JACS*; in press.



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, especially for quality improvement
- 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
- 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





AHRQ Quality Indicators Toolkit

H. Joanna Jiang, Ph.D.

Center for Delivery, Organization and Markets, AHRQ

May 18th, 2010



Why do we need a toolkit?

- AHRQ QIs are increasingly used in hospital-level public reporting.
 - Currently in 19 states
 - CMS will add 6 individual QIs and 2 composites to Hospital Compare
- For real changes to happen, need to incorporate the QIs into hospital quality improvement interventions.
- There have been some successful examples (e.g., University HealthSystem Consortium).
- But many hospitals have limited experience using the QIs.



Who would be the audience?

- Hospitals and health systems.
- Two distinct audiences are considered:
 - Hospitals that have established expertise and resources in quality improvement.
 - Others that are less sophisticated with more limited resources.



What is the purpose and scope of the toolkit?

- A useful and usable resource to support hospitals in their efforts to improve performance on two sets of the AHRQ QIs – Inpatient Quality Indicators (IQI) and Patient Safety Indicators (PSI)



What are the objectives?

- Specific objectives to achieve through use of the toolkit:
 - Incorporate the AHRQ QIs into hospital quality improvement efforts to produce measurable impact on improving quality of care and patient safety .
 - Share successful implementation strategies as well as potential challenges that need to be addressed.
 - Broadly disseminate the tools and evidence of the value of using the AHRQ QIs in quality improvement



What will be included?

1. Assessing Readiness to Change:
 - Getting to know the IQI and PSI.
 - Presentation to the Board and hospital leadership
 - Self-assessment on readiness for change (e.g., organizational structure, priority, senior leadership, data systems, skills and knowledge, experience with the QIs)

2. Applying the QIs to the Hospital Data
 - Guidance on how to prepare data, run the software, review the output, and understand the rates

What will be included? (cont.)

3. Identifying Priorities for Quality Improvement
 - Methods to compare the QIs with benchmarks.
 - Report formats to display and communicate the results
 - Prioritization matrix to decide on which QIs to address

4. Implementing Evidence-Based Best Practices
 - Evaluating current systems, protocols, processes
 - Implementation team and goals
 - Identifying and implementing best practices
 - Measuring progress



What will be included? (cont.)

5. Return-on-Investment Analysis
 - Instructions on performing ROI analysis
 - ROI worksheet
 - Examples

6. Ongoing Monitoring and Sustainability of Improvement
 - Meaningful measures for use in regular monitoring of performance on the QIs
 - Reporting process and formats



Who are involved in this work?

- RAND Corporation
- University HealthSystem Consortium (UHC)
- Advisory Panel
 - Gregg Meyer, MD, MSc (MA General Hospital)
 - Martha Radford, MD (NYU Langone Medical Center)
 - Donald Goldmann, MD (Institute for Healthcare Improvement)
 - Denise Remus, PhD, RN (BayCare Health System)
 - Stephen R. Mayfield, DrHA, MBA, MBB (AHA)
 - Sheri L. Eisert, PhD (Denver VAMC HSR&D)
- Six Hospitals that participate in testing the toolkit
- H. Joanna Jiang, Ph.D. (AHRQ Task Order Officer)



What is the timeline?

- Literature review (Aug - Oct 2009)
- Develop the toolkit (Nov 2009 – May 2010)
- OMB clearance for interviews (Dec 2009 to June 2010)
- Implement and test the toolkit (Aug 2010 - July 2011)
- Evaluate implementation process and results (concurrent)
- Revise and finalize toolkit (Aug – Sept 2011)
- Final report and dissemination plan (Oct 2011)
- Journal manuscripts (Nov 2011)



Questions and Suggestions?

- H. Joanna Jiang, Ph.D.
email Joanna.jiang@ahrq.hhs.gov
phone 301-427-1436
- Thanks.



NEXT STEPS:

How HRET Can Help you use your Data

- If you are interested in having HRET work with you on your QI initiatives, please contact Jenny Shaw, HRET Program Manager, jshaw@aha.org, (312) 422-4568.



Questions?



Appendix A

List of AHRQ QIs

Inpatient Quality Indicators (IQIs)

■ Volume Indicators

- Esophageal resection
- Pancreatic resection
- Abdominal Aortic Aneurysm (AAA) repair
- Coronary Artery Bypass Graft (CABG)
- Percutaneous transluminal coronary angioplasty (PTCA)
- Carotid endarterectomy

■ Utilization Indicators

- Cesarean delivery rate
- Primary cesarean delivery rate
- VBAC rate
- VBAC rate, uncomplicated
- Laparoscopic cholecystectomy rate
- Incidental appendectomy in the elderly rate
- Bilateral cardiac catheterization rate
- CABG (area level rate)
- PTCA (area level rate)
- Hysterectomy (area level rate)
- Laminectomy or spinal fusion (area level rate)

Inpatient Quality Indicators (cont.)

■ Mortality Indicators for Inpatient Conditions

- Acute myocardial infarction (AMI)
- AMI, without transfer cases
- Congestive heart failure
- Gastrointestinal hemorrhage
- Hip fracture
- Pneumonia
- Acute stroke

■ Mortality Indicators for Inpatient Procedures

- AAA repair
- CABG
- Craniotomy
- Esophageal resection
- Hip replacement
- Pancreatic resection
- Carotid endarterectomy
- PTCA



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 venous catheter-related bloodstream infection *
- Postoperative hemorrhage or hematoma *
- Postoperative hip fracture
- Postoperative physiological and metabolic derangement
- Postoperative PE or DVT

** The indicators are also provided as area-level indicators*



Patient Safety Indicators (cont.)

- Postoperative respiratory failure
- Postoperative sepsis
- Postoperative wound dehiscence *
- Transfusion reaction *
- Accidental puncture or laceration *
- Birth trauma – injury to neonate
- OB trauma – vaginal delivery with instrument (w/ and w/o 3rd degree lacerations)
- OB trauma – vaginal delivery without instrument (w/ and w/o 3rd degree lacerations)

** The indicators are also provided as area-level indicators*



Pediatric Quality Indicators (PDIs)

■ Inpatient Indicators

- Accidental puncture and laceration
- Pressure ulcer
- Foreign body left in after procedure
- Iatrogenic pneumothorax in non-neonates
- Pediatric heart surgery mortality
- Pediatric heart surgery volume
- Postoperative hemorrhage or hematoma
- Postoperative respiratory failure
- Postoperative sepsis
- Postoperative wound dehiscence
- Transfusion reaction
- Central venous catheter-related bloodstream infection



Pediatric Quality Indicators (Cont.)

■ Area-Level Indicators

- Asthma admission rate
- Diabetes short-term complication admission rate
- Gastroenteritis admission rate
- Perforated appendix admission rate
- Urinary tract infection admission rate



Neonatal Quality Indicators (NQIs)

- Inpatient Indicators
 - Iatrogenic pneumothorax in neonates
 - Neonatal mortality
 - Central line bloodstream infection in neonates



Prevention Quality Indicators (PQIs)

- Bacterial pneumonia
- Dehydration
- Urinary tract infection
- Perforated appendix
- Low birth weight
- Angina without procedure
- Congestive heart failure
- Hypertension
- Adult asthma
- COPD
- Diabetes complications - short term
- Diabetes complications - long term
- Uncontrolled diabetes
- Lower extremity amputation



Appendix B

List of National Quality Forum endorsed AHRQ QIs



National Quality Forum Endorsement: Overview

Currently, NQF endorsement in regard to:

■ 45 of the AHRQ QIs

- Inpatient Quality Indicators (IQIs): 12
- Patient Safety Indicators (PSIs): 10
- Prevention Quality Indicators (PQIs): 14
- Pediatric Quality Indicators (PDIs): 8
- Neonatal Quality Indicators (NQIs): 1

■ 3 AHRQ QI composites

- Mortality for selected conditions
- Patient safety for selected indicators
- Pediatric patient safety for selected indicators



National Quality Forum Endorsement: IQIs

IQI	Label	IQI	Label
IQI 1	Esophageal Resection Volume	IQI 16	CHF Mortality
IQI 2	Pancreatic Resection Volume	IQI 17	Acute Stroke Mortality
IQI 4	Abdominal Aortic Aneurysm (AAA) Repair Volume	IQI 19	Hip Fracture Mortality
IQI 8	Esophageal Resection Mortality	IQI 20	Pneumonia Mortality
IQI 9	Pancreatic Resection Mortality	IQI 24	Incidental Appendectomy in the Elderly
IQI 11	Abdominal Aortic Aneurysm (AAA) Repair Mortality	IQI 25	Bilateral Catheterization



National Quality Forum Endorsement: PSIs

PSI	Label	PSI	Label
PSI 2	Death in Low Mortality DRGs	PSI 12	Postoperative DVT or PE
PSI 4	Death Among Surgical Inpatients With Treatable Serious Complications	PSI 14	Postoperative Wound Dehiscence
PSI 5	Foreign Body	PSI 15	Accidental Puncture or Laceration
PSI 6	Iatrogenic Pneumothorax	PSI 16	Transfusion Reaction
PSI 11	Postoperative Respiratory Failure	PSI 17	Birth Trauma – Injury to Neonate



National Quality Forum Endorsement: PDIs & NQIs

Indicator	Label	Indicator	Label
PDI 1	Accidental Puncture or Laceration	PDI 7	Pediatric Heart Surgery Volume
PDI 2	Decubitus Ulcer	PDI 11	Postoperative Wound Dehiscence
PDI 3	Foreign Body	PDI 13	Transfusion Reaction
PDI 5	Iatrogenic Pneumothorax	NQI 3	Blood Stream Infection in Neonates
PDI 6	Pediatric Heart Surgery Mortality		



National Quality Forum Endorsement: PQIs

PQI	Label	PQI	Label
PQI 1	Diabetes, short-term complications	PQI 10	Dehydration
PQI 2	Perforated appendicitis	PQI 11	Bacterial pneumonia
PQI 3	Diabetes, long-term complications	PQI 12	Urinary infections
PQI 5	Chronic obstructive pulmonary disease	PQI 13	Angina without procedure
PQI 7	Hypertension	PQI 14	Uncontrolled diabetes
PQI 8	Congestive heart failure	PQI 15	Adult asthma
PQI 9	Low birth weight	PQI 16	Lower extremity amputations among patients with diabetes