



## The AHRQ Quality Indicators

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## Overview

1. The QIs and QI Modules
2. NQF-Approved Measures
3. Public Reporting
4. Validation Efforts
5. QI Tools



## Quality Indicators & HCUP

- HCUP: Partnership among States, industry, and AHRQ
- Uniform database for cross-State studies; includes clinical, demographic, and resource use information
- Represents all inpatient discharge data from participating States—represents approximately 90 percent of all discharges

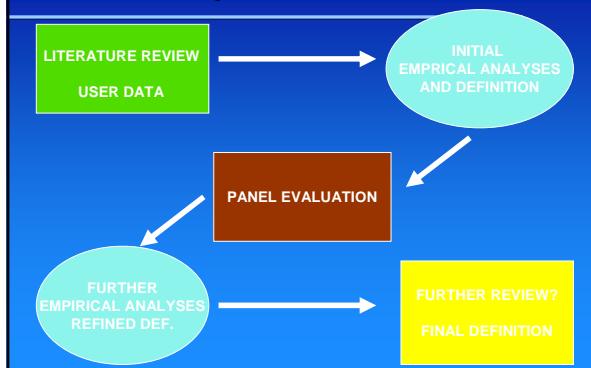


## Background on the QIs

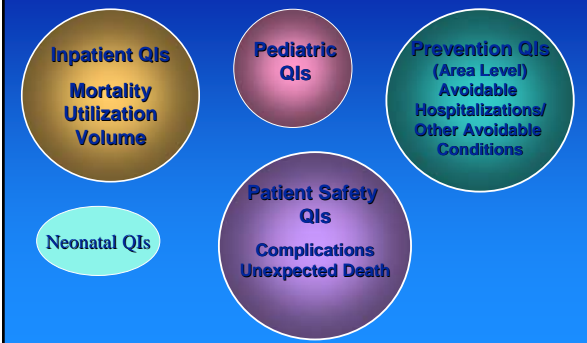
- Developed through contract with UCSF-Stanford Evidence-based Practice Center
- Use existing hospital discharge data, based on readily available data elements
- Incorporate a range of severity adjustment methods, including APR-DRGs and comorbidity groupings
- Current modules: Prevention, Inpatient, Patient Safety, Pediatric and Neonatal




## Example Indicator Evaluation




## Current QI Modules






## Prevention Quality Indicators

- The original QI module (released 2001)
- Focus on quality of care for ambulatory care-sensitive conditions




## List of PQIs

- Diabetes, short-term complications
- Perforated Appendix
- Diabetes, long-term complications
- Chronic Obstructive Pulmonary Disease
- Hypertension
- Congestive Heart Failure
- Low Birth Weight
- Dehydration
- Bacterial Pneumonia
- Urinary Infections
- Angina without Procedure
- Uncontrolled Diabetes
- Adult Asthma
- Lower Extremity Amputations among Patients with Diabetes




## Inpatient Quality Indicators

- Second set of QIs (released 2002)
- Focus on quality of care inside hospitals
- Includes measures of inpatient mortality, utilization, and volume




## List of IQIs

|  |   |
|--|---|
| <p><u>Mortality Rates for Medical Conditions:</u></p> <ul style="list-style-type: none"> <li>■ Acute Myocardial Infarction</li> <li>■ AMI, without transfer cases</li> <li>■ Congestive Heart Failure</li> <li>■ Stroke</li> <li>■ Gastrointestinal Hemorrhage</li> <li>■ Hip Fracture</li> <li>■ Pneumonia</li> </ul> | <p><u>Mortality Rates for Surgical Procedures:</u></p> <ul style="list-style-type: none"> <li>■ Esophageal Resection</li> <li>■ Pancreatic Resection</li> <li>■ Abdominal Aortic Aneurysm Repair</li> <li>■ Coronary Artery Bypass Graft</li> <li>■ Percutaneous Transluminal Coronary Angioplasty (PTCA)</li> <li>■ Carotid Endarterectomy</li> <li>■ Craniotomy</li> <li>■ Hip Replacement</li> </ul> |
|--|---|



## List of IQIs (cont'd.)

|   |  |
|---|--|
| <p><u>Hospital-Level Procedure Utilization Rates:</u></p> <ul style="list-style-type: none"> <li>■ Cesarean Section Delivery</li> <li>■ Primary Cesarean Delivery</li> <li>■ Vaginal Birth After Cesarean (VBAC), uncomplicated</li> <li>■ VBAC, all</li> <li>■ Laparoscopic cholecystectomy</li> <li>■ Incidental Appendectomy in the elderly</li> <li>■ Bi-lateral cardiac catheterization</li> </ul> | <p><u>Area-Level Utilization Rates:</u></p> <ul style="list-style-type: none"> <li>■ Coronary Artery Bypass Graft</li> <li>■ PTCA</li> <li>■ Hysterectomy</li> <li>■ Laminectomy or spinal fusion</li> </ul> |
|---|--|



## List of IQIs (cont'd.)

Volume of Procedures:

- Esophageal Resection
- Pancreatic Resection
- Abdominal Aortic Aneurysm Repair
- Coronary Artery Bypass Graft
- PTCA
- Carotid endarterectomy



## Patient Safety Indicators

- Third set of QIs (released 2003)
- Focus on potential adverse events occurring during hospitalization



## List of PSIs

### Hospital-Level:

- Complications of anesthesia
- Death in Low Mortality DRGs
- Decubitus Ulcer
- Failure to Rescue
- Foreign Body Left in During Procedure
- Iatrogenic Pneumothorax
- Selected Infections Due to Medical Care
- Postoperative Hip Fracture
- Postoperative Hemorrhage or Hematoma
- Postoperative Physiologic or Metabolic Derangements
- Postoperative Respiratory Failure
- Postoperative Pulmonary Embolism or Deep Vein Thrombosis
- Postoperative Sepsis
- Postoperative Wound Dehiscence in Abdominopelvic Surgical Patients
- Accidental Puncture or Laceration
- Transfusion Reaction
- Birth Trauma – Injury to Neonate
- Obstetric Trauma – Vaginal Delivery with Instrument
- Obstetric Trauma – Vaginal Delivery Without Instrument
- Obstetric Trauma – Cesarean Delivery



## List of PSIs (cont'd.)

### Area-Level:

- Foreign Body Left in During Procedure
- Iatrogenic Pneumothorax
- Selected Infections Due to Medical Care
- Postoperative Wound Dehiscence in Abdominopelvic Surgical Patients
- Accidental Puncture and Laceration
- Transfusion Reaction
- Postoperative Hemorrhage or Hematoma



## Pediatric Quality Indicators

- Fourth set of QIs (released 2006)
- Measures similar to other modules, but focus on pediatric population



## List of PDIs

### Hospital-Level:

- Accidental Puncture or Laceration
- Decubitus Ulcer
- Foreign Body Left in During Procedure
- Iatrogenic Pneumothorax in Neonates at Risk
- 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
- Selected Infections Due to Medical Care
- Transfusion Reaction



## List of PDIs (cont'd.)

### Area-Level:

- Asthma Admission Rate
- Diabetes Short-Term Complications Rate
- Gastroenteritis Admission Rate
- Perforated Appendix Admission Rate
- Urinary Tract Infection Admission Rate



## Advantages

- Public Access
  - All development documentation and details on each indicator available on Web site [www.qualityindicators.ahrq.gov](http://www.qualityindicators.ahrq.gov)
  - Software available to download at no cost
  - Standardized indicator definitions
  - Can be used with any administrative data: HCUP, MEDPAR, \* State data sets, payer data, hospital internal data
  - Hospitals can replicate data

\* Medicare Provider Analysis and Review



## Advantages (cont'd)

- Scope
  - Over 100 individual measures
  - Each measure can be stratified by other variables including patient race, age, sex, provider, geographic region
  - Include priority populations and areas: Child health, women's health (pregnancy and child-birth), diabetes, hypertension, ischemic heart disease, stroke, asthma, patient safety, preventive care
  - Focus on acute care but do cross over to community and outpatient care delivery settings



## Advantages (cont'd)

- Harmonization of measures
- Indicator maintenance, updates
- Tools and technical assistance
- National benchmarks
  - National Healthcare Quality Report
  - National Healthcare Disparities Report
  - HCUPnet



## Current Limitations & Challenges

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



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## National Quality Forum Endorsement

- Suitable for comparative reporting and quality improvement
- Evaluated for importance, scientific acceptability, usability, and feasibility
- An effort to harmonize and standardize measures among developers
- AHRQ Quality Indicators
  - 14 Prevention Quality Indicators (PQIs)
  - 12 Inpatient Quality Indicators (IQIs)
  - 8 Patient Safety Indicators (PSIs)
  - 9 Pediatric Quality Indicators (PDIs)

## National Quality Forum Endorsement

| IQI     | Label  | IQI     | Label                                  |
|---------|--|---------|--|
| IQI #01 | Esophageal Resection Volume                      | IQI #16 | CHF Mortality                          |
| IQI #02 | Pancreatic Resection Volume                      | IQI #17 | Acute Stroke Mortality                 |
| IQI #04 | Abdominal Aortic Aneurysm (AAA) Repair Volume    | IQI #19 | Hip Fracture Mortality                 |
| IQI #08 | Esophageal Resection Mortality                   | IQI #20 | Pneumonia Mortality                    |
| IQI #09 | Pancreatic Resection Mortality                   | IQI #24 | Incidental Appendectomy in the Elderly |
| IQI #11 | Abdominal Aortic Aneurysm (AAA) Repair Mortality | IQI #25 | Bilateral Catheterization              |

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## National Quality Forum Endorsement

| PSI     | Label  | PSI     | Label                             |
|---------|--|---------|-----------------------------------|
| PSI #02 | Death in Low Mortality DRGs  | PSI #12 | Postoperative DVT or PE           |
| PSI #04 | Death Among Surgical Inpatients With Treatable Serious Complications | PSI #14 | Postoperative Wound Dehiscence    |
| PSI #05 | Foreign Body   | PSI #15 | Accidental Puncture or Laceration |
| PSI #06 | Iatrogenic Pneumothorax  | PSI #16 | Transfusion Reaction              |

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## National Quality Forum Endorsement

| Indicator | Label                             | Indicator | Label                               |
|-----------|-----------------------------------|-----------|-------------------------------------|
| PDI #01   | Accidental Puncture or Laceration | PDI #07   | Pediatric Heart Surgery Volume      |
| PDI #02   | Decubitus Ulcer                   | PDI #11   | Postoperative Wound Dehiscence      |
| PDI #03   | Foreign Body                      | PDI #13   | Transfusion Reaction                |
| PDI #05   | Iatrogenic Pneumothorax           | NQI* #02  | Blood Stream Infection in Neonates* |
| PDI #06   | Pediatric Heart Surgery Mortality |           |                                     |

\*NQI- Neonate Quality Indicator  
\*Endorsement pending

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## Composite Measures

- Inpatient Quality Indicators
  - Mortality for Selected Procedures
  - Mortality for Selected Conditions
- Patient Safety Indicators
  - Overall Safety
- Pediatric Quality Indicators
  - Overall Safety
- Volume-Outcome
  - Resection, AAA repair, pediatric heart

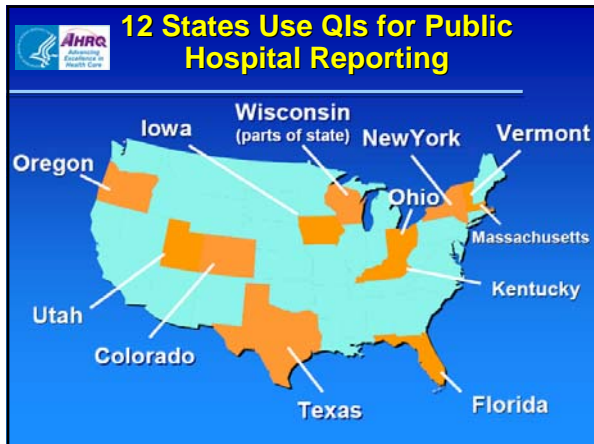
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## General Uses of the AHRQ QIs

- Hospital Quality Improvement – Internal and External
  - Individual hospitals and health care systems
  - Hospital association member-only reports
- National, State, and Regional Reporting
  - National Healthcare Quality/Disparities Reports
  - Commonwealth Fund's Health Performance Initiative
- Pay-for-Performance by Hospital
  - CMS/Premier Demo
  - Anthem of Virginia
- Hospital Profiling
  - Blue Cross/Blue Shield of Illinois
- Comparative Public Reporting



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- ### Validation Studies
- AHRQ sponsored
    - Phase I
      - Simple Review
      - In-depth Review
      - Supplemental Review
    - Phase II
      - Currently Recruiting

- ### Validation Pilot, Phase I
- Pilot Objectives:
    - Gather evidence on the scientific acceptability of the PSIs
      - Medical record reviews, data analysis, clinical panels, evidence reviews
    - Consolidate the evidence base
    - Improve guidance on the interpretation and use of the data
    - Evaluate potential refinements to the specifications

- ### Validation Pilot, Phase I
- Conclusions
    - The five evaluated PSIs have variable PPVs, which should be considered in selecting indicators for public reporting and pay-for-performance
    - Pilot-tested a mechanism for supporting ongoing validation work, which can be applied to estimate sensitivity in Phase II

- ### Validation Pilot, Phase II
- Validation Pilot, Phase II
    - Pending OMB review
    - Estimate sensitivity (false negatives) in addition to PPV (false positives)
    - 16 organizations have indicated an interest in participating in Phase II
    - Encourage hospitals in HCUP partner States to participate



## Other Validation Studies

- University HealthSystem Consortium – Patient Safety Indicators



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## Windows Quality Indicators Software (WinQI)

- Allows users to run AHRQ QI analysis with data they provide
- Current users: federal govt., state govt., hospital associations, individual hospitals, researchers
- Software enables calculation of QI rates as well as generation of reports



## Preventable Hospitalization Costs: A County-Level Mapping Tool

The PHC mapping tool is a QI software application designed to help organizations to:

- better understand geographical patterns of potentially preventable hospital admission rates for selected health problems.
- allocate resources more effectively by calculating potential cost savings if admission rates are reduced.

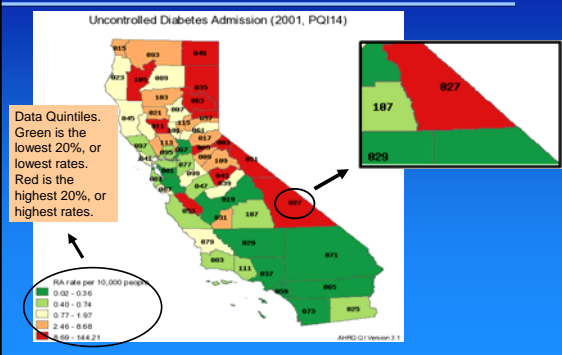


## Main Functions of the PHC Mapping Tool

- Creation of maps that show the rates of hospital admission for selected health problems on a county-by-county basis.
- Calculation of potential cost savings that may occur if the number of hospital admissions for selected health problems in each county is reduced.
- Ability to place additional information about local populations onto maps to indicate the number of persons who are at greatest risk for those health problems in each county.



## Sample Map for PQI 14, Uncontrolled Diabetes Admission



## Excel Spreadsheet Produced by PHC, with Cost Savings Estimate

| County Name    | Number     | Discharge rate per person | Risk adjusted rate per person | Difference from Overall Rate | Cost savings |
|----------------|------------|---------------------------|-------------------------------|------------------------------|--------------|
| Alameda County | 26,171,180 | 0.000000                  | 0.000000                      | 0.000000                     | \$0.00       |
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County Risk - Adjusted Rate is significantly higher than state.

Cost Savings Data

## Sample Map for PQ1 14, Population Data Added

Uncontrolled Diabetes Admission (2001, PQ14)

Population data broken into three groups. Stick figures superimposed on map to represent relative population size.

Persons age 18+  
 55-143  
 145-224  
 225-445  
 446-666  
 667-1142

## For More Information...

Quality Indicators:

- Web site: <http://qualityindicators.ahrq.gov/>  
 - QI documentation and software are available
- E-mail: [support@qualityindicators.ahrq.gov](mailto:support@qualityindicators.ahrq.gov)
- Support Phone: (888) 512-6090 (voicemail)
- Staff: [Mamatha.Pancholi@ahrq.hhs.gov](mailto:Mamatha.Pancholi@ahrq.hhs.gov)

## Presenter Contact Info

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## Questions?

## Thank You!