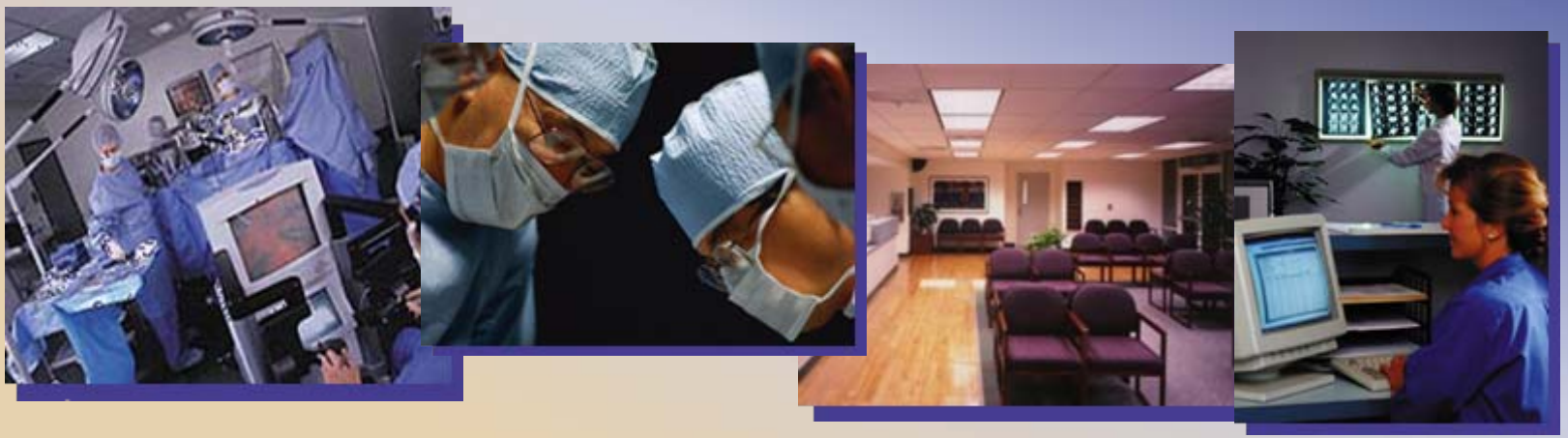
Adding Clinical Data to California's Patient Discharge Data



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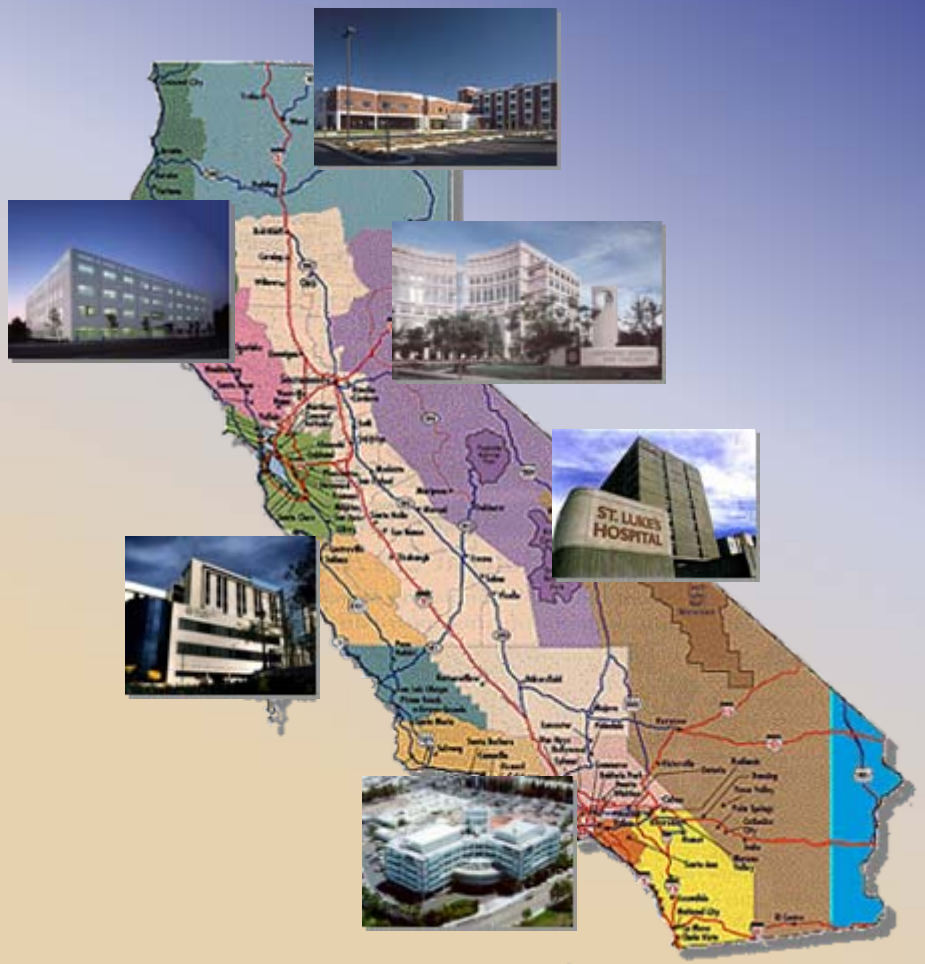
California Overview

- Population: 36,457,549
- Acute Care Hospitals: 456
- Average Annual Discharges: 3,900,000
- Hospital Emergency Departments: 334
- Annual ED encounters: 8,500,000
- Hospital based Ambulatory Surgery sites: 432
- Freestanding Ambulatory Surgery Centers: 453
- Annual AS encounters: 2,800,000



What Does OSHPD Do?

- Health Facilities Development
  - Seismic safety
  - Code compliance
- Cal-Mortgage
  - Facility financing
- Healthcare Workforce and Community Development
  - Health professions training
  - Nursing initiative

- Healthcare Information Division
  - **Healthcare Outcomes Center**
  - Patient Data Section
  - Data dissemination Center
  - Financial/Utilization data

Legislative Mandates: Data and Reports

- Healthcare facilities provide patient-level data to OSHPD
  - Inpatient discharge records, emergency department, ambulatory surgery
  - Clinical registry data for CABG surgeries
- OSHPD produces reports on hospital quality of care
  - Calculate risk-adjusted outcome rates and publish hospital performance ratings using statistical criteria
  - Performance ratings for individual physicians (CABG only)
- OSHPD health policy commission and technical advisory groups provide guidance

Outcomes Reporting: Current Focus

Completed Reports (ongoing)	**Studies in Validation or Preparation**
Heart Attack (first report 1993) Community-Acquired Pneumonia Intensive Care Outcomes Coronary Artery Bypass Graft Surgery (clinical) 8 AHRQ Inpatient Mortality Indicators	Maternal Outcomes Stroke Outcomes Hip Fracture Repair Congestive Heart Failure Abdominal Aortic Aneurysm (AAA) Repair

Patient Discharge Data Elements

- Hospital ID Number
- Date of Birth
- SSN
- Sex
- Race/Ethnicity
- Admission Date
- Discharge Date
- Procedures & Dates (20)
- Principal Language Spoken (begins 2009)
- External Cause of Injury Codes
- Total Charges
- Source of Admission
- Type of Admission
- Expected Source of Payment
- Disposition of Patient
- DNR (since 1996)
- Diagnoses (24)
- Condition Present on Admission (since 1996)
- Patient Zip Code

Present on Admission Coding (POA) Coding in Calfornia: Background

- Collection intended to improve risk-adjustment models for reporting CA hospital outcomes
- Pre-implementation (1994): broad-based stakeholder involvement to develop coding guidelines
- Three years of workshops, seminars, newsletters after initial implementation in 1996
- Automated rules and error acceptance thresholds implemented for data collection system, but relatively liberal
- **POA validation study conducted 2006-2009**
- CA POA revised in 2008 to conform to national standard
- New hospital POA coding quality reports in development

POA Validation Study

- Approx 2000 records at 48 hospitals
- Records reabstracted by both nurses & coders (HITs)
- Included CHF, pneumonia, heart attack, and PTCA (angioplasty) patients
- Preliminary results
  - Percent agreement across 200+ clinical classification groupings ranged from 69.3% to 100%
  - 88% overall agreement on POA for secondary diagnoses
  - 61%-79% agreement for select acute risk factors (AMI, acute renal failure, septicemia, resp. failure, shock, pulmonary edema)
- Issues
  - Documentation of a condition versus presence of a condition at admission
  - Presence of a chronic condition vs. a related acute flare-up post admission
  - Poor physician documentation/notes, hybrid medical records,ICD-9 coding rules vs. clinical judgment, clinician vs. coder interpret.

POA Coding Quality by Hospital Type
(Lower Rates = Better Coding)

	Hughes/3M (2006)		OSHPD Metric
	Post-op. %	Acute Medical %	% All Dx POA = Yes
Government	36.2	65.4	95.0
Investor	29.1	60.0	94.5
Non-Profit	24.6	54.9	93.8
Teaching	22.6	52.2	91.8

POA Only Valuable if Well Coded

- POA coding quality metrics needed for use as data acceptance screens
- In-depth hospital coder education required
- Specific guidance for acute risk factors: clear up the grey areas
- Physician-directed training on documentation requirements
- Methods to incentivize better coding (penalize poor coding?)

Opportunity to Expand Patient Discharge Data (PDD)

- 1998 Legislation gave OSHPD authority to add data elements to PDD for hospital reporting
  - Major intent to enhance risk-adjustment for outcome reports
- Parameters for expansion:
  - Maximum **15** new data elements over **5** year period
  - Data elements in Health Care Claim or Equivalent required by HIPAA exempt from limit (not attachments)
  - Minimize administrative burden and adhere to existing national standards
- Since 1998, active discussion with advisory committees and reports but no action until ….

Laying the Groundwork

- In 2005, OSHPD contracted with UCSF (A. Bindman, M.D.) to produce a report to help guide decision-making
- Findings:
  - ICD-9-CM coding is imprecise/subjective
  - Limited demographic information
  - Limited clinical information (e.g., lab values) for risk adjustment
  - Inadequate for gauging appropriateness
  - Little information on process/timing of care
  - Difficulty linking to other data sets

Recommendations Using IOM Framework of Quality Domains

Safety	**Mandatory reporting of E-codes for medical misadventures**
Timeliness	Timing of procedures
Efficiency	Time of admission/discharge
Equity	Patient address
Appropriateness/Effectiveness	Lab values, admission vital signs, tobacco smoking status
Patient-centeredness	Patient primary language spoken

AHRQ-Funded Abt/Pine Associates Study: Improving Risk Model Performance

- Large increase in performance when POA added to basic admin. data model - on par with adding lab data
- Admission vital signs were relatively unimportant risk predictors after lab values added
- Difficult to collect composite clinical measures (e.g., Glasgow coma score, ASA) added little to predictive performance of models with POA and labs
- Addition of a limited set of lab values to POA model increased model performance sufficiently to “support risk stratification of surgical mortality”

OSHPD Starting List

- Lab Values
  - AST
  - Potassium
  - Sodium
  - pH
  - PT/INR
  - Albumin
  - Creatinine
  - BUN
  - Platelets
  - White Blood Cells
  - Hematocrit/Hemoglobin
- Vital Signs
  - Pulse
  - Blood Pressure
  - Respiration Rate
  - Temperature
  - Oxygen Saturation
- Operating Physician ID
- Patient Address

Choosing Best Performing Clinical Data Elements and Others

- Limited data elements to significant and important risk factors in at least 6 of the 8 inpatient mortality cohorts studied (Abt/Pine)
  - 11 Lab Values:
    - Prothrombin time, pH, blood gas, SGOT, sodium, potassium, pO_2, pCO_2, blood urea nitrogen, platelet count, and white blood cell count
  - 2 Vital signs:
    - Pulse, systolic blood pressure
- Strong interest in collection of patient address and physician identifier

Hospital Readiness

- Outreach
  - Feedback from advisory bodies
  - Onsite visits with hospitals (representatives from rural, urban, teaching, etc.)
  - Hospital Lab IT & HIT interviews
- Survey Content
  - What in medical record captured electronically vs. on paper
  - Lab value definitions, reporting formats, units, vendor information
  - Use of LOINC codes for labs, pharmacy records automation/integration with other hospital systems
  - Estimated costs for reporting new data elements
  - Status of electronic health record implementation

Survey Results (1)

- 448 general acute care hospitals (44% return rate)
- Lab Values
  - Only 6% currently use LOINC codes
  - Over 80% report in conventional units
  - 43% could extract lab values and append to discharge data file
- Vital signs recorded in paper record at most hospitals

Survey Results (2)

- Electronic Health Record
  - 80% said target date for EHR implementation “unknown”
  - 16% said EHR implementation to occur between 2010 and 2013
  - Over 50% have hybrid medical record
  - Nurses notes and outside lab results paper-based for over 50%

Survey Results (3)

- 66% recommend phasing in new data elements over time
- Preferred order of collection:
  - Lab Values
  - Patient Address
  - Operating Physician ID
  - Vital Signs

Deliberations

- Collection from what types of facilities
  - 456 General Acute Care Hospitals
  - 57 Acute Psychiatric, Psychiatric Health Facility, Chemical Dependency and Special hospitals
- Patient Address
  - Issue of protecting additional patient identifiable information
  - IT solution for geo-coding on-the-fly not available
- Data elements should be broadly applicable to most patients (e.g., no glucose, CPK MB (cardiac enzyme)
- No national standards for some proposed data elements (e.g., vital signs)
- Avoiding perverse incentives: unnecessary testing

Business Case For Final List

Lab Values

- Stated intent of legislation to enhance risk-adjustment methods for outcome studies
- Nationally standardized reporting formats, available electronically for most hospitalized patients
- National bodies promote reporting
- Literature and Abt/Pine study provide evidence of value in improving risk-adjusted outcome models
  - Improved prediction of outcomes (i.e., model C-statistics)
  - Increased face validity from clinical community
- Automated data submission by hospitals may be possible (minimize resource requirements)

Data Elements: Final List

- Aspartate Aminotransferase (AST)
- Potassium
- Sodium
- pH
- International Normalized Ratio (INR)
- Albumin, serum
- Creatinine
- Blood Urea Nitrogen (BUN)
- Platelet Count
- White Blood Cell Count
- Hemoglobin
- Oxygen Saturation

Example Regulatory Language

Time of Admission

The time recorded by the hospital indicating the hospital's formal acceptance of an inpatient who is to receive healthcare services.

Definitions of Clinical Measurements

- Effective with discharges occurring on or after January 1, 2011, the following clinical measurements, if collected by the admitting hospital, shall be reported for each patient for the first measurement occurring within 24 hours prior to or 24 hours after the time of admission:
- **Albumin, serum.** Test measuring the concentration of albumin in the blood. Results shall be reported in grams per deciliter (g/dL) of serum.

Implementation Timeline

- Regulation Submission April 2009
- Regulation adoption (best case scenario) December 2009
- Online reporting system (MirCal) modification – 12 months after regulation adoption
- Begin collection January 2011

Questions?

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