Making the Most of Data: Turning Data into Useful Information

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Ira Hofer

- 10 years of experience in bioinformatics
- Experience working with AIMS and Health System EMR (EPIC)
- Director of Bioinformatics UCLA Department of Anesthesiology
- Director of Analytics and Reporting for UCLA Operative Services
- Numerous publications on data extraction from EMR and use for Quality

Emily Richardson

- 8 years in private practice anesthesiology
- Currently Chief Quality Officer for a practice management company
- Quality consulting for physician practices, quality data collection software, and registry development
- Chair, AQI Practice Quality Improvement Committee (PQIC)
- Member, PCPI National Quality Registry Network (NQRN) QCDR and Steering committees

The Case for Data

- Payment Systems (MIPS, MACRA)
    - Increasingly becoming required
    - May be of importance to Hospitals and Payers
- MOCA 2.0 Part 4 Requirement
- Evaluate and Improve Quality of Care
    - We are physicians!!!
    - Transition towards bundled payments (i.e. CJR)
    - Value based payment models
    - Pathway based care (ERAS)
- Engagement with the Health System
    - Hospitals are under even more pressure than groups in these transitions
    - Bigger role probably means bigger slice of the pie

Developing a data collection strategy

- **What is your practice model?**
  - *Affects cost, workflow, and compliance*
- **How many providers do you have?**
  - *Affects both financial risk and cost*
- **Are they ASA members?**
  - *Affects cost*
- **Do you have administrative support?**
  - *Affects provider workflow and implementation*
- **Who does your billing? Are they responsive to your needs?**
  - *Affects implementation and results*
- **Does your workflow vary between facilities?**
  - *Affects implementation and compliance*
- **What type of anesthesia record do you use?**
  - *Affects provider workflow, implementation, and results*

Data Comes in Many Forms

- Electronic Medical Records (EMRs)
- Online Questionnaires
- Paper Forms
- Data Abstraction
- Vendor(s)

Ultimately they need to be combined

Electronic Medical Records (EMRs)

EMR Infrastructure

- Secure Servers/Databases
  - Self Maintained vs. Cloud Based (Amazon, Microsoft Azure etc)
  - HIPPA Compliant
  - Access Provisioning
  - Platform (SQL, Cluster, etc)
- Personnel
  - Programmers
  - DBAs
  - Physician Leads
  - Reporting Analysts

EMR Reporting

- **Reporting to QCDRs and other Registries**
  - What do they support (may be different from each one)
  - Do they support automation
  - How will you keep up with changes
- **Reporting Internally**
  - Spreadsheets
  - Databases
  - Websites
  - Commercial Software
- **Reporting to the Hospital/Others**
  - Data Transmission
  - Format
  - Security

What does our Infrastructure Look Like

- Servers maintained by the Health System
  - Access provisioned by them
- Personnel
  - 2 Faculty
  - 1 Anesthesiologist/Programmer
  - 1 Full time Programmer
  - 1 Reporting Analyst
  - 1 Fellow
- Commercial Analytics Software for Reporting (Tableau)
- Separate MPOG Reporting
- Estimated Annual Cost - ~$500K

A Systematic Approach to Creation of a Perioperative Data Warehouse

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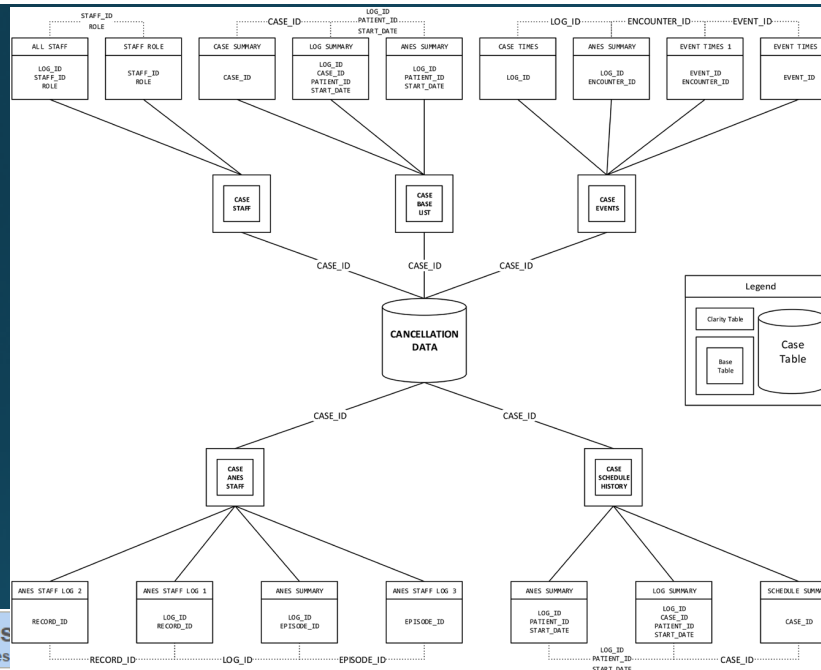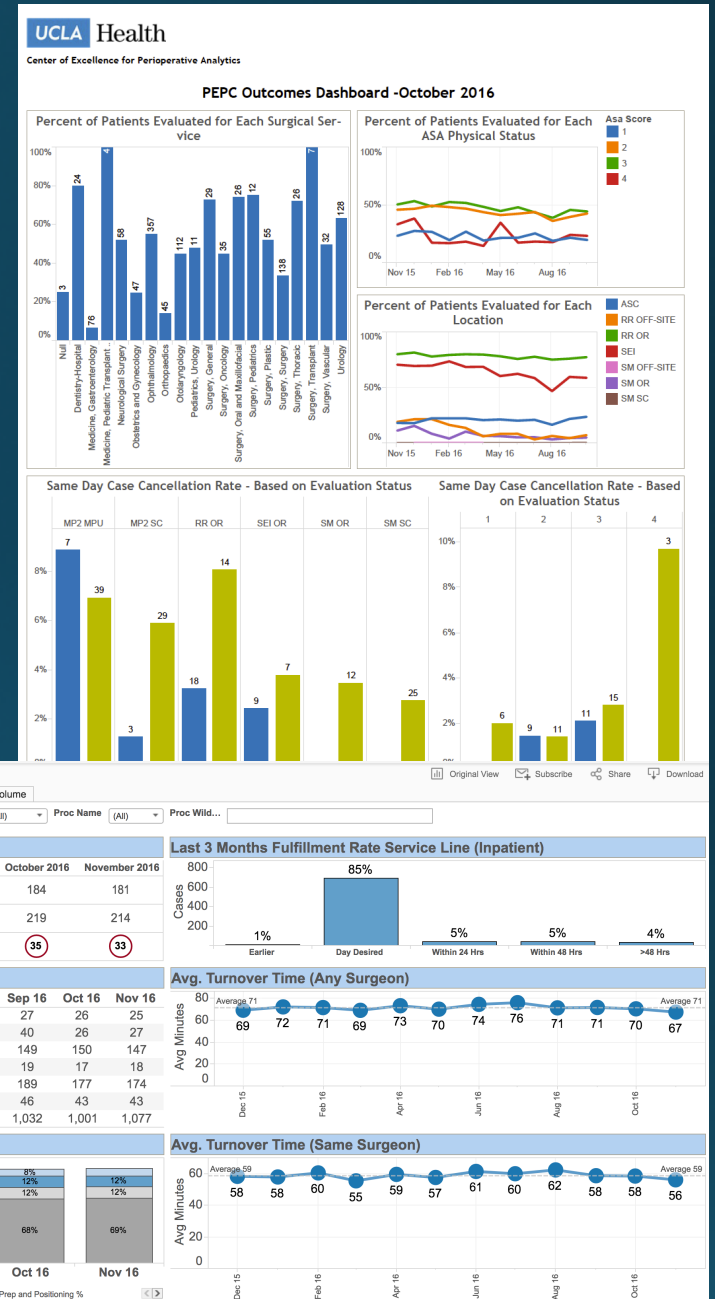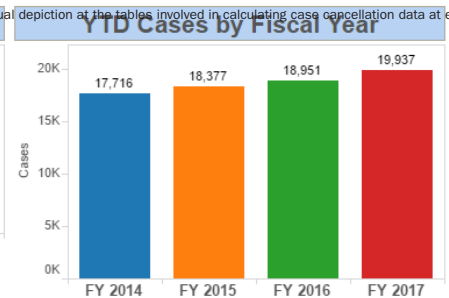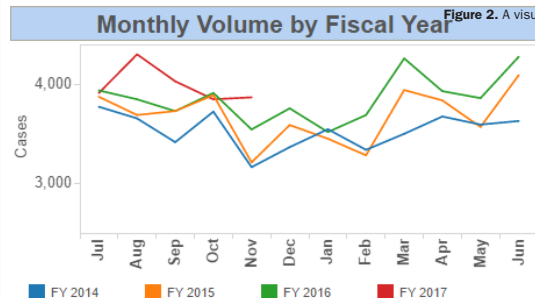
Figure 2. A visual depiction of the tables involved in calculating case cancellation data at each state of the data warehouse.

EMR

- Very Robust
- Significant Upfront Investment/Costs
  - Servers
  - Personnel
  - Compliance/Security
- Increasingly shared data source with hospital
- Scales Well

High Risk & High Reward

Paper Forms, Data Abstraction and Vendors

Define your data collection process(es)

- Will you need more than one collection process?
- Can you involve your EHR out of the box?
- Which vendor(s) can best meet your needs?

The Vendors

- Visit asahq.org or aqihq.org for a list of QCDR-Ready Vendors
- Vendor differences:
  - Quality capture only
  - AIMS + quality capture
  - Billing or practice management + quality capture
  - Electronic vs. paper data collection
  - Measures offered
  - Consider your organization's long term goals
    - Are you building a quality program? PSH?
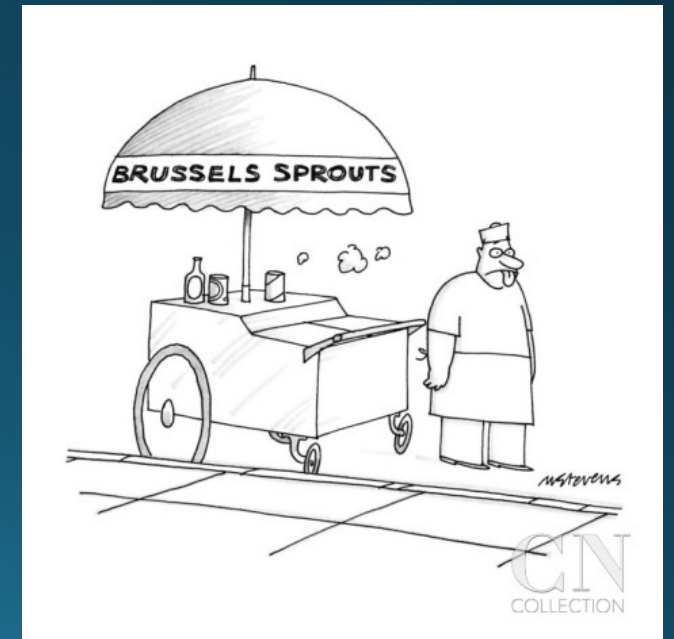
The Vendors

- Questions to ask:
  - Which measures can you report?
  - How is data collected?
  - How does data collection affect provider workflow?
  - What kind of interfaces can be established to improve efficiency?
  - Will group data be available for review before it is sent to the AQI?
  - Will support be offered for go live?
  - How much will this cost?
  - Have you successfully transmitted **REAL DATA?**
  - Can we speak with some of your customers?

Engage External Players

- Billing vendor
- EHR vendor
- Hospital/facility IT
- Hospital/facility Administration
- Be ready to describe the value proposition
  - Share cost share benefits?
- Align your goals with those of the facility so everyone wins

If No Vendor

- How will you process the data?
  - Who is responsible
  - How will you ensure reliability/accuracy
  - How will you validate
- How will you store the data?
  - HIPPA
  - Data Access
- How will you share the data?

Paper Forms, Data Abstraction and Vendors

- Low(er) Upfront Costs
- Works well for smaller numbers of patients
- Harder to Scale

Shared Risk & Shared Reward

General Considerations

Turning Data Into Information

- Clear Definition
  - What do you want to measure (process/outcome)
  - What is the numerator
  - What is the denominator
  - Inclusion & Exclusion Criteria
- How will you measure it
  - Source
  - How to deal with artifact
- How will you analyze and display it
  - Statistical Software
  - Excel
  - The Web

Data Definitions

- **Numerator**: patients receiving a clinical action or experiencing a health outcome; the target of the performance measure
- **Denominator**: the eligible population who should receive the clinical action or health outcome; the population evaluated by the performance measure
- **Traditional** performance measures: higher is better, 100% is target
- **Inverse** performance measures: lower is better, 0% is target
- Registries may each have their own specifications regarding numerators and denominators. Failure to conform will mean failure to get credit for reporting

Potential Pitfalls

- Lack of provider engagement
  - Clearly describe your organization's goals
  - Be able to answer *Why?*
  - Clearly define the benefits
  - Focus on improving care while avoiding payment penalties
- Lack of support
  - Offer resources for both providers and administrative staff
- Lack of preparation
  - Understand the measures and how to report them correctly
  - The devil is in the details

Workshop

Your Goal

- Create a plan to report on your groups PONV Rate
  - Definition of PONV
  - Definition of a Case (Denominator)
  - Plan for Analysis
  - Plan for Displaying/Sharing Data
  - Data Security Plan
- 2 Groups
  - Health System Integrated EMR
  - Practice without EMR

Food for Thought

- Data
  - Risk Stratification
  - Co-Variates (type of surgery, location, providers, etc.)
- Strategy
  - Risks
  - Business Case
  - Funding Opportunities