Objectives

• Review data analytics in other industries
• Understand data analytics in healthcare from the enforcer and provider perspective
• Understand the value of internal data
• Discuss how to get started, what to anticipate and how to evaluate effectiveness of the process
• Explore the expected and unexpected outcomes of data analytics and data forensics
Lessons learned from other industries

- Organizations are investing in programs that improve their ability to execute in those areas that contribute to value, and, the successes of strategic improvement initiatives are dependent on the availability, accuracy, and consistency of a wide range of enterprise data.

Lessons learned from other industries (cont.)

- The data management is "top-down", while data integrity is "bottom-up"
Lessons learned from other industries (cont.)

- Enterprise information management is an organizational commitment to maximize business value by creating an integrated semantic layer which leverages structured and unstructured information within and external to the enterprise.
Data analytics in healthcare compliance

- In many industries, information management impacts revenue growth, operating margin, asset efficiency, and risk management
- This is true in healthcare, however, for hospitals, risk management and compliance tend to have added emphasis
- Enforcement, reputation, quality, efficiency
- Hospitals are ripe with data and there is going to be more
- Effective data analytics and information management can provide hospitals with an advantage that safeguard them from reputational/regulatory risks while improving their quality and patient experience
- Using data to manage readmission rates is a good example of this

Readmission model
Data source and model variables

<table>
<thead>
<tr>
<th>In-patient data</th>
<th>Model variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>Age</td>
</tr>
<tr>
<td>Admission status</td>
<td>Sex</td>
</tr>
<tr>
<td>Type of admission</td>
<td>DRG on present claim</td>
</tr>
<tr>
<td>DRG/primary Dx</td>
<td>Type of admission</td>
</tr>
<tr>
<td>Secondary Dx</td>
<td>Discharge status</td>
</tr>
<tr>
<td>Discharge status</td>
<td>Clinical history</td>
</tr>
<tr>
<td>Service/revenue codes</td>
<td>Diabetes, hypertension, depression, etc.</td>
</tr>
<tr>
<td></td>
<td>Prescription history</td>
</tr>
<tr>
<td></td>
<td>Nitrites, beta blockers, lipid regulators,</td>
</tr>
<tr>
<td></td>
<td>etc.</td>
</tr>
<tr>
<td></td>
<td>Service history</td>
</tr>
<tr>
<td></td>
<td>Transport, physiotherapy,</td>
</tr>
<tr>
<td></td>
<td>laboratory test, etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Out-patient data</th>
<th>Extract transform load + Feature derivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td>Procedure code</td>
<td></td>
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<tr>
<td>Diagnosis code</td>
<td></td>
</tr>
<tr>
<td>Service/revenue codes</td>
<td></td>
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</tbody>
</table>

| Pharmacy data                    |                                            |
| NDC/therapeutic class            |                                            |
| Quantity dispensed               |                                            |

Extract transform load + Feature derivation

Deloitte
Data analytics in healthcare — Enforcer perspective

- Data direct from MACs and CMS common working file
  - Data is unwieldy and at times too aggregated
  - Often the data is 835/837 specific but does not truly reflect the patient encounter
- Enforcers may have enough to identify simple errors (i.e. MUEs) but often lack the level of data for an in-depth review
  - Medical necessity review, additional data required
  - Through the appeal process provider and enforcer resources are expended

Data analytics in healthcare — Provider perspective

- Start simple, show the value
  - A few simple edits/queries can make a business case
  - Showing the value can free up resources for more edits
- While enforcers lack depth of data, providers are data-rich
  - Supplemental data can be added to standard reportable data sets
  - Data can be screened prior to bill drop, and corrected "real-time" before the bill leaves the door
  - Data screening can “ear-mark” data to identify certain issues making audits time and resource friendly
- Now is the right time
  - With HITECH/EMRs, 5010 and ICD-10, now is an ideal time to lay down data architecture while systems are being installed.updated and data pulls are being developed
How data analytics applies to you

- Even the smallest providers can begin being “data-savvy”
  - Know what internal data is available or potentially available to you
  - Use data warehouse outside the system if necessary (i.e. AHCA, MEDPAR, RAC TRAC, etc.)
  - Running small reports and teaming with internal audit, to provide audit intelligence and support is a great ramp-up to a more data intensive project
- Data analytics is an investment with very tangible rewards
  - It is not an overnight process, and not without costs
  - The rewards do not come instantly but there is value, obvious, and some unexpected, to investing in a data analytics initiative
- Real life examples of data becoming actionable information
  - CHI takes data analytics from concept to reality

Who Can Relate?

- How many people currently do some sort of data mining to look for audit issues?
- What sources do people currently use to identify the audit issues that they should be aware of?
- Does anyone have any data mining success stories?
Catholic Health Initiatives (CHI)

- CHI is the nation's third-largest Catholic health care system
- CHI operates in 18 states:
  - 70+ hospitals; 40 long-term care, assisted living and residential facilities; two community health services organizations; and home health agencies
- 65,000+ employees
- Annual revenues of approximately $9 billion

Why data analytics? — Provider perspective

- Quality of care
- Reimbursement
- Operations
- Claims submission
- Strategy and growth
- Decision making

Internal data analytics
Why data analytics? — Enforcer perspective

MACs
RACs
ZIPCs
MICs
OIG
State RACs
Other

Consistent information hierarchies — an information structure that supports easy and meaningful consolidation
Common definitions and names — a classification system to ensure consistent application and understanding of the meanings and labels of the information
Standard calculations — application of consistent definitions, calculation methodologies, and assumptions
Defined policies — a consistent application of policies and procedures

Integrated information management model

1. Transaction system
   - General ledger
   - Accounts payable
   - Accounts receivable
   - Fixed assets
   - HR
   - Accidents claims
   - Adm. clinical outcomes
   - Supplier
   - Cost accp.

2. Information process layer
   - Revenue
   - Operating margin
   - Asset efficiency
   - Implementation capabilities
   - Financial metrics and analytics
   - Operational/clinical analytics
   - Consolidation, financial reporting and analysis
   - Productivity management
   - Operational/clinical data marts

3. “Tail Light” analytics
   - Financial metrics and analytics
   - Operational/clinical metrics and analytics
   - Operational/clinical data marts

4. “Head Light” analytics
   - Financial analytics
   - Operational/clinical analytics
   - Information process layer
   - Integrated analytics

5. Integrated analytics
   - Consistent information hierarchies
   - Common definitions and names
   - Standard calculations
   - Defined policies

Also:
External and manual data sources
Compliance data analytics — FY 2010

• Purpose
  – Identify educational opportunities
  – Mitigate financial and compliance risks
• Stakeholders
• Methodology
  – Utilize data analysis to identify potential areas of vulnerability
  – Perform testing of a small random sample
  – Designed as quality reviews

Compliance data analytics — FY 2011

• Purpose
  – Develop internal capability to mine data
  – Identify potential vulnerabilities
  – Identify educational opportunities
  – Mitigate financial and compliance risks
• Ability to compare data across CHI entities
  – IPPS hospitals
  – Critical access hospitals
Compliance data analytics — FY 2011 (cont.)

• Methodology
  – Risk-based auditing approach
  – Pull from OIG/DOJ/RAC focus areas
  – Utilize claims data from CHI data warehouse
  – PEPPER data as benchmark
  – Identify potential risk populations and outliers

Compliance data analytics — FY 2011 (cont.)

• Inpatient risk areas
  – PEPPER target areas
  – Medical and surgical short stays
  – MS-DRG with and without complication/co-morbidity
  – Cardiac procedures (stents, defibrillators)
Sample three-day stay with SNF transfer

Sample three-day stay with SNF transfer (cont.)
Compliance data analytics — FY 2012

- Inpatient
  - RAC focus MS-DRGs
- Outpatient
  - Inpatient-only procedures performed on outpatients
  - Duplicate surgical procedure codes
  - Evaluation and management visits
  - Observation
  - Transfusions
  - Injections and infusions
  - Debridement procedures

Outcomes of compliance data analytics

- Confirmation that effective controls are in place
- Identification of best practices
- Collaborative opportunities
- Identification of risk areas
- Process improvement opportunities
- Data standards
- Education and training opportunities
Next steps

• Restructure compliance auditing and monitoring function across CHI
• Continue to evolve risk-based auditing
• Increase internal data analytics by utilizing enterprise patient data repository
• Explore external data analytic resources with clinical services and other data owners/users
  – Medically necessary care settings
  – Clinical appropriateness
  – Other outliers
• Enhance denials management function

How is your organization using data analytics for compliance auditing and monitoring?
Conclusion

• Just start!
• Partner with other data owners in your organization
• Identify current data analytic activity
• Understand what external data analytics is being done by regulatory agencies and payers
• Work with internal and external auditors to do risk-based auditing/monitoring
• It is an evolving journey!

Questions?

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