Data Analytics and Risk-Based Methodologies in Refreshing Compliance Auditing & Monitoring

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Learning Objectives

1. Demonstrate how a risk-based approach to revenue compliance auditing and monitoring targets critical resources at the most important risks.

2. Show real-world examples of risk-based data analytics in revenue compliance (e.g., Evaluation and Management services).

3. Exhibit how data visualization bridges the gap between challenging data interpretation and consistent organizational understanding of compliance risk.
Mayo Clinic: About Us

- Large academic medical center
- 1.3M people from all states and 136 countries
- $12B Revenue
- Employees:
  - Staff physicians / scientists: 4,729
  - Administrative / allied health staff: 58,405
  - Total Employees: 63,134
- Major campuses: Rochester, MN; Scottsdale / Phoenix, AZ; Jacksonville, FL. Locations in many other states and internationally.

Revenue Compliance Auditing & Monitoring Team

- Multi-disciplinary backgrounds (Coding, Legal, Nursing, Finance, Analytics)
- Shared service covering all sites and providers, focused solely on risk
- Opportunity addressed by a different department
7 Elements of an Effective Compliance Program

1. Standards of Conduct/Policies & Procedures
2. Compliance Officer and Committee
3. Education
4. Hotline
5. Monitoring and Auditing
6. Reporting and Investigating
7. Enforcement and Discipline

Developing a “Risk-Based” Auditing and Monitoring Program

• Historically provided 100% reviews. In 2017, underwent revenue compliance refresh.

• The goal: Maximize critical resources using risk-based approach.

• Auditing and monitoring program:
  • Uses data analytics to target risk.
  • Integrates analytics with strategic process that targets risk at every step.
“Data Analytics”

- Examining data sets to draw conclusions.

- Simple Excel sorts and filtering to predictive / prescriptive analytics and machine learning.

- Don’t get overwhelmed with terminology: (e.g. Big Data, Analytics, Data Mining, Machine Learning, Deep Learning, Artificial Intelligence, etc.).

- “Don’t use a sledgehammer to crack a nut.”

Data Visualization

- **Tools**: Tableau, Qlikview, FusionCharts, Highcharts, PowerBI even Excel

- **Be Creative**: Visualize the visualization first.

- **Execute**: Have fun building!
  - Data ink ratio = Data Ink / Total Ink
  - Overuse of Colors (<=3)

- **Validate**: Visualization aligns with source data.

- **Self-Service Analytics**: Distribute analytical tools for broad use.
Risk-Based Analytics Development

Data Sources
- Business Objects (ERP), WebIntelligence
- Enterprise Data Warehouse, SQL
- Excel Cubes

Data Mining / Prep
- Many Tools (e.g. SQL, Arbutus / ACL, Alteryx, Knime, SAS, Excel

Data Visualization
- Tableau
- Qlikview
- PowerBI
- Excel

Self-service Analytics
- Tableau Server
- Alteryx Server
- PowerBI
- Knime Server

How It All Fits Together: Starting with the Revenue Compliance Risk Assessment

<table>
<thead>
<tr>
<th>Risk Title</th>
<th>Likelihood</th>
<th>Regulation</th>
<th>Financial</th>
<th>Legal</th>
<th>Impact Score</th>
<th>Controls in Place</th>
<th>Corrected Risk Score</th>
<th>Risk Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Copy and Paste (Coding Professional)</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>11</td>
<td>3</td>
<td>5</td>
<td>Copy and coding / templates</td>
</tr>
<tr>
<td>2. CCM documentation and coding (Auditing and Monitoring)</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>11</td>
<td>2</td>
<td>5</td>
<td>Risk Reviews in place, reduced risk for 2019</td>
</tr>
<tr>
<td>3. Teaching Physician Role (IPR)</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>11</td>
<td>3</td>
<td>5</td>
<td>Education and Monitoring</td>
</tr>
<tr>
<td>4. Telehealth</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>11</td>
<td>1</td>
<td>4</td>
<td>OIG Reuse</td>
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<tr>
<td>5. Credit Balances</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>11</td>
<td>1</td>
<td>3</td>
<td>AHC, CERT audits</td>
</tr>
<tr>
<td>6. DRG Monitoring (MCC/OC, LOS, CMI)</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>11</td>
<td>4</td>
<td>2</td>
<td>OIG, Commercial Payers, RESEARCH</td>
</tr>
<tr>
<td>7. Two-Midnight Rule</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>11</td>
<td>4</td>
<td>2</td>
<td>AHC, CERT audits</td>
</tr>
<tr>
<td>8. Modifier 52</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>Reduced the consistency</td>
</tr>
<tr>
<td>9. Modifier 25</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>Coding systems prompt</td>
</tr>
<tr>
<td>10. MCC Capture Rates</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>Unsupported MCC scores</td>
</tr>
<tr>
<td>11. One day stays for Surgical DRGs</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>RESEARCH Warranting</td>
</tr>
<tr>
<td>12. Research Billing Errors</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>Monitored by Research</td>
</tr>
</tbody>
</table>

Note: Not Actual Mayo Clinic Information or Data
How the Risk Assessment is Guided by Analytics

- Populate Key Risk Topics with Analytics. Examples:
  - PEPPER
  - Inpatient (DRG and Secondary Dx) outliers
  - Evaluation and Management trends
  - Modifier Usage (i.e. 59, 25)

- Risk Assessment Topics:
  - Validate risks populated with analytics, where possible
  - Vet with key stakeholder

Example of a Risk-Based Audit Selection: Evaluation and Management (E&M)

- Visits performed by physicians and non-physician practitioners to **assess** and **manage** a patient’s health.

- Historically a significant portion of Medicare Part B payments and OIG focus.

- Question: Which E&M services to target for review?
E&M Analytics: The Bell Curve Challenge

- Every site, specialty, provider = thousands of bell curves.
- Manual and time intensive to interpret and identify risks & opportunities.

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E&M Analytics Methodology

- Sites, specialties and providers coding patterns compared to Medicare and each other
- Calculate level of service (LOS) by E&M service group
  - Average LOS variances (i.e. 1-5)
  - Code use percentage
- DEMO
Self-Service Analytics

- Benefits:
  - Non-traditional compliance value
  - Decentralized compliance monitoring and revenue optimization
  - Consistent data and analytics
  - Limit licensing costs
  - Highly effective use of FTE
  - Demo

Using a Strategic Process to Target the Risk at Each Step

- Providers Selected for Review
- Reviews
- Provider Feedback and Education
- Follow-up Reviews

Data Analytics → Weighted Scoring → Determined by Risk Scores
Weighted Scoring Methodology

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>No documentation for services provided</td>
</tr>
<tr>
<td>-4</td>
<td>Insufficient documentation of attending physician’s presence and participation in service (Teaching Physician Rule)</td>
</tr>
<tr>
<td>-4</td>
<td>Incorrect use of modifier</td>
</tr>
<tr>
<td>-3</td>
<td>E&amp;M wrong category: established patient billed as new patient</td>
</tr>
<tr>
<td>-3</td>
<td>Insufficient documentation of E&amp;M service by two or more levels</td>
</tr>
<tr>
<td>-1</td>
<td>Insufficient documentation of E&amp;M service by one level</td>
</tr>
<tr>
<td>0</td>
<td>Date of service error</td>
</tr>
<tr>
<td>0</td>
<td>Agree that documentation meets all documentation/coding requirements</td>
</tr>
<tr>
<td>+1</td>
<td>E&amp;M service undercoded 1 level</td>
</tr>
<tr>
<td>+3</td>
<td>E&amp;M wrong category: new patient billed as established patient</td>
</tr>
<tr>
<td>+3</td>
<td>E&amp;M service undercoded 2 or more levels</td>
</tr>
<tr>
<td>+4</td>
<td>Missing CPT procedure code or missing modifier</td>
</tr>
</tbody>
</table>

Targeting the Risk at Each Step—Provider Feedback

Provider Feedback and Education
Targeting the Risk at Each Step—Practice Leadership Feedback

Follow-up Reviews

- Providers with medium to high risk scores are reviewed again.
- Escalation process until risk is mitigated.
Adjust Focus Based on Outcomes

Risk Assessment Example: PEPPER

- Program for Evaluating Payment Patterns Electronic Report (PEPPER)

- “PEPPER provides provider-specific Medicare data statistics for discharges/services vulnerable to improper payments. PEPPER can support a hospital or facility’s compliance efforts by identifying where it is an outlier for these risk areas. This data can help identify both potential overpayments as well as potential underpayments.” – PEPPER.org

- PEPPER Demo

Note: Not Actual Mayo Clinic Information and Data
Inpatient DRG Auditing and Monitoring

- **DRG Defined:** Medicare pays hospitals on a per-discharge (per inpatient stay) basis. Each discharge is assigned a diagnosis related group (DRG), which groups patients with similar clinical problems. DRG’s are determined primarily by:
  - Principal diagnosis
  - Surgical procedures
  - Secondary diagnoses (determines severity level)

- **MCC/CC Capture:** Each base DRG typically has up to three severity levels, determined by the secondary diagnoses as follows:
  - Without Complication (CC) or Major Complication (MCC)
  - With CC
  - With MCC

- **Revenue Risk:** Adding CC/MCC can increase reimbursement $1,000 – $25,000 per claim (Medicare reimbursement).

Inpatient Risk-Based Analytics

- MCC/CC Capture
- Length of Stay
- Case Mix Index
- Mortality Index

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What We Hear From the Practice?

- Analytics and visualizations are powerful and easy to use.
- Demand for more decentralized / self-service analytics.
- Eager for feedback/education support on coding and documentation.

Data Analytics Tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>Type</th>
<th>When to Use</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excel</td>
<td>Spreadsheet</td>
<td>• Small data sets&lt;br&gt;• Simple Analytics&lt;br&gt;• Ad hoc, low complexity</td>
<td>• Familiar tool&lt;br&gt;• Easy to use&lt;br&gt;• Large user base</td>
<td>• Data set size limits&lt;br&gt;• Difficult to reuse analysis logic</td>
</tr>
<tr>
<td>Arbutus / ACL</td>
<td>Audit data analytics tools</td>
<td>• Large data sets&lt;br&gt;• Automate procedures&lt;br&gt;• Transform data</td>
<td>• Fast&lt;br&gt;• Handles huge datasets</td>
<td>• Proprietary small user base, limited documentation&lt;br&gt;• Quirky, may crash</td>
</tr>
<tr>
<td>Tableau</td>
<td>Data visualization</td>
<td>• Data needs to be summarized and visualized</td>
<td>• Quickly turns data into information&lt;br&gt;• Distribute info with ease&lt;br&gt;• Tableau Server</td>
<td>• Limited large data prep and analytics capabilities</td>
</tr>
<tr>
<td>SQL</td>
<td>Query language</td>
<td>• When data is stored in tables in relational databases&lt;br&gt;• Join, union, query and transform data across multiple sources</td>
<td>• Standard query language for relational databases&lt;br&gt;• Endless examples&lt;br&gt;• Easy to learn</td>
<td>• Mostly for relational databases</td>
</tr>
<tr>
<td>VBA</td>
<td>Microsoft Programming Language</td>
<td>• Data resides in Excel or other MS Office tools</td>
<td>• Reasonably easy to learn&lt;br&gt;• Built-in to Office tools</td>
<td>• Limited to MS products</td>
</tr>
<tr>
<td>Alteryx, Knime, SAS</td>
<td>User interface driven analytics</td>
<td>• Data Science&lt;br&gt;• Machine Learning&lt;br&gt;• Artificial Intelligence</td>
<td>• Programming experience not required&lt;br&gt;• Broad / powerful use</td>
<td>• Smaller user-base</td>
</tr>
<tr>
<td>Multiple</td>
<td>Robotic Process Automation (Robots)</td>
<td>• Repetitive and High Volume Processes&lt;br&gt;• Low Ambiguity and decision making&lt;br&gt;• Increase efficiency, accuracy and compliance coverage&lt;br&gt;• Stay ahead of the curve</td>
<td>• Few case studies&lt;br&gt;• Security monitoring&lt;br&gt;• Audit logs</td>
<td>• Not necessary for most audit activities&lt;br&gt;• Difficult to learn</td>
</tr>
<tr>
<td>Python</td>
<td>General-purpose object-programming language</td>
<td>• Data Science&lt;br&gt;• Machine Learning&lt;br&gt;• Artificial Intelligence</td>
<td>• Free and open source&lt;br&gt;• Easy-to-learn language&lt;br&gt;• Broad use</td>
<td>• Not necessary for most audit activities&lt;br&gt;• Difficult to learn</td>
</tr>
<tr>
<td>R</td>
<td>Statistical programming language</td>
<td>• Data Science&lt;br&gt;• Heavy duty predictive and prescriptive statistics</td>
<td>• Free and open source&lt;br&gt;• Ad hoc analysis&lt;br&gt;• Deep statistical analysis</td>
<td>• Not necessary for most audit activities&lt;br&gt;• Difficult to learn</td>
</tr>
</tbody>
</table>
Analytics Resources

- Structured Query Language (SQL)
  - W3schools: [https://www.w3schools.com/sql/default.asp](https://www.w3schools.com/sql/default.asp)

- Data Prep / Analytics:
  - Alteryx: [https://www.alteryx.com/](https://www.alteryx.com/)
  - ACL: [https://www.acl.com/products/acl-analytics/](https://www.acl.com/products/acl-analytics/)
  - Arbutus: [https://www.arbutussoftware.com/](https://www.arbutussoftware.com/)
  - Tableau Prep: [https://www.tableau.com/products/prep](https://www.tableau.com/products/prep)
  - Knime: [https://www.knime.com/](https://www.knime.com/)
  - Python / R Studio

- Tableau Visualization:
  - Local Tableau and Analytics user groups: Meetup.com (Tableau User Groups), Free Webinars: [https://www.tableau.com/learn/webinars](https://www.tableau.com/learn/webinars)

Additional Revenue Compliance Analytics

- Medical / Surgical DRG’s:
  - Length of Stay
  - MCC / CC Capture
  - Secondary Diagnosis
  - Severity of Illness
  - CMI

- PEPPER
- Readmissions
- Modifier Use

- Two Midnight Rule
- Hierarchical Condition Category Coding (HCCs)
- Teaching Physician Rule
- Overlapping Surgeries
- High-risk Procedures
Questions & Discussion

Thank You