Data-driven strategies for risk mitigation and patient safety in the diagnostic process

A systematic approach to developing long term success in the management of diagnostic-related events

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Data as a catalyst for change

Data-driven intelligence uncovers specific causes of error and allows for targeted solutions

- Use data to identify / validate the greatest risks to your clinical (and financial) outcomes
- Use data to engage organization and clinical leadership in real dialogue about validated issues that impact clinical care
- Use data to target priorities / proven interventions that reduce harmful outcomes and financial loss associated with medical error
- Engage providers in real, sustained change that improves patient safety / satisfaction
How Does Data Drives Change

Growing concern re: host of "failure to rescue" cases in the surgical setting

Treated the concern as an opportunity to further explore issues

Dove Deeper:
- Were the complications avoidable?
- Was there a specific trend / pattern / root cause that could be identified?
- Was there an opportunity to intervene / improve outcomes?

Was there an identifiable root cause? — YES

Action Plan: need to sustain the consistent training

Acted:
- Identified communications issues as a key driver of these cases
- Developed a survey to further validate / understand the communication gaps
- Designed the Communication Trigger Card
- Implemented and “spread” to other services

Monitor:
- Develop post implementation survey to monitor improvement
- Developed standard for sustaining use

Solution: Resident-to-Attending
Communication Guidelines (front)
Solution: Resident-to-Attending Communication Guidelines (back)

2. The following will be discussed with and approved by the attending before they occur:
   - Discharge from the hospital or from the Emergency Department
   - Transfer out of ICU

3. The attending should also be contacted if:
   - Any transfer feels that a situation is more complicated than he or she can manage
   - Nursing or physician staff, or the patient request that the attending surgeon be contacted

Case Study: We don't know what we don't know...

Diagnostic failures in the ambulatory setting

Client with growing trend of diagnostic failures in the ambulatory setting.

Client’s Assumption: Test result management issues.
- Antiquated system for test result management.
- Providers worry that loops are not being closed after testing and after consults.

Deep Dive:
- Coded and conducted comparative analysis on 5 years of ambulatory claims.
- Key vulnerabilities identified: not "unreported" tests, but interpretation of test results, driven by radiology and pathology

Before: Planned to invest in expensive test result management software.

After: Strengthened systems that identified primary mis-reads.
Redesigned system for communication of revised clinical findings.

Case Study: Some things are that simple...Diagnostic failures: incidental findings

Cluster of six cases where failure to follow up on incidental findings from routine CXR resulted in missed diagnosis of lung cancer.

Treated the small data set as an important signal.

Dove Deeper:
- What were the causes of the failure to follow up?
- Were there process issues?
- Were there inconsistencies in how test results were seen and responded to?
- Were there "human factors" at play?

Was the problem validated? YES

Discovered:
- Physicians recognized the design of the reports left important information in "vulnerable" location, often at the bottom of the report, or the "next page" on the EHR
- Additionally, there was no clear policy for "who" was responsible for follow-up

Simple changes – easy implementation

Acted:
- Designed new reports that put any incidental finding at the TOP of the report
- Developed and promoted clarity in who was responsible in various settings for reporting findings
Does it work? 35 years’ experience in data-driven patient safety with success stories such as:

- **OB**: Detailed analysis identified that 42% of all med mal cases in OB involved teamwork related failures.
- **Anesthesia**: Anesthesia premiums were among the highest, and climbing - analysis lead to simulation training and incentives.
- **Team Training**: Reduced both number and severity of claims.
- **Anesthesiologists with simulator training** vs. those without 25% premium rate differential.

Applying data-driven strategies to diagnostic error:

• Analysis of 4,140 cases with a diagnostic-related allegation: asserted 2009-2013
• Total incurred losses*: $1B total

* total incurred includes reserves on open cases and payments on closed cases

Overview of CBS*

Comparative Benchmark System

- **CBS National Database of Medical Malpractice Cases**: > 300,000
- **Hospitals/Healthcare entities**: ~ 400
- **Physician Providers**: 165,500
- **New cases per year**: ~ 8–10,000

- Open and closed - claims & suits
- Clinical, legal, and financial attributes
- Denominators e.g., visit, surgeries, days, births
- Multiple peer groups for comparative analysis,
  - Academic-Teaching-Community – Size / Volume Based
- Proprietary Coding Taxonomy for "mining" MPL claims for learning
  - Hundreds of Contributing Factors (causation) codes in a tiered structure proving for rich analysis and learning of clinical process/system errors that result in harm
In a study of 21,000+ medical malpractice cases, surgery-related allegations account for the greatest number(#) of cases, while, diagnosis related allegations account for the highest total incurred($).

Cases occurring in the Ambulatory and ED setting account for 75% of the diagnosis-related cases.

Together, General and Emergency Medicine account for 36% of the cases and 39% of the dollars associated with diagnostic allegations.
The profile of high severity diagnosis-related cases is similar in the academic & community setting.

**PERCENT OF ALL CASES BY SEVERITY**

- **High**: 61%
- **Medium**: 35%
- **Low**: 4%

*NIAC Severity Scale: High=Death, Permanent Grave, Permanent Major, or Permanent Significant
Medium=Permanent Minor, Temporary Major, or Temporary Minor
Low=Temporary Insignificant, Emotional Only, or Legal Issue Only

Low: 5%
Medium: 35%
High: 60%

4,140 cases | $1B total incurred

Distribution of the key (missed or delayed) diagnosis in diagnosis-related medical malpractice cases.

- Cancer (key driver of Ambulatory Dx-related cases)
- Injury (key driver of ED Dx-related cases)
- Cardiac diseases (reflected in both inpatient & outpatient cases)
- Digestive system
- Nervous system and sense organs
- Cerebrovascular
- Other (Total of multiple small # contributors)

Failure to establish a differential diagnosis (step 4) and its influence on test ordering (step 5) has the most impact on diagnostic failure.

<table>
<thead>
<tr>
<th>STEP</th>
<th>% CASES</th>
<th>TOTAL INCURRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patient notes problem and seeks care</td>
<td>1%</td>
<td>$6M</td>
</tr>
<tr>
<td>2. History and physical</td>
<td>7%</td>
<td>$60M</td>
</tr>
<tr>
<td>3. Patient assessment/evaluation of symptoms</td>
<td>26%</td>
<td>$203M</td>
</tr>
<tr>
<td>4. Diagnostic processing</td>
<td>33%</td>
<td>$257M</td>
</tr>
<tr>
<td>5. Order of diagnostic/lab test</td>
<td>30%</td>
<td>$235M</td>
</tr>
<tr>
<td>6. Performance of tests</td>
<td>4%</td>
<td>$26M</td>
</tr>
<tr>
<td>7. Interpretation of tests</td>
<td>23%</td>
<td>$175M</td>
</tr>
<tr>
<td>8. Receipt/transfer of test results to provider</td>
<td>4%</td>
<td>$29M</td>
</tr>
<tr>
<td>9. Physician follow up with patient</td>
<td>17%</td>
<td>$129M</td>
</tr>
<tr>
<td>10. Referral management</td>
<td>19%</td>
<td>$145M</td>
</tr>
<tr>
<td>Post-discharge follow up (ex. pending test results)</td>
<td>12%</td>
<td>$105M</td>
</tr>
<tr>
<td>12. Patient compliance with follow-up plan</td>
<td>15%</td>
<td>$87M</td>
</tr>
</tbody>
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Case examples of claims due to failure to order diagnostic tests for fractures (fx)

<table>
<thead>
<tr>
<th>INITIAL Dx</th>
<th>Film?</th>
<th>FINAL Dx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthritis of knee</td>
<td>No</td>
<td>Fx femur</td>
</tr>
<tr>
<td>Bruised foot</td>
<td>No</td>
<td>Fx ankle</td>
</tr>
<tr>
<td>Small fx / 5th metacarpal (low)</td>
<td>Yes Read by NP (not MD)</td>
<td>Mal-union of displaced fx (surgery)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CLIENT CASES</th>
<th>PEERS CASES</th>
</tr>
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<tbody>
<tr>
<td>Cancer</td>
<td>32%</td>
</tr>
<tr>
<td>Cardiac disease</td>
<td>10%</td>
</tr>
<tr>
<td>Fractures &amp; dislocations</td>
<td>9%</td>
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<th>PEERS CASES</th>
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</thead>
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<tr>
<td>Cancer</td>
<td>32%</td>
<td>46%</td>
</tr>
<tr>
<td>Cardiac disease</td>
<td>10%</td>
<td>6%</td>
</tr>
<tr>
<td>Fractures &amp; dislocations</td>
<td>9%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Closed Data Summary


<table>
<thead>
<tr>
<th>CASES CLOSED</th>
<th>TOTAL INDEMNITY PAID</th>
<th>% CLOSED WITH INDEMNITY PAID</th>
<th>AVERAGE INDEMNITY PAID</th>
<th>% CASES CLOSED WITH INDEMNITY PAID &gt; $1M</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Closed Cases</td>
<td>43,503</td>
<td>$3,867,434,623</td>
<td>28%</td>
<td>$325,000</td>
</tr>
<tr>
<td>Target Areas:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgery</td>
<td>8,063</td>
<td>$700,523,205</td>
<td>27%</td>
<td>$320,000</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>5,042</td>
<td>$782,446,453</td>
<td>33%</td>
<td>$473,000</td>
</tr>
<tr>
<td>Medication</td>
<td>1,808</td>
<td>$217,188,071</td>
<td>33%</td>
<td>$361,000</td>
</tr>
<tr>
<td>Emergency</td>
<td>1,815</td>
<td>$251,927,317</td>
<td>31%</td>
<td>$452,000</td>
</tr>
<tr>
<td>OB</td>
<td>1,018</td>
<td>$399,554,922</td>
<td>41%</td>
<td>$956,000</td>
</tr>
</tbody>
</table>

Implementing and sustaining data-driven solutions to diagnostic error
Diagnosis-related Score Card

**PROGRESS OF IMPLEMENTATION OF DIAGNOSIS-RELATED BEST PRACTICES AT HOSPITAL A**

- Reliable office-based system for routine updating of family history
- Reliable office-based system for receipt of test results by ordering provider
- Reliable office-based system for tracking/managing follow up
- Reliable office-based system for communication of all test results to patients
- Ongoing interval-based education to clinicians
- Decision support tools embedded in EMR

<table>
<thead>
<tr>
<th>Stage of Implementation</th>
<th>Not Started</th>
<th>Partially Implemented</th>
<th>Fully Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reliable office</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Follow-up</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**LEGEND**
- Willing to implement
- Implementation pending
- Partially implemented
- Fully implemented
- No activity

An Ambulatory Risk Management Structure

Successful initiatives require structure to sustain success

**CRICO/RMF**

**Goals**
- Raising the Umbrella
- Data as a Driver
- Training
- Performance Improvement

- Expand the oversight of (traditional) Risk Management
- Malpractice data as a "pointer" to where vulnerabilities lie
- Use of adverse event reporting system: train doctors/nurses/practice managers to report the relevant hazards
- Online CMEs
- Disclosure workshops
- LEAN methodology
- Using the adverse event reporting system
- Hands-offs during transitions of care
- Dealing with challenging patients
- Gaps in care when patients present episodically
- Workflow redesign:
  - Internal & test result management

**Key Program Elements**

**Needs Assessment**
- Assessing risk in the outpatient setting:
  - Ambulatory claims activity
  - Office Practice Evaluations
  - Ambulatory focus groups
  - Ambulatory Risk
  - Assessments
  - Self-assessment surveys

**Hazard Surveillance**
- Identifying hazards in the outpatient setting:
  - Adverse events, near misses
  - Complaints
  - Ambulatory Walkrounds
  - Weekly Paper Rounds
  - Ambulatory RHAs
  - Patient reporting / feedback

**Communication & Spread**
- Feedback to outpatient physicians and staff:
  - Ambulatory Newsletters
  - Risk Management Newsletters
  - Ambulatory data farm reports
  - Dashboards

**Culture of Safety**
- Conditions and leadership committed to:
  - Safety and high quality care
  - Practice improvement
  - Fair and just event review
  - Collaborative approach to problem solving
  - Focus on effective systems to drive improvements
  - Integration of initiatives into existing workflow

**Education**
- What, when, how, and why to report:
  - Training for MDs, office staff
  - Risk Management basics
  - Identification of hazards
  - Reporting process

- CRICO/RMF
- Handoffs during transitions of care
- Dealing with challenging patients
- Gaps in care when patients present episodically
- Workflow redesign:
  - Internal & test result management
If you have questions regarding this topic, or have a need or interest in another topic for which CBS may be helpful, please email us at: strategiesweb@rmfstrategies.com

We hope you found this information informative.