Diagnostic Timeliness and Accuracy: A Review of Medical Malpractice Claims

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Penny Greenberg, MS, RN, CPPS
Senior Program Director
CRICO Strategies
Data-driven Risk Management & Patient Safety

CRICO

- Captive insurer of the Harvard Medical Institutions
- 40 years’ proven success in data-driven risk management and patient safety
- Proprietary coding taxonomy analyzes malpractice claims and shares learnings for process improvements
- CRICO Members
  - Harvard-based affiliates including academic, teaching and community hospitals and physician practice settings

CRICO STRATEGIES

- ~20 years as a division of CRICO
- Extends CRICO’s data-driven strategy (and proprietary taxonomy) to a national community
- Comparative Data (CBS)
- Sharing solutions/best practices
- Strategy Partners
  - Captive and commercial insurers representing > 400 hospital / health care entities and 165,000 physicians

Comparative Benchmarking System and National Community of Learning

Nearly 400,000 Medical Malpractice Cases representing ~30% of all paid physician claims in the US
**CBS:** A national database of medical malpractice claims deeply coded for analysis of the patterns and trends that contribute to medical error

<table>
<thead>
<tr>
<th>CBS National Database of Medical Malpractice Cases</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>New cases per year</td>
<td>~ 8 - 10,000</td>
</tr>
</tbody>
</table>

*NPDB (National Practitioner Data Bank)*
Overview of CBS: Data/Taxonomy Elements

**CLINICAL/CASE ATTRIBUTES e.g.**
- Allegation(s)
- Responsible Service(s)
- Initial & Final Diagnoses
- Comorbidities
- Injury & Injury Severity
- Diagnostic Tests
- Medication & Device
- Clinical Summary (free text)
- Patient Demographics
- Claimant type (Inpt, Amb, ED)
- Site/Location (e.g., OR, PACU, SD, MDO)
- Physician Specialty
- Physician Role (resident, fellow, staff)
- Advanced PC’s (e.g., NP, PA, CRNA)
- Legal outcomes
- Financials (reserves, payments)
- Non-insured Involvement

**CONTRIBUTING FACTORS e.g.**
- Administrative
- Communication
- Clinical Judgment
- Clinical Systems
- Documentation
- Environment
- Supervision
- Technical

**NEW/UPDATED TAXONOMY ELEMENTS**
- Disclosure and Apology
- Human Factor Codes
- Team Factor Codes
- EHR Codes
Who contributes data to CBS?
The National Comparative Benchmarking System

ACADEMIC HEALTH SYSTEMS

• CRICO e.g.,
  • MGH, BIDMC, BWH
• FOJP
  • Maimonides Medical Center
  • Mount Sinai Health System
  • Montefiore Medical Center
• Maine Medical Center
• Medstar
  • Georgetown University
  • Washington Hospital
• Temple University
• University of Florida/SHANDS
• University of California e.g.,
  • UCLA
  • UCSF
• University of Colorado
• University of Maryland

COMMERCIAL INSURERS

• MMIC
• MedPro Group
• MIEC
• TDC

COMMUNITY HOSPITALS

• PHTS
• Cassatt Insurance
• Baptist Health

Comparative Data
Community of Peers
### Major Allegation
**Based on complaint, 1:1 ratio**
- Diagnosis-related events
- Surgical events
- Medical treatment events
- Obstetrical events
- Safety & security events

### Responsible Service
**1 primary + secondary**
- Primary / secondary contributors
- All providers in a specialty
  - CRNA in Anesthesiology
  - NP in OB

### Contributing Factors
**RN review, multiple per case**
- Clinical judgment
- Clinical systems
- Communication
- Technical skill

### WHAT (is alleged to have) happened
- delayed dx, missed dx, wrong dx, failure to dx
- skill based, retained FB, pt management post-op
- improper placement of C-line, improper choice of tx
- pregnancy, labor/fetal distress, delivery
- falls, enviro hazards, assaults (non-employee)

### WHO was the provider/service(s) involved
- Medicine (Gen Med, Cardio/Hem Onc / Hospitalist…)
- Surgery (Gen Surg, Bariatric/Cardiac/Urology…)
- OB/GYN, Orthopedics, Neurosurgery
- Emergency Service
- Radiology, Pathology, Nursing

### WHY it (might have) happened
- narrow dx focus, no consults, patient monitoring
- scheduling, reporting results, follow up monitoring
- med record, informed consent, patient education
- improper use of equip, inexperience, poor technique

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**Using data to tell the story...**
**Multi-level hierarchies for roll-up & detailed analysis**
Learning from the past: the tip of the iceberg

The “skeptics” on the value of learning from medical malpractice claims

**Small N - “invalid”**
- Emphasis on most severe injuries
- Relatively large # of rare events
- CBS multiplies value/trends

**Aged info - “fixed it”**
- Richer details available for analysis
- Consistently trends significant events often lost in “fix and move on” process (e.g., Dx failure)

**Unique Convergence - “too rare”**
- Codes beyond the “headline”
- Provides common causation factors
- Breaks down “silos” of individual focus
Overview of Trends for Advanced Practice Clinicians and APRNs
Nurse Anesthetists, Nurse Midwives and Nurse Practitioners Practicing will increase by 31% by 2024

Percent change in employment, projected 2014 - 2024

Nurse anesthetists, nurse midwives, and nurse practitioners

Health diagnosing and treating practitioners

Total, all occupations

0% 5% 10% 15% 20% 25% 30% 35%

Note: All occupations includes all occupations in the U.S. Economy
APRNs are playing an increasingly significant role in health care

- 222,000 nurse practitioners licensed in the US\textsuperscript{1}
- Approximately 20,000 new NPs completed academic programs in 2014-2015\textsuperscript{2}
- 96% of NPs prescribe Rx (average 23/day)\textsuperscript{3}
- 83% of NPs are certified in Primary Care\textsuperscript{3}
- 50% of NPs hold hospital privileges\textsuperscript{3}
- 11% have long term care privileges\textsuperscript{3}
- 61% of NPs see 3 or more patients per hour\textsuperscript{3}

\textsuperscript{1} AANP National Nurse Practitioner Database, 2016
\textsuperscript{3} 2016 AANP National Nurse Practitioner Sample Survey
Procedures performed by APCs

<table>
<thead>
<tr>
<th>Procedure</th>
<th>NPs can perform</th>
<th>PAs can perform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial line placement</td>
<td>50%</td>
<td>83%</td>
</tr>
<tr>
<td>Thoracenteses</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>Chest tube placement</td>
<td>25%</td>
<td>100%</td>
</tr>
<tr>
<td>Intubations</td>
<td>33%</td>
<td>100%</td>
</tr>
<tr>
<td>Lumbar punctures</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

NPs can perform = Yellow
PAs can perform = Aqua
CRICO APC Growth Outpaces Physicians
Comparing growth trends for CRICO MDs and APCs: 2010 to 2014
Medical Malpractice Data for Advance Practice Clinicians – Detailed Analysis

- 401 cases
- $26 M total incurred
- Cases asserted 2010–2014
Diagnosis-related Allegations are most prevalent in APC cases in CBS database

Top Major Allegations

![Bar chart showing percent of cases for different categories: Diagnosis, Medical Tx, Surgical Tx, Anesthesia Tx, Medication, OB Tx.]

ACP N=401 cases asserted 1/1/10–12/31/14 | MD N=21,772 cases asserted 1/1/10–12/31/14
Medicine and Surgery are the top services identified in APC cases

Top Primary Services

Top OB/Gyn Subspecialties

APC N=401 cases asserted 1/1/10–12/31/14 | MD N=21,772 cases asserted 1/1/10–12/31/14
Cases involving APCs reflect a larger proportion of high severity outcomes when compared to cases involving physicians.

**APCS**
- **High**: 54% (27% Deaths)
- **Med**: 39%
- **Low**: 6%

**PHYSICIANS**
- **High**: 40% (21% Deaths)
- **Med**: 49%
- **Low**: 11%

**NAIC CLINICAL 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

APC N=401 | MD N=21,772
PL cases asserted 1/1/010–12/31/14 with APCs as the Responsible Service.
Similar to physician colleagues, APC events are more prevalent in the office/clinic setting

Care Setting & Top Locations

APC

- Amb: 43%
- IP: 31%
- Other: 29%

MD

- Amb: 53%
- IP: 40%
- Other: 7%

Phys Office/Clinic

- Amb: 43%
- IP: 31%
- Other: 29%

Amb Surg

- Amb: 5%
- IP: 15%
- Other: 17%

Surgery-rel

- Amb: 43%
- IP: 31%
- Other: 29%

Other IP

- Amb: 53%
- IP: 40%
- Other: 13%

OB

- Amb: 53%
- IP: 40%
- Other: 7%

APC N=401 cases asserted 1/1/10–12/31/14 | MD N=21,772 cases asserted 1/1/10–12/31/14
Challenges around Clinical Judgment, Communication and Technical Skill are driving APC cases

- Assessment
- Selection and management of treatment
- Failure/delay in obtaining a consult
- Patient monitoring
- Provider to patient
- Provider to provider
- Informed consent
- Poor rapport
- Known complication
- Technical error
- Retained foreign body

*A case will often have multiple factors identified.
APC N=401 fully-coded cases
Medical Malpractice Data for Advance Practice Registered Nurses

• 222 cases
• $23M total incurred
• Cases asserted 2005–2014
Similar to all APC cases, Diagnosis-related Allegations are most prevalent in APRN cases

Top Major Allegations

From the literature...
- Errors occur across the diagnostic continuum:
  - Assessment:
    - History taking: 56%
    - Clinical exam: 47%
  - Synthesis:
    - Processing tests & referrals: 29%

N=222 - PL cases asserted 1/1/005–12/31/14 with APRNs as the Responsible Service.
APRN cases result in more high severity injuries and are more prevalent in the ambulatory setting.

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

N=222 - PL cases asserted 1/1/005–12/31/14 with APRNs as the Responsible Service.
Medicine and Surgery are the top services identified in APRN cases

N=222 - PL cases asserted 1/1/05-12/31/14 with APRNs as the Responsible Service
What risk management factors are driving APRN cases?

* A case will often have multiple factors identified.

N=222 - PL cases asserted 1/1/005–12/31/14 with APRNs as the Responsible Service
Challenges with patient assessment along with obtaining consults are key drivers of APRN cases

<table>
<thead>
<tr>
<th>CLINICAL JUDGMENT CONTRIBUTING FACTORS</th>
<th>%APRN*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient assessment – failure/delay in ordering a dx test</td>
<td>27%</td>
</tr>
<tr>
<td>Failure to appreciate and reconcile relevant signs/symptoms/test results</td>
<td>16%</td>
</tr>
<tr>
<td>Patient assessment-narrow dx focus/failure to establish differential dx</td>
<td>16%</td>
</tr>
<tr>
<td>Failure/delay in obtaining consult/referral</td>
<td>15%</td>
</tr>
</tbody>
</table>

CASE EXAMPLE

48 yo presented to ED c/o sudden onset of upper back/neck pain and TMJ s/s x 3 hrs after boogie boarding; triaged as 4 (low acuity) by KN; eval by NP 1 hour later; pt states pain worse with movement similar to sensations from past TMJ episodes; pt denied CP or SOB; No EKG or cardiac enzymes ordered; Given Toradol IM, Flexeril, Percocet and Norflex; Dx with “cervical strain with spasm & TMJ exacerbation”; Discharged 1.5 hours after presentation; Returned to ED 2 hours after discharge unresponsive after collapsing at home; CPR unsuccessful; Autopsy – COD w/significant blockage of coronary arteries

*A case will often have multiple factors identified.
N=222 - PL cases asserted 1/1/05–12/31/14 with APRNs as the Responsible Service
Communication between providers is identified as a key driver in APRN cases

<table>
<thead>
<tr>
<th>COMMUNICATION CONTRIBUTING FACTORS</th>
<th>%APRN*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among providers</td>
<td>39%</td>
</tr>
<tr>
<td>Among patient/family and provider</td>
<td>33%</td>
</tr>
<tr>
<td>Inadequate informed consent for procedures/surgery</td>
<td>1%</td>
</tr>
</tbody>
</table>

**CASE EXAMPLE**

62 year old patient with a history of poorly controlled diabetes, HTN, cervical disc herniation and hyperlipidemia presented for OV c/o dizziness, left arm weakness and fatigue; seen by NP who noted a normal BP, HR of 102; neuro exam documented as 5/5 motor strength bilaterally with cranial nerves intact, reflexes symmetrical and negative Romberg test; dizziness was reproducible with Epley’s maneuver; an EKG showed no acute changes and spine x-rays showed degenerative changes at C5-6; NP discussed findings with patient and attributed her arm weakness to disc disease and dizziness to vertigo; no CT was ordered, a neuro consult was not requested and the case was not discussed with MD; **NP did not ask if patient was currently taking aspirin** and did not start the patient on aspirin as a precaution; patient was given pamphlet on vertigo and told to go to ED if symptoms worsened; the next day the patient developed a left sided facial droop and weakness at work and was taken to the ED; CT revealed a right infarct with occlusion- started on TPA with some improvement; patient has permanent left sided weakness facial droop, slurred speech and visual deficits.

**A case will often have multiple factors identified.**

N=222 - PL cases asserted 1/1/005–12/31/14 with APRNs as the Responsible Service
41% of cases with a provider-provider communication event resulted in a high-severity injury

**Key provider-provider factors:**

- Lack of communication re: patient clinical status
- Lack of clarity (need for) / follow-up in tests, consults
- Lack of role clarity (among providers – who “owns” it)
Lack of documentation contributes to both the defensibility of APRN cases and affects patient safety

<table>
<thead>
<tr>
<th>DOCUMENTATION FACTORS</th>
<th>%APRN*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inconsistent or insufficient documentation</td>
<td>16%</td>
</tr>
<tr>
<td>Delay in documentation</td>
<td>2%</td>
</tr>
</tbody>
</table>

CASE EXAMPLE

27 year old with PMH of IV drug abuse presents to office with Temp 102, severe pain, HA, fatigue, neck stiffness; seen by NP; No documentation of history of drug abuse; regular heart rhythm noted but no rate; dx with virus; ordered blood work including Lyme disease; 2 days later presents to ED c/o chest discomfort w/tingling in both arms; EKG – RBBB & non-specific ST-T wave changes; admitted to ICU – dx sepsis, r/o endocarditis; pts condition declined; a TEE revealed aortic valve endocarditis; died while being transferred to higher level of care

* A case will often have multiple factors identified.

N=222 - PL cases asserted 1/1/005–12/31/14 with APRNs as the Responsible Service
## Diagnostic Processing, Ordering of Tests and Referral Management are vulnerable areas for APRNs

<table>
<thead>
<tr>
<th>Diagnostic Process of Care</th>
<th># Cases</th>
<th>% Cases (N=51)</th>
<th>Total Incurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patient notes problem and seeks care</td>
<td>0</td>
<td>0%</td>
<td>$0</td>
</tr>
<tr>
<td>2. History/Physical</td>
<td>10</td>
<td>20%</td>
<td>$6,820,898</td>
</tr>
<tr>
<td>3. Patient Assessment / evaluation of symptoms</td>
<td>9</td>
<td>18%</td>
<td>$5,205,318</td>
</tr>
<tr>
<td>4. Diagnostic Processing</td>
<td>24</td>
<td>47%</td>
<td>$13,330,386</td>
</tr>
<tr>
<td>5. Order of diagnostic/lab test</td>
<td>30</td>
<td>59%</td>
<td>$12,877,756</td>
</tr>
<tr>
<td>6. Performance of tests</td>
<td>0</td>
<td>0%</td>
<td>$0</td>
</tr>
<tr>
<td>7. Interpretation of tests</td>
<td>6</td>
<td>12%</td>
<td>$6,989,759</td>
</tr>
<tr>
<td>8. Receipt/ transmittal of test results (to provider)</td>
<td>3</td>
<td>6%</td>
<td>$2,222,044</td>
</tr>
<tr>
<td>9. Provider follow up with patient</td>
<td>15</td>
<td>29%</td>
<td>$5,367,841</td>
</tr>
<tr>
<td>10. Referral management</td>
<td>13</td>
<td>25%</td>
<td>$5,951,703</td>
</tr>
<tr>
<td>11. Provider to provider communication</td>
<td>10</td>
<td>20%</td>
<td>$5,693,458</td>
</tr>
<tr>
<td>12. Patient compliance with follow-up plan</td>
<td>8</td>
<td>16%</td>
<td>$3,425,148</td>
</tr>
</tbody>
</table>
Summary

- Narrow Diagnostic Focus
- Communication Breakdowns
- Documentation
Diagnosing Diagnostic Risks

Why do we struggle?

Diagnostic failures are ‘veiled’
- Occur over long timespan, process failures hard to see—and report
- Limited feedback on errors
- Limited data for analysis and linkage to organizational improvement

Causes are multifactorial, solutions are complex
- Well-known cognitive drivers are challenging to address—and easier to see in others than ourselves
- Involvement of multiple providers (MD, Radiologist, Labs, etc.) increases stakes for communication
- EHR systems perpetuate diagnostic processing challenges
- Evolution of medical imaging modalities, tests and testing recommendations
- Payment structure limits opportunities for ‘space’ for reflection

It’s personal!
- Pride in being excellent diagnosticians is challenged

From the literature...
- 1/1000 dx encounters result in diagnostic error
- The average sized hospital will see:
  - 1 ambulatory pt harmed/day
  - 5-10 deaths/year
  
Singh 2013, Graber
Addressing Diagnostic Risks

Why there is hope

**Diagnostic risks are “on the radar”**
- IOM Report on Diagnostic Error
- ONC work on addressing risks posed by EHRs
- Society to Improve Diagnosis in Medicine—15 years
- “Diagnosis” journal—first online issue in 2014

**Systems and processes can be improved to lessen individual burden on memory**
- Clinical decision support can help
- Team-based systems for loop closure can provide safety net

‘Transparency’ movement opening doors to reflection and discussion
Key clinical targets for improvement efforts based on malpractice analysis

Distribution of key allegations (case types) over time.

N=25,789 MPL cases asserted 1/1/10–12/31/14.
Source: http://www.visualdx.com/benefits/reduce-diagnostic-error
Discussion topics

**Scope of Practice**
- Gaining clarity on who is doing what
- Establishing guidelines for scope of practice

**Competency**
- Evaluating competency
- Establishing metrics for measuring improvement

**Supervisor Responsibility**
- Developing mechanisms to educate MDs
CMOS, CNOS, NP/PA LEADERS, MEDICAL STAFF OFFICE PERSONNEL JOIN US FOR A THREE-PART WORKSHOP

Defining the “Scope of Practice” Expectations for Advanced Practice Clinicians in Ambulatory Settings

Session 1:
Define the issues that the common template should address.

Session 2:
Build consensus for a scope of practice agreement template.

Conclusion:
Finalize template language that CRICO-insured organizations could commit to implement.
CRICO’s Diagnostic Support Tools

CRICO Breast Care Management Algorithm
A DECISION SUPPORT TOOL

Prevention & Early Detection of Colorectal Cancer
A CRICO DECISION SUPPORT TOOL

Clinical Guidelines for Obstetrical Services
AT CRICO-INSURED INSTITUTIONS
Insight

Chronology of a Malpractice Case
A defendant’s interpretation of the stages of a malpractice case, from first-hand experience.

www.rmf.harvard.edu
Thank you!