Directed Peer Review in Surgical Pathology

Stephen S. Raab, MD
University of Colorado Denver
Disclosure

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Learning Objectives

• To learn how different methods of slide review may be used to improve practice quality
• To learn causes of error detected by slide review
• To learn strengths and limitations of different review methods
Agenda

- Error
- Methods of error detection
- Secondary review processes
- Data from 5% and focused review studies
- Using secondary review data for improvement
Accuracy and Precision

Not Accurate
Not Precise

Accurate
Not Precise

Not Accurate
Precise

Accurate
Precise
Discrepancy Detection

• Proportion of discrepancy depends on detection method
  – Retrospective review
    • Correlation (e.g., cytologic-histologic)
    • Random 5% of all cases
    • Focused on specific cases
  – Prospective review
    • Challenging case review
    • Double viewing
Error Root Cause

- Total testing process: pre-pre-analytic, pre-analytic, analytic, post-analytic, post-post-analytic
    - Error rate 20%
    - 17% in pre-pre and post-post phases
    - 0.2% analytic phase
Error Root Cause

• Eindhoven Classification Model for the Medical Event Reporting System for Transfusion Medicine
  – Latent: technical, organizational
  – Active: knowledge, rules, skills

• Over 95% of diagnostic errors are associated with a system failure
Use of Secondary Review

- Often used as a quality assurance tool
- Secondary review processes are costly
- Difficult to use error data for improvement
  - Lack of formal root cause analysis
  - Lack of ability to change processes
  - Lack of study of implementation science
Random Versus Focused Review

• Subspecialty based sign out practice
• Error defined as a difference in primary and review diagnosis (i.e., at least one diagnosis does not correlate with disease process)
• Assess error detection proportion and harm
• Adjudicative process through committee
Random Review

- January 1, 2001 – December 31, 2005
- Used laboratory information system to identify 5% of cases (additional cases added for absent cases or gross only cases)
- Cases circulated to all pathologists
- Adjudicated if diagnosis was incorrect and secondary to interpretation
- Classified error into: 1) major and 2) minor severity categories based on subjective (no formally obtained outcome data) assessments
Focused Review

- January 1, 2006 – December 31, 2006
- Subspecialty directors chose area (e.g., higher levels of diagnostic uncertainty or perceived lack of terminology standardization)
- Performed by one or several pathologists in specific subspecialty
- Adjudicated error and subjectively assessed severity
Comparison

- Compared pseudo-random 5% and focused review error proportions
- Performed formal outcome analysis
  - Outcome classified as
    - No harm
    - Near miss
    - Harm (minimal, mild, moderate, and severe)
<table>
<thead>
<tr>
<th>Method</th>
<th>Total cases</th>
<th>Cases reviewed</th>
<th>Major errors</th>
<th>Total errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>213,142</td>
<td>7,444</td>
<td>27</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.36%)</td>
<td>(2.6%)</td>
</tr>
<tr>
<td>Focused</td>
<td>54,663</td>
<td>380</td>
<td>12</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(3.2%)</td>
<td>(13.2%)</td>
</tr>
</tbody>
</table>
## Examples of Errors Detected by 5% Review

<table>
<thead>
<tr>
<th>Site</th>
<th>Original diagnosis</th>
<th>Review diagnosis</th>
<th>Comment</th>
<th>Error severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stomach</td>
<td>No abnormality</td>
<td>Chronic inactive gastritis</td>
<td>&gt; 6 months delay in diagnosis</td>
<td>Mild</td>
</tr>
<tr>
<td>Bladder</td>
<td>Blood clot</td>
<td>Blood clot with tumor</td>
<td>Return for second biopsy</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
## Examples of Errors Detected by Focused Review

<table>
<thead>
<tr>
<th>Site</th>
<th>Original diagnosis</th>
<th>Review diagnosis</th>
<th>Comment</th>
<th>Error severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colon</td>
<td>Adenoca in colectomy</td>
<td>1/20 nodes +</td>
<td>CT scan follow-up normal</td>
<td>Minimal</td>
</tr>
<tr>
<td></td>
<td>(0/20 nodes +)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colon</td>
<td>Adenoca in colectomy</td>
<td>1/18 nodes +;</td>
<td>No recurrence</td>
<td>Minimal</td>
</tr>
<tr>
<td></td>
<td>(4/18 nodes +)</td>
<td>stage N1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colon</td>
<td>Adenoca in colectomy;</td>
<td>0/17 nodes +</td>
<td>PET scan no evidence of</td>
<td>Minimal</td>
</tr>
<tr>
<td></td>
<td>(1/17 nodes +)</td>
<td></td>
<td>metastasis</td>
<td></td>
</tr>
</tbody>
</table>
Findings

• Statistically significant higher proportion of errors detected by focused review (\( P < 0.001 \))

• For focused review subspecialty, the number of major errors ranged from 0% to 5.7% of cases reviewed

• Harm:
  – 5% process: 12 cases of major errors (44.4%); 2 cases moderate or above
  – Focused: 7 cases of major errors (58.3%); 0 cases moderate or above
Root Cause Analysis

• 5% review: errors secondary to a variety of causes (e.g., cognitive, poor quality specimen, lack of standardization, lack of uniform expertise)

• Focused review: errors generally secondary to lack of diagnostic standardization among pathologists
Standardization

- Diagnostic criteria for well differentiated liposarcoma
- Diagnostic criteria for metastatic adenocarcinoma in a lymph node
- Diagnostic criteria for high grade dysplasia
- Diagnostic criteria for ASAP
Summary

• Benefits of 5% review:
  – All pathologists participate
  – Pathologists see a variety of specimen types
  – Greater percentage of errors associated with moderate+ harm detected (compared to focused review)
  – Less work in review design
Summary

• Benefits of focused review:
  – Subspecialty areas focus on lack of standardization or other problems
  – Higher percentage or errors (and major errors) detected
  – Significantly lower number of slides evaluated
  – Errors detected in context of a specific problem
  – Greater ability to create standardizing procedures
References


Thank you for participating!