IT Solutions to Foster and Facilitate Peer Learning

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Acknowledgement:

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Overview

- Brief Background and context
- Functional requirements to enable peer learning
- Broad technical (IT) requirements
- BWH as Use Case
  - Workflow demonstration
  - Impact to date
- Conclusions
Peer Feedback, learning, and improvement: Institute of Medicine Report on Diagnostic Error

“Improving Diagnosis in Health Care” [IOM September 2015]

“health care organizations should adopt policies and practices that promote a non-punitive culture that values open discussion and feedback on diagnostic performance.”
Balancing Peer Review and Peer Learning goals v 2020 Realities

• Physician burnout as a ‘public health crisis’

Health Affairs Blog

Physician Burnout Is A Public Health Crisis: A Message To Our Fellow Health Care CEOs
John Noseworthy, James Madara, Delos Cosgrove, Mitchell Edgeworth, Ed Ellison, Sarah Krevans, Paul Rothman, Kevin Sowers, Steven Strongwater, David Torchiana, and Dean Harrison
March 28, 2017

• Contributing factors include:
  o Technology (‘EHRs’) a major driver of burnout
  o Interruptions, distractions, inefficiencies
  o Regulations/accreditation, performance measures, etc.

• Do interventions deliver desired results?
Learning from major adverse events (macro-events)

- Learning from major adverse events (macro-events) is an established process to improve patient care (Root Cause Analyses, Collaborative Case Reviews):
  - ~1000 safety events (> 700,000 annual examination)
  - 10-20 considered ‘macro-events’: e.g., death, delay in cancer diagnosis
  - Typically related to performance of test or procedure or lack of closed loop communication of test results

Learning opportunities and peer learning

• Learning opportunities from ‘micro-events’-care that deviates from our best practices and occur tens of times each day
  ○ Traditional score-based random peer review programs perform poorly
  ○ Innovations are needed to capture every learning opportunity

• Learn from a ‘miss’ as well as a ‘great call’ or a ‘consult’
• Create an easily searchable repository of ‘vetted’ learning opportunities to promote individual and group learning
• Promote *Just Culture* Principals

Functional Requirements-1

• Define goal: capturing learning opportunities, v meeting perceived regulations v OPPE/FPPE, v physician’s quality of interpretation

• Discourage Under reporting of learning opportunities: THE major challenge

• Must be non-punitive, just culture principles

• ‘Peer review protected’-data flow predominantly and preferably outside EHR

• Easy to use, safe and secure, minimize redundant data entry

• Embedded in workflow
  • interpretation (launch from PACS) and reporting (launch from reporting software) or EHR workflow

• Allow receiver confirmation and feedback

• Welcoming and Valuable
  • Minimize ‘threatening’ look and feel, promote ‘usual/expected’ workflow, relevance to mission/goals evident as used

• Searchable, ‘vetted’, access controlled, repository of learning opportunities
High level Technical Requirements

• Closed loop communication tool-[e.g., confirm receipt]

• Context sharing-Interoperability (web-enabled /SMART on FHIR/etc.), tethered or mobile device (particularly to view):
  • E.g.: Single Sign-on; Active directory (page, email)
  • E.g.: Context sharing URL launch from PACS, reporting system, EHR
  • E.g.: SMART on FHIR app launch from EHR (e.g. Apple orchard/Epic-etc.)

• Enable secure feedback from receiver to sender

• Integrate with image viewing software in context

• Analytics tool, data repository
Case Example:
Peer Learning Program at Brigham and Women’s Hospital

‘Worth Another Look’

- Pilot February 2017, Full Implementation October 2017

Workflow
Impact to-date
Key Components of Peer Learning Program

• Leadership

• **WHY?**: Patients first

• **HOW?**: Capture each learning opportunity to improve care

• To manage transition to peer learning:
  
  o Develop policies and procedures
  
  o Eliminate superfluous and wasteful programs (score-based peer review)
    
    o *[Strong ACR leadership support to transition to peer learning]*
  
  o Include in routine interpretation workflow to encourage use
  
  o Unambiguous metrics, celebrate milestones; modify based on feedback
### Critical Alert Level

- **Critical Level 1 (Red)**
  - Findings that are potentially immediately life-threatening. Requires "face-to-face" or "telephone" contact.

- **Critical Level 2 (Orange)**
  - Findings that could result in mortality or significant morbidity if not appropriately treated urgently. Requires "face-to-face" or "telephone" contact.

- **Critical Level 3 (Yellow/Alert)**
  - Findings that could result in mortality or significant morbidity if not appropriately treated, but are not immediately life-threatening or urgent. Requires "face-to-face", "telephone", or other verifiable contact. Email is the default communication option and pager is optional.

- **Critical Level 4 (Yellow/Page)**
  - Findings that could result in mortality or significant morbidity if not appropriately treated, but are not immediately life-threatening or urgent. Requires "face-to-face", "telephone", or other verifiable contact. Pager is the default communication option and email is optional. (Intended for use in emergency setting.)

### Follow-Up Alert Level

- **Follow-Up Imaging**
  - This alert serves as a recommended course of action for the care of the patient. The receiver of this alert can accept it, modify it, forward it to another physician, or dismiss it immediately.

### Other Alert Level

- **Worth Another Look Alert (WAL)**
  - This alert is for radiologist to radiologist communication for peer review and QA purposes ONLY as part of the BWH "just culture" initiative.

- **Pink Alert**
  - This alert is for Breast Imaging radiologists to communicate follow-up instructions to the radiology technologist if the imaging exam was performed: DCE, CNAP, FLR, MBI, LBD. Email is the only communication option for this level.

- **Technical Feedback**
  - This alert is for radiologist to modality leadership communication for imaging QA and feedback (excluding patient callbacks).

- **Patient Callback**
  - This alert is for radiologist to modality leadership communication for patient callbacks (excludes screening mammography).
Worth Another Lock Alert (WAL)

This alert is for radiologist to radiologist communication for peer review and QA purposes ONLY as part of the BWH 'just culture' initiative.

FOLLOW-UP ALERT LEVELS

- Follow-Up
  - Imaging
  - Recommendation

Critical Findings Description

- Consult
- Clinical Follow-up
- Great Call

CONTACTS

- Receiver
- Cc

COMMUNICATION OPTIONS

- Use ANCR to notify the provider of the Critical Result.
- Email
  - I have already communicated the Critical Result to the provider face to face
  - I have already communicated the Critical Result to the provider on the telephone

Submit  Cancel
This alert is for radiologist to radiologist communication for peer review and QA purposes ONLY as part of the BWH ‘just culture’ initiative.

**FOLLOW-UP ALERT LEVELS**

- [ ] Follow-Up Imaging
- [ ] Recommendation

Please do not use this alert level until formally introduced and instructed to do so. This alert serves as a recommended course of action for the care of the patient. The receiver of this alert can accept it, modify it, transfer it to another physician, or deem it unnecessary.

**Critical Findings Description**

- [ ] Consult
- [ ] Clinical Follow-up
- [ ] Great Call

Great Call. See image(s):

**CONTACTS**

- **Receiver:** Khorasani, Ramin, M.D.
- **Search Directory:**
- **Inpatients:**
- **Showing Clinician:**
- **Show Treatment Team:**

**Communication Options**

- [ ] Use ANOR to notify the provider of the Critical Result.

- **Email**

- [ ] I have already communicated the Critical Result to the provider face to face

- [ ] I have already communicated the Critical Result to the provider on the telephone
Critical Radiology Results: Worth Another Look Alert (WAL)

ANCR - Alert Notification of Critical Results <anrc@cebi.partners.org>
Tuesday, February 7, 2017 at 10:50 AM
To: Khorasani, Ramin, M.D., M.P.H.

A patient in your care has a Critical Radiology Result that requires your acknowledgement. The Worth Another Look Alert (WAL) was created by Ramin, M.D., M.P.H. Khorasani on 2/7/2017 10:50:01 AM.

To view and acknowledge this alert follow this link:
https://anocrqa.partners.org/Alert/Details/114772

Important Notes:
Worth Another Look Alert (WAL): 30 Days for Acknowledgement of Receipt This alert is for radiologist to radiologist communication for peer review and QA purposes ONLY as part of the BWH 'just culture' initiative.

Any questions on the ANCR system please contact ancrsupport@partners.org. Please do not reply to this email.
I would appreciate your opinion on this case. See image(s):

I have reviewed and understand the results.

Thank you for sending.

very helpful
<table>
<thead>
<tr>
<th>Alert Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worth Another Look Alert (WAL)</td>
<td>This alert is for radiologist to radiologist communication for peer review and QA purposes ONLY as part of the BWH ‘just culture’ initiative.</td>
</tr>
<tr>
<td>Pink Alert</td>
<td>This alert level is for Breast Imaging radiologists to communicate follow-up instructions to the mammography coordinators at the location where the imaging exam was performed (850, DFCI/MV/WS, FLK, FXB, LBC). Email is the only communication option for this level.</td>
</tr>
<tr>
<td>Technical Feedback</td>
<td>This alert is for radiologist to modality leadership communication for imaging QA and feedback (excluding patient callbacks).</td>
</tr>
<tr>
<td>Patient Callback</td>
<td>This alert is for radiologist to modality leadership communication for patient callbacks (excludes screening mammography).</td>
</tr>
<tr>
<td>Non-Critical Result</td>
<td>This alert is for closed-loop communication of non-critical results for exams with priority of STAT, Urgent/Patient Waiting, and Needed for Discharge.</td>
</tr>
</tbody>
</table>

**Critical Findings Description**

- Consult
- Clinical Follow-up
- Discrepant Opinion
- Great Call
- Teaching Case
- Report Template Feedback
- Unclear reason for STAT
- Consult Resident Feedback

Please describe the potential discrepancy and the provider(s) with whom you have communicated:

COMPARISON: None

IMPRESSION:

PA and lateral chest examination demonstrates parenchymal opacification within the left upper lobe, possibly due to malignancy or pneumonia. No pleural effusion is seen and there is no pneumothorax. CT scan the chest is recommended.

Critical results were communicated and documented using the Alert Notification of Critical Radiology Results (ANCR) system.

END IMPRESSION
Improving Radiology Peer Learning: Comparing a Novel Electronic Peer Learning Tool and a Traditional Score-Based Peer Review System

Tony W. Trinh¹,²
Giles W. Boland²
Ramin Khorasani¹,²

OBJECTIVE. The purpose of this study was to compare the yields of peer learning between a radiology electronic peer learning tool (PLT) and a score-based peer review (SBPR) system.

MATERIALS AND METHODS. This retrospective study was performed from May 1, 2017, through October 31, 2017, at a 776-bed academic hospital performing more than 620,000 radiology examinations annually. Use of a PLT that generates alerts facilitating closed-loop feedback was initiated on March 1, 2017. Functions included providing peers with the following clinical follow-up after review of prior reports; positive feedback, and consultation to solicit second opinions. In the same period, an SBPR system yielded the following scores: 1. agree with original interpretation; 2. minor discrepancy; 3. moderate discrepancy; and 4. major discrepancy. Potential learning opportunities were defined as cases receiving a clinical follow-up alert (PLT system) and reports scored 3 or 4 (SBPR system). Primary outcome was clinically significant feedback per total reports reviewed, measured as radiology report addendum rate (number with addenda divided by number of reports reviewed monthly for each system). The secondary outcome was potential learning opportunity rate (number of clinical follow-up alerts or reports scored 3 or 4 divided by the total number of radiology reports reviewed monthly). A paired t-test was used for statistical analysis.

RESULTS. The overall PLT report addendum rate was 11.2% (23 addenda/206 reports) versus 0.27% (13 addenda/4861 reports) for SBPR (p = 0.03), a 41-fold difference (11.2/0.27). The potential learning opportunity rate for PLT was 50.0% (206 clinical follow-up alerts among 412 total alerts) versus 0.53% (26 scored 3 or 4 among 4861 reports reviewed) for SBPR (p = 0.00003), a 94-fold difference (50.0/0.53).

CONCLUSION. A PLT improves radiology peer learning with a significantly higher yield of clinically significant feedback and potential learning opportunities compared with a traditional SBPR system.
## Worth Another Look (WAL)

<table>
<thead>
<tr>
<th>Program</th>
<th>Total Alerts</th>
<th>Consult</th>
<th>Clinical F/U</th>
<th>Great Call</th>
<th>Addenda</th>
<th>Addendum Rate</th>
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<tbody>
<tr>
<td>WAL</td>
<td>412</td>
<td>77</td>
<td>206</td>
<td>129</td>
<td>23</td>
<td>11.2%</td>
</tr>
<tr>
<td>Peer review</td>
<td>4861</td>
<td>4543</td>
<td>292</td>
<td>18</td>
<td>8</td>
<td>13</td>
</tr>
</tbody>
</table>

P<0.03

Key Components of Peer Learning Program

• Leadership
• WHY?: Patients first
• HOW?: Capture each learning opportunity to improve care

• To manage transition to peer learning:
  o Develop policies and procedures
  o Eliminate superfluous and wasteful programs (score based peer review)
    o [ACR leadership very supportive of transition to peer learning]
  o Include in routine interpretation workflow to encourage use
  o Unambiguous metrics, celebrate milestones; modify based on feedback

• Embed in radiologist performance expectations:
  • Radiology Patient Outcome Measures (RPOMS)
  • 5% of individual radiologist compensation
Impact of Physician Performance Incentive Program on Clinical Impact and Usage of Peer Learning Program

XmR chart, 3 sigma

### Impact of Physician Performance Incentive Program on Clinical Impact and Usage of Peer Learning Program*

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Mean</th>
<th>Addendum Rate (%)</th>
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<tbody>
<tr>
<td>Pre-Incentive</td>
<td>9.9%</td>
<td></td>
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<tr>
<td>Division Incentive</td>
<td>8.3%</td>
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<tr>
<td>Individual Incentive</td>
<td>7.9%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Mean</th>
<th>Clinical Follow-Up Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Incentive</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>Division Incentive</td>
<td>34.4</td>
<td></td>
</tr>
<tr>
<td>Individual Incentive</td>
<td>31.2</td>
<td></td>
</tr>
</tbody>
</table>

- **P =0.55**
- **Addendum rate 25-30 times higher than Score-based peer review**

* Excluded Breast Imaging Division

Impact of Physician Performance Incentive Program on Clinical Impact and Usage of Peer Learning Program

- No significant change in rate of addended reports; 8-9% of ‘clinical follow up’ alerts which account for ~30-35% of peer learning alerts
- 5-fold increase in use with group incentive; 10-fold increase in use with individual incentive
  - 1% of salary (withhold)
  - Each faculty must generate, on average, 1 WAL per clinical day in each quarter
    - What is the right target?
  - Currently ~2-3% of all reports (excluding breast imaging); >10,000/year

Key Points and Next Steps

• Peer learning, a key component of learning health systems, must help identify learning opportunities to improve quality of care for patients
  - ‘Micro-events’ occur tens of times each day; under reporting is a major challenge
  - Supplement safety reporting for ‘macro-events’ that occur much less frequently

• Effective implementation and adoption will require addressing people, process and technology requirements