Disclosures

• None
Background – The Current State of Imaging Consultation

- PACS technology and current fee-for-service payment models limit direct consultation activities.
- Added value of such activities is rarely documented.
- Direct consultation improves education, communication, and patient care.

Background – Traditional Imaging Consultation

- No windows, separate room, separate area
- Radiologist works side-by-side with radiologist
- Telephone
Background — Imaging 3.0 in Action Case Studies

• After intervention: “Show referring clinicians you care about their opinion by travelling to their work site and listening to their feedback…in order to improve communication.”
• After intervention: “We are solving more day-to-day issues for clinicians seeking our services. All of this is very good for us demonstrating value to our colleagues and patients.”

• Before intervention: “From the physician’s perspective, all radiologists do is read images and, for that reason, would be easy to replace.”
• After intervention: “At our hospital, our radiologists are among the strongest physician leaders, and they actively participate in many groups.”

Background — Purpose

• As healthcare moves towards a bundled payment system, we must increase the awareness of the value of the radiologist.
• Radiology residents can provide essential consultation services without significantly disrupting attending workflow.
• Resident-driven clinical imaging rounds (CIR) allow radiologists-in-training to actively and directly participate in clinical management.
• Consultation activities take considerable time and effort. Demonstrating their value impacts future implementation.
Background - Purpose

• Retrospective review of survey data determined the qualitative and quantitative effects of CIR on clinical management, communication, and education of referring providers and radiology residents.
• With results, CIR will be modified to better serve patients and providers.
• By documenting its organization and effectiveness, CIR can be adopted at other institutions to improve patient care and the radiologists’ role in the larger medical community.

Methods

• The initial ten months of Clinical Imaging Rounds (CIR) were evaluated in a retrospective study.
• CIR format:
  – Schedule: Four 30-minute sessions were held weekly on the clinical wards.
  – Case Submission: Via email 24 hours before the scheduled CIR time
  – Rounds format:
    • Medicine team presented the relevant patient history.
    • Radiology resident demonstrated relevant imaging findings, clarified imaging related questions, and discussed management options and recommendations with the referring service.
  – Documentation: Residents documented their CIR communication in a standardize note.
Methods

• An anonymous survey to determine the perceived usefulness of CIR as a form of consultation given to:
  – radiology residents
  – internal medicine attending physicians
  – Internal medicine residents
  – medical students.
• Qualitative and quantitative analysis of survey responses was performed to demonstrate the impact of CIR on patient care and education.

Results

• Approximately 20 radiology residents and 150 internal medicine physicians and medical students participated in imaging rounds.
• 85% of radiology resident participants completed the survey (N=17).
• Approximately 30% of internal medicine participants completed the survey (N=45).
Appropriate to your level of training? 100.0%

Enhance your understanding of imaging reports? 95.6%

More confident in ordering imaging studies? 75.6%

Affects the clinical management of your patients? 70.5%

Allows for the radiologist to have a better understanding of the patient resulting in a more complete assessment and interpretation? 93.2%

Improves patient care? 84.1%

Beneficial to your education? 91.3%

Results – Medicine Dept. (Attendings, Residents, and Medical Students)

Improved your skills as a consultant? 69.0%

Improved communication? 90.9%

Incorporate imaging medicine consultation in your future practice? 86.4%

Changed your perspective on the radiology department? 61.4%

Improved your ability to interpret medical imaging? 86.7%

Convenient and easy to schedule? 83.3%

Results – Medicine Dept. (Attendings, Residents, and Medical Students)
Results – Radiology Residents

- Beneficial to your education? 88.2% Yes, 11.8% No
- Improves patient care? 88.2% Yes, 11.8% No
- Enhance your understanding of the imaging studies you review? 100.0% Yes, 0% No
- Allows for the radiologist to have a better understanding of the patient resulting in a more complete assessment and interpretation? 94.1% Yes, 5.9% No
- Affects the clinical management of your patients? 75.0% Yes, 25.0% No
- Appropriate to your level of training? 100.0% Yes, 0% No

Results – Radiology Residents

- Imaging rounds are convenient and easy to schedule? 58.8% Yes, 41.2% No
- Improved your ability to interpret medical imaging? 47.1% Yes, 52.9% No
- Incorporate imaging-medicine consultation in your future practice? 100.0% Yes, 0% No
- Changed your perspective on the internal medicine department? 23.5% Yes, 76.5% No
- Improved communication? 54.1% Yes, 45.9% No
- Improved your skills as a consultant? 88.2% Yes, 11.8% No
## Results — Medicine Department

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the discussion appropriate to your level of training?</td>
<td>8 (100)</td>
<td>0 (0)</td>
<td>n/a</td>
</tr>
<tr>
<td>Does imaging rounds enhance your understanding of information contained within the report?</td>
<td>7 (87.5)</td>
<td>1 (12.5)</td>
<td>0.4485</td>
</tr>
<tr>
<td>Do you feel more confident in ordering imaging studies after participating in imaging rounds?</td>
<td>6 (75.0)</td>
<td>2 (25.0)</td>
<td>0.1684</td>
</tr>
<tr>
<td>Does imaging rounds affect the clinical management of your patients?</td>
<td>6 (75.0)</td>
<td>2 (25.0)</td>
<td>0.2705</td>
</tr>
<tr>
<td>Does imaging rounds allow for the radiologist to have a better understanding of the patient, resulting in a more complete assessment and interpretation?</td>
<td>8 (100.0)</td>
<td>0 (0)</td>
<td>0.1410</td>
</tr>
<tr>
<td>Do you think imaging rounds improve patient care?</td>
<td>8 (100.0)</td>
<td>0 (0)</td>
<td>0.3962</td>
</tr>
<tr>
<td>Do you feel that imaging rounds are convenient and easy to schedule?</td>
<td>7 (87.5)</td>
<td>1 (12.5)</td>
<td>0.7444</td>
</tr>
</tbody>
</table>

Table 1. Medicine Attending Medical Student Resident P-value (N=8) (N=16) (N=21)

Since participating in imaging rounds, do you feel you have improved your skills as a consultant? | n/a | n/a | 0.7444 |
Do you think this activity has improved communication between the radiology and medicine departments? | n/a | n/a | n/a |
Has imaging rounds changed your perspective on the radiology department? | n/a | n/a | 0.3962 |
Has imaging rounds improved your ability to interpret medical imaging? | n/a | n/a | 0.1410 |

Legend: >75%

There was no statistically significant difference in answers between medicine attendings, residents, and medical students.

Across all three groups, there was an overwhelming positive review of imaging rounds.

All three groups agreed imaging rounds improved education, communication, and patient care.
Results — Medicine v. Radiology Residents

While 47% of radiology residents felt imaging rounds improved their own interpretation skills, a whopping 86% of medicine residents believed their interpretation skills were improved.**

>90% of residents felt that communication between departments was improved.

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*statistically significant with p-value>0.05*
Survey participants were given the opportunity to provide free text feedback to identify areas of improvement for CIR.

Results – Free Response Questions

• What are the barriers you encounter during imaging rounds?

• What can be improved?

• What has been the most valuable aspects of imaging consultation?
Results

What are the barriers you encounter during imaging rounds?

Top Answers:
- Medicine Attendings: Computer Quality
- Medicine Residents: Timing
- Medicine Med Students: Lack of Knowledge
- Radiology Residents: Preparation
Results

What are the barriers you encounter during imaging rounds?

“Availability of .”

“There has been some instances where timing was inconvenient due to pending .”

“Radiologists have a tendency to move between images quickly and it would be helpful if the radiologist were to explain in a bit more detail how the imaging findings pertain to the clinical presentation.”

“ is key as it allows a thorough evaluation of the case, literature, and review with radiology attendings as needed.”

Results

What can be improved?

[Bar chart showing the number of responses per category: Computer Quality, Preparation, Case Submission, Timing, Content, Attending involvement, Communication. Each category has a bar chart showing the distribution of responses from Medicine Attendants, Medicine Residents, Medicine Medical Students, and Radiology Residents.]
Results

What can be improved?

Both medicine and radiology residents believe that the case submission process, more than many other aspects of CIR, can be improved.

“More flexibility in that may have particular radiology needs.”

“I think the processing of could be improved. Also, I think it would be great if we were able to and show them their imaging if they want to see it.”
Results

What has been the most valuable aspects of imaging consultation?

Top Answers:

**Medicine Attendings:**
- Education – Image Interpretation

**Medicine Residents:**
- Education – Image interpretation and utilization

**Medicine Med Students:**
- Education - Image Interpretation

**Radiology Residents:**
- Communication
- Education – Image Interpretation
Results

What has been the most valuable aspects of imaging consultation?

“Getting to discuss with imaging findings with radiologists to get a”

“Great interdisciplinary contact and

Shared goal of”

“I think these are wonderful sessions which help us to better understand results and”

“which is the team we work the most for but speak directly to the least.”

Discussion

• Resident-driven imaging rounds provides a valuable opportunity to improve communication, education, and patient care.

• Our sustainable workflow:
  – Allows for direct and regularly scheduled imaging-medicine consultation.
  – Is valued by both radiologists and internal medicine physicians as an excellent educational experience.
Discussion

• Areas for improvement:
  – Case submission process
  – Timing of rounds
  – Remote PACS access
Limitations

• Survey was not mandatory – not all participants responded to survey, selection bias.
• Improvement in patient care analysis was subjective only, based on memory and opinion of survey takers.

Future Directions

• A retrospective analysis of de-identified CIR patient information to determine:
  – consult patient demographics
  – nature of consultation
  – impact of specific clinical recommendations made during CIR
• Improvements in Web PACS.
• Incorporation of tablet use.
• Automated case submission system.
References