R2-QI-6

"My Attending Really Wants it!" Manual Clinical Decision Support Adjudicating the "Better Look" Inpatient MRI at an Academic Medical Center

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Problem Description

- Our institution has ranked #1 for inpatient MRI utilization (AAARAD survey) amongst academic medical centers repeatedly. 32 per 100 admissions.
- Main hospital:
  - 2 inpatient MRI scanners and approximately 632 licensed beds.
  - High volume of inpatient MRI orders→ long turnaround (TATs)
- Body MRI studies are typically the least urgent c/w urgent neurological and spinal studies. Generally, inpatient MRI studies are not reimbursed and not relevant to the inpatient clinical care. Adds to length-of-stay (LOS) and costs.
- Complex patient population with consultant-driven recommendations
  - Hierarchical primary team structure with the most junior team member often placing the order for the imaging study
  - Ordering clinician often unsure of indication for study
- Clinical decision support (CDS): impact on reducing imaging utilization

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Fishbone analysis of the Problem

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OBJECTIVES

- We devised a Google forms based questionnaire applied to all inpatient body MRI orders to probe the urgent need for an inpatient MRI walking ordering clinicians through a series of questions using a manual clinical decision support (CDS) dialogue.

- Specific Aims:
  1. Potentially cancel inappropriate studies or redirect nonurgent MRI orders to the outpatient setting
  2. Understand ordering patterns to identify whether inpatient MRIs were recommended by non-radiology consultants or from recommendations from our own imaging studies, offering potential opportunity for internal improvement
  3. Confirm an appropriate indication for the inpatient MRI order

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METHODOLOGY: Intervention

9-item Google questionnaire for all Inpatient body MRI requests

- Questions were designed to probe the thought process driving the order
- House-staff protocoling body MRIs completed the questionnaire after discussion with the ordering clinician

1. What inpatient management decision(s) will be affected by this inpatient MRI?
2. What specific clinical question(s) of information needed will impact inpatient care?
3. If the answers to both of the preceding 2 questions is "uncertain," why should an inpatient MRI be performed?
4. Are there diagnostic tests related to the key clinical questions(s) that have not provided sufficient information?
5. Was this exam recommended by Radiology or another consulting service?
6. Is there an urgent procedure or management decision to be undertaken during this hospitalization that is contingent on the results of this MRI?
7. Could this MRI be performed after discharge?
8. If this MRI cannot or possibly cannot be performed after discharge, please state the possible reasons.
9. Please enter the final disposition for this inpatient MRI order.

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METHODOLOGY

- Study of the interventions
  - Question #9 (final disposition) was considered the outcome of the intervention
  - Percentage of orders canceled + intend to scan as an outpatient (OP-converted) were considered evidence of impact of the intervention

- Additional Measures
  - Percentage of orders with no known indications (Q3)
  - Percentage of consultant/Radiology-driven orders (Q5)
  - Trends in reasons why the study cannot be performed as an outpatient (Q8)

- We considered the possibility that other factors could lead to canceled orders: baseline data from 1500 body MRI orders preceding the study showed a 0.6% cancellation rate.

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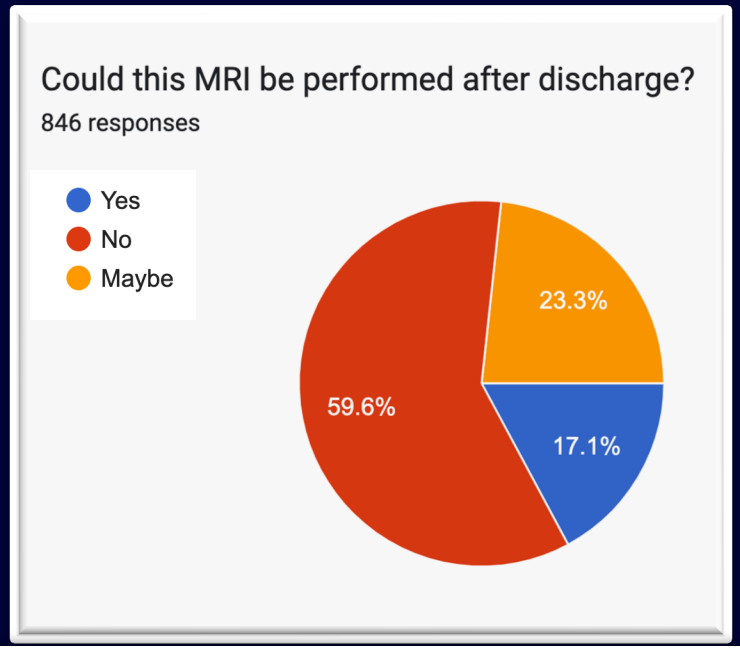
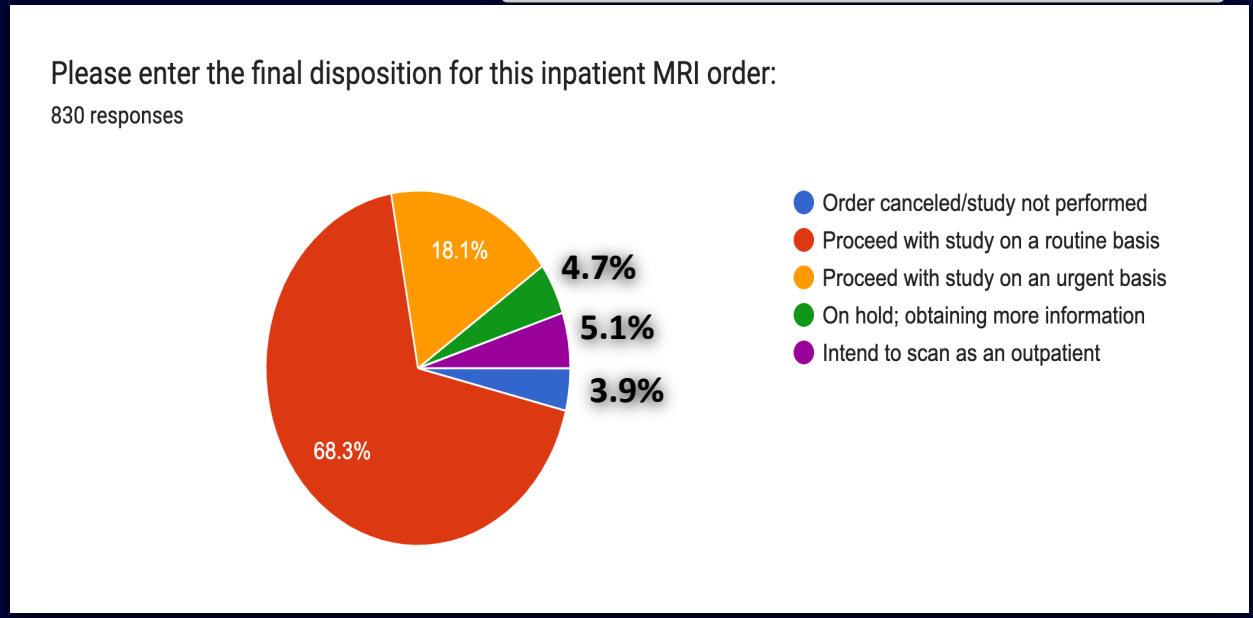
RESULTS

- 846 responses (each representing an order for IP body MRI)
- Assumed the IP-OP conversion rate pre-intervention = 0%

- Increase in IP body MRI cancellation rate from 0.6% to 3.9% following implementation.
  - Supplemented by IP→OP conversion rate of 5.1%
- Overall decrease in IP body MRI studies = 8.4%
- 13.2% with no management decision or clinical question (Q2)
- Outside recommendations (Q5):
  - 582 recommended by consultant = 68.8%
  - 136 recommended by Radiology = 16.1%





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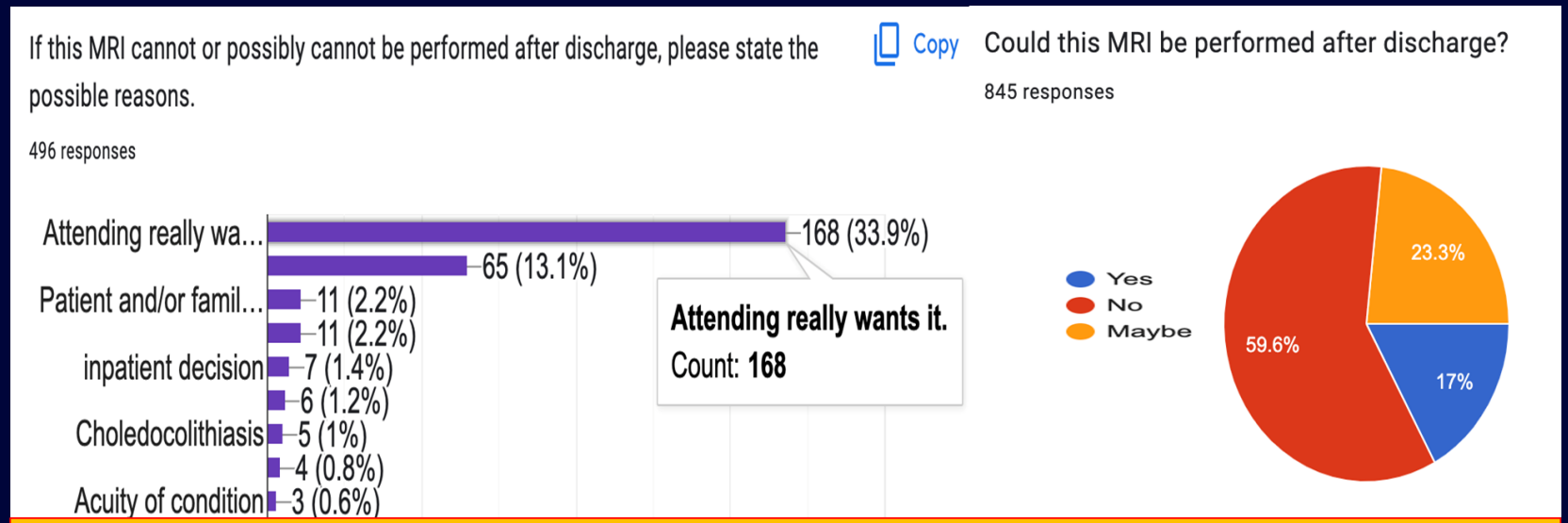
DISCUSSION



The most common #1 reason to perform inpatient-MRI at our institution:
"My attending really wants it!!"

- Knowledge Gap:
  - Requires a longer screening process for patient safety compared to other modalities
  - MRI is time-consuming with more time-efficient imaging alternatives
  - Limited capacity and availability compared with other imaging modalities

Top Causes of inpatient MRI over-utilization:

1. Orders from subspecialty consultants
2. Recommendations from prior CT/US imaging reports (not specified whether outpatient)
3. Junior residents may place orders without understanding the relevance to inpatient management, framing it as getting a "better look" or based on "attending preference"

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DISCUSSION

- Vast majority of the orders originated from consultant or Radiology: 68.8% + 16.1% = 84.9% (recommendations)
  - Primary team/ordering clinician unfamiliar with the indication or unable to explain the rationale
  - Opportunity for workflow improvements:
    - Add consultant to IP MRI orders
    - Review IP imaging studies recommending MRI

- Significant proportion likely amenable to IP-OP conversion: 17.1% yes + 23.3%maybe = 40.4%
  - Likely that many "may be" amenable to IP-OP conversion are appropriate to defer to OP
  - Results suggest substantial opportunity for improvement

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LIMITATIONS & CONCLUSIONS

- **Limitations:**
  - Single-institution project with idiosyncratic culture and processes
  - Team structure leading to discussion with junior team member limited ability to obtain actionable information
  - Final disposition unknown for 55 orders (6.5%)

- **Conclusions:**
  - Manual clinical decision support reduces inappropriate IP body MRI utilization: Radiology serving in a consultative capacity has the potential to optimize utilization
  - Opportunities for improvement:
    - Attach consultants to IP MRI orders and work with them to optimize recommendations
    - Care coordination: develop infrastructure to facilitate IP-to-OP conversion (i.e., schedule, obtain preauthorization, arrange for results communication, etc.)

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