Improved Operational Support for Advanced MR Imaging through Coordinated Real-Time Physicist Collaboration

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Department of Radiology and Imaging Sciences

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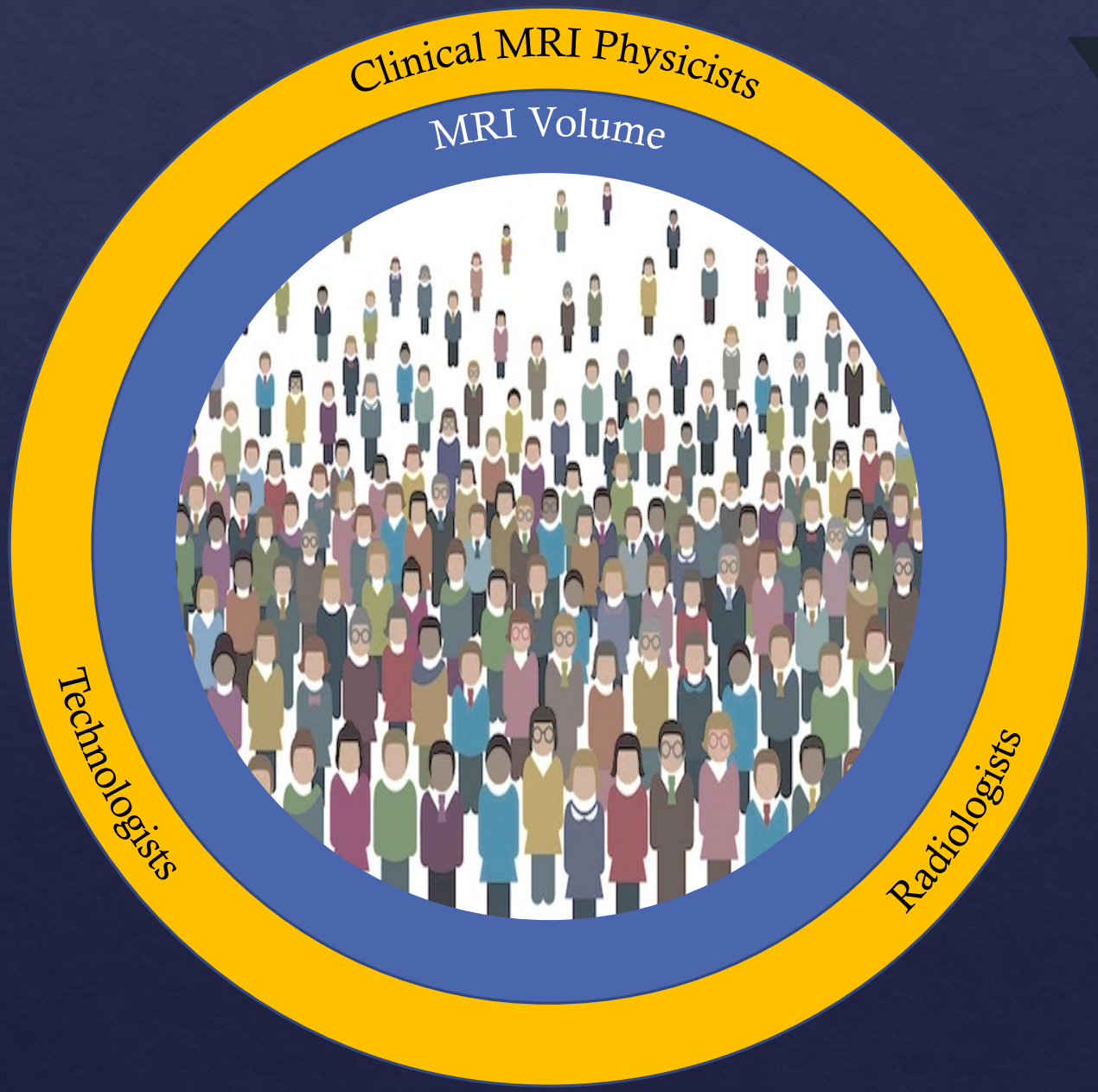

The Clinical Support Role of MRI Physicists and Scientists

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- System Compliance
- Protocol Management and Optimization
- Staff Training/Education
- Safety
- Radiologist Collaboration
- Purchases and Upgrades

Experience:

- MR Physics
- System Operation
- Applications and Diagnostic Need

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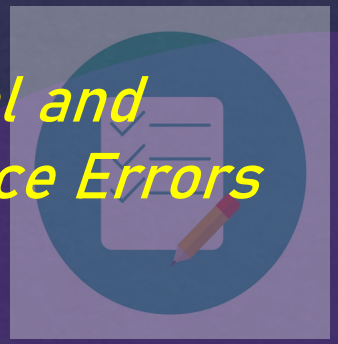
Current Operational State

- Questions or unresolvable issues
- Escalation before, during, or following MR exam
- General Mechanism
  - *Email, phone, QC logs*

Onsite MR physicists provide an expert resource for providing answers to specific MR problems. They mediate solutions in real-time or work to educate or re-configure chronic quality shortcomings. Often, they have multiple operational and research initiatives active in their scope of work

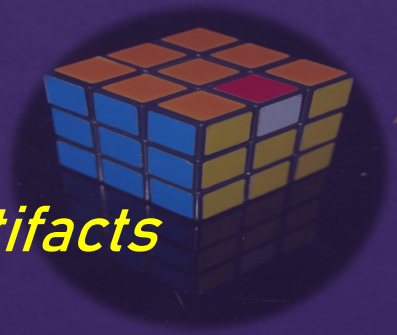


Protocol and Sequence Errors

Poor quality

Guidance and Training

Safety inquiries and Scan criteria



Artifacts

Short Comings:
- Significant Delays
- Uncertain Availability
- Misdirected Inquiries

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Quality Improvement Proposal:

The established method for soliciting expert guidance on key operational- and physics-related was non-standardized and ad hoc, based on email and phone calls. Hence, the certainty of addressing an inquiry was unknown, leading to low efficiency and reliability. Often physicists addressed inquiries on a personal availability-basis, which occasionally resulted in scheduling conflicts and delays.

Seek to Improve communication…

1 …EFFICIENCY

2 …RELIABILITY

We established a new program entitled:

"Physicist-of-the-Day" (POD)

<u>3 main objectives:</u>

- Organize scheduling/availability
- Instant messaging and communication
- Real-time collaboration
- Improved turnaround time

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Quality Improvement Proposal:

A Shift Radiology Communication...

The onset and evolution toward a decentralized network of sites in our network motivated the integration of digital software tools in Radiology to communicate and report information broadly in a standardized way.

Diverse and newly established sites have a common and interactive online destination for Department support information and protocols.

POD Proposal:

Implement within a larger framework of Radiology communication

Office 365

QGenda

Quality Improvement Workflow and Assessment:

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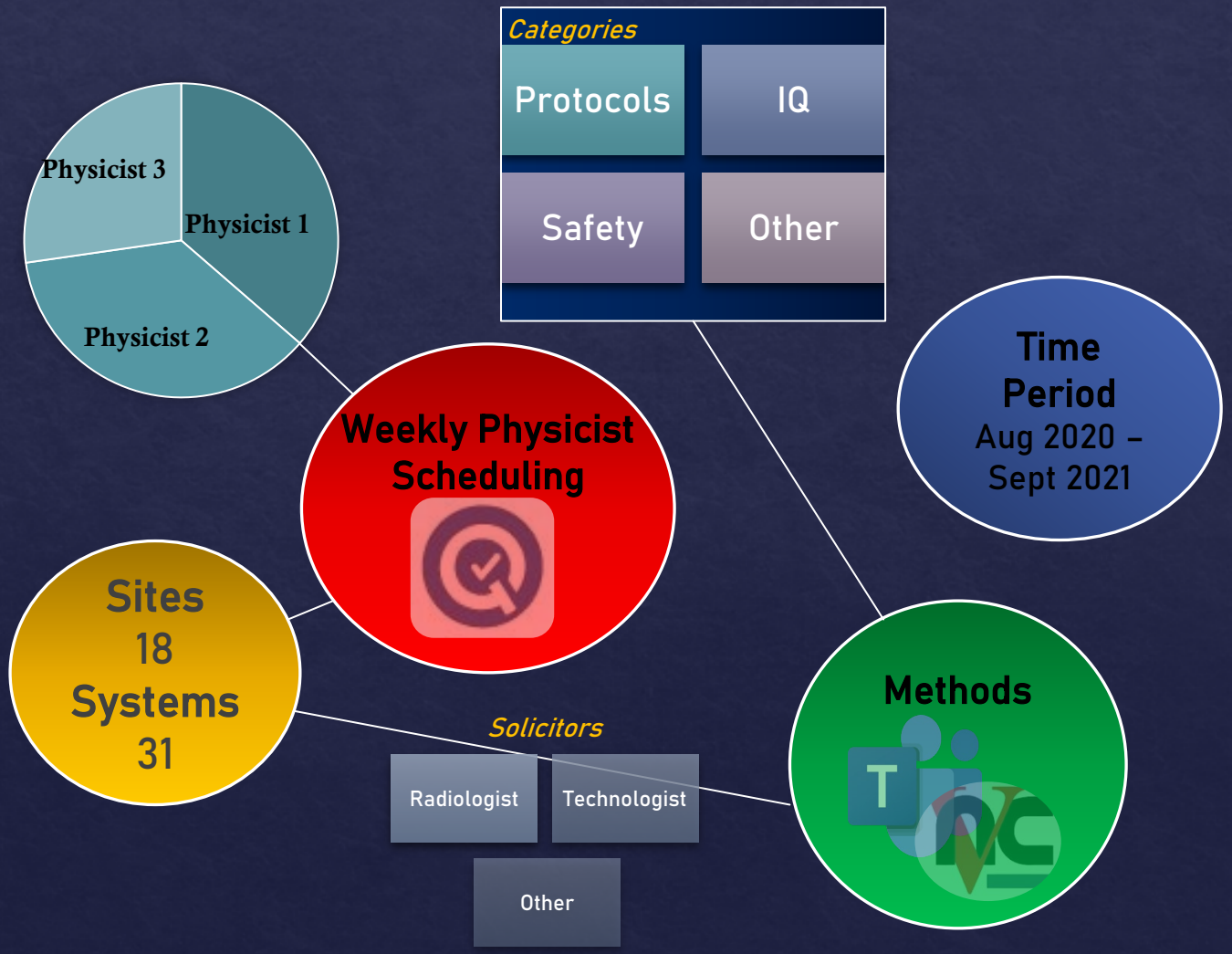
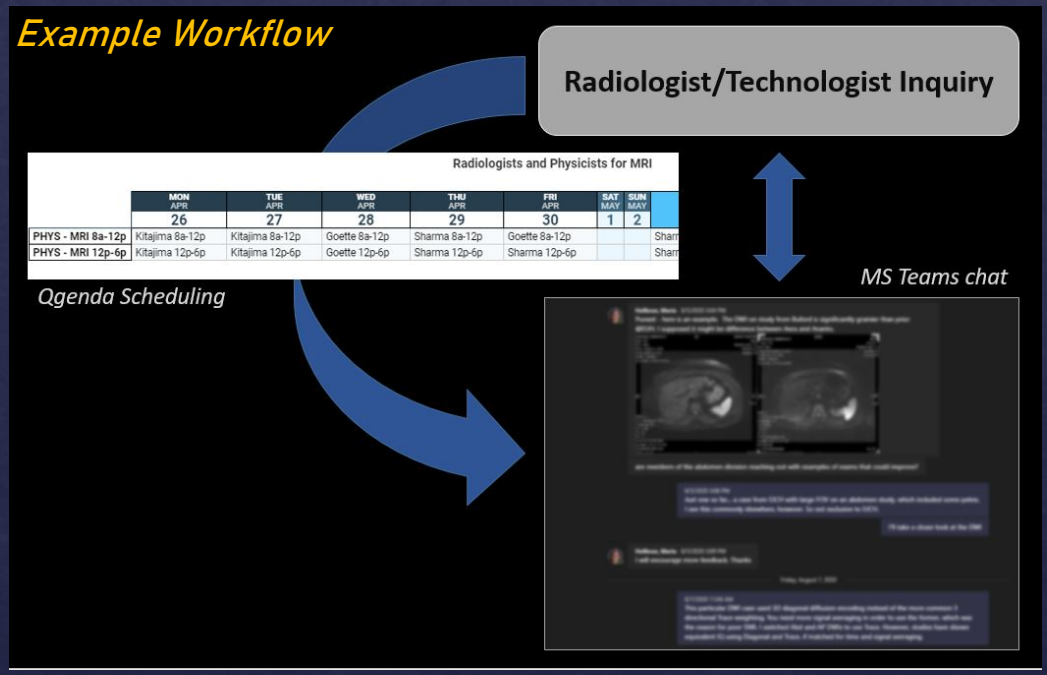




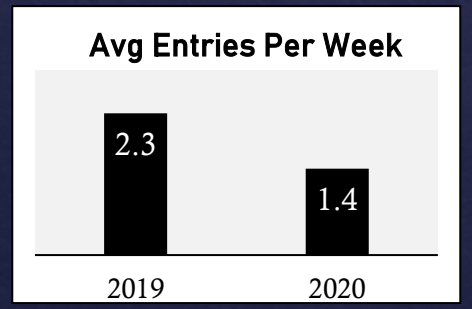
Comparative Data

- No prior data recording of ad hoc communications
- Imaging feedback forms (Rad to Site Suprv) – weekly emails

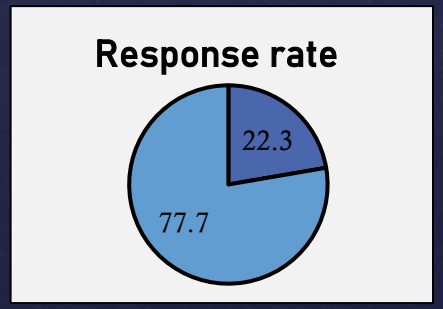
Quality Improvement Results:

Imaging Feedback Tool

- *Rad submits a QC note about a case*
- *Each week notes are compiled and sent to Supervisors at Site for response*
- *Site responds in note; distributed to Rad.*
- *Turnaround time > 1 week*



Low numbers and decline in system use



Many notes without feedback

	Phys 3	Phys 2	Phy 3	Total
Target %	*0.75*	*1.00*	*1.00*	
Target Hrs/wk	*13.2*	*17.6*	*17.6*	*48.3*
Target hours	*763.6*	*1018.2*	*1018.2*	*2800.0*
Actual %	**0.76**	**0.98**	**1.01**	
Actual Hrs/wk	**13.3**	**17.2**	**17.7**	**48.3**
Total Hours	**774**	**998**	**1028**	**2800**

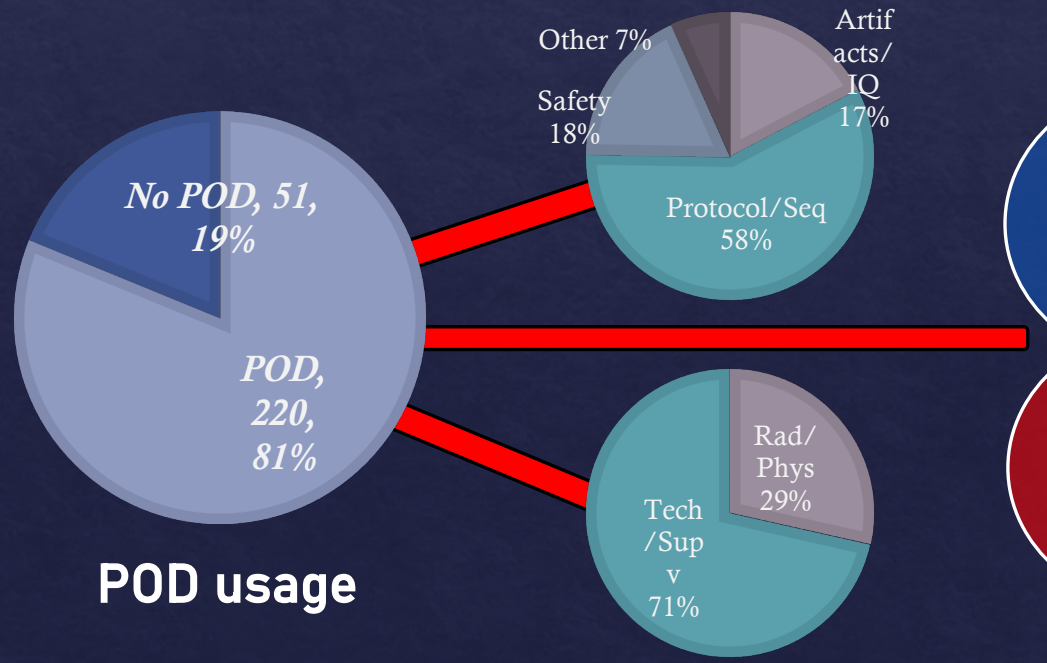
Time Period
58 wks
Aug 2020 – Sept 2021

100% Response Rate

271 Total Requests

4.7 Requests/wk

< 1 week Turnaround



POD usage

82.9% Use of Teams Chat

24.8% Use of Remote VNC Collab

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Key Points

Weekly Physicist scheduling impacted…
Availability
Response Rate
Appropriate escalation

Instant Chat and Messaging enabled…
Versatile and Mobile Communication
Secured Data Sharing
A Common Forum

Remote System Connection allowed…
Reduced System-Related Turnaround Time
Real-time Imaging Guidance

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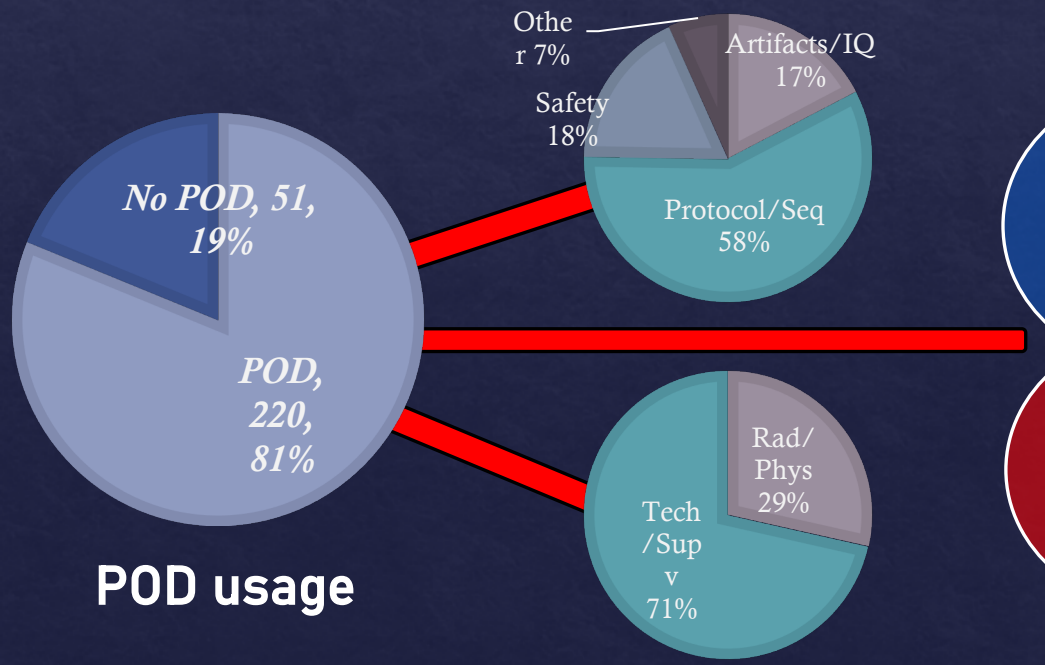

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QI Project Outcomes and Conclusions

Efficient

Fast, Two-Way Communication System

Effective

Able to contact physicists reliably, with reduced turnaround time

Clarity

Allows well-defined physicist scheduling, and improves time management

Future Directions…

Remote Conferencing and Assistance

- *Additional support would be made possible by in-line video conferencing and collaboration tools.*
  - *This option would avoid potential text messaging mis-communication*
- *Integrate robust and scalable remote connection to allow real-time system assistance and control.*
- *Extend to Rad – Tech communication*