Mass General Brigham

The Evolving Role of Radiology in the Modern Healthcare System: Supply and Demand, Throughput and Economics

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No Disclosures

Background

- Medicine is not what it used to be – more like a business
- Demand overwhelming – ageing and better treatments
- How do we act on it and deliver?
- Costs, inflation, reducing reimbursement
- Mission support – Community service, research and education
- Increasingly difficult to be financially sustainable
- Finances are key

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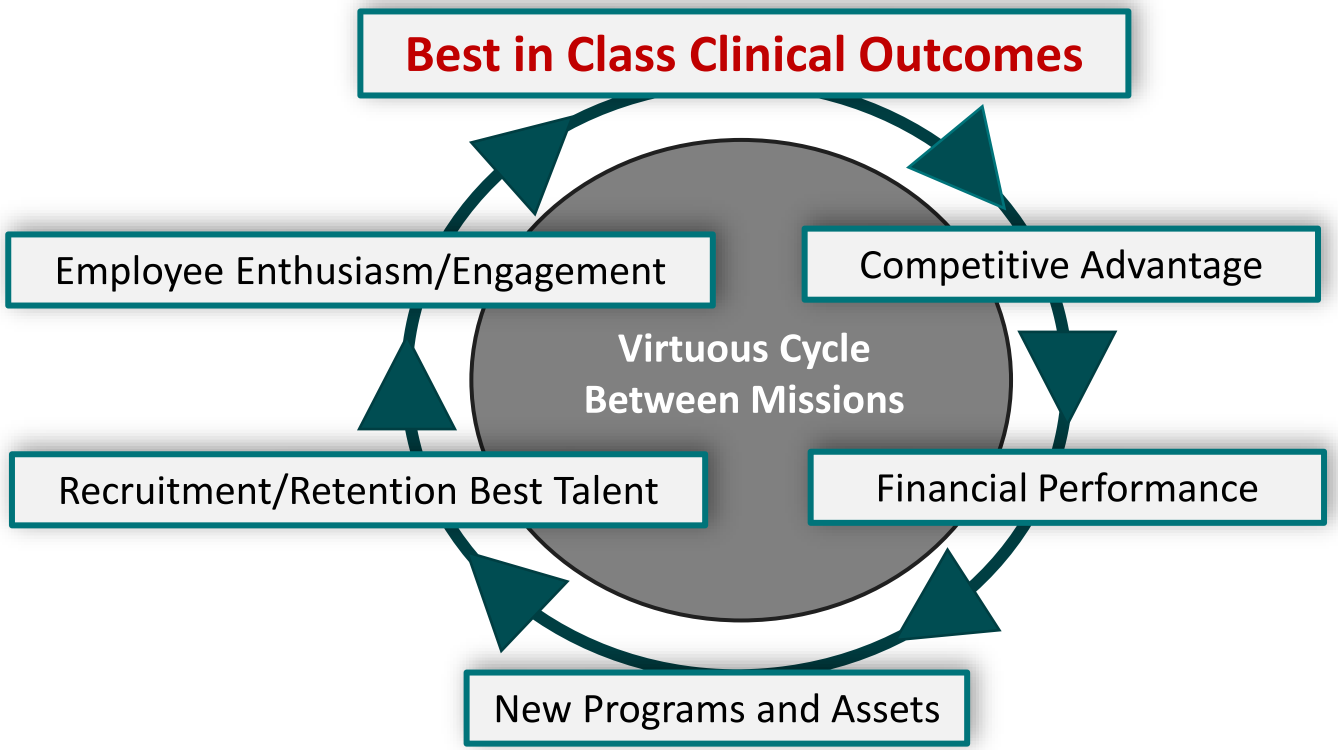
- Finances are key → patient outcomes

Virtuous Cycle Between Missions

Success in modern academic healthcare requires a dynamic synergy between all missions that gears innovation towards delivery of best-in-class clinical outcomes, research and education – a virtuous integrated cycle between the core academic missions.



Optimized clinical outcomes drives brand, demand and competitive advantage. Combined with operational excellence, patient experience and financial performance outperforms. This enables funding for new research and educational programs that attracts the best talent further enhancing excellence. Excellence motivates all employees to deliver even better outcomes.

Major Themes Medicine 2025

Revenue	→	Survival to support the missions
Politics and reimbursement	→	Payment reform/value based care/research funding/costs
Consolidation and Branding	→	Alignment, cost, site of care
Systems	→	Market share, governance, best practice delivery
Disrupters	→	Doing better with lower acuity care
Demand	→	Ageing population, drugs, treatments, disease prevention
Efficiency and Productivity	→	Asset management, throughput, LOS
Site of Care	→	Hospital, outpatient, post-acute, home
Provider Roles	→	Physician vs. Advanced practitioners
Provision of Care	→	Integration clinical units, Institutes, Service Lines
Precision Medicine	→	Targeted phenotypic and genomic therapies
Quality and Safety	→	Remove variation, best practices, outcomes
IT innovation	→	AI (generative), ML, CDS, Virtual care
Patient/Employee Experience	→	Focus on patients and staff
Equity	→	Patient care and workplace employees
Tension between Missions	→	Revenue versus research and education
Burnout	→	Overload, agency, IT burden
Organized Labor	→	Trust, agency, autonomy, pay equity
Leadership	→	How to navigate the changes

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- Good for patients (LOS, time to diagnosis, screening, ED, f/u – pretty much everything!)
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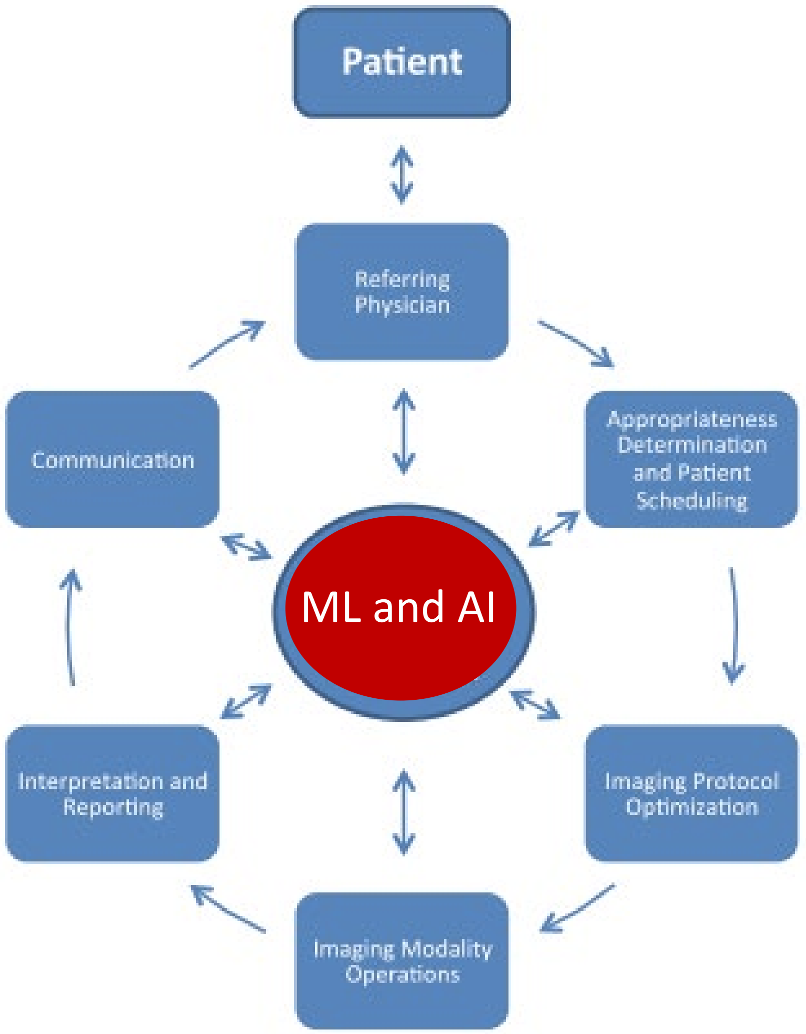
- Not CEO's wheelhouse so they trust we will deliver
- Our job is to respond accordingly (own it)

The Business of Radiology

- System standardization – all machines run the same so patients can go anywhere and receive same care
- Enabler to drive efficiency & productivity
- Faster machines, shorter protocols, longer hours, more staff, remote monitoring, IT (especially AI)
- Adopt or “steal” best practices and outcomes
- Inpatient, ED and outpatient
- Governance – must be driven by strong leadership

Opportunity in Radiology - Imaging Value Chain

Variable practices reduces efficiency, safety and increases cost



Standardized processes can be replicated across enterprise for increased efficiency, revenue, patient satisfaction and outcomes

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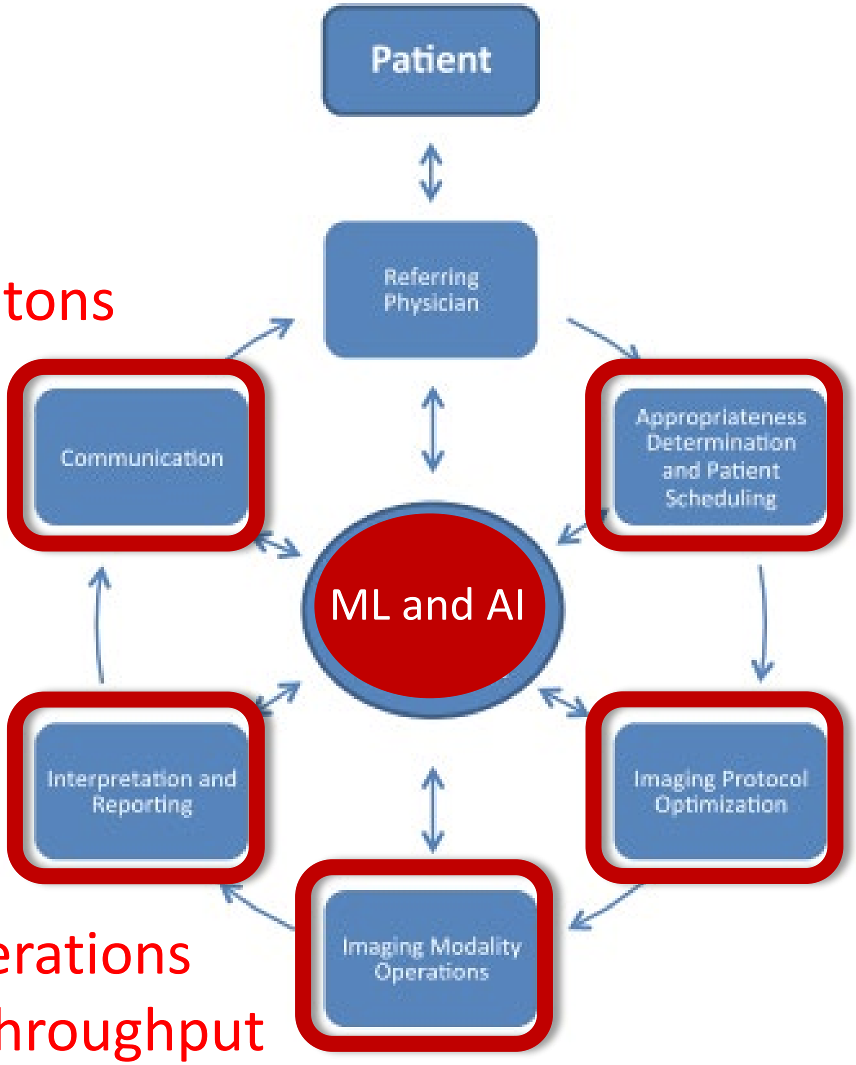
Opportunity in Radiology - Imaging Value Chain

Automated communicatons protocols

AI assisted reporting
Remote reporting
Different staffing models



Only image what is necessary
Provide on-line scheduling

Reduce wasteful protocols = minimize length
"intelligent protocols"

Increase hours of operations
Optimal staffing for throughput

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Maximizing Throughput

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Articles Publish Topics About Contact

ORIGINAL ARTICLE · Volume 5, Issue 2, P119-125, February 2008

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Maximizing Outpatient Computed Tomography Productivity Using Multiple Technologists

Giles W.L. Boland, MD · Margaret P. Houghton, RT(R) · David G. Marchione, RT(R), MHP · William McCormick, RT(R)

Affiliations & Notes Article Info

Throughput – MRI example

- 45min. Protocol
- 12 hour operation
- 300 days/year
- Breaks in schedule

- 14-16 slots/day
- 4500/year ($5.9M)

Assumes $1300 reimbursement/scan

Throughput – MRI example

• 45min. Protocol	• 30 min. Protocol
• 12 hour operation	• 12 hour operation
• 300 days/year	• 300 days/year
• Breaks in schedule	• Breaks in schedule
• 14-16 slots/day	• 22-24 slots/day
• 4500/year ($5.9M)	• 6900/year ($10M)

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- 20 min. Protocol
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- 300 days/year
- Breaks in schedule

- 34-36 slots/day
- 10,500/year ($13.7M)

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- 22-24 slots/day
- 6900/year

- 20 min. Protocol
- 12 hour operation
- 355 days/year
- No Breaks

- 36 slots/day
- 12780/year ($16.6M)

Throughput – MRI example

• 45min. Protocol	• 30 min. Protocol	• 20 min. Protocol
• 12 hour operation	• 12 hour operation	• 18 hour operation
• 300 days/year	• 300 days/year	• 355 days/year
• Breaks in schedule	• Breaks in schedule	• No Breaks
• 14-16 slots/day	• 22-24 slots/day	• 54 slots/day
• 4500/year	• 6900/year	• 19440/year ($25.5M)

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- 72 slots/day
- 25560/year ($33.3M)

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10 Machines = 260,000 scans = $340M

50 Machines = 1.3M scans = $1.7B

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- 25560/year ($33.3M)

Mix of 15/20/30 min protocols (54 slots/day)

10 Machines = 19100 scans = $250M

Throughput – MRI example

- Massive opportunity for capacity growth
- Potential volumes 4500 to 26000/scanner
- Revenue $5.9M to $33M/scanner
- Assumes unlimited demand – still is generally true
- Even if slots/capacity seems excessive - $25M is realistic
- Our job is to drive efficiency for patients and revenue

Driving Volume

- Can’t be done?
- True, with current approach
- But, some already doing it (or close to it)
- Radiologist resistance (volume, “pet” protocols, not safe)
- Technologist and radiologist staffing
- Different platforms and vendors
- Hospital won’t pay added costs – make the business case
- All real issues – but, our job is to present solutions

Innovate – protocol development and image interpretation

- Intelligent protocols (AI driven)

> J Magn Reson Imaging. 2025 Sep;62(3):858-866. doi: 10.1002/jmri.29798. Epub 2025 Apr 22.

Prostate Cancer Risk Stratification and Scan Tailoring Using Deep Learning on Abbreviated Prostate MRI

Patricia M Johnson[1,2], Tarun Dutt[1], Luke A Ginocchio[1], Amanpreet Singh Saimbhi[1], Lavanya Umapathy[1,2], Kai Tobias Block[1,2], Daniel K Sodickson[1,2], Sumit Chopra[1,3], Angela Tong[1,2], Hersh Chandarana[1,2]

Affiliations + expand

PMID: 40259798 PMCID: PMC12335925 (available on 2026-04-22) DOI: 10.1002/jmri.29798

2 Pulse sequences and you’re done (T2 and DWI)

Innovate – protocol development and image interpretation

- New model for image interpretation
- AI driven interpretation and reporting
- Different staffing models (productivity vs research)
- Creative hiring
- Remote reads
- Shared worklists
- Teleradiology
- Just don’t read it – let other disciplines do it

The Opportunity

- Like it or not demand is relentless and increasing
- Our responsibility to accommodate demand
- Constant titrating to expected demand – get ahead
- If full with 12 hours, go to 16 or 18 (weekends etc.)
- Reduce protocol length – requires leadership to drive imperative (will meet with resistance – from within)
- Learn from other organizations – they have done it
- Don't be reactive – drive this from within Radiology

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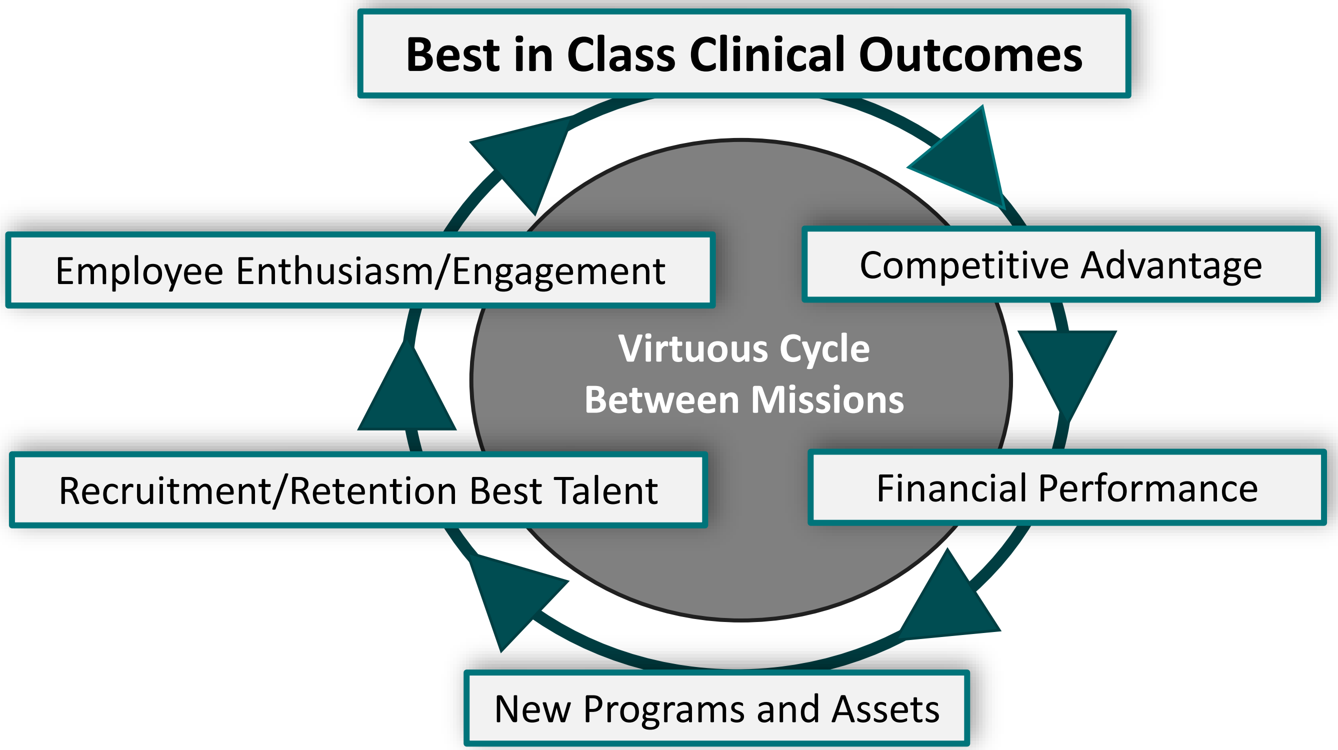

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