

Radiology Growth: Leveraging Technological Advances in Teleradiology and AI

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Outline

- Background
- Challenges
- How technology can help
- Application of some of the leadership principles to a pilot project

Background

- Skyrocketing imaging utilization (USA) past two decades
- Projected continued market growth this decade - all modalities
- Continued increase in ED/Urgent care imaging usage

Paradox:

- Our population is not growing at 5-10%/year
- Our population is not getting sicker year by year

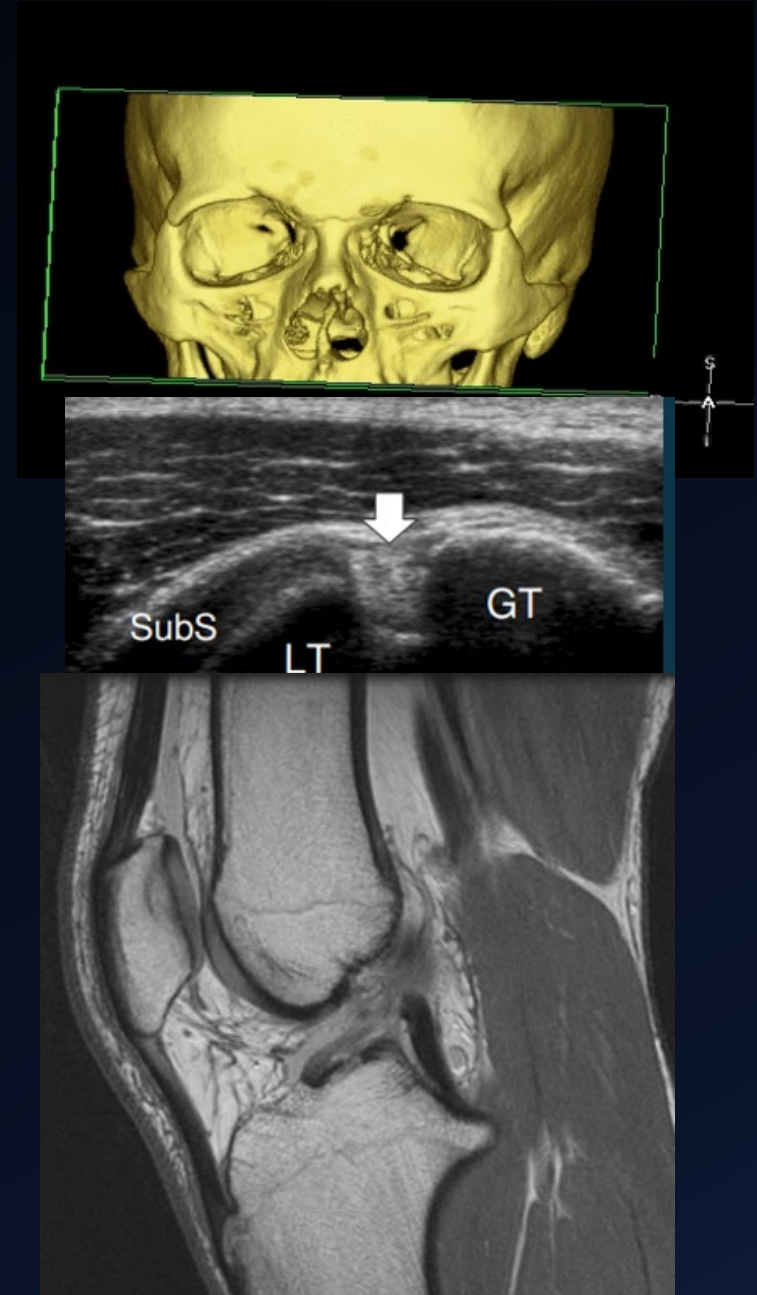
Tan. Radiology. 2020

Selvarajan. AJR. 2019

grandviewresearch.com

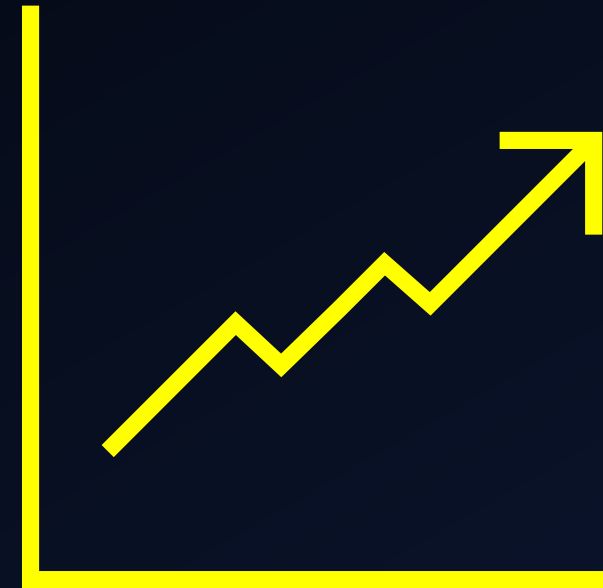
Background

- SUNY Downstate Radiology
 - Multiple CR/DR/XR
 - 1.5 T MRI
 - 2 64 slice MDCT
 - 4 US + ER US
 - 1 DXA
 - Mammography
 - Interventional radiology
 - Nuclear medicine
- FUJI RIS/PACS, Nuance PS360



Background

- Growth as part of strategic plan
- Different Paths
 - New outpatient faculty practice
 - Acquiring new imaging centers
 - Reestablishing lost services
 - PET-CT
 - Radiation oncology
 - Increasing referrals
 - **Establishing teleradiology**

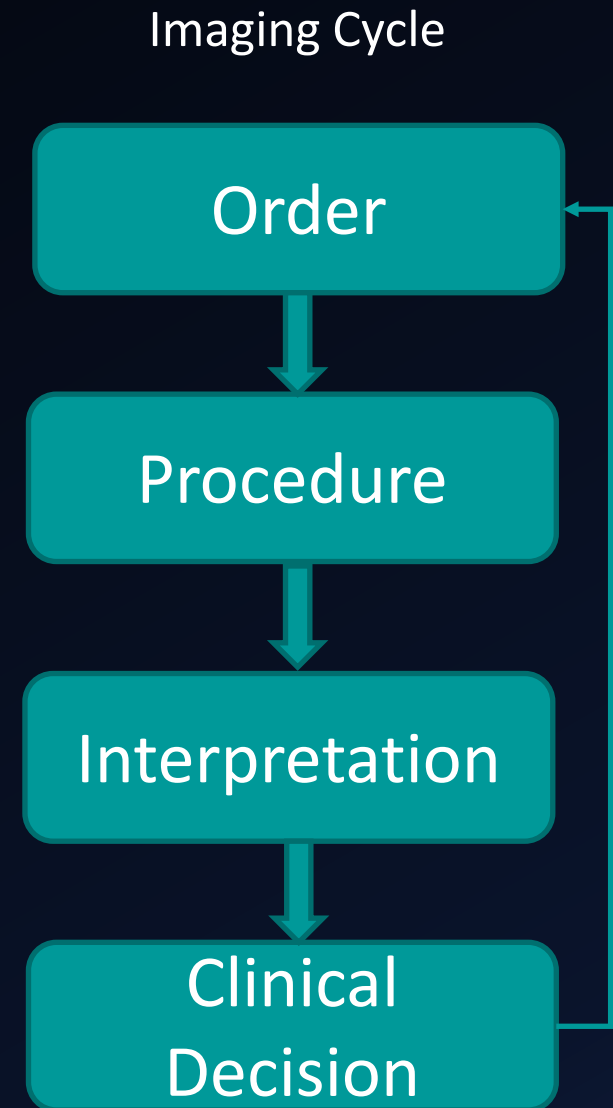


“finance is everyone’s problem”
Susan Sommerville

“no margin, no mission”
Sister Irene Kraus

Challenges

- Disparities
 - Throughout the imaging cycle*
 - Competency
- Retention & Recruitment
 - Inner city healthcare centers
 - [Radiology landscape post Covid-19](#)
- Finance
 - Finite resources



Leveraging Technology for Growth

- Downstate radiology as a hub for receiving imaging studies from outside practices
- Assets
 - Technology know how
 - Informaticists
 - Experienced, highly competent radiologists



Teleradiology Benefits

- Smaller practices can have access to high quality interpretations
 - Better patient care
- Lower starting cost compared to starting new imaging equipment

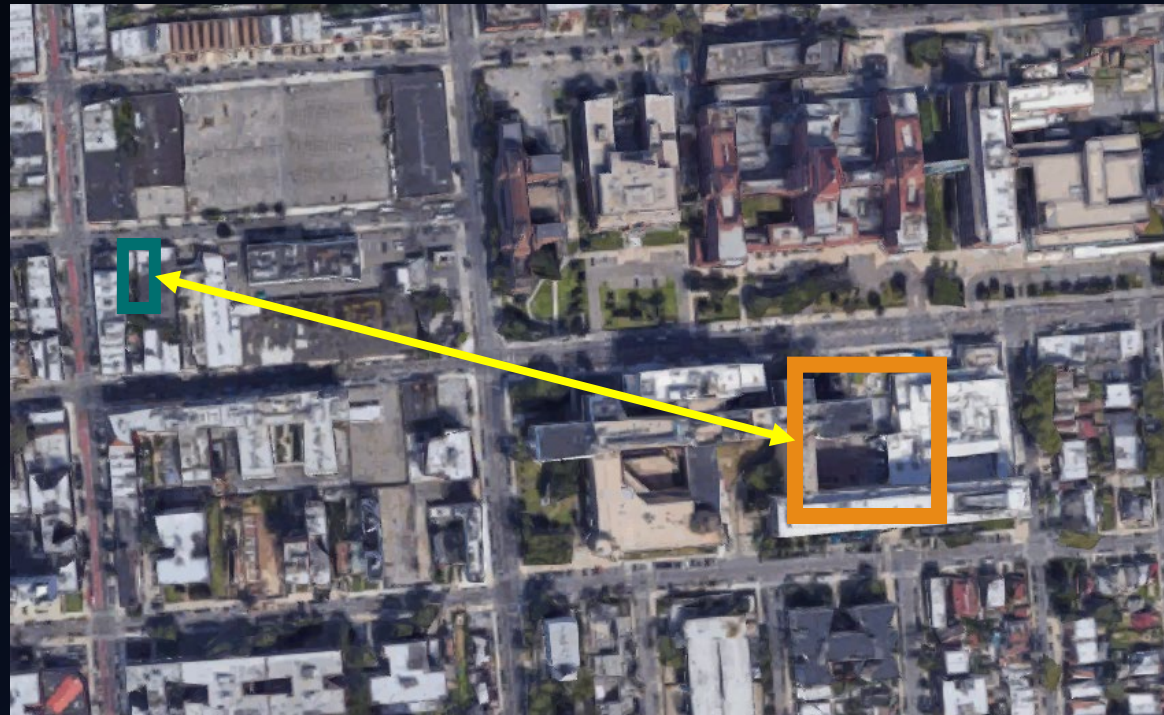


Teleradiology – Small Scale Application

Goal: Connect **University Orthopedic Associates(UOA)** with SUNY Downstate's **University Hospital Brooklyn(UHB)**

Why UOA?

- Single Modality
- 300 cases/mo
- Easy to troubleshoot
- Proof of concept



Source: Google Maps

Resources:

- PACS admin
- RIS admin
- UOA admin
- Radiology admin
- Existing PACS/RIS hardware and software

Team Goals

- Connect UOA & UHB
- See cases from UOA in FUJI PACS (by referring and radiologists)
- “complete” cases for dictation (RIS team)
 - Accession number assignment
 - MR number match with existing patients
- Send back reports to UOA
- Setting a date for completion



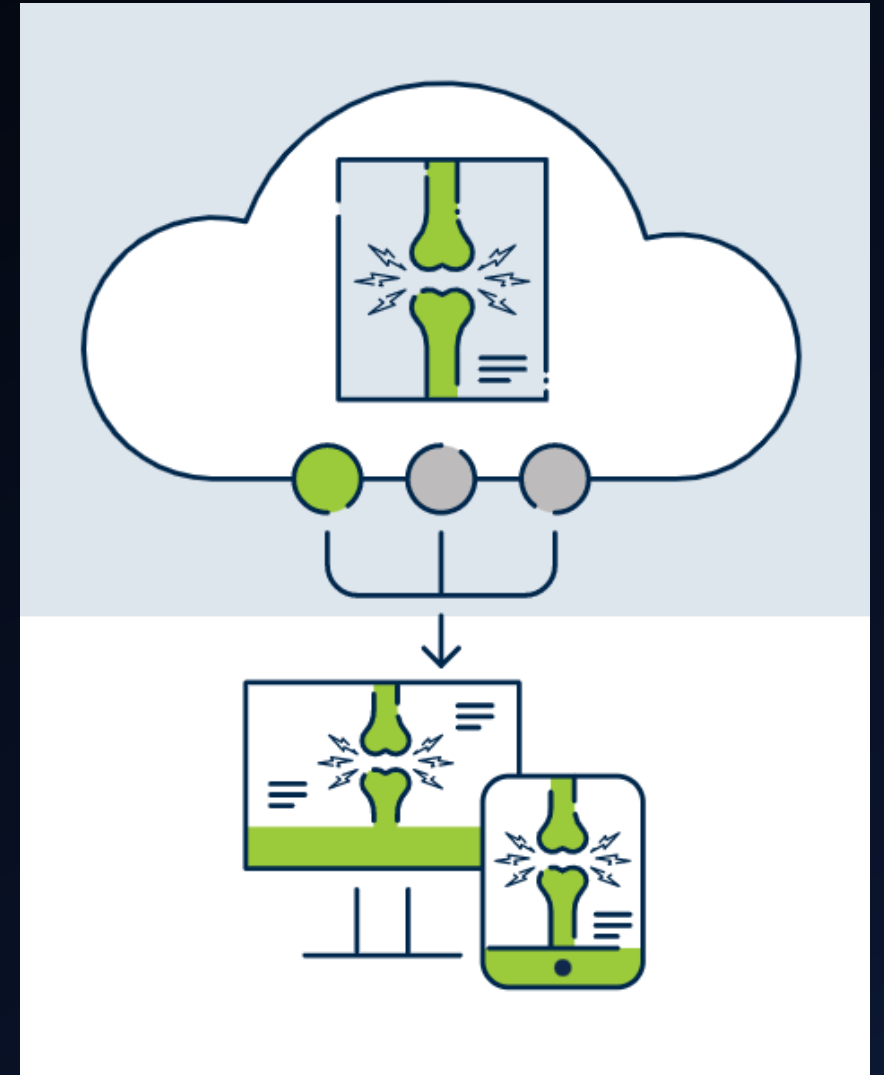
Team Progress Review

The screenshot displays a medical imaging software interface. On the left, there is a sidebar with navigation options: Peer Review Neck MRI, Peer review Sinuses CT, Peer Review Temporal Bone CT, Recent Pediatrics cases, scoliosis pelvic cases (29), Tech Sent Status, Todays Pediatric cases, Ultrasound, and University Orthopedic Associates. Below the sidebar is a search bar with two input fields containing the numbers 486 and 47, and 767 and 77. The main area shows a list of studies with columns for study name, modality (DX), and a status indicator. The list includes: LS SPINE XRAY AP/LAT, RIGHT HAND XRAY COMP..., LEFT HIP UNILATERAL WIT..., LEFT KNEE XRAY AP/LAT, LEFT SHOULDER XRAY, LEFT SHOULDER XRAY, BILAT WRIST XRAY, LEFT SHOULDER XRAY, LEFT HAND XRAY COMPL..., LS SPINE XRAY AP/LAT, LEFT HAND XRAY COMPL..., LS SPINE XRAY AP/LAT, and LS SPINE XRAY AP/LAT. On the right, there is a grid of image thumbnails. The top row shows four thumbnails: L-SPINE AP (1), L-SPINE SPOT (1), All Images (2), and Bookmarks (0). Below this is a section for 'Other Studies' with a search bar and a list of studies. The first study is 'CT ABD - PELVIS WITHOUT IV CONTRAST' with a search bar. Below it are four thumbnails: ABD/PLV C- (317), Dose Info (1), SCOUT (4), and All Images (322).

- Connect UOA & UHB ✓
- See cases from UOA in FUJI PACS (test environment) ✓
- “complete” cases for dictation (RIS team)
 - Accession number assignment ✓
 - MR number match with existing patients ✓
- Send back reports to UOA (pending)
- Go live (pending)

Future Direction

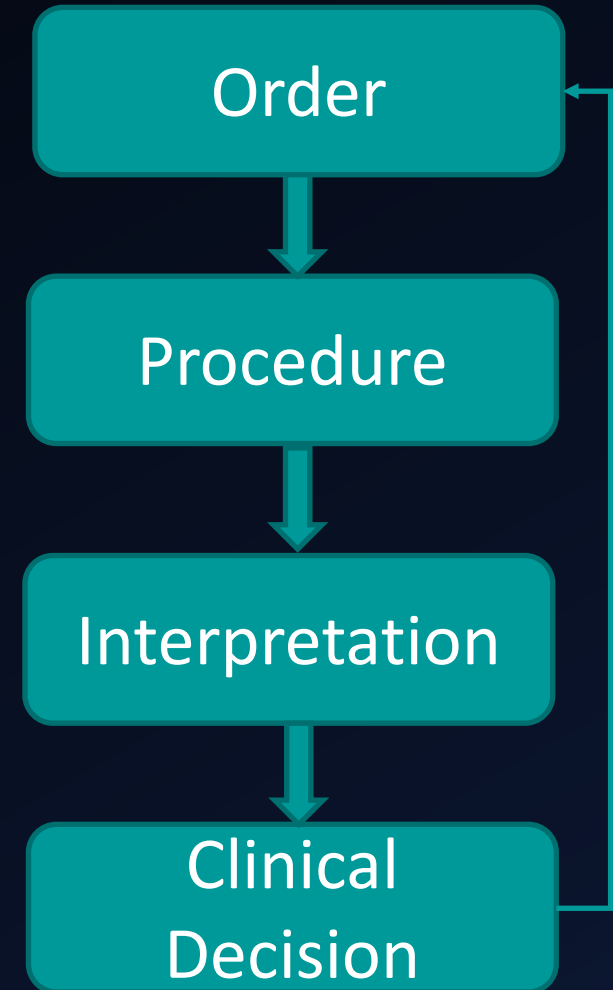
- Build a high-performance team
- Establish a cloud based teleradiology infrastructure for receiving, storing, reviewing cases from anywhere
 - Will cost \$\$
 - Will need institutional support
 - Will need to increase radiologists as we scale



Role of AI

- Useful throughout the imaging lifecycle
- Augment deficiencies
 - Pediatric radiology
- Triaging cases
- Optimal presentation
- Bone Age example
(Bunkerhill Health)
 - Large multicenter RCT found AI to be more accurate and faster than specialist radiologists

Imaging Cycle



Conclusion

- Departmental growth possible even with limited resources
- Technology is key