Evolving Role of Artificial Intelligence in Radiological Imaging

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AI in Medicine: Not Optional

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Underrecognized Urgency

Data Overload
Data Waste
Medical Errors
Physician Shortages
Data Overload

One Radiologist

50 MRI Studies/Day

425 Images/Study

1.52 Seconds/Image
Data Overload and Data Waste

Findings

Left ventricular measurements
- End Diastolic Diameter: [ ] mm (normal, 36-56 mm)
- Ejection Fraction: [ ] % (normal: male = 56-78%; female = 56-78%)
- Stroke Volume: [ ] ml
- End Diastolic Volume: [ ] mL (normal: male = 77-195 mL; female = 52-141 mL)
- Indexed End Diastolic Volume: [ ] mL/m²
- End Systolic Volume: [ ] mL (normal: male = 19-72 mL; female = 13-51 mL)
- Indexed End Systolic Volume: [ ] mL/m²
- Cardiac output: [ ] L/min (normal: male = 2.82-8.82 L/min; female = 2.7-6.0 L/min)

Can we assist physicians by providing insight from all these measurements using large clinical datasets and computing?
Additional Pressures

- Time Pressures
- Documentation Burden
- Poor Outcomes
Medical Errors

• 3rd largest cause of death in the US
• The number is probably larger
• Errors lead to
  • Decrease patient safety
  • Poor outcomes
• Poor patient experience
• Poor patient engagement
Shortage of Physicians

China's doctor shortage prompts rush for AI health care

Qu Jianguo, 64, had a futuristic medical visit in Shanghai as he put his wrist through an automated pulse-taking machine and received the result within two minutes on a mobile phone—without a doctor present.

Healthcare crisis: Short of 5 lakh doctors India has just 1 for 1,674 people

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New Findings Confirm Predictions on Physician Shortage

The United States will see a shortage of up to nearly 190,000 physicians by 2032 as demand for physicians continues to grow faster than supply, according to new data published today by the AAMC (Association of American Medical Colleges). The projected shortfall is similar to past projections and ranges from 46,900 to 127,900 physicians.
Summary

• Make Providers more efficient
• Make them more accurate
• Reduce Errors
• Plan for bias elimination
• Need safe, faster options for testing, validation and implementation