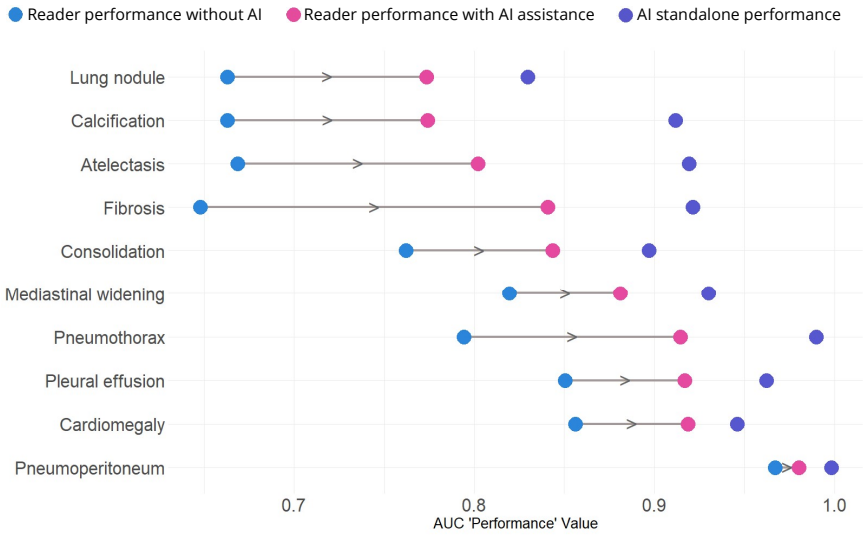
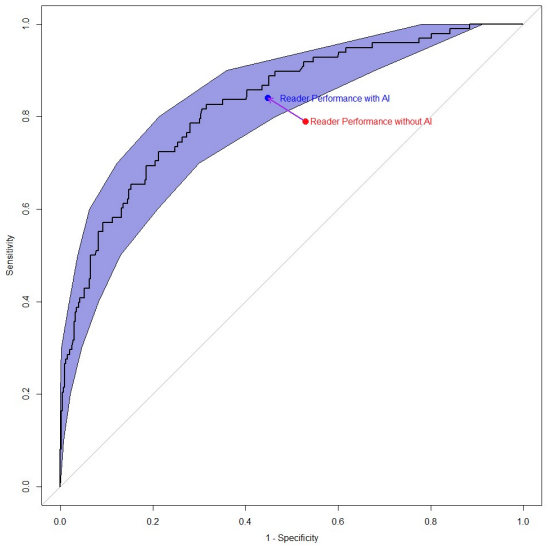
Using **AI helps** frontline clinicians interpret emergency chest x-rays better…

…But can **AI do it better** alone?

Clinician performance with and without AI, compared with AI
- AUC performance scale is 0 – 1, with 1 being the highest performance



Example ROC for LUNIT AI at detecting lung nodules
- With 95% ROC uncertainty
- Clinician performance before and after AI assistance



Problem
- Only 21% of A+E CXR's and 24% of inpatient CXR's are reported the same day[1] by an expert radiology doctor
- This leaves most of the interpretation and subsequent decision to be made by the patient facing clinician such as the emergency or general medicine doctors
- These doctors may also be more junior if out of hours
- These clinicians are making time critical decision on patient management based on their CXR interpretation, which may not be as good as a consultant radiologist[2-7]

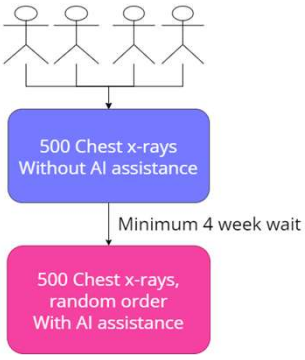
Solution
- AI assistance may improve performance of these patient facing clinicians CXR interpretation
- There is a lack of evidence in the literature that explores non-radiology clinicians' performance compared against AI and with AI assistance
- A multi-reader multi-case study design was used to explore this further using a commercial AI CXR tool (LUNIT) on 500 inpatient and emergency department CXR's

Findings
- AI assistance showed a statistically significant improvement in performance for 8 out of the 10 pathologies for readers

Next Steps
- Work to be presented and written up for publication
- This study can inform possible ways to practically implement AI into clinical practice

Study Design
- 30 clinicians recruited to read 500 chest x-rays in 2 phases, without and then with AI assistance
- 500 chest x-rays were from inpatient and emergency department patients
- Case mix included 100 normal chest x-rays and at least 40 of each pathology

Recruitment: 30 Clinicians of different grades and specialities
(Radiology, Emergency, General Medicine, Intensive Care, Radiographers)



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Thank you to the fellowship faculty and my local supervisors for supporting me and guiding me throughout the year. And thank you to my colleagues who have managed to accommodate my 60% LTFT rota requests!

Skills I have learnt / other projects I was involved in:
- ❑ Involved in multicentre prospective trial evaluating AI to triage emergency CT head scans
  - ❑ Learnt about the practical challenges and solutions to deploying commercial AI tools locally
  - ❑ Began to appreciate the value of engaging different stakeholders early and the different approaches needed
- ❑ Further developed my statistical analytical skills using R, especially with regards to multi-reader multi-case studies
  - ❑ Practiced using R to create data visualisations to aid communication with different stakeholders
- ❑ Learnt about database management and learnt SQL by understanding local radiology CRIS database; this was used to help inform local departmental leads the scale of reporting backlog
- ❑ Developed understanding of current regulatory challenges facing digital tools and AI within healthcare
- ❑ Won a prize at the Google/Deloitte/NHS hackathon

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