

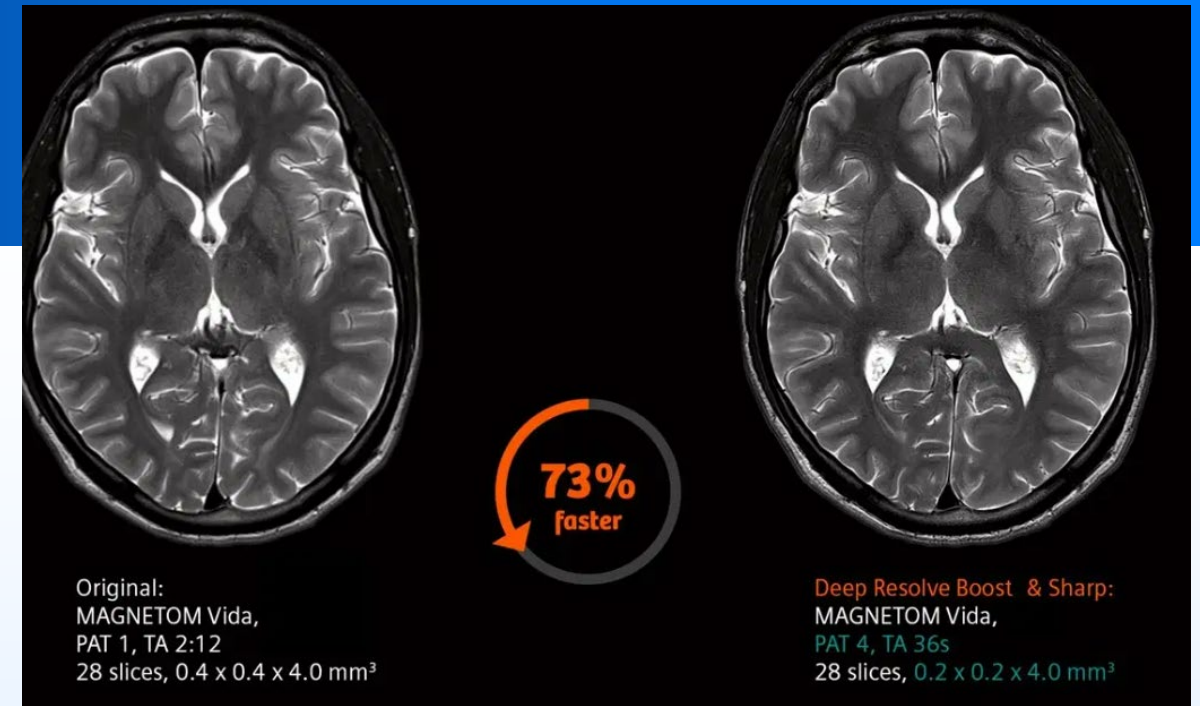
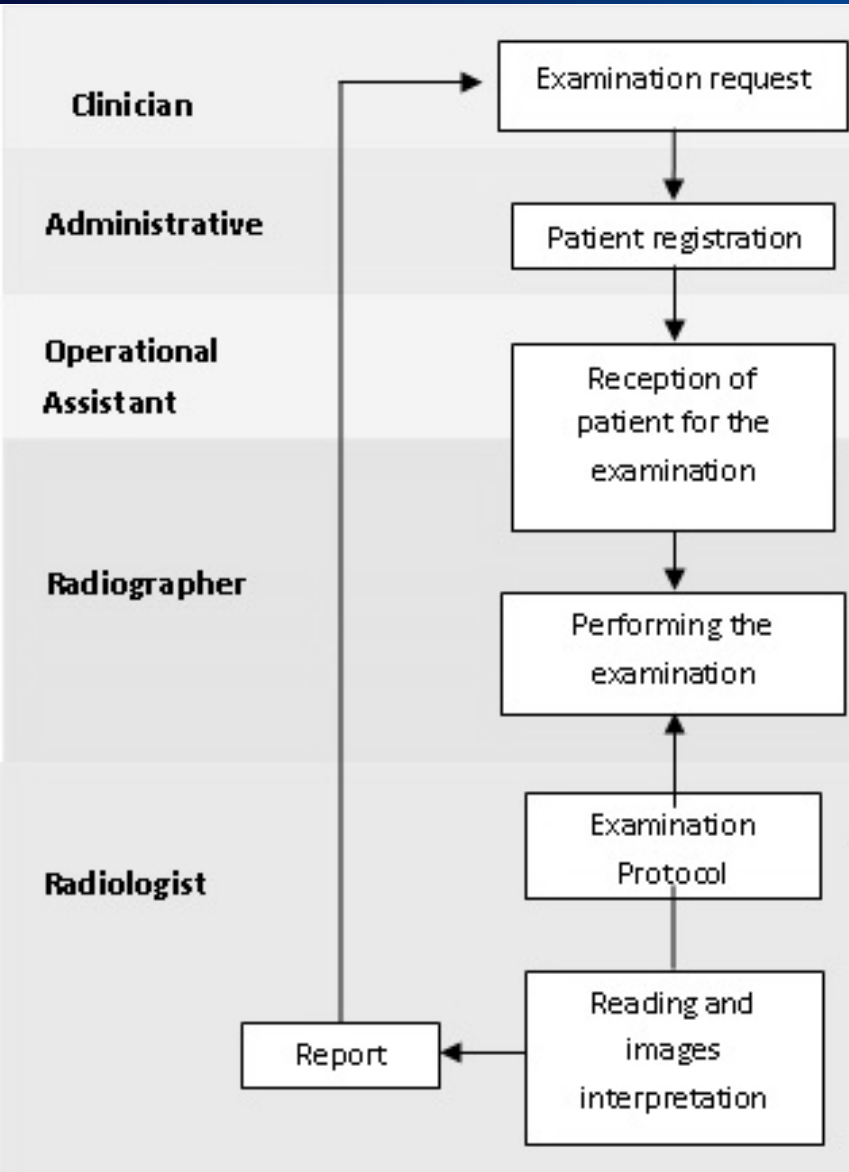
Applied AI in radiology - Region Halland

Peder Wiklund

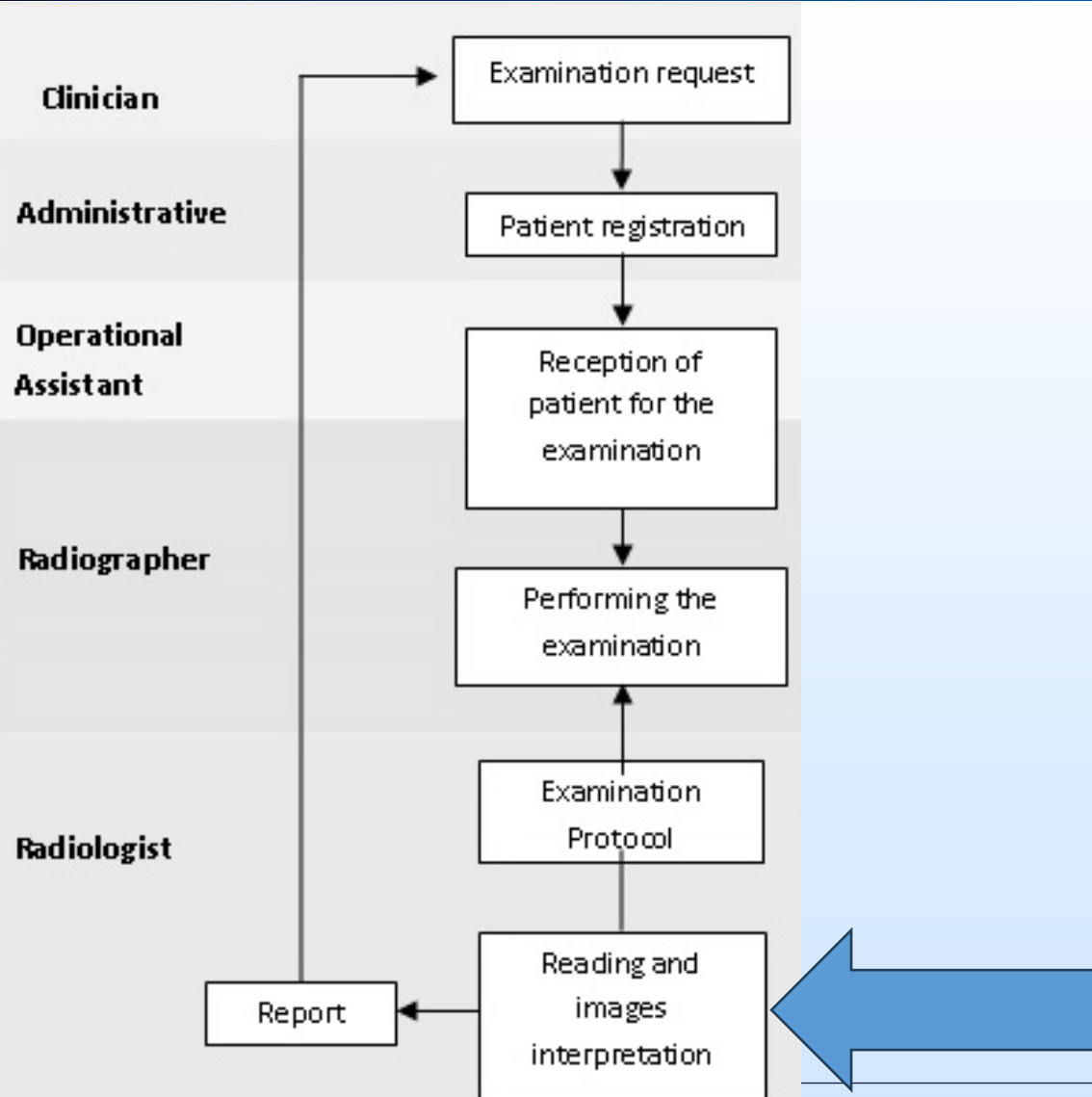
Department of Radiology Halmstad
peder.wiklund@regionhalland.se

- How can AI help?
- AI today – pulmonary embolism
- AI tomorrow – vertebral compression fractures
- AI in the future - ??

Bakgrund



Bakgrund

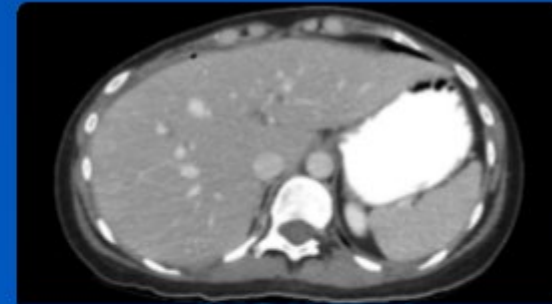




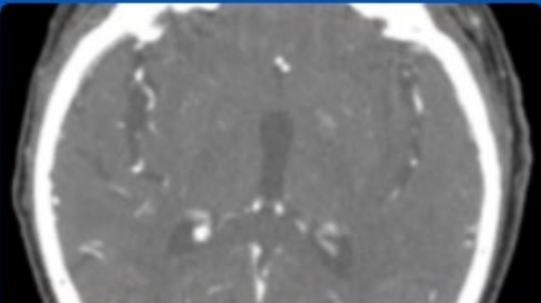
PNEUMOTHORAX



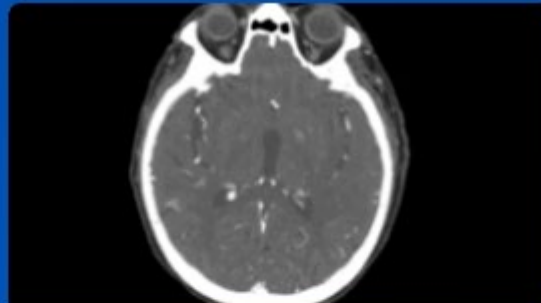
**MALPOSITIONED
ENDOTRACHEAL TUBES
(ETT)**



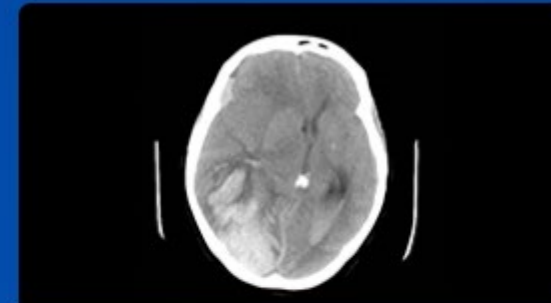
**INTRA-ABDOMINAL
FREE GAS**



**VESSEL OCCLUSION
(LVO AND MEVO)**



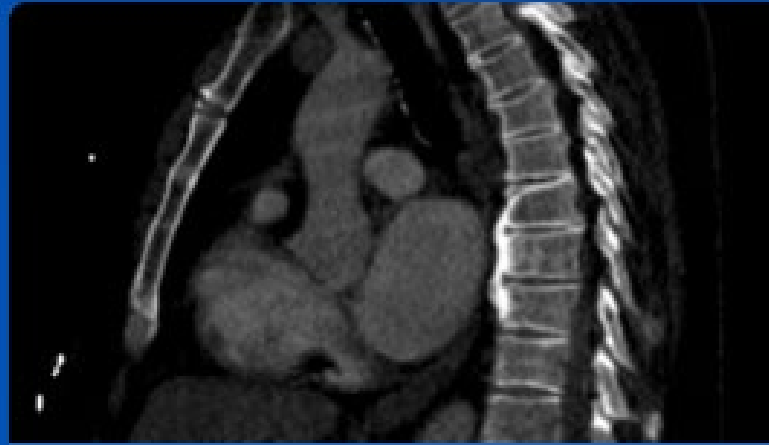
**M1 LARGE VESSEL
OCCLUSION**



**INTRACRANIAL
HEMORRHAGE**



**CORONARY ARTERY
CALCIFICATION**



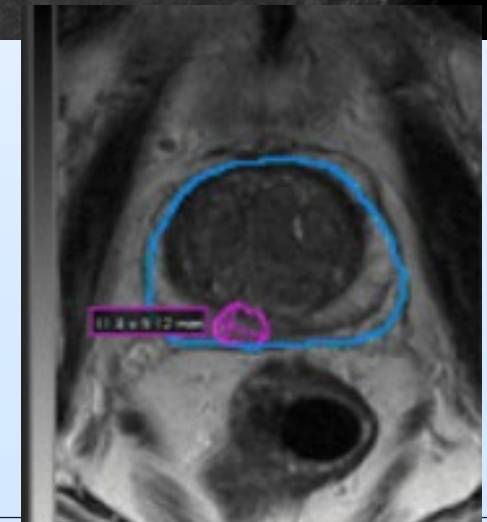
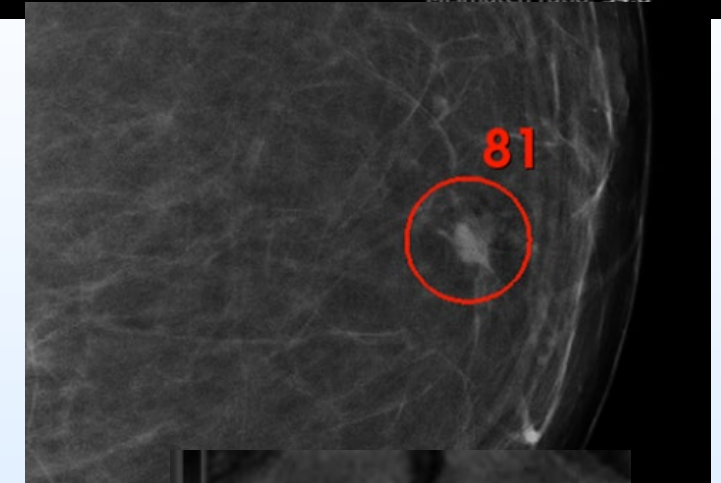
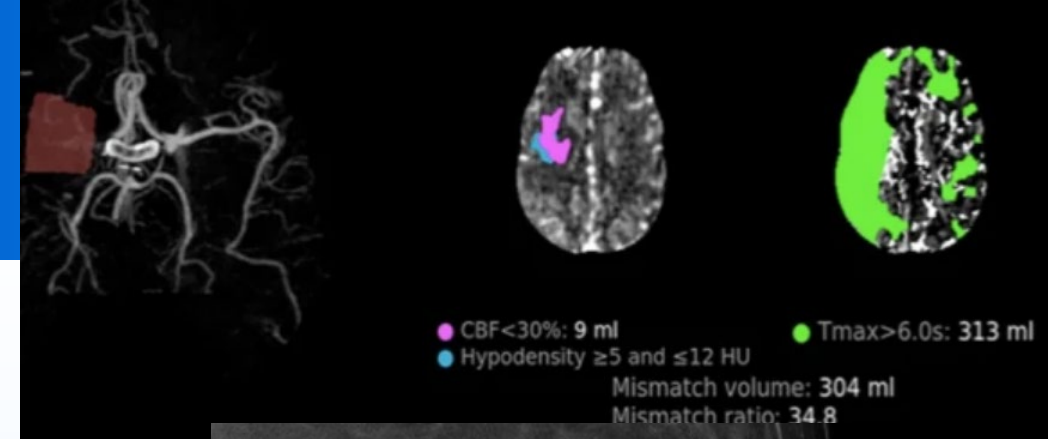
**VERTEBRAL
COMPRESSION
FRACTURES**



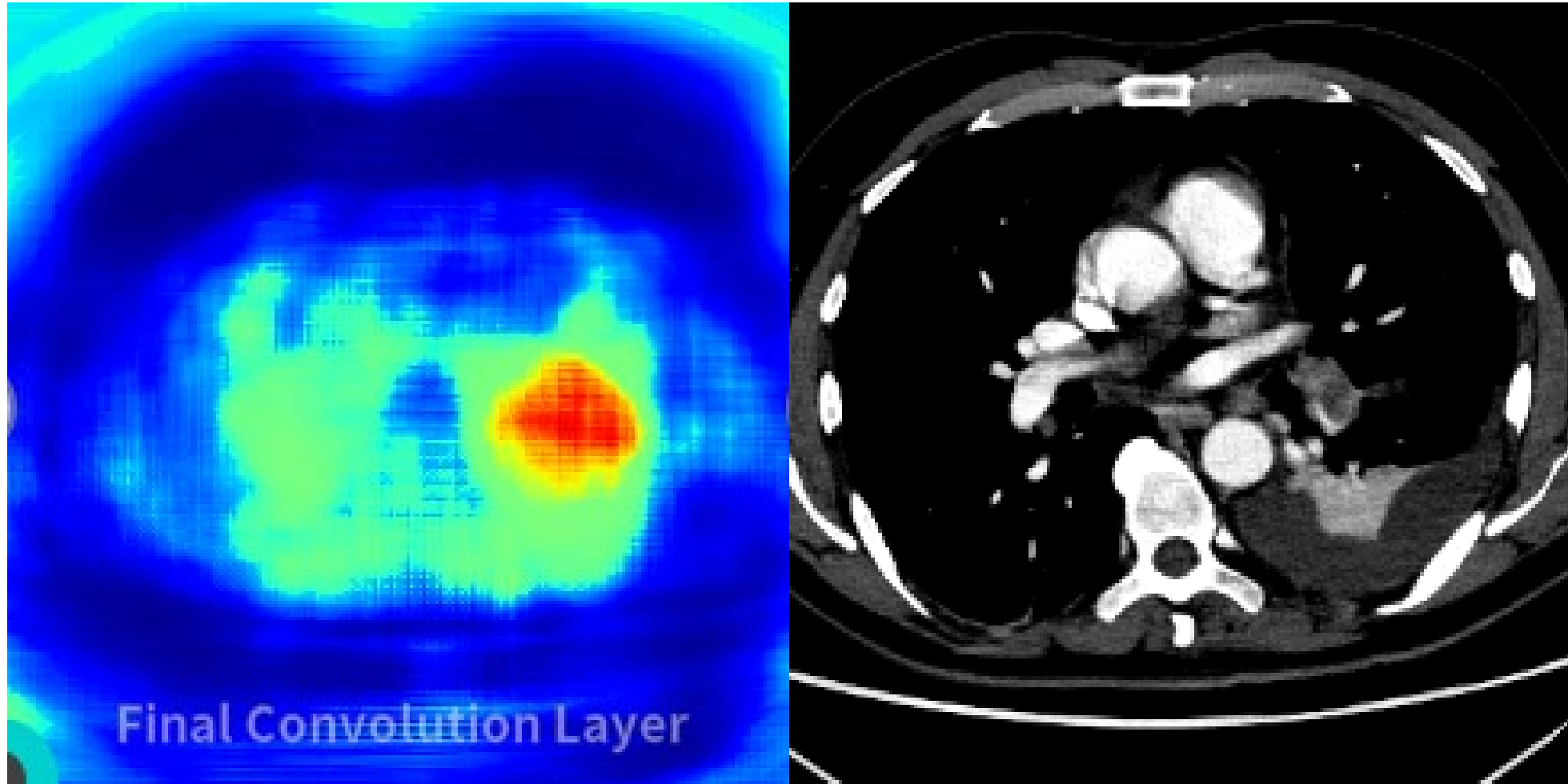
**ABDOMINAL AORTIC
MEASUREMENT**

AI in Halland - today

- AI-supported stroke diagnostics
- AI in mammography screening
- AI in prostate biopsy planning
- AI in pulmonary embolism



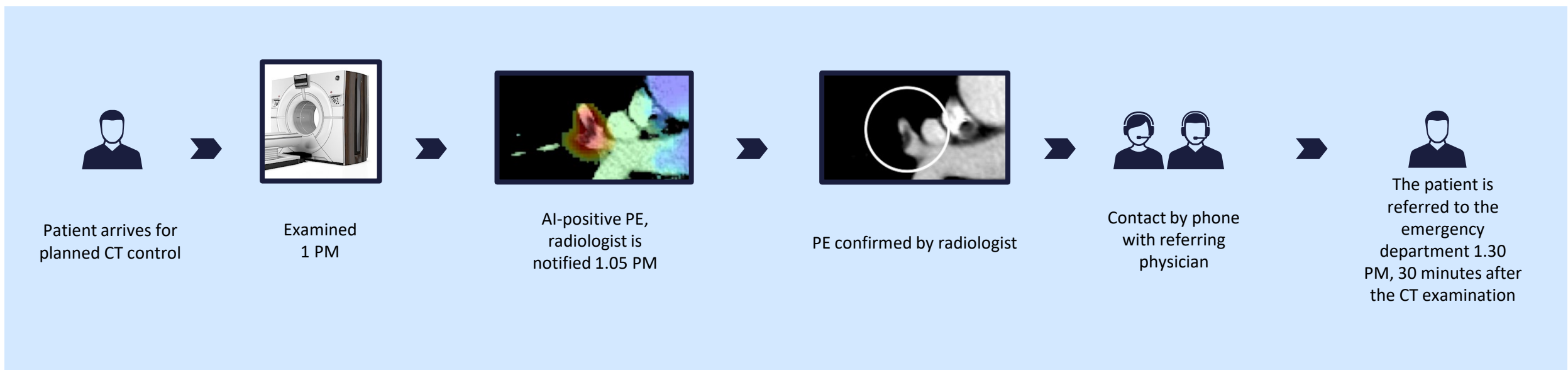
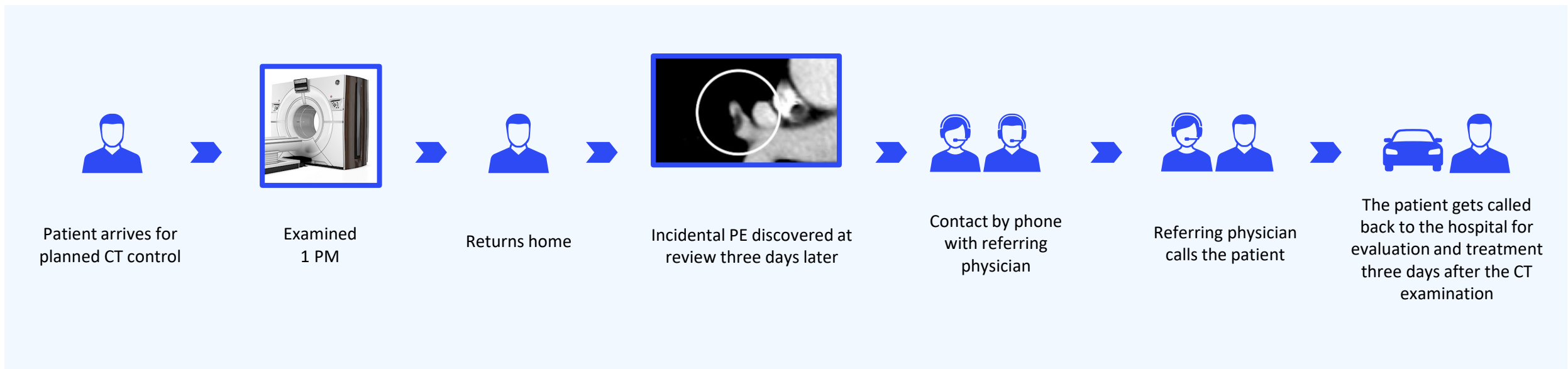
AI today – pulmonary embolism



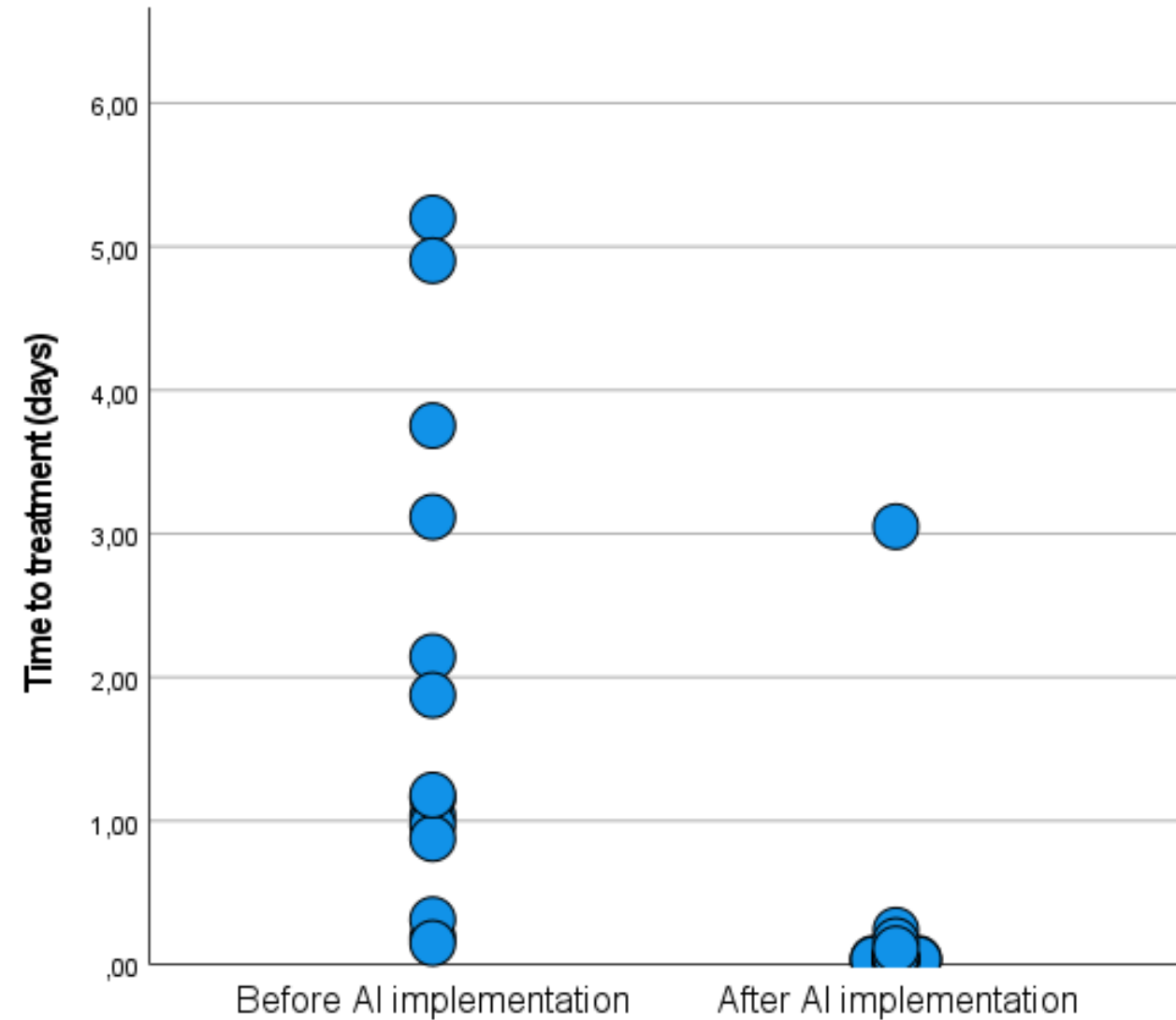
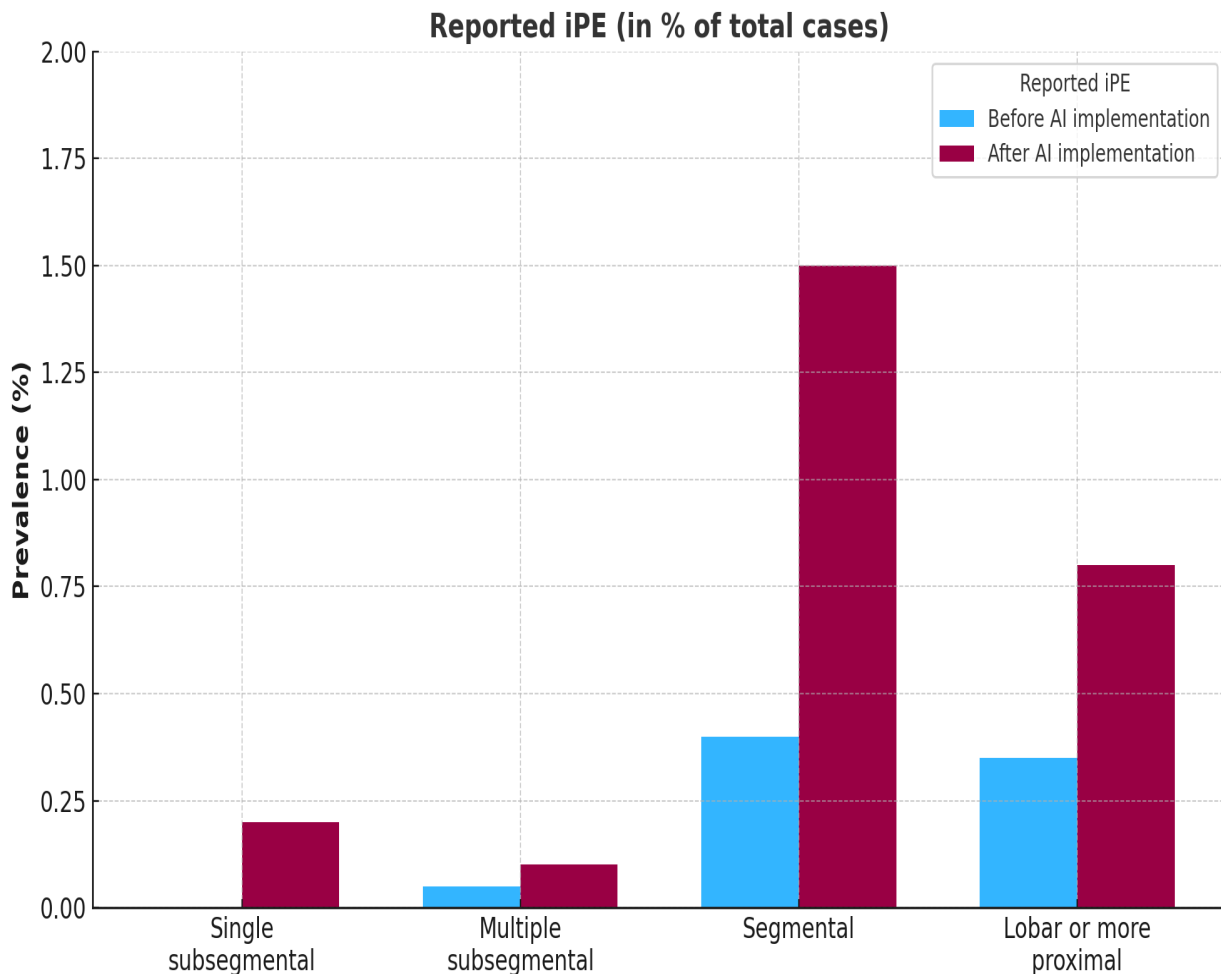
Pulmonary embolism - a common clinical conundrum

- Acute shortness of breath, bloody cough, fast breathing
- Important to quickly identify patients with large embolisms
- Often unspecific symptoms, common in cancer

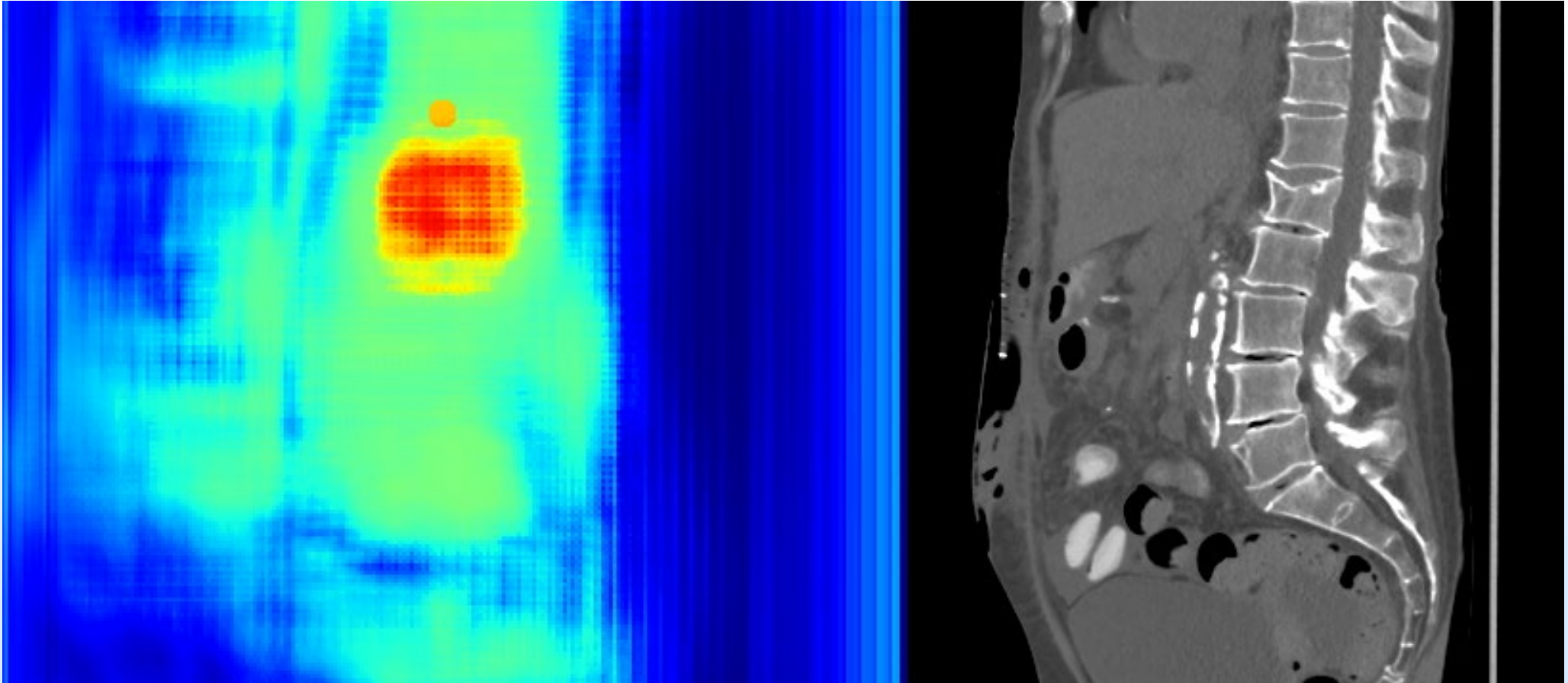




Detection rate and time to treatment



AI tomorrow – vertebral compression fractures



Osteoporotic fractures

- Every other woman and a fourth of all men suffers an osteoporotic fracture



Osteoporotic fractures

- Vertebral compression fractures (VCF) are the most common osteoporotic fractures
- VCFs confers a very high risk of additional fractures
- Very effective pharmacologic treatments for reducing the risk



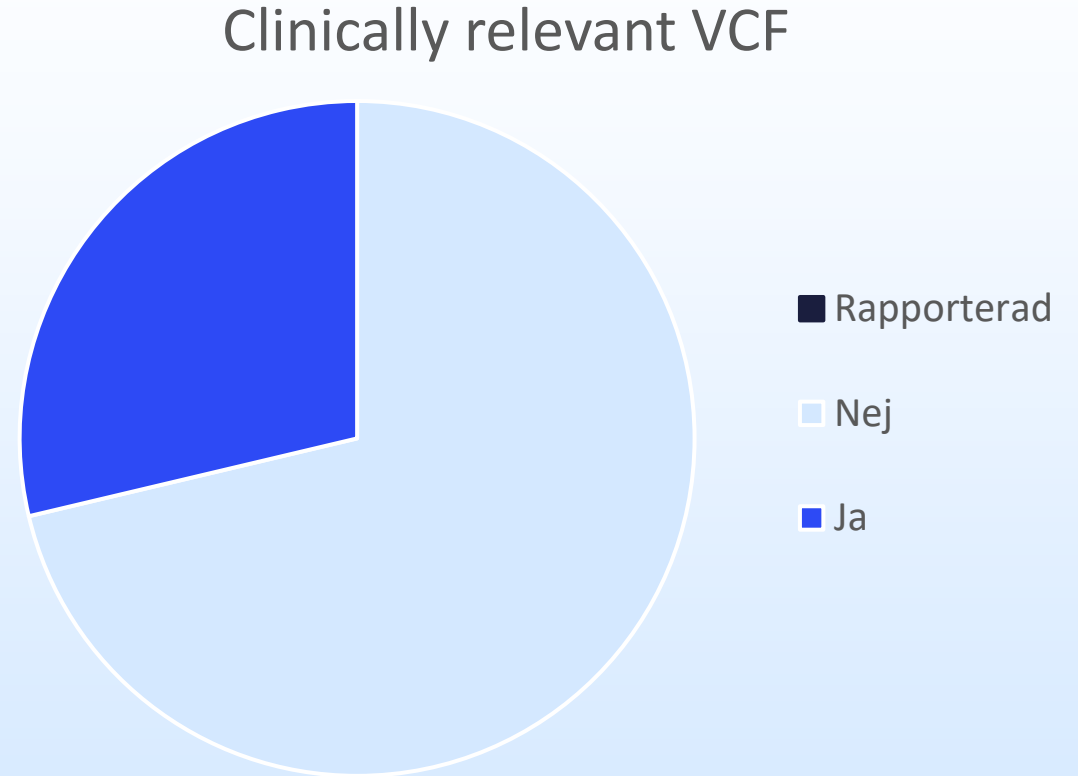
- Patients with hip fractures
- 40% had a previous vertebral compression fracture
- Less than half reported!



Mitchell RM et al. *Arch Osteoporos.*
2017 Dec;12(1):71

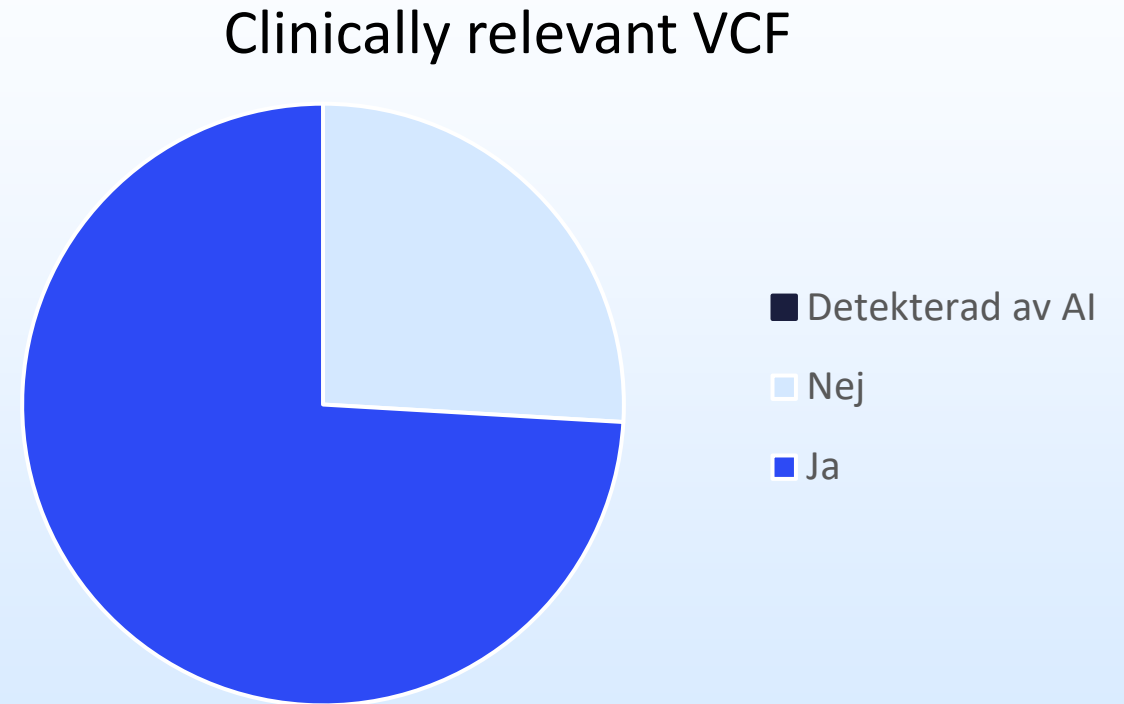
Radiology reporting rate

- Of 109 clinically relevant VCF, 70% was not reported



AI accuracy

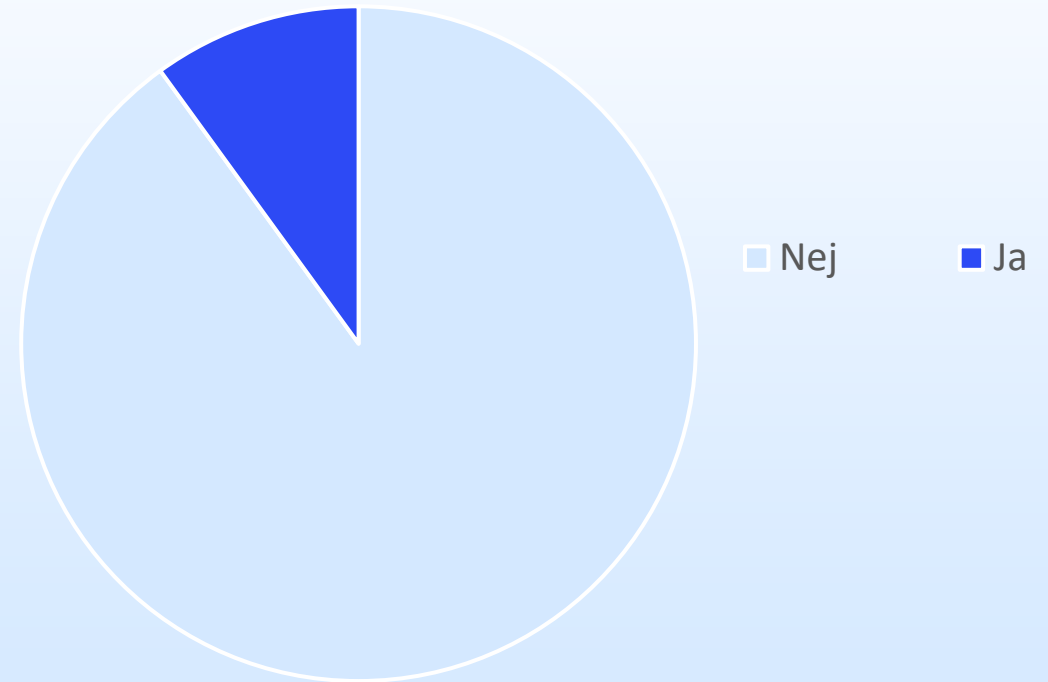
- AI had 75% sensitivity
- High positive predictive value (PPV) 79%

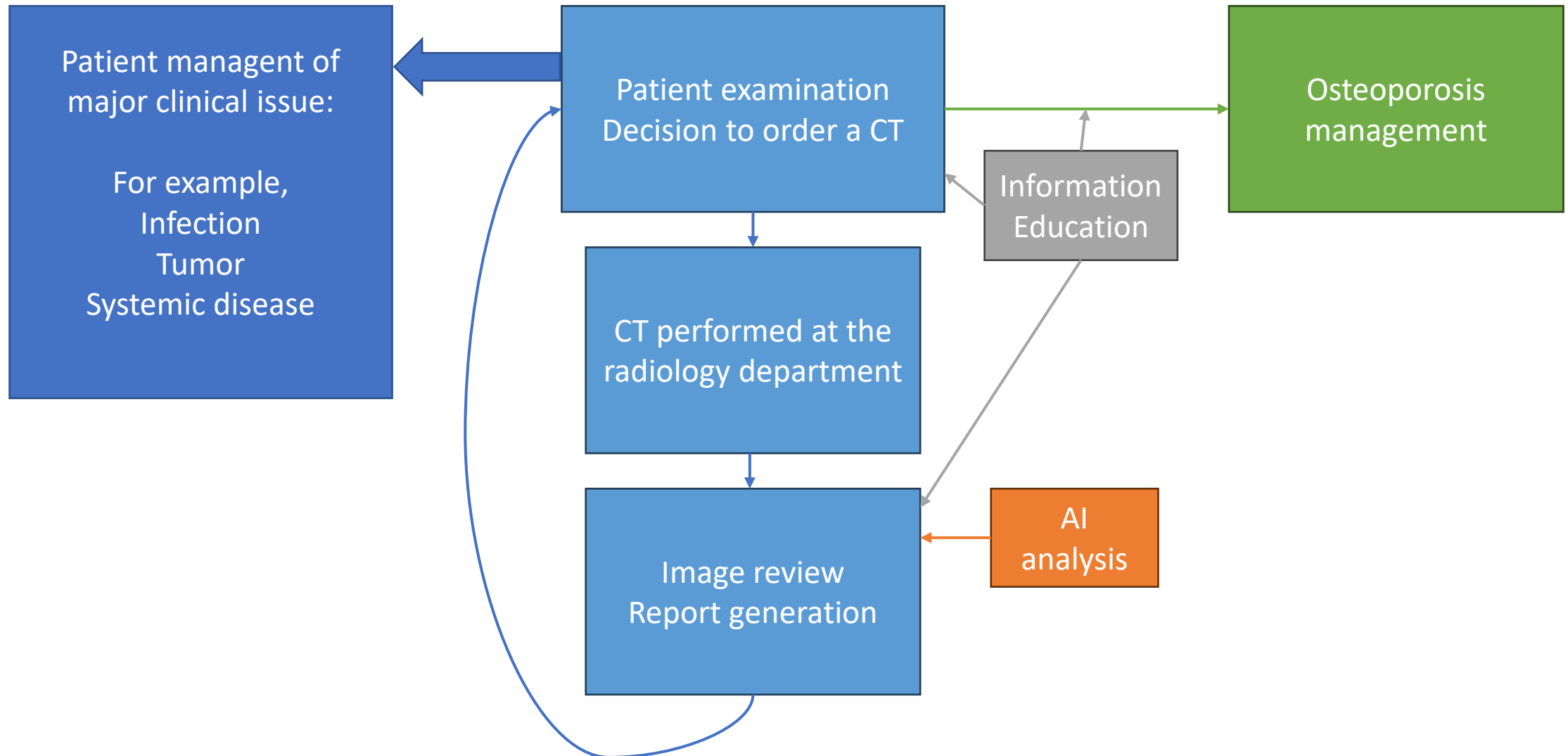


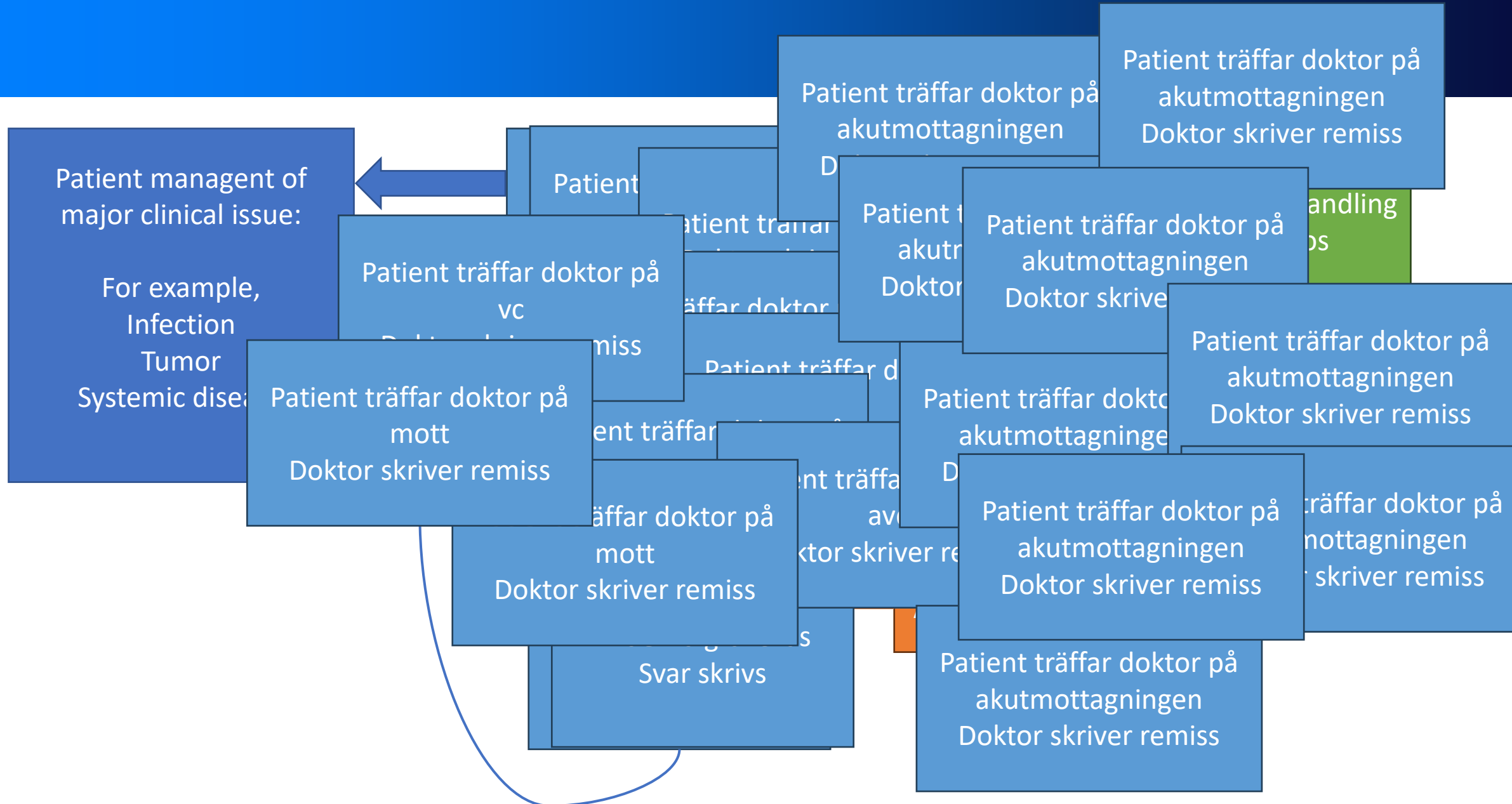
Patient outcomes

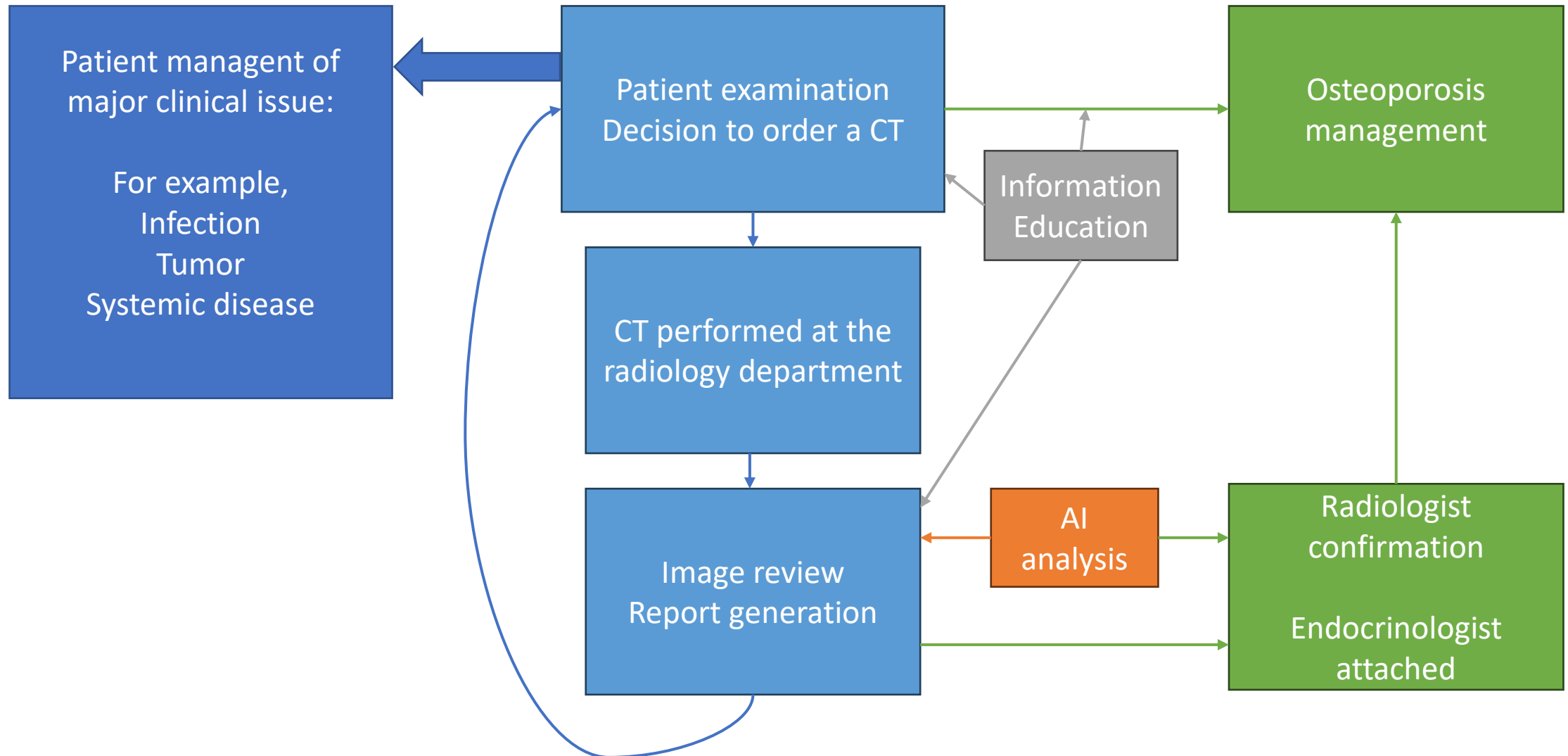
- Of the 33 patients with a reported VCF:
 - Only three patients (9%) started treatment within a year of the fracture

Pharmacologic treatment started within one year









AI in Halland

- Clinical problem?
- Prioritize AI that solves several problems
- Patient benefit?

AI in the future – AI very sensitive, offloading

- Autonomous / semiautonomous AI
- AI-supported diagnostics outside of radiology

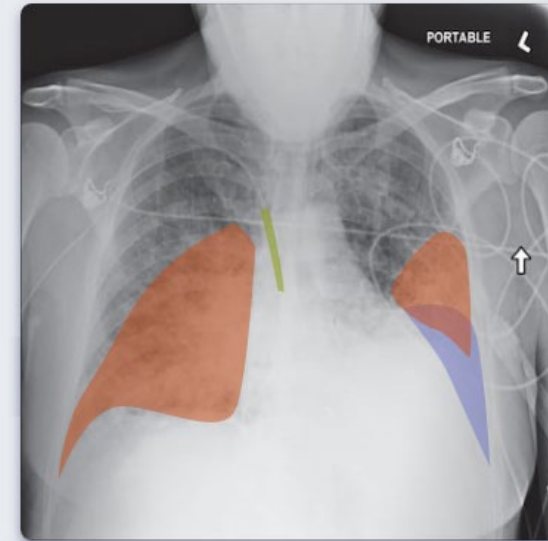
EXAMPLE RESULTS

Findings

- There is volume loss in both lungs. Ill defined opacities are present bilaterally.
- A left sided pleural effusion is seen filling the costophrenic sulcus.
- The hilar area is enlarged.
- The mediastinum is within normal limits.
- Central venous catheter is observed with tip at the superior vena cava.

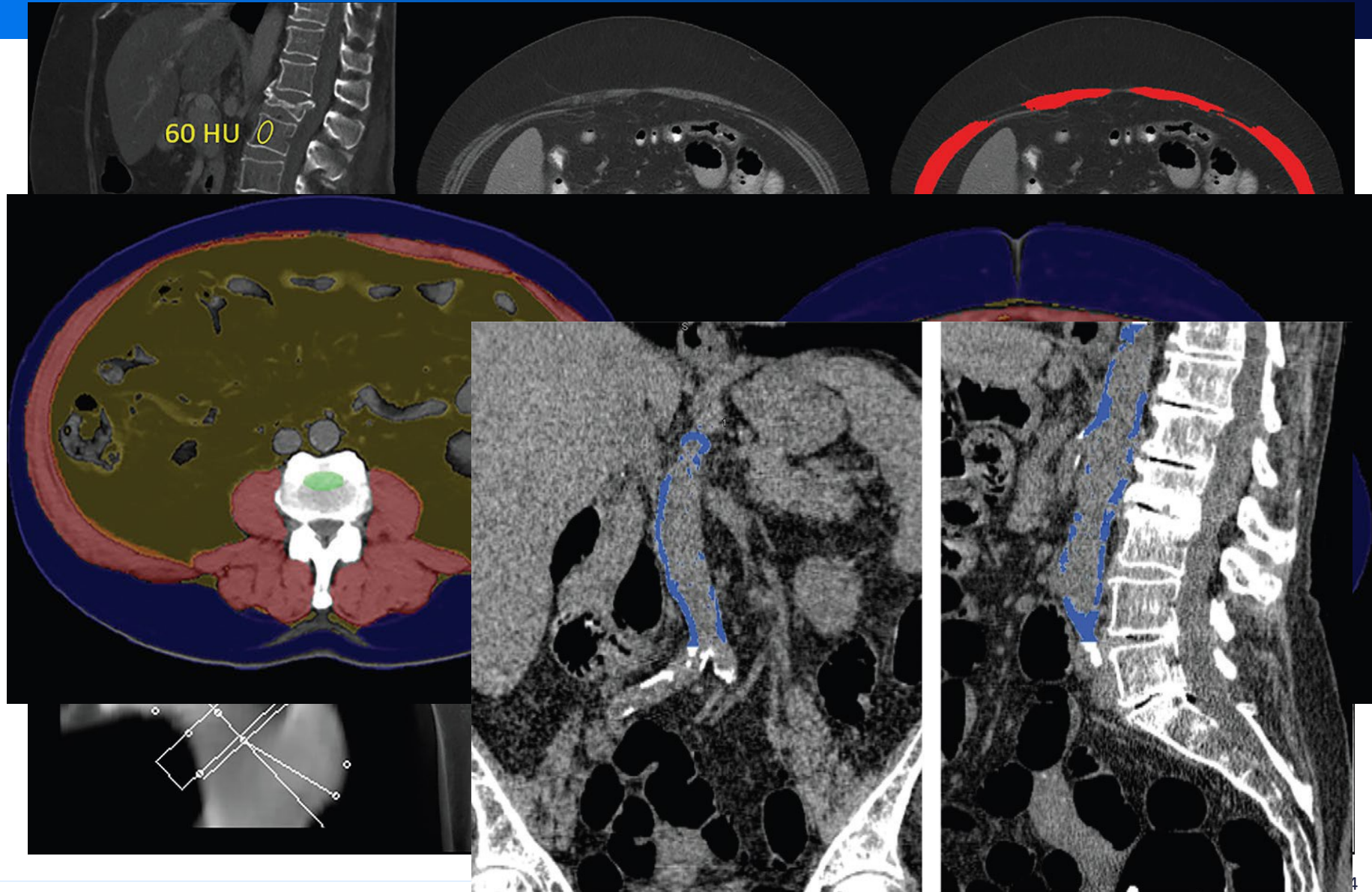
Impression

Bilateral consolidation, Left pleural effusion.



AI in the future – hard for humans/easy for AI

- Muscle atrophy
- Vascular calcification
- Abdominal and subcutaneous fat
- Factors reflecting frailty and risk of disease?



Thank you!

AI is not one-size-fits-all, however the right AI can improve almost any workflow

