COMPARISON OF RADIOLOGY AUGMENTED VS ASYNCHRONOUS OF ARTIFICIAL INTELLIGENCE (AI) ENABLED VERTEBRAL FRACTURE (VF) REPORTING

OBJECTIVES: To compare the performance of using synchronous AI-augmented general radiology reporting with asynchronous dedicated MSK expert review of CT scans flagged by AI.

METHODS: Using the Nanox-AI HealthVCF AI model, CT scans that included the thoracic/ lumbar spine were re-analysed at the high specificity setting for moderate/ severe vertebral fractures. Flagged CT images were annotated for the reporting radiologist to confirm and the patient referred to the Fracture Liaison Service (FLS). In parallel, all AI-flagged CT scans were sent to a separate server for asynchronous reading by a musculoskeletal (MSK) radiologist. We used Fisher's exact test to compare the two pathways.

RESULTS: Between December 2023 and November 2024, 10,679 scans were analysed, 1,311 flagged by the AI as potential vertebral fractures. An MSK radiologist confirmed 946 (72.2%) as vertebral fractures. 20.9% of flagged scans with at least one confirmed vertebral fracture were not reported and referred. Trainees had the lowest missing rate, with the highest missing rate being for outsourced and locums radiologists ($p<0.001$). The highest non-MSK missing rates were from Chest/Nuclear Medicine (29.6%), head&neck (26.7%) and Breast (26.3%).

CONCLUSION: Even with AI-informed prompting, a fifth of scans with confirmed VF were not reported. This supports asynchronous reading of the AI-flagged scans and should inform local implementation.