NICE National Institute for Health and Care Excellence

Artificial intelligence software to help detect fractures in the emergency department (provisional title)

X-ray imaging is used in the emergency department to examine the bones and joints of people that present with a suspected fracture. The majority of fractures are classed as non-complex. They can occur across a wide age range, involve numerous different bones and require a range of different treatment options. Therefore, fractures present a considerable challenge to the NHS.

The initial interpretation of the X-ray images to diagnose or rule out a fracture is usually done by a doctor or nurse in the emergency department. The images should then be reviewed by a radiologist or radiographer before the person with a suspected fracture is discharged. But, in practice due to increasing demands on radiology services and workforce shortages, this is not always possible, leading to missed fractures or delayed diagnoses. This can delay treatment and lead to long-term complications and poor health outcomes. For some fractures, an immediate and accurate diagnosis is essential to avoid complications and potential further harm.

Artificial intelligence-based software packages are available that can analyse X-ray images to help detect fractures and support clinician interpretation. This could improve the accuracy and timeliness of X-ray diagnoses and reduce the number of missed fractures. AI technology could also provide efficiency gains by freeing up radiologist time and reducing the number of patient recalls.

The NICE health tech assessment programme will assess the clinical and cost-effectiveness of using AI software to help detect fractures and support interpretation of X-ray images in order to make recommendations on its use in the NHS.

Specialist committee member disciplines:

- Consultant radiologist
- Reporting radiographer
- Diagnostic radiographer
- Consultant in emergency medicine
- Consultant orthopaedic surgeon
- Emergency nurse practitioner or advanced clinical practitioner
- Physiotherapist