NICE National Institute for Health and Care Excellence

Resource impact summary report

Resource impact

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This summary report is based on the NICE assumptions used in the resource impact template. Users can amend the 'Inputs and eligible population' and 'Unit costs' worksheets in the template to reflect local data and assumptions.

Recommendations

NICE has recommended that 4 artificial intelligence (AI) technologies, Rayvolve and TechCare Alert (for all ages) and BoneView and RBfracture (for 2 years and over), can be used during the evidence generation period as an option to help healthcare professionals detect fractures on X-rays in urgent care.

They can only be used if the evidence outlined in the evidence generation plan is being generated, and once they have appropriate regulatory approval including NHS England's Digital Technology Assessment Criteria (DTAC) approval.

Eligible population for the AI technologies

The number of people who report to A&E or minor injuries units with suspected fractures is unknown. However, in 2023 to 24 there were around 4.9 million A&E attendances with a primary diagnosis classified as a fracture (NHS England Hospital Accident & Emergency Activity 2023 to 2024).

The AI technologies may not be suitable for use in certain groups, for example, children and young people or people with conditions that affect bone health. Table 1 in the guidance shows the regions covered and the pathologies detected by the technologies. Centres should ensure that the AI technologies are used within their indications.

Treatment options

NICE's guideline on fractures (non-complex): assessment and management (2016) covers assessing and managing non-complex fractures that can be treated in the emergency department or orthopaedic clinic. Clinical experts highlight that for people presenting to

urgent care with a suspected fracture, an X-ray is undertaken followed by, if available, an interpretation of the image by a reporting radiographer or radiologist. Formal reporting may not be possible before people are discharged, leaving diagnoses to be made based only on interpretation by a less specialised urgent care clinician. This can contribute to an issue of missed fractures, whereby patients are given an incorrect diagnosis of having no fracture present or missing multiple fractures.

Missed fractures are reported to be the most common diagnostic error in the emergency department. Hussain et al. 2019 found that 44% of diagnostic errors in fractures resulted from inappropriate response to imaging. Missed or delayed diagnosis of fractures on radiographs is reported to occur in around 3% to 10% of cases (Kuo et al. 2022).

The inclusion of AI technology in the pathway as an addition to clinical diagnosis is to help improve fracture detection by helping healthcare professionals to interpret X-rays. Used in urgent care it could help reduce the number of missed fractures at initial interpretation therefore reducing the number of people that reattend urgent care after discharge or are recalled to hospital after radiology review.

Financial resource impact (cash items)

Implementation of AI technologies will incur additional costs to the NHS which will vary depending on pricing and usage. The prices are commercial in confidence. For details of the prices contact the relevant companies.

A clinical expert advising the committee indicated that there may also be set-up costs associated with IT staff time, and to integrate AI systems with the picture archiving and communications system.

A resource impact template has been developed to enable organisations to estimate the cost of implementing the AI technologies.

In order to calculate the financial impact of cash items, see the resource impact template.

Capacity impact

Capacity impacts that may result from implementation could be the reduction in number of people that reattend urgent care after discharge or are recalled to hospital after radiology

review.

For further analysis or to calculate the financial capacity impact from a commissioner (national) and provider (local) perspective, see the resource impact template.

Benefits

Use of AI technologies may:

- improve the detection of fractures on X-rays in urgent care without increasing the risk of incorrectly identifying fractures in people who do not have a fracture. This is likely to reduce the number of follow-up appointments as highlighted in the capacity impact section. Also, it may reduce the costs and capacity impact associated with complications of missed fracture, although this is not modelled in the resource impact template.
- help reduce variation in standard care by providing a consistent baseline for X-ray interpretation, which is not affected by differences in staff experience or resources, between centres.
- improve geographical inequalities in X-ray interpretation and fracture detection, because smaller centres may have fewer and less-experienced staff.

Key information

Table 1 Key information

Specialty area	Musculoskeletal
Disease area	Various
Programme budget category	PBC15X - Problems of the Musculoskeletal system
Pathway position	Diagnosis
Commissioner(s)	Integrated care boards
Provider(s)	Secondary care - acute

About this resource impact summary report

This resource impact summary report accompanies the NICE healthtech guidance on artificial intelligence (AI) technologies to help detect fractures on X-rays in urgent care and should be read with it.

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