NICE National Institute for
Health and Care Excellence

HealthTech Programme

GID-HTE10059 Artificial intelligence technologies to aid the opportunistic detection of vertebral fragility fractures

Equality impact assessment: Scoping

The impact on equality has been assessed during this evaluation according to the principles of the NICE Equality scheme.
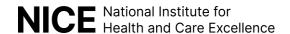
1. Have any potential equality issues been identified during the scoping process, and, if so, what are they?

There are geographical inequalities related to radiology services and service capacity. Artificial intelligence (AI) technologies to aid the opportunistic detection of vertebral fragility fractures (VFFs) can improve accessibility and equity of access by providing diagnostic services in areas lacking specialised radiologists.

Some bone disorders (e.g. scoliosis, ankylosing spondylitis, bridging osteophytes, Scheuermann's disease and degenerative disc disease) might affect the performance of the technologies. Clinical experts explained that AI technologies may also be less effective when detecting VFFs on images of people who are very elderly.

The incidence of VFFs increases with age from around the age of 50 years. VFFs occur more commonly in women than men at all ages. Osteoporosis is also more common in people of lower socioeconomic status.

People with certain conditions that affect bone density like osteoporosis are more likely to have VFFs. Certain medications like glucocorticoids, which are taken for a number of long-term conditions, may cause a reduction in bone density leading to osteoporosis and subsequently VFFs.

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Compared to other ethnic groups, white men and women are at an increased risk of fragility fractures. Also, some ethnic groups may be underrepresented in the population used to train AI to detect VFFs. This may result in the algorithm performing differently in ethnic groups in which it was not developed, trained or validated with. There is a lack of a race-specific reference standard for measurement of bone density, noting that variations exist in bone mineral density across various ethnic groups, which could be a contributory factor to the misdiagnosis of VFF. The effectiveness of dual-energy X-ray absorptiometry (DXA) and CT also varies significantly across different racial and ethnic groups.

Age, sex, disability and ethnicity are protected characteristics under the Equality Act 2010.

2. What is the preliminary view as to what extent these potential equality issues need addressing by the Committee?

The potential equality issues will be considered by the committee during decision making.

3. Has any change to the draft scope been agreed to highlight potential equality issues?

The potential equality issues have been included in section 6.3 of the scope. At the scoping workshop the higher risk of osteoporosis among people of lower socioeconomic status was discussed and added to section 6.3 of the final scope.

4. Have any additional stakeholders related to potential equality issues been identified during the scoping process, and, if so, have changes to the stakeholder list been made?

No additional stakeholders related to potential equality issues have been identified during the scoping process.

Approved by Associate Director: Lizzy Latimer

Date: 10 February 2025