key points

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Osteoporosis is characterised by architectural deterioration of bone tissue, low bone mineral density (BMD) and an increased risk of fragility fractures. It affects around 40% of women and 13% of men at some point in their lives. While almost any bone can fracture as the result of osteoporosis, the most common sites are the wrist, spine, hip and humerus.

The two most important risk factors for osteoporosis are increasing age and female gender. Other risk factors that are associated with reduced BMD and an increased risk of fragility fractures include chronic inflammatory diseases, malabsorption, chronic liver disease, chronic kidney disease and chronic neurological diseases. Drug treatments that predispose to osteoporosis include corticosteroids, thiazolidinediones, antiepileptic drugs, proton pump inhibitors and aromatase inhibitors. The presence of one or more of these clinical risk factors in individuals aged 50 and over is an indication for a fracture risk assessment.

The two most commonly used fracture risk calculators in the UK are FRAX and Qfracture. The QFracture calculator allows clinicians to enter more clinical risk factors than the FRAX algorithm, and can provide calculations ranging from one- to ten-year risk. The FRAX calculator only provides ten-year estimates of risk. However, an advantage of FRAX over QFracture is that it is possible to refine the estimated fracture risk by adding information from DXA provided that hip BMD measurements have been taken.

To make a diagnosis of osteoporosis DXA examination of the lumbar spine and hip should be performed. The diagnosis can be confirmed if the BMD T-score value at either site is -2.5 or less. However, it is possible to have osteoporosis of the spine with normal BMD values at this site due to coexisting diseases such as osteoarthritis. Quite frequently DXA examination can reveal osteoporosis at one skeletal site but not at another e.g. osteoporosis of the spine but not at the hip.

There is a strong evidence base for drug treatment in DXA proven osteoporosis and those with low trauma vertebral fractures. Bisphosphonates are the most commonly used drugs. They inhibit osteoclastic bone resorption and prevent bone loss. The most common adverse effect is upper gastrointestinal (GI) upset but some patients who develop GI upset with one oral bisphosphonate can tolerate another perfectly well. If oral bisphosphonates are contraindicated or poorly tolerated, parenteral bisphosphonate therapy should be considered, typically with intravenous zoledronic acid. With antiresorptive drugs there is a concern that with very long-term treatment, there is a small risk of developing atypical femoral fractures and osteonecrosis of the jaw. Therefore, the MHRA advises that the need for continued treatment should be reviewed every five years. In most individuals, this involves a medication review and a repeat DXA.