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Osteoporosis SBRI challenge

Improved identification of people at risk of osteoporosis and fracture, including those with diabetes

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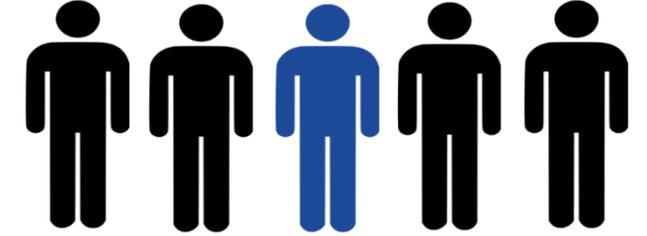
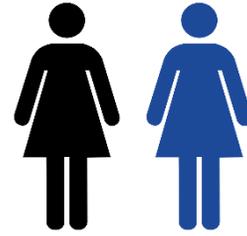
This challenge invites applications to:

Explore and improve the processes for identifying people, including those with diabetes, who are at risk of osteoporosis and recurrent fracture

Automate the current case-finding processes to identify patients with new fractures and other risk factors for osteoporosis

Develop improved, less manual mechanisms of identifying patients with fracture who should be followed up by the Fracture Liaison Service (FLS)

Background



1 in 2 women and 1 in 5 men will suffer a fracture at some point after the age of 50, mainly because of poor bone health.



People with diabetes, particularly type 1 diabetes, often have poorer bone quality and an increased risk of osteoporotic fractures.

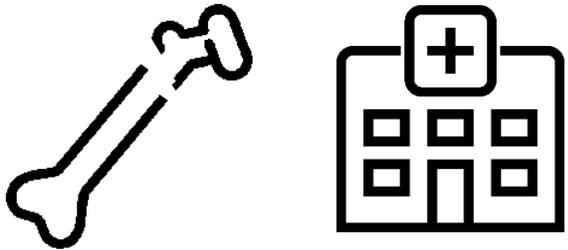


Fractures are an important cause of morbidity. Patients who suffer hip fractures and vertebral fractures have a decreased life expectancy compared with population-based controls.

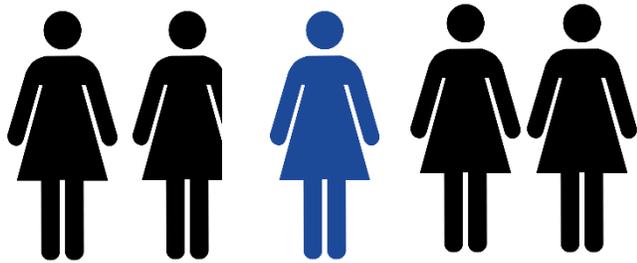


Fragility fractures are estimated to cost the UK around £4.4 billion each year.

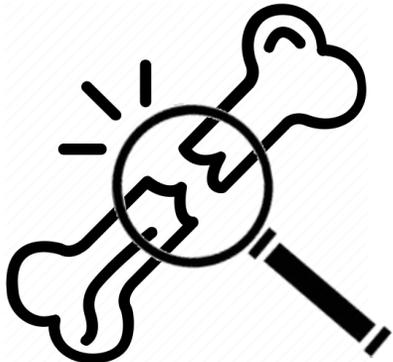
Background



Hip fractures alone account for 69,000 emergency admissions into English hospitals, adding up to 1.3 million bed days and a cost of £1.5 billion each year.



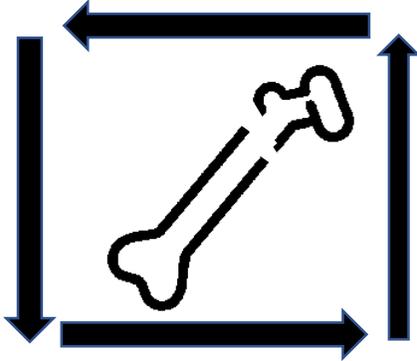
One in five women who have broken a bone break three or more before being diagnosed.



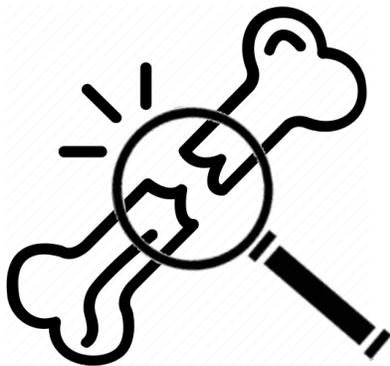
Many fractures could be prevented with earlier identification and intervention.

Identifying and treating those at highest risk of a first or subsequent fracture can give them the best chance of avoiding further fractures.

Background

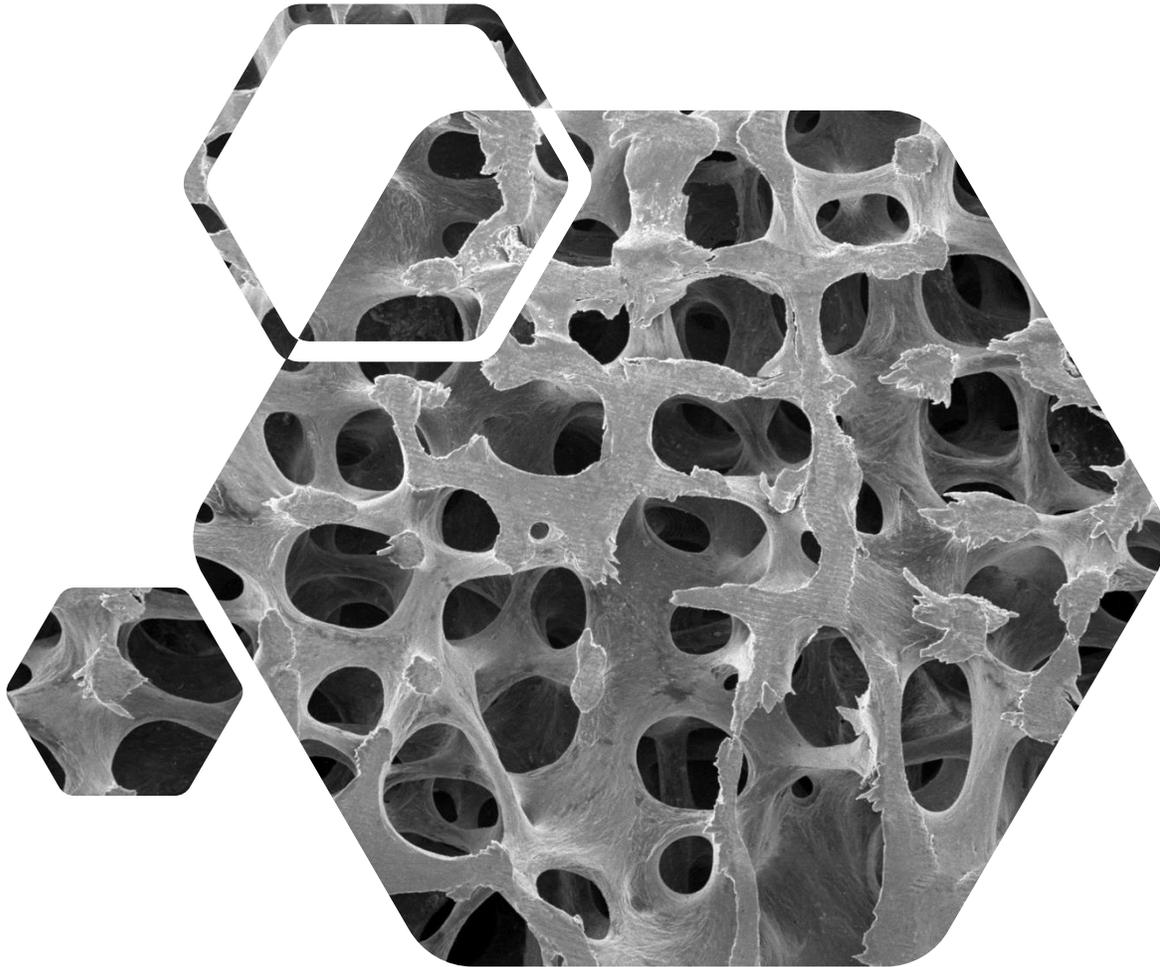


Currently 35% of UK local health services provide Fracture Liaison Service (FLS) pathway - not all of these can demonstrate reliable assessment of all fracture patients.



Earlier, more accurate identification of all people at risk of osteoporosis and fracture will ensure earlier assessment and therapy, reducing subsequent fracture-related morbidity and costs.

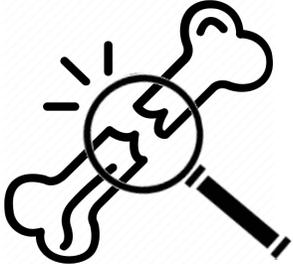
Current Situation

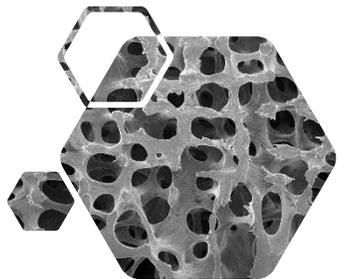


Bone density is one of a number of important risk factors that contribute to someone's risk of fracture.

Chronic diseases including diabetes are important contributors to osteoporosis (reduced bone density) and fracture risk.

The Metabolic Bone Service

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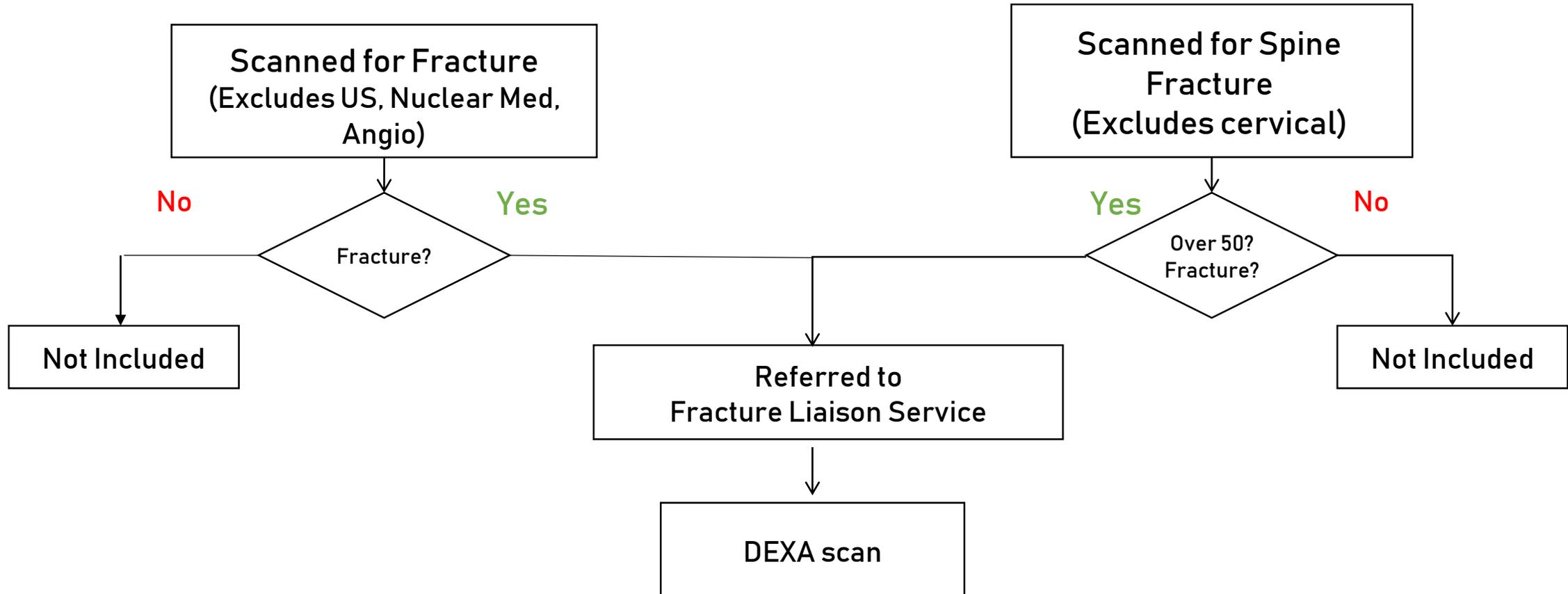
1 Identifies people at risk of osteoporosis and fracture (case-finding)
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2 Assessing their bone density using DEXA Scan (screening)
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3 Analyzing their scan result with other patient data (interpretation) to decide future management

Case Finding from Radiology Lists

Radiology Access Team – Weekly Report



Very slow

Not generated directly from scan

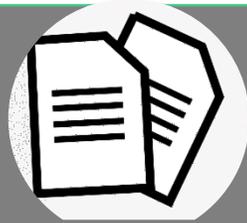
Requires scans to be reported by radiologist first to generate lists

Current situation

Case-finding is manual and time consuming – FLS nurses:



Sort through large excel spreadsheet lists generated by radiology



Conduct a manual daily trawl of orthopaedic trauma lists



Receive secondary care referrals

Available Data Sources

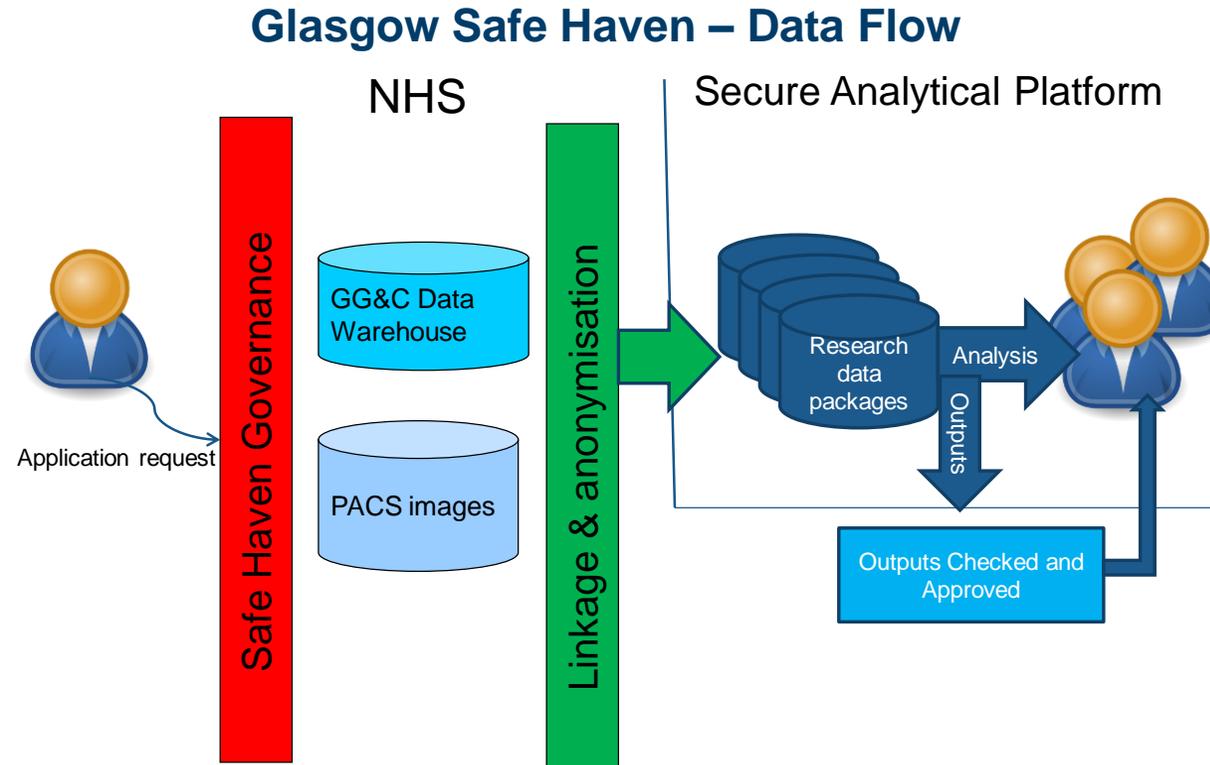
6 – 12 months NHS GGC FLS dataset comprising:

- CT/MRI images (with/without fracture)
- Unstructured radiology reports
- Orthopaedic trauma lists generated from Trak
- Bone metabolism data

Historic patient-level data (as required up to 5 years):

- Emergency Department attendance reports (ED Trak)
- National diabetes dataset (SCI Diabetes)
- Community prescriptions

Access to data through NHSGGC Safe Haven



- Access to data will get ethical approval through the Local Privacy Advisory Committee
- The Safe Haven team will extract, link and anonymise data
- Company access for data analysis is virtual (VPN) through the Secure Analytical Platform
- Company will hold analysis outputs and models (but not the data itself)