Royal Osteoporosis Society

Better bone health for everybody

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APPG on Osteoporosis and Bone Health - Review of DXA (bone density scanning) facilities

Contents

Introduction

Dual energy X-ray absorptiometry (DXA) is the 'gold standard' test to measure bone mineral density (BMD), which is a key component of bone strength.(1,2) Combined with other independent risk factors (such as age, sex, weight), BMD forms part of a comprehensive clinical assessment to identify people with osteoporosis and at high risk of fracture.

The UK currently has no screening programme to identify people at risk of fracture. NICE and other UK guidance (2–4) recommend that clinicians use DXA to make a clinical assessment of patients who they suspect may be at risk of osteoporosis, and subsequently, to inform their management. In this way, DXA is critical to the prevention of fractures. DXA is also a vital part of the secondary fracture prevention pathway provided by Fracture Liaison Services (FLS). FLS identify people who have had a fracture that may be due to undiagnosed osteoporosis. Where appropriate, the service refers the patient for DXA and prescribes a bone-strengthening treatment to prevent future fractures.

Typically, a clinician uses an online risk assessment tool such as FRAX® or QFracture® to make an initial risk assessment. If this assessment indicates that the patient is at a higher-than-average risk of fracture, then they can be referred for a DXA scan to establish their BMD and fine-tune their fracture risk assessment. The results from a DXA scan inform whether a patient needs treatment and their choice of treatment, and gives people who need it access to the most appropriate treatments. BMD also provides a baseline against which changes can be measured over time – this shows if treatment is working.

Compared to other imaging teams, DXA services should be delivered by a small, highly skilled team due to the importance of validity and precision in DXA scanning technique, which highly influences a meaningful result (see Fig.1). The scan results should be formally reported by a DXA reporting clinician who has an expert understanding of the interpretation of DXA results and understands the individual patient's clinical history and risk factors. Unique to DXA is the holistic approach of providing an individualised report, which includes not only the patient's BMD measurements but also individualised treatment/ management advice and future fracture risk.(1,5) This formal report can be used to support the referrer's clinical decisions and consultation with the patient in deciding treatment regimes or changing drug treatments.(6)

Purpose of this review

During the course of our 2022 Inquiry into primary care, the APPG heard evidence of the national shortage of both DXA scanners and operators (often radiographers, technicians and clinical scientists), restricted access to DXA services, and long waiting times leading to delayed patient diagnosis and treatment.(7–10)

Prior to the pandemic, an NHSE-commissioned review showed that the NHS diagnostic capacity across all imaging (including CT, X-ray, ultrasound and DXA) was incompatible

with demand for some time and was reaching a tipping point.(10,11) Breaches of the six-week diagnostic standard for DXA (from referral to appointment) increased rapidly between 2017 and 2020, and the review recommended that DXA provision be increased to meet the 4% annual growth in demand.(10) Since then, however, the COVID-19 pandemic has created a large backlog on top of previous lack of capacity.

As part of the Inquiry into Primary Care in 2022, the APPG gathered data on diagnosis, treatment and management of osteoporosis from all Clinical Commissioning Groups (CCGs), Health Boards and Health and Social Care Trusts by means of an FOI request. It uncovered a 45% fall in DXA scans during 2020/21.(12) From March 2020 to January 2022, the number of patients waiting more than six weeks for a DXA scan increased from 2,295 to over 20,000.(13) More than 8,000 of these patients had been waiting for more than 13 weeks.(13) The evidence from our 2022 Primary Care Inquiry indicated that DXA provision in England was insufficient to address this backlog while also providing for new patients.

As a result of this evidence, the APPG decided to undertake a review of DXA service provision across the UK to establish a clearer picture of the challenges facing DXA services.

What we did

- We conducted a DXA facilities audit on infrastructure, workforce and quality by means of an FOI request to 160 NHS Trusts and Health Boards across the UK. 137 responded – a response rate of 86%.
- We held a remote APPG evidence session to hear oral evidence from four expert clinicians and one person with lived experience of osteoporosis and DXA service provision. These experts detailed the challenges facing DXA services, and the impact it is having on care.

Executive Summary

Diagnostic imaging services including dual energy x-ray absorptiometry (DXA) are a vital part of healthcare. Prior to 2020, we know that demand for bone density scanning by DXA services was steadily increasing and had been outstripping capacity for many years. The disruption of the COVID-19 pandemic only exacerbated a worsening situation. This review found how, after decades of neglect, DXA provision has deteriorated in terms of capacity, workforce and now quality – to a point which is, in some instances, of grave concern.

- The number of scanners per head of population in the UK is one of the lowest in Europe – 23rd of 29 countries.
- Long waiting lists are delaying access to treatment for people who are at high risk of fracture.
- There is no correlation between measures of deprivation and waiting lists. However, some of the longest waiting times for DXA are in regions with high levels of health inequality and rather than recovering post-pandemic, some regions are, in fact, getting worse.
- To try to address backlogs, some services have stopped reporting DXA scans for the referring clinician. Instead, referring clinicians are sent scan images with uninterpreted measurements. High quality reporting provides specialist interpretation of complex measurements and a clear steer to non-specialist clinicians, such as GPs, on the best management for that individual. Failure to report renders a DXA service unfit for purpose.
- The knowledge and skills requirements to expand and develop the DXA workforce have been overlooked. There has been no accredited DXA reporting training available in the UK since the closure of the only course provider in 2022. This course is now due to re-open in January 2024 but capacity must increase to meet the demand for places due to the lack of any reporter training in the UK during this period.
- Roles within DXA and Fracture Liaison Services (FLS) can be attractive propositions for people who prefer flexible working, but chronic de-prioritisation of bone health has led to this potential remaining untapped, with roles that could retain workers within the NHS not being developed and supported, resulting in severely blunted capacity.
- We found evidence of services that are under pressure cutting corners in respect of their duties under Ionising Radiation (Medical Exposure) Regulations.
- Compared to the other types of imaging, DXA has been neglected in the decisions around transforming diagnostics in the UK. For example, the current service specification for Community Diagnostic Centres does not specifically include DXA provision.

However, this review also identified good practice which, with the right training and resource, can be replicated across the UK. We urge the responsible bodies to act to ensure that high quality reporting of scans resumes across all services and sufficient capacity for reporter training is established in the UK as a matter of urgency. Trusts must also embrace innovative approaches to expand the specialist DXA workforce and future-proof quality DXA service provision.

DXA SCANNING CAPACITY

Everyone in the UK should have reasonable access to a DXA scanner. The requirement for approximately one DXA scanner per 100,000 population is widely accepted.(14) Through our FOI request, we established that in England:

- 89% of Trusts had less than one scanner per 100,000 population.
- 71% had less than 0.5 scanners per 100,000 population.
- 20% of services cited scanner capacity as a barrier to delivering DXA scans within 6 weeks of referral.

A Europe-wide comparison of care of osteoporosis in 2021 placed UK provision of DXA scanners/million population as inadequate – 23rd out of 29 countries. (14)

In her oral evidence to the APPG, Professor Knapp of the University of Exeter highlighted the need to look at the distribution of scanners across the UK with special focus on areas of deprivation where long waiting times exacerbate health inequalities (see Fig.1). In Cornwall, for example, and other large areas where there is just one DXA scanner within an ICS, a round trip to have a DXA scan can be up to three hours. This has implications for the most vulnerable patients who either struggle to travel due to mobility issues, cannot afford the transport or, due to job insecurity, struggle to get time off work for appointments.

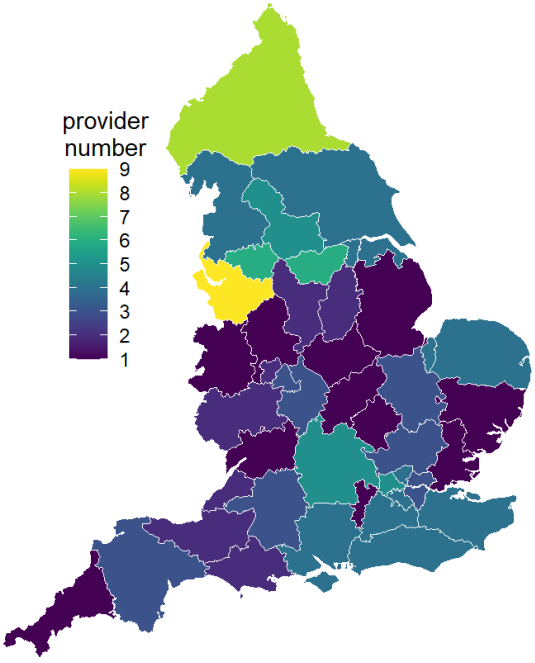


Fig 1: Map of England showing DXA providers per ICS (Prof. Knapp, Dr K Knight Dec. 2022)

Our analysis

The current provision of DXA scanners is wholly inadequate. NHS England's independent review recommended that DXA scanning equipment should as a minimum, be expanded in line with growth in demand (4%) prior to the pandemic, and that equipment more than 10 years old should be replaced.(10) **Our data strongly suggest that this will not be sufficient to support best practice care for people at high risk of fracture. Our data suggests that Community Diagnostic Centres (CDCs) should**

be used to address this shortfall, with a special focus on the regions with the longest waits and greatest health inequalities. Consideration must be given to the distribution of new DXA scanners, so that CDCs are not located close to an existing DXA service, but rather are based within communities that are currently at a significant distance from existing DXA provision.

Our Recommendations

NHS England must outline plans to address the shortfall in DXA provision, with a special focus on regions experiencing the longest waits.

NHS bodies in each of the four nations should ensure that everyone is given reasonable access to a DXA scanner – within a 30-minute journey in mainland UK.

DELAYS IN DIAGNOSTIC TESTING

UK-wide clinical guidance recommends that patients wait no longer than six weeks between being referred and having a scan appointment. After that appointment, a report of the scan should be supplied to the referring clinician (often a GP) within three weeks (see Fig.2).

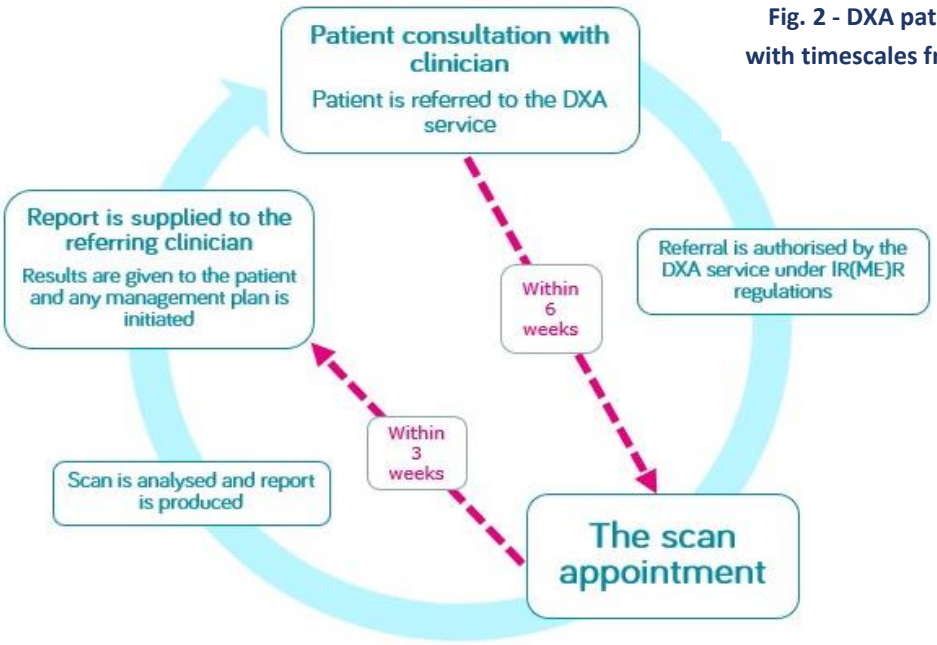
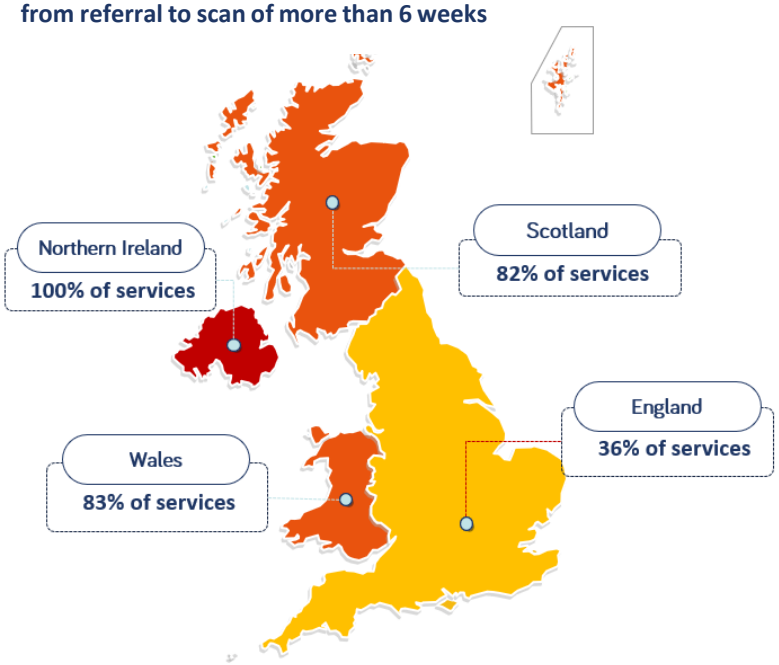


Fig. 2 - DXA patient pathway - with timescales from referral to report.

Delays from referral to scan

UK-wide clinical guidance states that DXA services should perform scans within 6 weeks of referral (see Fig.2).(1,2,15) Our FOI uncovered delays in this process.

Fig. 3: DXA services with average waits from referral to scan of more than 6 weeks



Across the UK, 46% of DXA services had an average wait from referral to scan of more than six weeks, 26% of services had an average wait of more than 13 weeks.

Average wait times were significantly longer in the devolved nations – see Fig.3. Respondents cited clinical capacity (40%) and scanner capacity (20%) as the main barriers to meeting this target.

Many services are therefore not meeting their **national diagnostic standards**:[1]

- In **England,** nearly one third of services are not compliant with the six-week diagnostic standard in the NHS England Constitution and are in breach of their Standard Contract.(16)
- In **Scotland**, while there is not an explicit diagnostic standard for DXA, there is an 18-week referral to treatment standard of which timely diagnostics is an essential part. 82% of services had an average wait for a scan of more than six weeks, and 64% had an average wait of more than 13 weeks.
- In **Wales**, 83% of services had an average wait of more than 13 weeks – in breach of their diagnostic standard of eight weeks.
- In **Northern Ireland**, at least 80% of services had an average wait of more than 13 weeks – in breach of the nine-week diagnostic standard.

[1] The diagnostic standard in England (which covers DXA) is six weeks. This is a key part of the 18-weeks-from-referral-to-treatment standard. In Scotland, DXA is not covered by their six-week standard, however they also have an 18-weeks-from-referral-to-treatment standard. In Wales the diagnostic standard is eight weeks, and in Northern Ireland it is nine weeks.

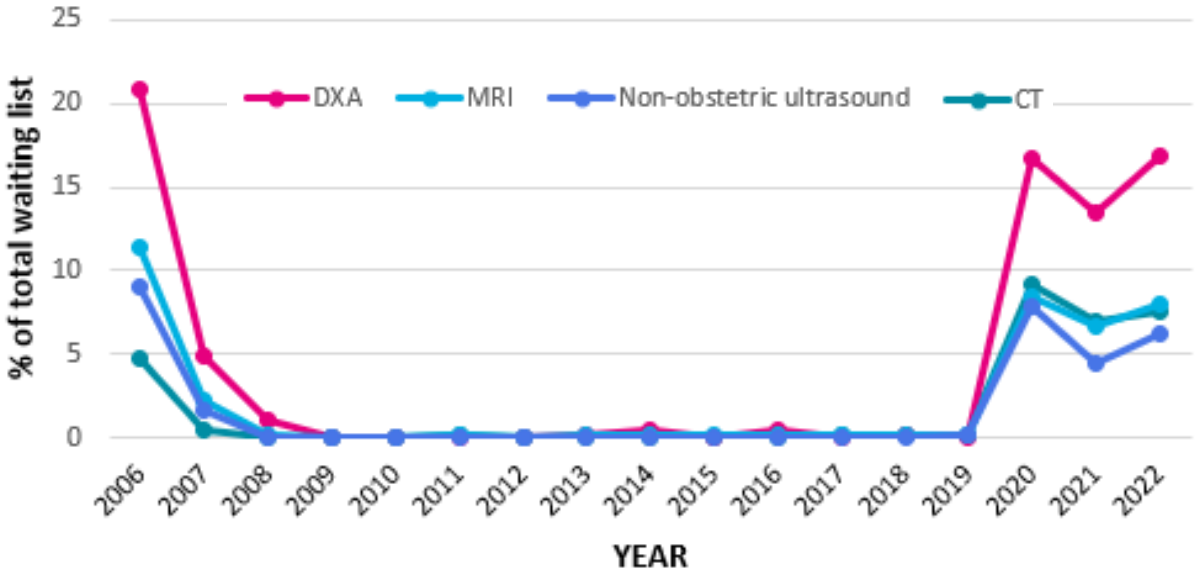
The patient experience

The APPG heard heart-rending evidence from a person with lived experience about the stress and anxiety caused to them by cumulative delays – from delays for DXA to a long wait for a follow-up GP appointment to discuss results.

> **"I would say that my anxiety level started to creep up the minute that letter arrived to say that I had sustained a fracture. I'd not had an accident. How could that be possible? I was scared…**
>
> **Waiting [for a DXA scan] was hard for me. I kept waking up at night thinking 'I'm going to die now with my broken bones. If I've had a rib fracture, it's highly likely that I will have a hip fracture.'**
>
> **My second DXA scan took six months. We need to do something about it. People shouldn't have to suffer like I did." Person with lived experience of osteoporosis**

In her oral evidence to the APPG, Professor Knapp described how backlogs for DXA are disproportionate compared to other imaging modalities (MRI, CT and Ultrasound) (See Fig. 4).

Fig. 4: 13 week+ wait as percentage of total list, England 2006 -2022. (Courtesy of Dr. Katy Knight, University of Exeter)



Waits for DXA scans of 13+ weeks had increased substantially during the COVID pandemic, and recovery of waiting times to pre-pandemic levels has only occurred in some regions (London, the North West and the South East). Waits of 13+ weeks have continued to rise in other regions (Midlands, East of England, North East and Yorkshire).

The regions with the highest waiting lists – North East and Yorkshire, East of England – also have higher deprivation rankings. This raised the question of DXA provision contributing to widening health inequalities.

Delays in reporting

DXA services should complete a report on the DXA scan for the referring clinician within three weeks of the scan (See Fig. 2 on page 6).(1,2) Our UK-wide FOI request found that:

- 31% of centres took longer than three weeks to issue reports. Performance was worst in Wales (50%) and England (32%), and better in Scotland (18%) and Northern Ireland (20%).
- 5% of centres are operating with an average wait time for reports to be issued of over 13 weeks (on top of the initial wait for the scan).

Clinical capacity (25%) was the most common factor cited as the reason behind these delays.

The effect of long waits

People are most at risk of a second fracture immediately after their first fracture.(17–23) In the case of spinal fractures, if untreated, 20% of women will sustain another one within the next 12 months.(24) Treatment reduces the risk of spinal fracture within 6-12 months by up to 80%.(2,3,25–28) Prompt diagnosis and treatment are therefore vital.

Our analysis

Nearly half of DXA services in the UK do not meet the clinically recommended 6-week timescale for referral to scan. Furthermore, significant numbers of services are in breach of their national diagnostic standards. Similarly, nearly one third of services in the UK (notably, 50% in Wales) are not delivering reports within the clinically recommended three-week timescale.

These cumulative delays result in a delay in treatment for many patients who, if they have just had a fracture, are at their highest risk of having another one. The COVID-19 pandemic has impacted DXA services more than other diagnostic imaging modalities, and in some regions the picture is worsening rather than returning to pre-pandemic levels of service.

Our recommendations

NHS bodies in each of the four nations should investigate waiting times for DXA services that exceed national diagnostic standards as a matter of

NHS England should advise ICBs for areas where waiting times are increasing to prioritise DXA provision in their Community Diagnostic Centres, and support this through ring fenced resource.

The NHS bodies in each of the four nations should issue guidance to all Trusts and Health Boards on ways to reduce waiting times for DXA without compromising quality (including provision of quality reporting).

Services that are struggling need access to examples of good practice from services that have successfully reduced waiting times while maintaining quality standards. Under NHS England, the Getting it Right First Time (GIRFT) programme should be resourced to provide this support.

QUALITY ISSUES

DXA reporting

A DXA service is only as good as the quality of the end-product – the report. Both quality and timeliness of DXA reports are vital to support GPs to get patients onto treatment as quickly as possible. Our 2022 Primary Care Inquiry found that GPs had low levels of confidence in evaluating fracture risk, interpreting DXA results and communicating them to patients. They relied heavily on the expert DXA report.

No-one wants to be exposed to radiation unnecessarily. But at the moment, patients are having DXA scans which are effectively pointless because the report provided is not understandable to GPs and other clinicians. The Royal College of Radiologists and the Society and College of Radiographers recommend that all reports generated from a radiological examination must be 'actionable' for the referring clinician – meaning that they contain recommendations upon which a clinician can take clinical decisions.(6,29) This is in accordance with the Ionising Radiation (Medical Exposure) Regulations IR(ME)R 2017 and IR(ME)R (NI) 2018 (referred to as IR(ME)R in this report) which state that a clinical evaluation (the report) must be recorded for each radiation

exposure.(30,31) The ROS Standards for DXA reporting (2019) outline in detail what reports should include.(1)

However, our 2023 FOI request established that across the UK:

- 47% of services did not include individualised management advice in their reports to referring clinicians.
- 47% of centres did not include a statement defining the patient's fracture risk.

Failure to provide expert advice in a report to referring clinicians (who are often GPs) was put into context for the APPG by the person with lived experience who gave oral evidence (see also p.9). She described her experience of navigating a primary care system characterised by a lack of expertise in osteoporosis. As the patient, she felt that she had to educate herself to challenge and drive her GP's clinical decision-making. She requested scans and referrals that were not otherwise offered and pushed for a timely follow-up scan. Finally, she requested a specialist referral when it became clear that her GP did not have the expertise to interpret her repeat DXA scan results and adjust her treatment appropriately. She expressed her deep concern for people who, for a variety of reasons, would not have the same agency and determination to get the care they need.

Case study: DXA service stops reporting all DXA scans

"DXA scanning is essentially a waste of time if reporting is not done correctly and accurately." **Radiographer giving evidence**

The APPG heard oral evidence from a radiographer about the impact of their NHS Trust's decision during the COVID-19 pandemic to stop routinely providing reports of DXA scans. When the Trust discovered that other Trusts were dispensing with DXA reporting, the Trust decided to follow suit and cease reporting altogether.

Now, instead of a detailed individualised report in which the significance of measurements taken are explained and management advice is provided, referring clinicians are sent the scan images with uninterpreted BMD measurements and, for repeat scans, an uninterpreted rate of change of BMD since the last scan. They are not informed of any incidental findings, such as a spinal fracture.

Continued overleaf

This service change has been implemented despite the fact that many referring clinicians (typically GPs) do not have the expertise to interpret DXA results. Critical clinical information identified by the DXA operator is no longer shared, even though it could result in a different patient management decision. Doctors are no longer advised to instigate investigations for underlying causes or routine blood tests. They are given no advice on different treatment thresholds for patients with exceptional clinical circumstances – such as patients with breast cancer who are taking aromatase inhibitors, or patients taking oral steroids.

As a result, in the radiographer's view, patients' fracture risk is not being addressed appropriately. Some patients are being under-treated and not monitored until they have another fracture. Others are being over-treated, incurring unnecessary costs to the NHS, and risking harm to the patient from medication or side effects.

The radiographer explained that no one should be exposed to ionizing radiation if it does not result in a change to their treatment or management which may be the case if the scan is not reported. Furthermore, the radiographer described to the APPG how the regulator had not yet caught up with this challenge since the pandemic.

Training of scan reporters

Our FOI made a number of requests for information regarding the types of professionals undertaking DXA scan reporting. We found that:

- Only 31% of reporters (medical or non-medical) had received accredited reporting training.
- 64% of centres used medical doctors to report on scans. This calls into question the extent of training in DXA interpretation in under- and post-graduate medical training. Anecdotally, the contributors to this report have informed the APPG review that this is negligible and relies heavily therefore on in-house instruction, the quality of which cannot be ascertained and is most likely highly variable.

The APPG has been informed that the *only* accredited course in DXA reporting in the UK (which did not run in 2022 or 2023) will now reopen in January 2024.

Our analysis

Our UK-wide FOI request established that most services are not delivering a report that is helpful to the referring doctor or facilitates decision-making with patients. Referrers (such as GPs) wanted explicit guidance in a DXA report regarding the patient's BMD result, rates of change, further investigations and appropriate treatment. At the very least, they need the report to summarise the patient's risk of fracture and signpost to the relevant guidance on treatment. Without an expert report, even a knowledgeable referrer has no way of knowing whether the results are technically valid and reliable. Good reporting provides expert interpretation of results into meaningful information for a referrer. The APPG is very concerned about the quality of current reporting and the lack of accredited reporting training in the UK. Reports that are not fit for purpose represent financial resource wasted and pose a clinical risk, which the NHS can ill-afford.

Our recommendations

Everybody who reports DXA, no matter their profession (including medically trained doctors, nurses, allied health professionals, clinical scientists and technicians), must have had a period of accredited training that involved supervision and a requirement to demonstrate competency. NHS England must investigate new sources of accredited DXA reporting training as a matter of urgency.

The enforcing authorities for IR(ME)R[2] must undertake an investigation into quality of DXA provision – including Trusts that only offer DXA without reporting - as a matter of urgency.

Accreditation and regulatory requirements

The College of Radiographers and Royal College of Radiologists operate (via UKAS - a UK-wide accreditation service) a scheme for imaging services (including DXA), to demonstrate that a service is delivered to a set of quality standards.(32)

Our FOI request found that across the UK:

[2] The enforcing authorities are as follows: For England: the Care Quality Commission. For Wales: the Healthcare Inspectorate Wales. For Northern Ireland: The Regulation and Quality Improvement Authority. For Scotland: Healthcare Improvement Scotland.

- only 12% of DXA services are accredited by UKAS.

For DXA services under pressure in terms of staffing and waiting list, accreditation has a cost implication that services may be choosing to avoid. However, lack of accreditation means that the quality of services being delivered is not assured.

Reviews of practice and equipment

DXA services are subject to regulation under IR(ME)R and IRR17 due to the use of radiation in scanning.

- 22% of services do not routinely undertake a scanner quality assurance review (to routinely test and review the accuracy of the equipment).
- Only 50% did a regular review of scan technique (which is essential for accurate results).
- 22% said that they did not routinely undertake any clinical audits (this included the reviews described above, as well as audits of the quality of reports being issued by the service).

Despite it being a regulatory requirement to audit service procedures under IR(ME)R:

- Only 50% of services did *any* of these audits, and
- 22% of services did not undertake any audits at all.

Our analysis

There is an alarming lack of quality assurance in DXA provision. Most services do not apply for UKAS accreditation due, we suspect, to a lack of confidence that they will meet the requirements. Our FOI has uncovered evidence that statutory duties are not being executed properly by many services.

Our recommendation

As a matter of urgency, the IR(ME)R and IRR17[3] enforcing authorities in each nation must investigate the uptake of clinical and quality assurance reviews or audits by DXA services to ensure that they are operating effectively and safely under current regulations.

[3] For Ionising Radiation Regulation 2017 (IRR17) the enforcing authority is the Health and Safety Executive (HSE) or the HSENI for Northern Ireland. For IR(ME)R see footnote on page 13.

WORKFORCE

Providing quality DXA services

To achieve quality outcomes, services need: adequate staffing, adequate staff training, and physical equipment which is maintained to the highest level.

Through our UK-wide FOI request we found that:

- 41% of respondents cited clinical capacity as the main barrier to delivering DXA scans within six weeks of referral.
- 26% of respondents cited clinical capacity as the main barrier to delivering DXA reports within three weeks of the scan.

While 77% of respondents said that they had no current vacancies, they described feeling understaffed, but having no funding to expand their service to meet demand.

Scan operator training

In the UK, DXA scans are mostly conducted by a radiographer, DXA technician, clinical scientist or assistant practitioner under supervision. The reliability of DXA scan results is very dependent on the skill of the operator. A rigorous approach is essential to deliver quality requirements. Unreliable measurements are obtained if, for example, the patient is not positioned correctly. Through the FOI we established that:

- 76% of operators had accredited training. The majority of this training was through the ROS' National Training Scheme for Bone Densitometry, which is not supported by any government funding.
- 90% of operators had 'in house' training, the quality of which cannot be assured.
- 85% have had manufacturers training. On its own, this technical training on the equipment is not adequate for the purposes of clinical practice.

Long term workforce challenges

DXA services can and should be very attractive propositions to people who prefer flexible working arrangements – for example, part-time workers, job-sharers and even home-workers– as well as existing NHS staff seeking work away from the wards. However, chronic de-prioritisation of bone health means that this potential is not being exploited and has led to roles remaining unadvertised and vacancies being unfilled.

The APPG heard oral evidence regarding the ageing workforce across radiography. A large cohort of the most experienced practitioners are due to retire over the next five years. Workforce planning is needed to achieve and maintain adequate staffing levels and to standardise practice, such as the supervision of assistant practitioners for example. The recently published NHS England Long Term Workforce Plan recognises that the shortfalls in staff will increase the most by 2036 for diagnostic radiographers amongst others.(33) It highlights how the education and training pipeline is not keeping pace with demand.

Innovations such as the promotion of apprenticeships in DXA for radiography staff will help to bring people into the specialty, with senior staff taking on supervisory or mentoring roles. NHS England's ambition is for this route in diagnostic radiography to account for 25-50% of new radiographers by 2031.(33) However, this inevitably has cost and time implications for services already under pressure. It remains to be seen if the NHS England Long Term Workforce Plan facilitates apprenticeships by allowing funds to support them to be more easily accessed by services. Even with new pathways into the profession, the opportunities to advance skills and knowledge via reporting training is currently unavailable in the UK due to a lack of accessible accredited training providers.

In her oral evidence to the APPG, Lisa Field, consultant radiographer, described the work underway to develop a career pathway for DXA operators and reporters. She described a specialism that has received poor recognition to date. However, she also outlined various strategies to promote career development in bone densitometry for newly qualified radiographers who can extend their skills and knowledge of DXA with rotations between diagnostic radiography and DXA. She described an apprentice pathway for assistant practitioners to take them to advanced practice, which is already well established in diagnostic radiography and can be adapted for DXA. The development of new Enhanced Practice opportunities will provide career development for DXA operators that want to progress their skills and knowledge in DXA and progress their career. She highlighted the challenge to access training, and how the main accredited ROS course for operators is always oversubscribed and allowing staff to attend is dependent on funding form the departmental teaching and educational budget.

Our analysis

The review has revealed a workforce in which there has been long-term under-investment. There is inadequate staffing to meet demand, resulting in long delays

for patients and sub-optimal care. The FOI revealed that services have under-invested in training, due to pressures such as short-staffing and the cost of clinical supervision. There is also a lack of experienced mentors to provide the clinical supervision required to train more staff.

The recent NHS England Long Term Workforce Plan identifies the workforce shortfall in diagnostic radiographers, but as yet it is not clear if the Government will commit sufficient funding to remedy the situation. It is also not clear if services have sufficient clinical capacity or access to sufficient funding to support the planned increase in apprenticeships in diagnostic radiography. Aside from diagnostic radiographers, NHSE plans are in danger of overlooking the rest of the DXA workforce.

The review has found how the opportunity for DXA staff to advance their skills and knowledge is being squandered while there is a lack of accredited reporting training providers in the UK.

With regard to accredited training of operators – our investigation has identified too heavy a reliance on a voluntary sector provider. The continuation of this essential training, currently provided by ROS, cannot be guaranteed without government funding. The ROS course relies on fundraising in a very challenging economic environment for charities, whilst delivery of the course is reliant on volunteers. High quality DXA provision requires a comprehensive and sustainable training strategy with adequate resource.

Our recommendations

NHS England and the Department for Health and Social care must address the need for a robust system of training for DXA operators, that is not as heavily reliant on a voluntary sector provider.

As recommended in the Richards Review (10), the UK government should establish a training academy for DXA practitioners.

Identification of spinal fractures

Vertebral or spinal fractures are the most common osteoporotic fracture. They cause significant pain and disability, are associated with increased mortality and are a strong predictor of further fractures. Osteoporosis medication treatments are highly effective

in rapidly preventing the occurrence of further fractures. Without treatment, one in five postmenopausal women with a spinal fracture will sustain a further spinal fracture within 12 months.(24) Despite this, only a minority are identified. One of the golden opportunities to identify them is during fracture risk assessment. In addition to the capability of measuring BMD, DXA scanners may be used to obtain imaging scans of the spine to look for the presence of vertebral (spinal) fractures (known as Vertebral Fracture Assessment or VFA). It simply requires an extra measurement to be taken and may help to identify broken bones in the spine that are, as yet, undiagnosed.

However, our UK-wide FOI request established that:

- In the UK, only 44% of services routinely undertake VFA.
  This was worse in England (39%) and Northern Ireland (20%), and significantly better in Scotland (91%).

Our analysis

It is very concerning that this vital opportunity to identify patients with spinal fractures is being missed. People with fractures of the spine often require more potent treatments than people with fractures at other sites such as the wrist or ankle. This is vital to effectively reduce their risk of further fractures. DXA services should be conducting VFA in approximately 50% of patients.(34)

Our recommendations

Where a DXA service undertakes VFA in less than 50% of patients, the service should review their practice and agree an action plan to improve VFA rates.

Where VFA is not currently commissioned, services should develop the business case for this, with funding made available for service development by the relevant agency in each nation.

The enforcing authorities for Ionising Radiation (Medical Exposure) Regulations in each nation must ensure that DXA scans are followed by an actionable report - including reference to and advice regarding incidental findings such as vertebral fractures.

CONCLUSION

Our review of DXA services has found a diagnostic specialty in crisis. Under-investment before the pandemic and the weight of the COVID-19 backlog, have brought DXA services to their knees. This has resulted generally in poor performance, a sub-standard diagnostic service in some cases, and worrying breaches of regulation.

The shift of diagnostics from acute hospitals into the community is a particularly appropriate opportunity for DXA given that it caters for a population that is primarily managed by primary care. While CDCs offer the enticing prospect of a radical shift in diagnostics in England, to date DXA has not been front and centre of this strategy, where it belongs.

Priority must also be given to

- The establishment up of a new DXA reporting training course for practitioners in the UK;
- Ensuring the continuation and sustainability of accredited DXA operator training;
- Ensuring the reporting of DXA results by all services;
- Addressing regulatory breaches of the Ionising Radiation (Medical Exposure) Regulations;
- Funding new and innovative professional pathways for a radiography profession that urgently needs to recruit and train staff.
- Examining in the round the shortfalls and barriers in regard to the training, career advancement, recruitment and retention of the whole DXA workforce.
- Implementing new patient pathways via CDCs

We call on the UK and devolved governments, the NHS bodies and ionising radiation regulators in each nation to act with urgency and focus to restore capacity, quality and confidence to DXA services. DXA is a specialism which must be properly resourced in order to ensure patients have timely, accurate diagnoses and the best possible treatment outcomes.

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