

Imaging Statement of Intent

This *Statement of Intent* addresses the current challenges in diagnostic and therapeutic imaging in the Welsh National Health Service. It signals the Welsh Government's commitment to adopt a new strategic approach to the development of high quality, effective and sustainable imaging services for NHS Wales that address the needs of the population, respond to current and future policy direction and ensure long term sustainability. The Statement is consistent with the Welsh Government ambitions outlined in Taking Wales Forward: Healthy and Active as well as recommendations made in Parliamentary Review of Health and Social Care in Wales by increasing investment in facilities to reduce waiting times; exploiting digital technologies to help speed up the diagnosis of illness. To achieve this we require a coordinated approach to diagnostic processes such as imaging. Central to our ambition are alternatively configured service models for imaging, including where it is provided, how it is staffed, how it is accessed, workforce development, informatics and information support, thriving research and innovation, and appropriate investment in equipment. We will establish a nationally coordinated, prudent imaging implementation plan to support the provision of imaging services across Wales that are sustainable and provide the best outcomes for Welsh patients.

Diagnostic imaging services provide a significant role in the investigation of disease, helping determine patient management through accurate diagnosis. This is predominantly provided in Radiology Departments (X-Ray) in hospitals with different imaging modalities which include radiographs (x-rays), Ultrasound, CT, MRI and Nuclear Medicine. Highly skilled professionals, mainly Radiographers and Radiologists, undertake and interpret the imaging studies respectively. Imaging investigations need to be carried out in a timely fashion, appropriate for the patient and their medical management. The imaging study then needs to be interpreted and reported promptly to maximise its impact on the patient's care as informed by the Welsh Radiology Reporting Standards. These imaging techniques are also used to guide targeted intervention such as liver biopsy, spinal injections and aorta repair (EVAR – endovascular aneurysm repair).

Imaging is a key component in the delivery of prudent health services to the population of Wales and a key enabler to Welsh Government health delivery plans including cancer and stroke. Innovative, state-of-the-art imaging facilities in Wales have established a strong international reputation, including Cardiff University's Brain Research Imaging Centre (CUBRIC) and the Wales Research and Diagnostic Positron Emission Tomography Imaging Centre (PETIC). Exciting new initiatives provide opportunities to enhance this reputation and fully exploit the clinical, research and economic potential of Wales' thriving life sciences sector.

Imaging services are provided by a wide range of different specialty and professional groups and account for a significant proportion of the NHS budget. As demonstrated by a recent Welsh Audit Office review, current services are under increasing pressure with major growth in demand as a result of more effective clinical pathways, increasing numbers of older people, increasing cancer incidence, improved

technology, new techniques and workforce pressures resulting in delays to patients accessing the appropriate imaging services for their needs.

As demonstrated by the Royal College of Radiologists annual census, the number of Magnetic Resonance Imaging (MRI) and CT scans performed is increasing by over 10% each year yet failing to keep pace with the growth in demand. The increased demand on imaging services come from varied sources: National Institute for Health and Care Excellence (NICE) recommendations, increased number of attendances, increased diversity of investigations, increasing access to diagnostic services, and the developing requirements of interventional radiology. Imaging is also associated with many benefits, for example, minimally invasive interventional radiology procedures have transformed aortic repair with reduced morbidity, mortality and hospital stay, compared to open surgical procedure, and treatment of patients hitherto excluded due to high general anaesthetic risk.

The demand for imaging, both image acquisition (scanning) and prompt clinical interpretation and reporting significantly outstrips current capacity across all types of imaging, compromising high-quality patient care and incurring unnecessary delays in care pathways. Capacity issues are exacerbated by difficulties in recruiting to consultant radiologist, radiographer and sonographer vacancies; the level of difficulty varies according to geographical location. Clinical imaging remains a popular specialty for medical trainees but training capacity does not match current workforce deficits.

Wales has seven radiologists per 100,000 population, compared to a European average of 12, and the 160 whole time equivalent consultant workforce in Wales has the oldest demographic in the United Kingdom; based on a retirement age of 62 years, 26% are anticipated to retire by 2020. The situation for radiographers and sonographers is no better; both professions are on the UK shortage occupations list. Similar challenges exist for other professionals such as cardiologists who spend increasing amounts of their time undertaking diagnostic imaging.

The imaging service in Wales is currently being sustained by outsourcing image reporting to the private sector, at a projected cost of at least £11 million over the next three years, and a heavy reliance on locum appointments, placing additional pressure on NHS resources. Delays in reporting are a major issue; despite an average turnaround of less than ten days, there is unacceptable variation with delays in some reporting of six months or more. In a recent consultation by the Royal College of Radiologists, Wales was the worst area of the UK with respect to access of images in an external picture archiving and communication system, with 83% of respondents reporting difficulty. The provision of clinically appropriate imaging services in Wales is unsustainable without significant change.

There are major opportunities to reconfigure the service model in a way that improves care pathways, is sustainable and cost-effective. This will involve increased primary care access to imaging, improved demand management and the creation of a national imaging network that is integral to a whole system approach to care pathway development and management in NHS Wales. Reconfiguration will require national targeted investment in imaging and a significant proportion of this will be recovered from the introduction of more efficient pathways, earlier diagnosis

at the appropriate stage of the pathway, reduced waste and savings in other service areas, including through reduced outsourcing.

Key Priorities

1. Public Involvement and Engagement

The public are central to healthcare in Wales and should be at the heart of imaging service development. Facilitating meaningful public involvement and engagement will allow the public, patients and professionals to work together as equal partners to co-produce imaging services for Wales that make a real difference. Co-production will promote a values based approach that focuses on achieving the outcomes that matter to the population of Wales, rather than being over-focused on the service delivery process.

Active public involvement and engagement will be facilitated by providing members of the public access to the support necessary to enable them to be involved.

ACTIONS

- **NHS Wales to develop meaningful linkages with the public to facilitate co-production of imaging services.**

2. Workforce Development

A significant element of the solution to addressing the large workforce shortfalls described above is the establishment of a NHS Wales Imaging Academy sited in South Wales that has an all Wales remit and significantly improves training capacity. The Academy will innovatively facilitate enhanced capacity for training and combine training with regional service provision to address the major but uneven recruitment challenges across Wales. A dedicated building will house state of the art facilities for teaching knowledge and practical skills and provide supervised interpretation of imaging from all NHS Wales Health Boards and Trusts.

Initially, the Academy will focus on training radiologists to perform tasks that only a radiologist can competently undertake, but rapidly extend this to radiographers and other professionals who will be critical to ensuring a sustainable imaging workforce for the future. Development of extended roles for other staff groups, especially radiographer reporting, will increase capacity in a cost-effective and sustainable manner working within the reporting team. Work will also be undertaken to drive skill mix change within the support workforce, including developing and training radiography assistant practitioners. The Academy will be a greenhouse for a prudent multidisciplinary integrated workforce and education.

In parallel with the work of the Academy, a strategic approach will be developed and implemented to increase skills and capacity within other critical imaging workforce groups, for example, breast clinicians, cardiac clinical physiologists and clinical scientists, cardiologists, medical physicists, physiotherapists, podiatrists, nurses and midwives. Development of an optimally configured future imaging workforce to

deliver the agreed service model will be supported by the *Train/Work/Live in Wales* initiative.

ACTIONS

- **The NHS Wales Imaging Academy will be established to develop a sustainable and flexible imaging workforce to deliver a modern, responsive diagnostic imaging service for Wales.**
- **Health Education and Improvement Wales will facilitate the development of an integrated workforce training strategy for Radiologists, Radiographers, Sonographers, Advanced Practitioners, Assistant Practitioners and other Imaging Healthcare Professionals in Wales.**
- **Welsh Government, in conjunction with NHS organisations, will establish funding models to allow the delivery of a national approach to workforce training that is appropriate for modern, flexible training combined with regional service provision.**

3. Equipment

Reliable, safe and modern imaging equipment is a pre-requisite for an effective and sustainable imaging service. Fit for purpose equipment is expensive, its value rapidly depreciates and its lifetime varies dependent upon its use, technological advances, maintenance and changes in clinical practice. On average, imaging equipment has an expected asset life of eight years. 2014 data published by the OECD in 2016 showed that Wales had ten CT and eight MRI scanners per million population compared with eight and seven for the UK as a whole and an average of 16.7 and 11.7 for France, Germany and Spain. In addition to the shortfall in the number of MRI and CT scanners in Wales compared to other high income countries, there is a need to invest in technologies such as Cardiac CT and MR, and Hybrid Positron Emission Tomography (PET) imaging with either CT or MRI imaging facilities.

In order to strategically plan, identify and address the imaging equipment needs of NHS Wales, a co-ordinated national approach will be established. This will include the identification, evaluation and, when appropriate, prioritisation and adoption of new technologies, and imaging equipment for specialties outside radiology such as cardiology. The national approach will also ensure that necessary complementary workforce developments are progressed in parallel with the evolving equipment infrastructure.

Planning will be based on the needs of the population through scrutiny of data that allows objective appraisal of what is required. Configuration of imaging equipment will be undertaken in a manner that is optimal for Wales as a whole and based on the principles of facilitating equitable access to and timely reporting of imaging wherever an individual lives. This will require a collaborative, regional approach towards demand and capacity planning and resourcing.

ACTIONS

- **Welsh Government will continue to support the development of a prioritised and sustainable capital replacement programme.**
- **NHS Wales will establish a co-ordinated approach to identifying, evaluating, prioritising and adopting new imaging technologies across NHS Wales.**
- **NHS Wales will ensure that regional utilisation and workforce considerations are central to equipment procurement decisions.**

4. Quality

A strong focus on improving the quality and safety of imaging services will be central to future provision. This will be contributed to by access to appropriate equipment and training and education programmes for staff but changes to the way we work will be vital to drive the transformative change required. Following the principles of prudent healthcare, future imaging services will ensure the public, patients and professionals work together as equal partners through co-production; care for those with the greatest health need first, making the most effective use of all skills and resources; do only what is needed, no more, no less, and do no harm; and reduce inappropriate variation using evidence based practices consistently and transparently.

A values based approach that is driven by health outcomes that really matter requires the development of a service model that is regularly updated as new knowledge emerges and through constant evaluation and monitoring, including benchmarking. The routine use of appropriate patient reported experience and outcomes measures will improve quality and place an emphasis on demonstrating the value of services delivered.

ACTIONS

- **NHS Wales will develop an evidence-based, data-driven and outcomes focused quality improvement framework that is based on the principles of prudent healthcare.**
- **NHS Wales, working with Welsh Government, will commission and evaluate research to support efficient and prudent use of imaging modalities and clinical imaging pathways.**

5. Services

As sophisticated imaging has become more central to the delivery of more effective prudent healthcare, the range of services has diversified and increased. They are now routinely provided both within and outside radiology/radiography departments, in primary and secondary care settings and are integral to many clinical pathways.

Further work is now required to ensure that imaging services are networked and delivered by the most appropriate people working at the top of their licence, in the most appropriate place as a fundamental element of an integrated and prudent healthcare system. It is vital that imaging experts are centrally involved in the data and evidence driven planning and delivery of all clinical services that rely on imaging and that care pathways are co-produced with all relevant stakeholders, not least the public and primary care providers.

Imaging service will be strengthened as part of a co-ordinated and networked approach to their planning and delivery. We will review service models and clinical pathways to provide optimal imaging services for the adult population of Wales. This will include a greater focus on primary care and expansion of the potential imaging workforce, with development of a strong mixed healthcare professional workforce. Services for such an approach include:

- Cardiac imaging – rapidly expanding service requirement including echocardiography, cardiac MRI and CT
- Interventional Radiology - including management of acute life threatening haemorrhage and the delivery of minimally invasive therapies
- Neuroradiology – includes early diagnostics of stroke and interventional services for minimally invasive therapies such as clot retrieval in stroke
- Nuclear Medicine – including the continuing development of PET-CT services in Wales
- Screening – Imaging is a substantial part of *Breast Test Wales*, *Bowel Screening Wales*, *Wales Abdominal Aortic Screening Programme* and *Antenatal Screening Wales*.

a. Antenatal Imaging and Imaging for Children

Antenatal screening is delivered by Welsh Health Boards in line with agreed policy and standards set by the managed clinical network (*Antenatal Screening Wales*). Equity of access to a high quality, timely and evidence-based service is key to ensuring consistency across Wales for our pregnant population. Sonography capacity has been a limiting factor to roll out some of the UK National Screening Committee recommendation in a timely way such as combined screening for Down's Syndrome Screening. This is now fully rolled out and the external quality assurance undertaken demonstrates the high quality that the sonography service delivers to in Wales.

Obstetric and Doppler ultrasound services are heavily pressured and vital to reduce stillbirth rates and meet guidelines for foetal monitoring. These services will be reviewed and rationalised through a quality assurance programme.

Paediatric radiology is a distinct sub-specialty. A sustainable neonatal and paediatric imaging and interventional radiology service model for children in Wales will be developed, including the provision of a fully staffed out of hours service. A tiered model will be developed where networked centres share images and reports. The level 1 site will be at the Children's Hospital for Wales, supported by the provision of in hours remote and on site image reporting and second opinion at level

2 sites. Paediatric Services for the population of North Wales will continue to be supported by Alder Hey Children's hospital Liverpool.

c. Imaging in Primary Care

Improved access to imaging through primary care services will reduce missed and delayed diagnosis and improve the efficiency, clinical and cost-effectiveness of many current care pathways. For example, Wales has the worst survival outcome for many cancers compared with similar health systems across three continents of the western world. Several contributing reasons include limited access to diagnostic tests, lengthy diagnostic pathways and a 'gatekeeper' approach from clinicians to protect the limited resource. A programme of work will be developed to support health boards across Wales to deliver key policy commitments to detect cancer earlier. The work programme will be based on models shown to be successful in other countries (e.g. Denmark) and promote a cultural shift in current approaches to cancer diagnosis across both primary and secondary care; ensuring they are aligned with the Welsh Government's vision detailed in the Cancer Delivery Plan 2016-2020. New ways of working to achieve earlier diagnosis will include: improving the diagnostic pathway; piloting new approaches to support earlier diagnosis; empowering radiologists to pro-actively move patients through the diagnostic pathway; developing and strengthening the professional relationship between primary care practitioners and secondary care diagnostic teams; and strengthening the role of the radiologist as a core clinician in multidisciplinary teams.

ACTIONS

- **NHS Wales will develop a regionally networked approach for the delivery of imaging for the population of Wales to ensure equitable access.**
- **NHS Wales organisations, will develop strategic plans for the delivery of imaging services to maximise workforce and imaging capacity utilization.**
- **Integrated service delivery plans for imaging will be delivered across Wales.**

6. Informatics and Information

Effective and high quality informatics systems and information are critical to the delivery of a world-leading, sustainable, effective and efficient imaging service. *Informed Health and Care: A digital Health and Social Care Strategy for Wales (2015)* clearly outlines the vision of improving access to information and introducing new ways of delivering care with digital technologies at the heart of Welsh Government's plans for NHS Wales. Images taken locally will be made available nationally with an interoperable picture archiving and communication system facilitating the drive to common standards and image sharing across Wales. This will make information available at the point of care, reduce unnecessary repeat imaging, allow safer transfer of care, reduce unnecessary delays and provide more efficient care pathways.

A common user interface based on nationally agreed standards with an integrated, once for Wales secure IT infrastructure across NHS Wales will be developed to allow electronic requesting, vetting, processing and reporting. Improved systems and data analytics based on common international standards will enable improved understanding of business demand, provide validated data for service modelling, benchmarking and improve demand management.

A new set of performance indicators will be developed to widen the range of performance information collated and used to deliver and improve the quality and consistency of imaging services. This will include routine measurement and monitoring of the demands on imaging services, the capacity of the services to respond to pressures and reduce risks. Standardisation of measurement will be agreed and adopted across Wales, and clear targets will be set for NHS Wales to achieve. The Welsh reporting standards for radiology services will be revised to ensure they are appropriate for these purposes, for internal and external benchmarking and to inform local and national service developments.

ACTIONS

- **Welsh Government will support the drive to a Once for Wales imaging platform based on agreed national standards across NHS Wales.**
- **NHS Wales will implement state-of-the-art business support informatics and radiology systems that can capture and report data in a consistent way to deliver a modern imaging service.**
- **Welsh Government will revise performance indicators to reflect and support the development and maintenance of a modern imaging service, including time to reporting, not just time to investigation.**

7. Research and Innovation

With its position at the cutting edge of medical science, imaging provides multiple opportunities for research and innovation through collaboration with various partners. There is a tradition of working with partners in the NHS, universities and industry to support high quality research studies, and to pursue new technologies with advances in equipment and techniques, including software development. Despite the opportunities and examples of research excellence in Wales, such as CUBRIC, the world-leading brain research imaging centre at Cardiff University, the potential of imaging research and innovation has not yet been fully realised in Wales. The NHS Wales Imaging Academy will act as a hub for research and innovation activity.

A strategic plan will be developed to ensure research and innovation opportunities are seized and Wales capitalises on its unique selling points. Central to the plan will be the ability to effectively support high quality research, to establish strong collaborations across sectors to undertake novel research and innovation that translates into clinical service change and to evaluate the true potential of new technologies including artificial intelligence/machine learning.

ACTIONS

- **Welsh Government will establish a strong research and academic base, with national and international collaboration, for imaging including radiology, radiography and medical physics in Wales.**
- **NHS Wales will provide effective imaging support for high quality service delivery and other research studies and innovation in Wales.**

8. Governance

A *National Imaging Network*, accountable to NHS Wales' Chief Executives, will be developed to co-ordinate imaging service development and provision for the Welsh Government and NHS Wales. This will include: provision of high quality training and education for the imaging workforce; leading the development of a sustainable Imaging Services Accreditation Scheme accredited imaging service across NHS Wales; advocating a nationally coordinated, locally delivered service; developing best practice guidance to reduce variation, improve patient outcomes and experiences; co-ordinating imaging research, development and innovation; supporting standardisation of imaging services, including NHS Benchmarking.

A high level advisory board will bring together chairs of working groups that will provide annual work programmes for imaging that feed into the IMTP process and also support the prudent healthcare agenda. The Medical Imaging Subcommittee will be configured to support the development and publication of best practice guidance to reduce variation, drive standardisation and improve patient experience and outcomes; provide horizon scanning, situational awareness and support research and development. The focus of both the National Imaging Network and Medical Imaging Subcommittee being on continuous improvement.

ACTIONS

- **Welsh Government to create a National Imaging Network, accountable to NHS Wales' Chief Executives, to co-ordinate imaging service development and provision for the Welsh Government and NHS Wales.**
- **Welsh Government to support the creation of a high level advisory board to the National Imaging Network.**
- **Medical Imaging Subcommittee will be reconfigured in order to support the imaging service improvement agenda.**

Next Steps

An imaging taskforce has been established to support the development of a national imaging implementation plan. The taskforce will be jointly chaired by Dr Rob Orford, Chief Scientific Adviser (Health), Welsh Government and Steve Moore, lead Chief

Executive for Imaging. The taskforce will engage with the public and other stakeholders and report back to Ministers in summer 2018. The implementation plan will be delivered together with the NHS in Wales, who have endorsed this Statement of Intent.