

# Research & Innovation for Healthcare Science Professionals in NHS Wales: A Five Year Strategy 2025-2030



**Gwyddor Gofal Iechyd Cymru**  
**Healthcare Science Cymru**

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## Foreword

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The national health service (NHS) provides for the population across a complete continuum from public health to primary, secondary, tertiary and social care. This mirrors the journey that we will all make with our health, from self-management, presentation, evaluation, diagnosis, to management, treatment, rehabilitation. Healthcare science professions have a significant role for patients in every one of these stages.

There are more than 30 different professions within the healthcare sciences, each with their own unique characteristics, including direct patient care and rehabilitation, provision of the majority of diagnostics, medical equipment management, research and innovation. The professions keep evolving as new scientific evidence emerges, and as new ways of providing and organising care are developed and implemented.

Healthcare science professionals are fundamental not only for the services they provide, but for bringing in new and integrated ways of providing care, using innovation and evidence to improve and change thereby increasing value for patients and the broader system. In a challenging landscape, harnessing the research and innovation skills in these professions will contribute to the Welsh Government long term plan of achieving a healthier Wales for all.

From Genomics, through to new innovative technologies and artificial intelligence, health board and trust chief executives will benefit from harnessing leading expertise to resolve key health and wellbeing operational challenges, in addition to supporting the retention of our best healthcare science professionals across Wales.

## Executive Summary

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The first of its kind, this research and innovation strategy sets out a vision and accompanying blueprint specific to our NHS Wales healthcare science workforce. It appreciates the differing needs and challenges of its varied workforce and provides a roadmap, not just a destination, to maximise our potential and realise significant contributions to research and innovation, regardless of the starting point.

This plan supports the Welsh Government drive to embed and integrate research into all aspects of health and care services in NHS Wales. It also acts in accompaniment with the many positive steps already taken to raise the profile of healthcare science. In addition to our strategic plans to establish ourselves as recognised key contributors of research, innovation, and the transformation of clinical practice, this is also a timely response to the growing needs of NHS Wales and assurance of its longevity.

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## Healthcare Science professionals: Who are we?

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**We are clinical, we innovate, we research, we educate, we improve, we lead!**

Healthcare science is the fourth largest and yet least known sector of the healthcare workforce, making up 7% of NHS Wales, with over 7000 healthcare science professionals across 30+ specialties.

We can be grouped into six broad areas:

- ▣ Laboratory sciences and genomics
- ▣ Physiological sciences
- ▣ Physical sciences and engineering
- ▣ Clinical computational sciences
- ▣ Radiographers and radiotherapists
- ▣ Operating department practitioners (ODPs).

We are a very skilled and specialised workforce, even though we are small in size, and we play a role in more than 80% of all clinical diagnoses.<sup>1</sup>

We dedicate ourselves to providing investigations, diagnoses and therapies for the betterment of our patients, delivering heavily relied upon services such as imaging, physiological measurement, laboratory testing, biomedical engineering and many more.

Scientific enquiry, evidence-based practice and continual improvement are the driving forces of our professions, evidenced in our training, our innovations, and our advancements in practice.

We must challenge ourselves to engage and to establish ourselves as the key researchers and innovators that we have every potential to be, driving forwards NHS Wales strategies, including Research Matters<sup>2</sup> and Wales Innovates: Creating a Stronger, Fairer, Greener Wales.<sup>3</sup>

We believe this is paramount to transforming our NHS services and achieving a healthier Wales.

## Background

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In line with the Welsh Government long term strategic plan A Healthier Wales<sup>4</sup>, research and innovation are essential for change, along with quality and value-based healthcare improvement.

NHS Wales faces difficult challenges ahead: a 25% increase in the number of people over 65 years living in Wales by 2030 and the number living with multiple long-term health conditions will double by 2035.<sup>5 6</sup> This increasing demand on healthcare services is outstripping capacity and requires new, radically transformative solutions.<sup>7</sup>

In response to these challenges, and in accordance with the Well-being of Future Generations (Wales) Act 2015<sup>8</sup> and Health and Social Care (Quality and Engagement) (Wales) Act 2020,<sup>9</sup> Welsh Government supports the facilitation of research and innovation across NHS Wales.<sup>4</sup>

Emphasis is on improved integration of research within clinical roles and enabling all staff in NHS Wales to apply themselves to the development of new knowledge and advancing healthcare provision through innovative practice.

This is achieved through the nurturing of continual learning and development, and through active engagement in improving patient care and service delivery.

Healthcare science professions are no exception to these plans, in fact they play a pivotal part, with Welsh Government priorities in 2024 including to quicken diagnoses, improve cancer survival rates, and streamline healthcare services with technological innovation.<sup>1, 4</sup>

Through innovation, we challenge and evaluate current ways of working, identifying and developing novel processes, pathways, and tools, to establish more cost-effective, equitable and sustainable whole systems approaches to delivering healthcare.

Equally, research provides the exploration and new knowledge needed to identify what we currently know, what is yet to be discovered, and to evaluate new ways of providing healthcare that enhance patient experiences and outcomes.

Within these challenges lies an opportunity, the chance to evolve, overcome, and rise to the challenge.

As demonstrated in our response to the Covid-19 pandemic, we are no strangers to adversity and continue to mobilise and strengthen in response to any difficulties that lie in the way of healthcare excellence.<sup>10</sup>

The emphasis is not only on increasing our capacity to undertake research and developing innovative thinking, but also to ensure improvements are scalable and embedded nationally.

As outlined in the Welsh Government Duty of Quality,<sup>9</sup> the six domains of quality; safety, timeliness, effectiveness, efficiency, equity and person-centredness, are essential to guiding and assessing healthcare improvements.

This requires an NHS Wales that is both coordinated and well-connected with a long-term vision and an openness to learning and collaborating with others, both across healthcare systems and with trusted partnerships with industry and academic institutions.

## Development of the strategy

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This strategic plan outlines the healthcare science vision for increasing research and innovation in the profession, aligned with the priorities of Welsh Government in A Healthier Wales,<sup>4</sup> Diagnostics Recovery and Transformation Strategy for Wales,<sup>11</sup> and Healthcare Science in NHS Wales – Looking Forward Framework<sup>1</sup> and underpinned by the Duty of Quality Statutory Guidance.<sup>9</sup>

It aligns with recommendations for research that span the health workforce in Wales in Making Research Careers Work,<sup>12</sup> with the NHS Wales research and development framework Research Matters<sup>2</sup>, and with the PRIORITY Project for nursing, midwifery and allied health professionals.<sup>13</sup> Emerging innovation strategies also align i.e. Wales Innovates: Creating a Stronger, Fairer, Greener Wales.<sup>3</sup>

Developed through the Healthcare Science Programme within Health Education and Improvement Wales (HEIW) and the Healthcare Science Research and Innovation Group (HCS RIG), the strategy was informed by the healthcare science profession in Wales across all specialties.

Professional consultation in July to August 2024 was open to NHS Wales, higher education institutes (HEIs), professional bodies and other stakeholders. Oversight was provided by the Healthcare Science Network and Healthcare Science Programme Board, including senior professionals, Executive Directors of AHP and Health Science (EDAHPHS) and Welsh Government representatives.

## Scope

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This document will be important to the following:

- ❏ Health and Care Research Wales (HCRW), policy leads and those within Welsh Government responsible for supporting research and innovation.
- ❏ Leaders in NHS Wales such as EDAHPHS, Chief Executives, Research and Development directors and all responsible for research and innovation.
- ❏ Professional and regulatory bodies associated with healthcare science professions, to support a future workforce involved in research and innovation.
- ❏ Healthcare Science professionals at all career levels and in all health boards and trusts, regardless of current involvement in research and innovation.
- ❏ HEIs across Wales, in educating and training this workforce and as key partners in NHS research, including clinical academic roles in healthcare science.
- ❏ Other members of the NHS workforce to recognise our potential and innovate in partnership with healthcare science professionals.

## Our vision:

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For research and innovation undertaken and led by healthcare science professionals to play a key part in evidencing and delivering a healthier Wales.

## Our mission:

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- ❏ To increase our capacity and capabilities to ensure all healthcare science professionals have an opportunity to engage in innovation and research across all career levels.
- ❏ To improve the engagement of healthcare science professionals as leaders in research and innovation across NHS Wales.
- ❏ To cultivate an environment in healthcare science that encourages rigorous scientific inquiry, patient-centred, value-based innovation and continuous professional development to address prevalent health challenges in Wales.

## Section 1: Research and Innovation in NHS Wales

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### Defining research and innovation

Before introducing steps to improve research and innovation, these terms and their relationship to one another must first be appropriately defined.

#### What is research?

Whilst broader definitions are adopted by HEIs,<sup>14</sup> the UK Policy Framework for Health and Social Care Research<sup>15</sup> provides a nationally adopted definition for research within the context of health and social care: “Research is defined as the attempt to derive generalisable or transferable new knowledge to answer or refine relevant questions with scientifically sound methods.”

This places research as distinct from audit, service evaluation (SE) and quality improvement (QI). To help determine the categorisation, the HRA provides an online decision tool: [www.hra-decisiontools.org.uk/research](http://www.hra-decisiontools.org.uk/research).

Research benefits from external review and approval such as via Health Research Authority (HRA) or HCRW and preferably forms part of an ongoing programme that builds through each phase of work. This further tool helps guide whether ethical review is required: [www.hra-decisiontools.org.uk/ethics](http://www.hra-decisiontools.org.uk/ethics).

#### What is innovation?

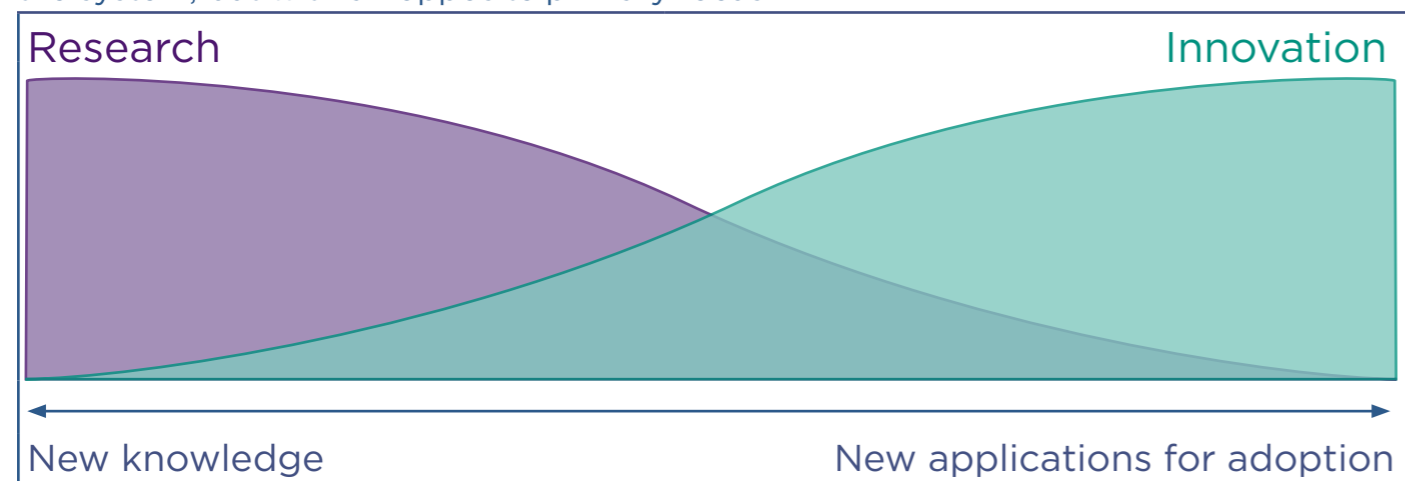
In comparison to research, the definition of innovation remains more elusive and for interpretation. All interpretations, however, recognise that innovation is the creation or identification of something new and of value. In line with the ‘Wales Innovates’ strategy, examples of healthcare innovation include any novel product, technology or process that provides value in achieving more prudent healthcare or enhancing patient experiences and/or outcomes.<sup>3</sup> [Appendix 1](#) demonstrates the process of innovation, from conception to widespread adoption, including sources of support and guidance within Wales.

Innovation is purposeful, inclusive, flexible and cultural.<sup>3</sup> It takes new ideas and realises them to make impactful, positive, and transformational change. Whilst traditionally characterised as cutting-edge technologies or life-saving vaccines, innovation can also lie within the everyday. The Learned Society of Wales recent paper on Inclusive Innovation for Wales<sup>16</sup> challenges us to rethink what we consider as innovation and highlights the importance of smaller stepwise changes to improving healthcare, which drives growth and can lead to bigger ventures to transforming how we do things. Inclusive innovation allows us all to identify as innovators and rightly values the everyday effort to improving practice.

#### How are research and innovation linked?

Research and innovation are inexplicably interlinked but there are different views as to their relationship. One interpretation is of overlapping entities, as polar ends of a spectrum ([illustrated in Figure 1](#)). Research focuses on the identification of new knowledge, whereas innovation seeks new approaches with an iterative process of idea development to disrupt current practice. Both are needed to identify, create and test evidence driven change that improves healthcare provision.

**Figure 1:** An illustrative representation of the relationship between research and innovation – both bringing new knowledge and new applications for adoption across the system, but with an opposite primary focus.



## Making the case: Why is research and innovation important?

The benefits of increasing our capacity to engage and become leaders in healthcare research and innovation are four-fold:

- 1. Benefit to our patients and the public** - Research and innovation enables evidence-based practice and can bring about new methods and technologies, advancing healthcare delivery and improving quality of care for our patients.<sup>9</sup> By collaborating with patients and the public, we ensure that improvements are person-centred. The myth that spending time on innovation and research is at the detriment to clinical responsibilities has long been dispelled. It is evidenced that research and innovation drive positive, necessary changes to patient satisfaction, experiences and outcomes, improving public health and quality of life.<sup>4,17</sup>
- 2. Benefit to our staff** - The wellbeing of our workforce is crucial to the success of NHS Wales and its ability to deliver quality healthcare. A culture of research and innovation is linked with improved job satisfaction, retention and the ability to recruit from outside Wales.<sup>4</sup> Personally, it improves creativity, resolves challenges provides exciting opportunities, and helps to diversify career paths, making NHS Wales an exciting place to work.<sup>18,19</sup> Enabling advancement of our skills in delivering research, testing innovations, providing leadership, and influencing service and pathway change also empowers us to provide quality patient care.
- 3. Benefit to our NHS** - These impacts are pivotal to sustainability and fundamental to providing healthcare excellence.<sup>20</sup> NHS Wales benefits financially from sources of revenue with intellectual property (IP) through product and technology design, funding grants, clinical trials, and industry collaboration. To deliver transformational change that is value-based and person-centred, a system-wide approach to nurturing ideas and supporting continuous learning and innovation is essential.<sup>9</sup>
- 4. Benefit to our Welsh economy** - Developing and supporting the application of new, evidence-based cutting-edge technologies and pathways can help bring about partnerships with industry, driving business investment into Wales and supporting the foundational economy. And where better than the birthplace of the NHS? Attracting industry into Wales provides a significant source of income and job prospects, allowing our innovative thinkers to flourish whilst remaining in Wales. It also allows industry to achieve real-world evaluation, whilst attracting talent and wealth.<sup>21</sup>

## Equality, Diversity and Inclusion:

Equality, diversity and inclusion (EDI) is essential to all that we do; research and innovation are no exceptions. As outlined in UKRI's EDI strategy, research and innovative activity must be 'by everyone, for everyone.'<sup>22</sup> To ensure this, HCRW's EDI action plan includes EDI as a key priority in all funding calls, fast tracking projects addressing EDI to second application stage.<sup>23</sup>

Patient and Public Involvement (PPI) is core to healthcare research and innovation, involving patients and members of the public to inform, co-design, conduct and/or disseminate. PPI ensures that our findings are relevant, acceptable and understandable to participants, enhancing the quality of our work and its ability to positively impact healthcare in real world settings.<sup>24</sup> Incorporating EDI into PPI is pivotal to provide perspectives that are diverse and inclusive, so that our research and innovation serve our whole population.

Where projects do not directly include participants, e.g. with technologies, literature or laboratory samples, PPI can take the form of public support on the value of the work or dissemination plans e.g. via patient forums. UKRI's Public Involvement Research Review<sup>25</sup> addresses this by highlighting key laboratory-based research that benefited from PPI.

## Incorporated into career pathways

Throughout our careers we undertake activities and develop essential skills that build our ability to undertake quality research and develop innovative thinking. This tacit process is however dependent upon culture and opportunities available.

Fundamentally, we believe that research and innovation should be supported by everyone as part of core business within healthcare. This may range from reading and applying research articles within continuing professional development to being a chief investigator on large portfolio research studies, and all stages in between. [Figure 2](#) maps essential, desired and additional innovation and research skills for different stages of our career pathway; this is not exhaustive but rather guidance on minimum criterion for three career scenarios.

This strategic plan was guided by our core professional guidance: the Academy for Healthcare Science (AHCS) Good Scientific Practice<sup>26</sup> and the Health and Care Professional Council (HCPC) standards of proficiency.<sup>27</sup> The Consultant Clinical Scientist in NHS Wales Recommendations<sup>28</sup> specifically highlights research and innovation as a required, essential part of our roles. Guidance was also sought from the curricula throughout the Practitioner Training Programmes (PTP), Scientific Training Programmes (STP), Higher Specialist Scientific Training (HSST) Programmes and their associated equivalence pathways.<sup>29</sup> Finally, the pathway references wider themes relevant to all in healthcare, such as education levels defined by Credit and Qualifications Framework for Wales (CQFW), the pillars of practice outlined in the Professional Framework for Enhanced, Advanced and Consultant Practice<sup>30</sup> and the research and innovation competency levels within NHS Wales Digital Capability Framework (DCF).<sup>31</sup>

For those specifically engaging in a career as a clinical researcher or clinical innovator, the third column of [Figure 2](#) provides an outline of skills to guide and raise awareness of this alternative career focus. In this alternative pathway, the ability to lead independent research and innovation, and to publish this contribution to new knowledge are crucial elements.

**Figure 2:** Minimum research and innovation skills across healthcare science career levels

Healthcare Science Associate or Associate Practitioner (Associate Practitioner level)		
Essential	Desirable	Specifically pursuing a career in R&I
<ul style="list-style-type: none"> <li>Ability to understand and use relevant journal articles</li> <li>Participate in audits, service evaluations and improvement</li> <li>Engages with CPD activities and shares knowledge gained</li> </ul>	<ul style="list-style-type: none"> <li>Ability to identify areas of improvement within a service</li> <li>Actively supporting projects e.g. participant recruitment</li> <li>Demonstrates leadership within small projects e.g. with peers</li> </ul>	<ul style="list-style-type: none"> <li>Actively involved in promoting and recruiting of projects</li> <li>Assisting project lead in the dissemination of findings e.g. involvement in creating a poster, presentation or paper</li> </ul>
Healthcare Science Professional (Practitioner level)		
Essential	Desirable	Specifically pursuing a career in R&I
<ul style="list-style-type: none"> <li>Ability to search for and draw conclusions from literature</li> <li>Makes key contributions to data collection and analysis</li> <li>Ability to disseminate scientific findings in a conference poster</li> <li>Demonstrates level 2 research competencies in the DCF</li> </ul>	<ul style="list-style-type: none"> <li>Completion of CQFW level 6 education (e.g. PTP or equivalence)</li> <li>Ability to identify QI priorities</li> <li>Experience employing QI/research methods of evaluating to improve a service and evaluate its impact</li> </ul>	<ul style="list-style-type: none"> <li>Ability to actively participate in R&amp;I work, demonstrating specific skills in research methods (e.g. consenting, data analysis)</li> <li>Undertaking GCP training and other relevant R&amp;I training</li> </ul>
Specialist Healthcare Science Professional (Enhanced Practitioner level)		
Essential	Desirable	Specifically pursuing a career in R&I
<ul style="list-style-type: none"> <li>Ability to critically evaluate journal articles and implement</li> <li>Plays a key role in R&amp;I (e.g. data analyst, author of paper)</li> <li>Ability to support project design</li> <li>Demonstrates level 3 research competencies in the DCF</li> </ul>	<ul style="list-style-type: none"> <li>Completion of CQFW level 7 modules or PgCert/PgDip</li> <li>Demonstrates leadership skills supporting R&amp;I projects of others (e.g. audit lead)</li> <li>Evidence of academic writing and dissemination</li> </ul>	<ul style="list-style-type: none"> <li>Completion of MRes, CQFW level 7 academic work or an innovation fellowship</li> <li>Undertaking and demonstrating leadership in a research or innovation project relating to clinical service</li> </ul>

Advanced Practice Healthcare Science Professional or Clinical Scientist (Advanced Practitioner level)		
Essential	Desirable	Specifically pursuing a career in R&I
<ul style="list-style-type: none"> <li>Ability to lead R&amp;I within service (e.g. site-PI, project lead)</li> <li>Support others in R&amp;I (e.g. research champion, trainee supervision)</li> <li>Demonstrates the four pillars of practice within role</li> <li>Disseminating R&amp;I findings both locally and nationally</li> <li>Demonstrates level 4 research competencies in the DCF</li> </ul>	<ul style="list-style-type: none"> <li>Experience leading on multiple R&amp;I projects (e.g. experience as site PI)</li> <li>Demonstrates ability to collaborate with teams outside of organisation/profession (e.g. other departments, HEIs, industry or charities)</li> <li>Completion of CQFW level 7 education (e.g. STP, MRes)</li> </ul>	<ul style="list-style-type: none"> <li>Performs R&amp;I projects independently (e.g. lead PI or innovation lead on projects/ undertaking a PhD)</li> <li>Ability to write proposals/protocol/ethic applications independently</li> <li>Applies for small grants for R&amp;I and manages budget for project</li> <li>Pursues doctoral fellowship</li> </ul>
Consultant Healthcare Science Professional (Consultant Practitioner level)		
Essential	Desirable	Specifically pursuing a career in R&I
<ul style="list-style-type: none"> <li>Demonstrates the five pillars of practice within role</li> <li>Completion of CQFW level 8 education (e.g. HSST, PhD, FRCPath)</li> <li>Initiates and informs evidence-based change, disseminating &amp; influencing national adoption</li> <li>Ability to lead on transformation and large scale R&amp;I</li> </ul>	<ul style="list-style-type: none"> <li>Publication in peer-reviewed journals and presents internationally</li> <li>Ability to mentor others to lead in small scale projects</li> <li>Ability to successfully capture grant funding for research or innovation benefiting NHS</li> <li>Demonstrate strong partnerships</li> </ul>	<ul style="list-style-type: none"> <li>Pursues post-doctoral fellowships/ professorships</li> <li>Competitively applies for large grant funding awards and leads multi-site R&amp;I (e.g. as CI)</li> <li>Regular, significant R&amp;I contribution (e.g. peer-review, appraise technology)</li> <li>Undertaking formal role in education</li> </ul>

## Pathway progression

Service evaluation and Quality improvement are a core part of innovation and are fundamental to all stages of the career.<sup>9, 30</sup> In more junior career stages, involvement in SE/QI work and real world testing of new products and services may be supporting and participatory, developing into leadership of projects.

These could be a small or incremental service change but with significant impact to patient outcomes. Or they can span across services and sites, leading to more transformative innovations, requiring specialist knowledge, a whole-team approach and rigorous inquiry.

Similarly, the opportunity for involvement in research will increase with experience and training e.g. in bid writing or involving health economics. Early career involvement is essential to build awareness of research and its role in service delivery. With experience of data collection and developing analytical skills, this will evolve into a participatory role and can lead to becoming site Principal Investigator (PI) or associate PI.

Such opportunities are available on the National Institute for Health and Care Research (NIHR) portfolio, accessed via NHS R&D departments.<sup>32</sup> It is of note that lead PI experience, where the researcher develops a short, novel project, is a key part of Clinical Scientist training.<sup>29</sup>

This equips Clinical Scientists with the fundamental skills of independent research essential for this registration and enables subsequent application for doctoral level opportunities, where they do not already hold a PhD.

For those looking to support trainees or develop either to consultant roles or towards a career as a clinical researcher, their role in research may continue to evolve to being lead PI on larger projects, and to Chief Investigator (CI), leading larger research studies with substantial funding, supporting a research team and collaborating with HEIs and industry.

Further advice can be found via the HCRW website: [healthandcareresearchwales.org/health-and-care-professionals/career-development](http://healthandcareresearchwales.org/health-and-care-professionals/career-development)

Innovation skills across the career pathway start with fundamentals in common with SE, QI, real world testing and/or research; combined with clinical expertise, problems can be identified and innovative solutions developed.

An idea is nurtured into creating a novel product, technology or pathway by following the innovation process ([Appendix 1](#)). A small innovation at an early career stage can develop into a nationally adopted change in practice over a career, with input from commercial, charitable and academic organisations.

There are a growing number of fellowships and programmes to support leadership of national projects (akin to PI in research) and build towards mentoring others to develop ideas into reality (akin to CI roles).

Although the titles of Clinical Academics and Clinical Researchers are sometimes used interchangeably, for the purpose of this strategy they are defined as followed:

- 📌 **Clinical Academics** - Clinical Academics are individuals who work both within academia and in healthcare. Their work in HEIs involves commitments to education as well as research. This is crucial within healthcare science to strengthen relationships between NHS Wales and academia, alongside facilitating research and mentoring researchers.
- 📌 **Clinical Researchers** - In contrast, Clinical Researchers are primarily healthcare based, with close relationships with academia and may acquire some teaching responsibility through honorary contracts with HEIs. Their work focuses more on research within their NHS service, promoting and supporting a research culture.
- 📌 **Clinical Innovators** - Synonymous with 'Clinical Entrepreneurs', Clinical Innovators are those with a role in healthcare who are actively involved in developing ideas in collaboration with industry, academic and/or charitable partners. They perform needs assessments and transform concepts into business propositions, working to develop, test and evaluate useable product, technology or pathway for mass adoption across healthcare services.<sup>33, 34, 35</sup> Whilst more common in clinical engineering or computational sciences, we advocate the growing need for such roles.

## Current opportunities: funding, training and support

The Welsh innovation and research landscape differs somewhat to its neighbouring countries. Understanding this is important to navigate the opportunities.

For both research and innovation, training and funding opportunities are available at each stage of the professional career pathway.

Opportunities have been mapped; examples of these for the advanced practitioner career stage are illustrated in [Appendix 2](#), and others will be developed into online resources via Healthcare Science Cymru webpages: [heiw.nhs.wales/hcs](http://heiw.nhs.wales/hcs). Below is a brief overview of types of opportunities available for healthcare science professionals in Wales:

### UK research funding

UK funding grants and research programmes are delivered by NIHR alongside England-only grants and programmes (e.g. funding channelled from NHS England or other England-only bodies). Welsh applicants are eligible for specific UK-wide NIHR grants, where this is stated in application guidance. In 2023/24, a further five NIHR research programmes have become open to Wales, Scotland and Northern Ireland.<sup>36</sup>

### UK innovation funding

UK-wide innovation opportunities are also available, such as UKRI grants and Innovate UK.<sup>37</sup> Increasingly many NHS England developed programmes are being opened to Wales. The Healthcare Science Programme has enabled access to the NHS Clinical Entrepreneur Programme<sup>34</sup> and Healthcare Science Knowledge Transfer Partnership<sup>38</sup> and had funded access to the NIHR Healthcare Science Innovation Fellowship.<sup>39</sup>

## Welsh Government Research funding, support and training

HCRW is supported by Welsh Government, offering support, guidance, training and access to funding streams, and monitoring research activity nationally.<sup>40</sup>

- ❏ **Faculty personal awards** - A series of award schemes, catering for all career levels, specifically for those with a specific research topic they wish to take forward.
- ❏ **Training and awareness raising** - HCRW offer training for developing fundamental research skills including Good Clinical Practice (GCP). They also information share and promote research across Wales via their website, bulletin and conferences.
- ❏ **Funded projects** - HCRW fund specific projects with clear public benefit, the supports research capacity building and provides robust evidence of policy development. Since 2015 they have funded 189 projects.
- ❏ **NHS R&D organisation** - HCRW also provide national oversight and funding to local R&D Directors and departments across NHS Wales.
- ❏ **Cross-funder and partner schemes** - HCRW provides access to national programmes and awards such as with NIHR, charitable organisations and others.

## Welsh Government innovation funding, support and training

Welsh Government also provides an Innovation Support Fund.<sup>16</sup> The Welsh Government Innovation Strategy plans to streamline innovation in Wales and provide a coherent ecosystem, for collaboration with industry, academia and the third sector.<sup>3</sup> There are multiple ways in which healthcare science will be able to get involved in Welsh Government supported innovation funds including through the work of the Clinical Networks and NHS Executive. Following this, the Framework will identify organisations within the innovation ecosystem that can help support at each stage defined and provide a guide for systematically identifying new opportunities, generating ideas, developing new products, services, or processes, and implementing them effectively. Further guidance to healthcare science will be provided at the delivery plan stage of this strategy as this progresses.

## Training programmes

Healthcare science professions have access to a wide range of opportunities to develop their career in research and innovation. Professional registration is available at graduate, postgraduate and doctoral levels, dependant on the roles and service need, with formal training programmes including: professionally accredited degrees, postgraduate Scientist Training Programme, and the doctoral Higher Specialist Scientist Training for consultant roles.<sup>29</sup> There is some variation in availability of these across specialties, under review and development in Wales.

## Profession-specific opportunities

There are also a range of developmental research and innovation grants, formal education, fellowship programmes, short courses and workshops specific to NHS professions. Healthcare science professional bodies also offer specialty-focussed opportunities, such as the Institute of Physics and Engineering in Medicine (IPEM) Innovation grants<sup>41</sup> and the Society of Radiographers Doctoral Fellowship grant.<sup>42</sup>

## Charitable organisations

Opportunities for funding also lie within charitable organisations such as those that make up The Association of Medical Research Charities (AMRC). Grants may be fully or partially funded by a charitable organisation for projects that tackle a specific healthcare need. This can be small local charities, or larger national charities such as the Wellcome Trust.<sup>43</sup>

## Research and innovation databases

Innovation leads across Wales are at the early stages of developing an All Wales Innovation Mapping and Tracking database to capture and monitor work supported by innovation leads within health boards and trusts. HEIW is also developing a Workforce Observatory that will include an NHS research repository.

## NHS research and innovation centres

Healthcare science professionals are key leads in delivering research and innovation through collaborations between health boards and universities across Wales. This includes three physical centres for research and innovation: the TriTech Institute, Centre for Healthcare Evaluation, Device Assessment and Research (CEDAR), and Maelor Academic Unit of Medical & Surgical Sciences (MAUSS).

## Local networks

There are many networks for research and innovation across Wales, such as the Wales Innovation Network which provides small grants<sup>44</sup> and networking opportunities and the Wales Audiology Research Network illustrated in [Appendix 3](#).

## Section 2: Current Landscape

### Participation in research and innovation

To identify how healthcare science currently utilises and fits into the current research and innovation landscape, this section explores current research activity levels, engagement with funding bodies and our involvement in innovative programmes relevant to Wales.

#### Audit of research activity:

To understand our current contribution to research, an audit was conducted whereby R&D departments in all health boards and trusts across Wales were asked to identify recorded research involving healthcare science. This included all studies undertaken or actively supported by healthcare science professionals recorded between 2021 and 2023.

At the time of this audit, professional occupation was not yet a mandatory field recorded by NHS R&D departments. The professions that healthcare science comprises were also not well understood, creating further challenges to identifying healthcare science research. Workforce numbers for the groups of healthcare science professionals (including radiographers and ODPs) were provided per health board or trust to aid in the search.

It is also important to note that this did not include any SE, QI, real world testing or wider innovation work, much of which is not formally recorded across NHS Wales. Therefore, the summary below demonstrates only a fraction of our activity.

Summary of audit findings:

- ☒ Nearly 400 recorded studies were identified overall as involving healthcare science professionals.
- ☒ The number of studies per health board or trust varied greatly. Cardiff and Vale University Health Board reported the highest number and Velindre University NHS Trust reported the highest proportion of research activity in relation to workforce size; a significant proportion of workforce across Velindre Cancer Centre and Welsh Blood Service are within healthcare science.
- ☒ When considering the 6 groupings of healthcare science professions, laboratory sciences were the largest contributors to research both in a supportive and leading capacity, with the highest proportion of research active staff compared to other areas. No research studies were recorded which involved ODPs.
- ☒ The type of involvement in research was primarily in supporting and enabling the research of other professionals, leading as CI in only 15% of studies identified.
- ☒ Our research partners included a wide range of academic institutes across the UK and industry partners worldwide.
- ☒ Most research was externally funded (83%), with grants of £54,376 on average per study.
- ☒ The majority of studies were focused on cancer, cardiovascular disease or microbiology.

#### Named Chief Investigators:

To take a different perspective, the 2000+ studies listed on the NIHR portfolio in 2023 were also manually reviewed to identify healthcare science professionals as CIs of funded research in Wales ([figure 3](#)). A total of 8 CIs were identified from the healthcare science professions: 4 from **laboratory sciences**, 2 from **physiological sciences** and 2 from **engineering**, across 4 health boards and trusts (Cardiff and Vale, Betsi Cadwaladr and Cwm Taf Morgannwg University Health Boards, and Public Health Wales NHS Trust).

To aid interpretation of this, and due to significant differences in profession size, estimated proportions within each workforce are shown below, based on NIHR portfolio records in 2023 and NHS Electronic Staff Record (ESR) data in 2024. This places healthcare science as similar to AHPs but lower than for medical and dental professionals combined. However, when adjusting for career levels likely to taken on responsibility for CI, differences are less dramatic.

**Figure 3:** Numbers of Chief Investigators (CIs) listed on NIHR research portfolio in 2023 that work in NHS Wales. Also shown as a percentage of the NHS Wales workforce in the professional groups, and the subset of those most likely to take on CI responsibility

Profession	Number of CIs in 2023	Estimated % whole workforce who are CIs	Estimated %CI in band 7-9 or medical & dental
Healthcare science	8	0.1%	0.4%
Allied health professionals	8	0.1%	0.4%
Medical and dental	97	1.0%	1.0%
Nursing, midwifery & health visitors	7	0.02%	0.1%

#### Engagement with Health and Care Research Wales (HCRW):

Our awareness of and engagement with current opportunities may give indications of research participation interest. HCRW provides essential information for all experience levels. Subscription to their weekly bulletin is accessible to all, with content covering new, emerging research, funding opportunities and training specific to Wales. Subscription statistics can therefore provide insight:

- ☒ Currently 47 healthcare science professionals were identified as subscribers to the bulletin. This is less than 0.7% of the whole healthcare science workforce, although members of our workforce may register under alternative titles (e.g. senior lecturers also holding an NHS post in healthcare science). In total, we make up 2% of the 2259 HCRW subscribers. The majority of healthcare science subscribers are trainee or registered Clinical Scientists.
- ☒ In October 2024, 525 people attended the HCRW annual conference either in-person or online, 6 were from healthcare science, making up 1% of total attendees.

## Grant funding applications:

Our engagement with opportunities and the ability to win funding awards was also examined. Recent awards were investigated to understand the demography of applicants. This was only possible for grants specific to Wales where profession had recently been recorded and therefore did not capture NIHR awards or historic data.

1

**NHS Research Time Award (HCRW)** - This award was specific to NHS staff within Wales to provide protected time for research. Of the applicants in 2022 and 2023, one per year was from healthcare science but not successful. There has been at least one healthcare science awardee previously (2018 - **physiological sciences**).

6

**Research Capacity Building Collaboration in Wales (RCBC)** - From 2019 to 2024, a total of 6 healthcare science professionals have been awarded the First into Research Fellowship with RCBC, 17% of the total for this award. These came from **radiography, laboratory sciences** and **physiological sciences**.

0

**Research Development Awards (HCRW)** - The new personal awards launched in 2024 to support research development. From a total of 39 applicants across these awards, one was from healthcare science, within **clinical computational science**. Of the 9 successful awardees, 5 were NHS employees (medical, midwifery, AHP); none were from healthcare science.

2

**Advanced Fellowship Awards (HCRW)** - In 2023, out of 15 applicants, 5 were healthcare science professionals (2 from **genomics** and 3 from **laboratory sciences**). Of these applicants, 2 were successful.

19

**Bevan Commission** - There has been at least one successful healthcare science professional per year throughout the 8 exemplar cohorts since its inception, with 19 healthcare Science Bevan Exemplars in total (up to 2023). In total this makes up approximately 5% of the total number of Bevan Exemplars across the 8 cohorts (353 in total).

23

**The Tritech Institute** - From 2021 to date, healthcare science professionals have been involved in all 23 studies and real-world evaluations within the Tritech Institute and have led on 15 of these. Of these projects, 22 involved or were led by a Clinical Scientist.

15

**NHS Wales research centres** - Across the 21 researchers within CEDAR in 2024, there are 9 healthcare science professionals, with 1 from **radiography**, 1 **clinical computational science**, 4 **physical sciences** and 3 **public health**. The core research team within MAUSS in 2024 includes 6 full time **biomedical scientists**.

6

**The Dragon's Institute**- Up to March 2023, 3 healthcare science professionals out of 120 individuals in total have completed the 10-month Climb leadership programme in Cardiff. Another 3 out of 181 have been part of the Spread and Scale Academy. All 6 (2%) were from **laboratory sciences and genomics**.

## Participation summary:

- Although it may seem that healthcare science is at the forefront of research and innovation, this is only evident for a few. Investigations suggest that most activity is supportive and is unevenly distributed across Wales and across professional areas.
- Few healthcare science professionals appear to be 'tuned in' to opportunity updates from HCRW and may be unaware of recent developments.
- From the grants investigated, applicants from healthcare science are few in number and even fewer are successful against their competition, particularly with highly sought after awards which include salary funding.
- From the strategy consultation it seems that research without participants or external funding (such as in the **physical sciences**) is undertaken but not routinely recorded.
- It is not clear whether these differ to the experiences of AHP and nursing colleagues.

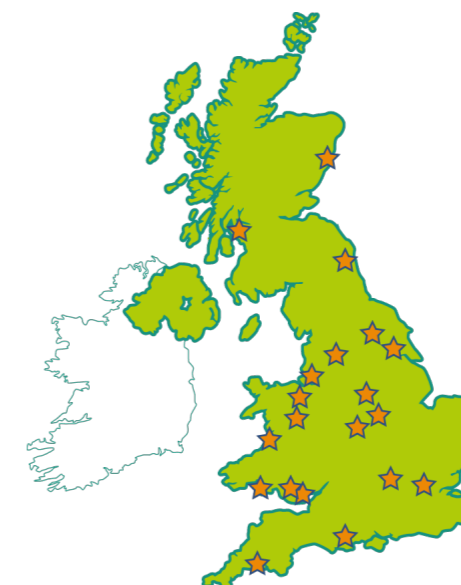
## Academia, industry and charitable organisations at a glance

### Academia:

Within the NHS R&D departments audit of research activity, approximately 26% studies partnered with an academic institute. HEIs across Wales offer a range of healthcare science programmes, primarily taught by healthcare science professionals, many of whom maintain clinical competencies with part-time NHS roles.

As illustrated in [Figure 4](#), the audit highlighted that our NHS healthcare science researchers are collaborating with many academic partners, but approximately 65% are partnering outside of Wales. A possible reason is that, whilst graduate training programmes in healthcare science are commissioned within Wales, post-graduate academic teaching is mainly from outside of Wales, and contacts are therefore naturally in place with these, or research perhaps stems from research initiated within training programmes (masters or doctoral level).

**Figure 4:** Map of academic partners from the NHS R&D departments research records audit.



## Joint roles:

Healthcare science clinical academics play an understatedly pivotal role in developing our future workforce. Often engaged in research as part of their roles, they are integral to bridging academia and clinical practice. Despite this, there is a reported sense of isolation, with few leading research in their respective fields and with difficulties over titles.

There has been much variation in the use of 'Clinical Academic'. Within healthcare settings, it refers to clinically active health researchers or professionals jointly working in academia and healthcare.<sup>45</sup> In HEIs, the title mainly applies to medical and dental professionals using nationally agreed titles and pay scales from the British Medical Association.<sup>46</sup> A lack of co-funded clinical academic or clinical lectureship roles for other healthcare professionals has said to restrict early post-doctoral opportunities for such professions.<sup>45</sup>

Hybrid roles can facilitate the sharing of research skills within NHS settings and create competitive, collaborative grant applications to undertake high quality research, driven by clinical need. Yet a 2018 review of clinical academic fellowships for healthcare professions outside of medicine found scarcity of competitive, funded post-doctoral opportunities.<sup>45</sup>

Work to tackle such barriers in Wales has included developing the newly launched HCRW Faculty, providing support and advice to funding holders developing a clinical academic career.<sup>47</sup> There are also doctoral fellowships now for funding to undertake a PhD whilst remaining 20% clinical – a helpful start that points towards such joint roles.<sup>40</sup> Such developments require time to impact, but also interest from professions in applying.

Crucial to such triumphs is safeguarding these individuals as facilitators of research across boundaries and not a 'sole researcher' within NHS or academic departments. Currently, many are fixed term, failing to provide stability, limiting attraction into this career path.<sup>12</sup> More is needed to establish permanent, joint-funded clinical academic roles in healthcare science. Case study examples showcasing the benefits are found in [Appendix 3](#).

## Industry & charitable organisations:

Working with commercial partners and charitable organisations is a key enabler to undertaking research, building capacity, and developing cutting-edge innovation. It provides a crucial source of income generation to undertake research and innovation as well as providing access to novel technology, methodology or treatments and can help alleviate tensions between undertaking R&I work whilst tied up in operational performance.

From the NHS R&D departments audit, we partnered with industry or charitable organisation in 19% of all studies (including those supported) and in 31% of studies led by healthcare science. Our largest partner group by number of studies was manufacturers of pharmaceutical products, with biotechnology development companies the second largest.

Another survey conducted by the Healthcare Science Programme into the physiology workforce revealed 4 departments in Wales that have been involved in commercial studies over the past two years. These spanned 3 out of 7 health boards and included all 4 main areas: Audiology, Neurophysiology, Respiratory and Cardiac Physiology.

Further exploration would be of benefit to establish whether our involvement with industry is fleeting or is intertwined with services delivered, to ensure transparency of approach.<sup>48</sup>

With MedTech advancements heavily focussed on diagnostics, our profession's key involvement in diagnosis is a valuable asset to research and innovation in these fields.<sup>49</sup> However, to navigate and enter this space and cultivate such relationships a level of entrepreneurial skill is required, a trait that is commonly found in the profession but currently not developed in our training curricula outside of engineering or computational sciences. Fellowships and programmes are developing at pace to meet this need.

Collaboration also benefits industry with real-world evaluation and access to NHS services and highly skilled, experienced staff that ensures patient-centredness. For some, partnering with industry can fuel fears of NHS privatisation and pose ethical dilemmas. However, supporting commercial clinical trials also provides our patients with options to explore novel, innovative therapies and treatments.<sup>50</sup>

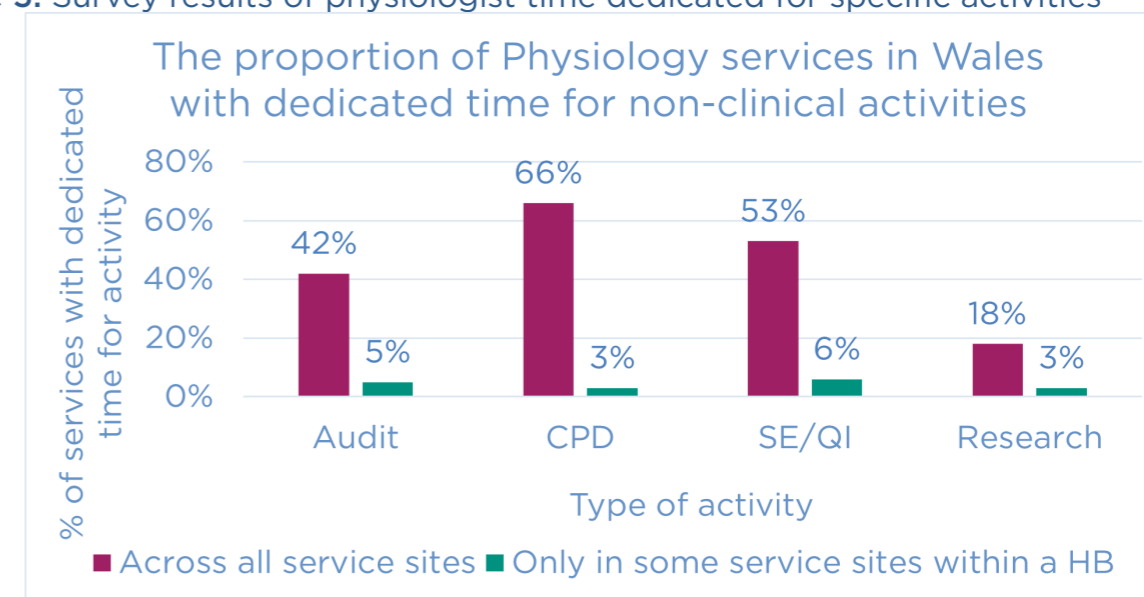
## Barriers and facilitators

To identify the barriers and enabling factors of undertaking research studies and innovation projects, a range of professional views, opinions and experiences were collated via a series of discussions, interactive polls and online surveys. Although not all exclusively relevant to healthcare science, they provide context to the landscape described above.

### Barrier 1 - Time:

Time to undertake research and innovation was considered the main barrier and featured in all responses of a survey sent via the Healthcare Science Network bulletin. As illustrated in [Figure 5](#), a physiology-specific survey identified 66% of services across Wales do not have dedicated time for research. This varied across professional area, between health boards and even across same-speciality departments within a health board.

Figure 5: Survey results of physiologist time dedicated for specific activities

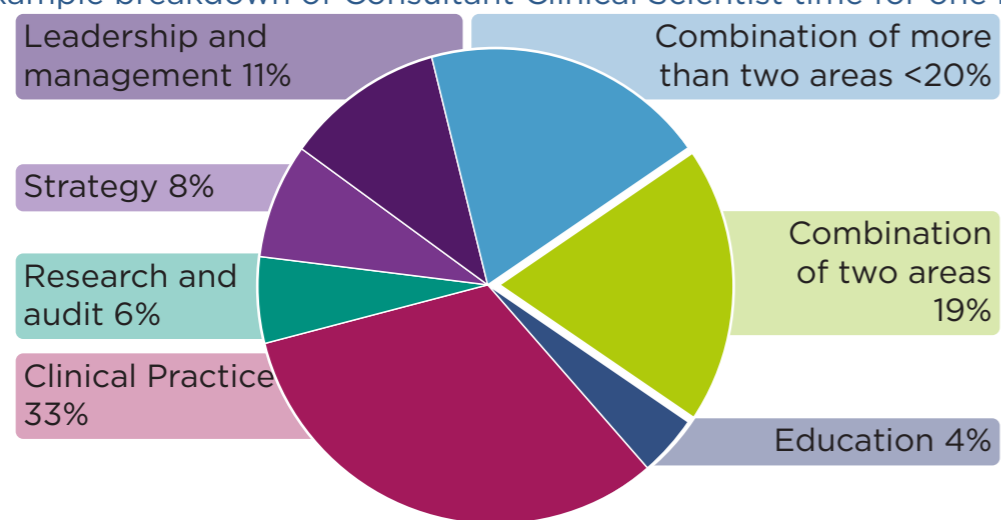


Research, development and innovation is a key domain of healthcare science roles as indicated in AHCS's Good Scientific Practice<sup>26</sup> HCPC standards of proficiency<sup>27</sup> and NHS Employers requirements for Clinical Scientist and Consultant Clinical Scientist.<sup>51</sup> Time is a well cited barrier to healthcare research and innovation across healthcare professions and in academia.<sup>52</sup> Job planning with time for research, a core pillar of practice, is now a well-documented necessity.<sup>30</sup> However, in reality, these activities are undertaken outside of working hours or narrowly fitted in between clinical work, harming work-life balance, creating disparities and fuelling beliefs that research and innovation are 'a young person's game'.

Desires to make significant contributions in research and innovation appear far-removed from the realities of fragile services. This significantly limits the undertaking of research and innovation, slowing down progress, disincentivising our workforce and allowing important ideas to go unnurtured, unsupported, and unrealised.

To further aid understanding of time for research, a volunteer Consultant Clinical Scientist in Audiology, Dr Jonathan Arthur, undertook a 4 week time and motion study (Figure 6) as an illustrative snapshot, aligning work with the five pillars of practice and expectations of this protected title.<sup>30</sup> 'Research and audit' was further considered as own work, supporting others, or strategic. Overall time for research was felt to be insufficient with little time available to dedicate to own research. Additionally, time was often disrupted and deprioritised by service demands.

**Figure 6:** Example breakdown of Consultant Clinical Scientist time for one individual.



'Combination of two areas' is made up of:

- Education and Clinical practice <1%
- Clinical practice and research and audit 2%
- Research and audit and strategy 3%
- Strategy and leadership and management 12%
- Leadership and management and education 1%

## Barrier 2 - Current culture & workforce issues:

Currently, morale for many healthcare science services is low and lacks a strong culture of research and innovation; with the benefits of which viewed as far-removed from the pressing priorities of immediate healthcare service provision. Workforce shortages and the constant issue of demand exceeding capacity, exacerbated by Covid-19, mean waiting times for diagnostic tests, largely performed by healthcare science continue to rise. This is said to have put severe strain on our workforce, restricting our ability to nurture an environment conducive of research and innovation.

Whilst this is a widescale issue, the small teams that healthcare science often comprises of arguably faces the most pressure. Some services are faced with de-skilling staff to meet the demands of specific tests, forced to outsource or stop services with less demand. Although opportunities that include salary do exist, backfill of highly specialised posts is often not possible and opportunities cannot be supported due to operational pressures. This may explain a lack of engagement with current opportunities as aforementioned.

“Any chance for research is offered to registrars.”- Radiographer

Reliance on existing staff working additional hours risks burnout, and bank workforce roles are not commonly in place. Additionally, in comparison with our medical, nursing and AHP colleagues, some areas of healthcare science are undertaken by one or a small handful of highly specialised, isolated individuals.

Our low profile, highly specialised roles and small numbers also mean healthcare science is poorly understood. Consequently, we often play a relatively silent, supportive role in research and innovation. This is further hindered by an outdated, but still rather present belief, that research must be led by medical professionals, restricting healthcare science professionals to only participate in research in a supportive capacity.

“We're part of quite a lot of studies... but we don't know what happens, we get samples and then that's the last we hear of it. And its frustration then of almost not being part of a team.... There would be lots of innovative processes put in place, and we would be at the heart of that, but we were never mentioned in the reports.” - Biomedical Scientist

Whilst there have been significant developments in recent years, there also remains unhealthy cultures within healthcare science professions such as between those on the graduate and postgraduate registers, thought to have resulted at least in part from the manner in which past developments to bring the profession under collective education and career pathways had been managed.

Disparities in culture disadvantage those within professions or locations that do not yet understand the benefits of research and innovation, with difficulty in gaining support to pursue such work and therefore improve the understanding and experience locally. In these circumstances, work must be done to establish healthcare science-led research as a cultural norm, with the aid of other professions and management.

### Barrier 3 - Lack of supportive networks:

Novice researchers and early innovators require role models, mentorship and guidance to succeed. Support networks are integral to this. Despite attempts to improve this, right now, our workforce seems to have weak connections. Many services work in silos, lacking a collective voice and limiting their influence to demonstrate widescale change.

Many other areas of the NHS workforce have established national research and innovation networks, councils and journal clubs, open to all, regardless of experience level. Without such infrastructure, undertaking research and innovation can be a lonely path, with difficulty generating interest within local, extremely busy teams. Difficulties generating support from management can also disincentivise those interested in pursuing innovation or research.

“There is limited scope or opportunity unless you are directly contacted to be involved and that is if you are in certain networks. This then has to be fitted into the working hours within the department which can be difficult.” - Neurophysiologist

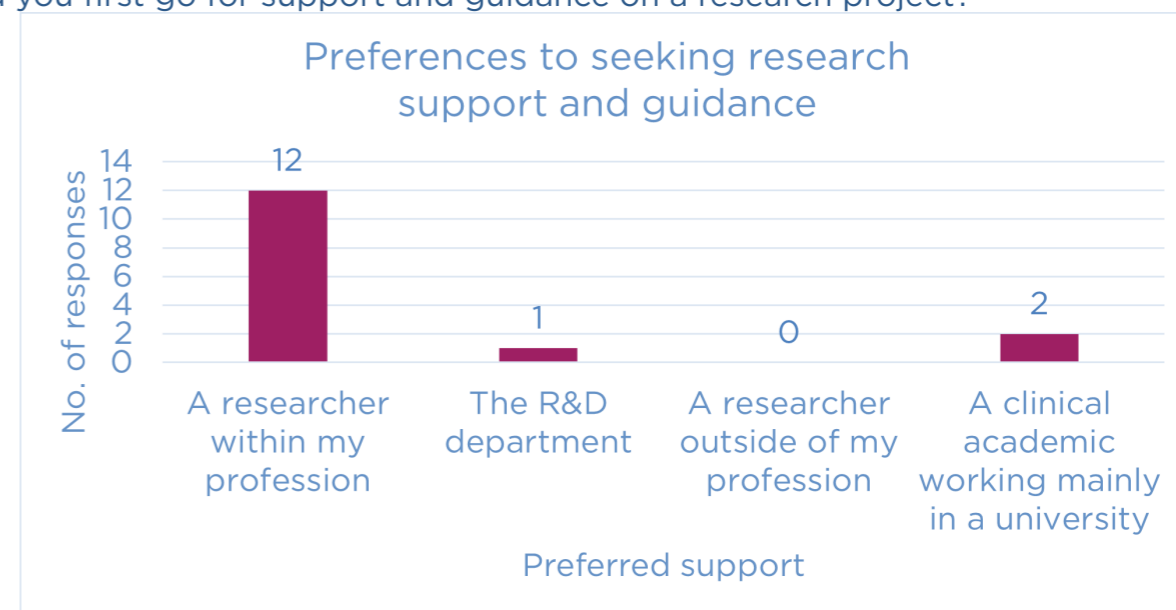
A review of the support networks available revealed a number of profession-specific research networks, support and resources within professional bodies. However, this is not equitable across our workforce, with some void of any or only recently implementing supportive infrastructure, e.g. the College of ODPs network, set up in 2024. Smaller professions (e.g. neurophysiology, medical illustrators, vascular scientists), rely on individuals for mentoring.

Whilst NHS R&D departments provide invaluable support and leadership for undertaking research, they too face pressures, and support may be variable across health boards and trusts.

“Whilst seeking approval via our local R&D Office, we were advised not to call it ‘research’ but rather a ‘service evaluation’ so that we could avoid the otherwise very lengthy and resource intensive approvals process... [yet] the University very much regarded his work as high-quality research.” - Rehabilitation Engineer

The new HCRW Faculty is a positive step forwards, providing peer and expert support for awardees; but those that have been unsuccessful remain without support. As demonstrated in [Figure 7](#), early researchers may typically look to more familiar, local guidance initially. A lack of awareness of the healthcare science workforce may also create further barriers to support.

**Figure 7:** Survey results from a national Neurophysiology meeting when asked ‘where would you first go for support and guidance on a research project?’



### Barrier 4 - Access to and transparency of resources:

Undertaking research and producing innovative change effectively is reliant on the availability and accessibility of resources. Any inability to readily access profession-specific journal articles, assistive research software and issues over availability of space and equipment for research and innovation projects, hinders our work and its scalability.

There is a plethora of research and innovation organisations such as the Tritech Institute, Health Technology Wales, Tec Cymru, The Bevan Commission, CEDAR, MAUMSS and many more, undertaking exciting, critically important work to transform our healthcare services. Equally for research training, there are various academies, institutes, and hubs within Wales. Particularly for novice researchers and innovators, the sheer volume of these and the rapidly changing landscape is said to make information scouting overwhelming and time-consuming.

“Without initial support I’m not confident to start an in depth research project.” - Radiographer

More could be done to simplify this and establish ‘built-in’ research and innovation infrastructure. As well as this, organisational firewalls, governance and digital incompatibilities across NHS Wales and the wider UK healthcare system are problematic to sharing resources and collaborating with those outside of local health boards or trusts.

Finally, compared to other healthcare professionals (e.g. medical and nursing professions) with strong identities as a workforce sector, some healthcare science professionals only identify with their specific profession, unaware that they form part of healthcare science. This creates further difficulties in understanding, awareness and access to available opportunities.

## Barrier 5 - Wider issues of career pathways, roles and national organisation:

The nature of a career in research and innovation is one of uncertainty, fighting for funding for next year's projects and salary. The risks reduce the ability of our workforce to become lead researchers and innovators and creates inequality for those with responsibilities at home that depend on stable income, hindering diversity. NHS England now has an established framework and multiple opportunities for these roles, with entry points across all professions.<sup>53</sup>

“Research and innovation are not quick and easy pathways to follow. You require funding, the Health Board approval, ethical approval, IG, IT etc., this is even before recruiting patients.” - Respiratory & Sleep Physiologist

A lack of understanding towards the benefits of formally recognised research and innovation was also prevalent. Ambiguity and lack of transparency over Intellectual Property (IP) rights also poses risks to inventions and ideas being explored elsewhere and losing talent.

Undertaking and allocating funding for research and innovation was also viewed as 'difficult, onerous, overwhelming and undervalued'. The writing of proposals, ethical applications and more are seen as disproportionately complicated and a duplication of work. This has led to work worthy of being identified as research being disguised as SE or QI or improvement, and projects that demonstrate innovative thinking, to remain local and relatively unexplored.

Furthermore, in comparison to some other professions outside of Healthcare Science, the nature of our work often means funding for research and innovation must also incorporate costly equipment, software and laboratory space which are not always covered in one single funding grant and can be difficult and time-consuming to secure.

## Barrier 6 - Inequity and lack of understanding:

Historically, many grants and opportunities have failed to include healthcare science, or have only been open to HCPC registered healthcare science professionals, which is not available for many of our practitioner level roles.

Whilst this issue of criteria has largely been addressed and funding, training and support is theoretically available for research activity across all career stages for NHS healthcare science professions, issues are still reported with access. There are calls from the profession to further address this through specific funding stream akin to the NIHR's 'RfPB for under-represented Disciplines and Specialisms' available to AHPs in NHS England.<sup>54</sup>

Issues raised also allude to restricted ability to influence and be understood. A lack of understanding to who the healthcare science workforce are, and the level of seniority (including consultant and director roles) were reoccurring themes. Recognition is needed to ensure healthcare science are appropriately represented in research decision making, grant realising panels and multi-organisational innovative networks, and to ensure that scientific expertise is valued for senior roles.

“R&D are not aware of our service and have no understanding of how we are conducting the study.”- Neurophysiologist

Exploration identified several other examples of inequity as summarised below:

<b>Issues with inclusion criteria</b>	<p>Many charitable organisations refer to nursing, midwifery and AHPs, with no clarity on whether healthcare science is either assumed to be a part of AHP or not included. We could still be successful for these, but this is not clear and poses a barrier.<sup>55, 56</sup> Others such as the British Heart Foundation offer fellowships for Healthcare Science but many more opportunities for medical colleagues.<sup>57</sup></p> <p>There are growing numbers of England-only opportunities now open to Welsh applicants, including the NIHR Invention for Innovation (i4i).<sup>58</sup></p>
<b>Profession disparity</b>	<p>Examples of good practice:</p> <ul style="list-style-type: none"> <li>❑ Audiology have developed an NIHR Champion role, run webinars and have a Welsh network for research, with the UK professional body also providing training and mentoring.<sup>59</sup></li> <li>❑ Laboratory Science and Clinical Engineering research networks provide support and funding opportunities.<sup>60, 61, 62</sup></li> <li>❑ Physical Sciences, Engineering and Laboratory Sciences professional bodies provide research and innovation grants.<sup>41</sup></li> <li>❑ Society of Radiographers has a research strategy, advisory group, training and funding available.<sup>42</sup></li> <li>❑ 'The Genomics Delivery Plan for Wales'<sup>63</sup> demonstrates funding priorities for research and innovation in preventative medicine.</li> </ul> <p>Charity and professional society opportunities are more prevalent in certain professions in healthcare science compared to others, with ODPs particularly struggling to identify opportunities. Between laboratory disciplines, opportunities exist for some, but others describe being dependent on academic interests of larger departments elsewhere.</p>
<b>Logistical disparities</b>	<p>Health boards and trusts vary in support for research and innovation projects:</p> <ul style="list-style-type: none"> <li>❑ Not all health boards and trusts have innovation leads</li> <li>❑ Capacity and support within NHS R&amp;D departments varies across Wales, and the number of healthcare science professionals within or jointly funded by NHS R&amp;D is also variable.</li> <li>❑ Some health boards are better networked across the healthcare science professions and are well placed to provide inter-professional support (e.g. BCUHB's healthcare science network).</li> <li>❑ Some health boards are more closely connected to supportive centres, hubs, institutes and organisations. Examples include: CEDAR research centre (CVUHB and Cardiff University); ARCH regional collaboration (SBUHB, HDUHB and Swansea University); MAUMSS research centre (BCUHB and Wrexham University).</li> </ul> <p>Whilst all health boards have profession leads in the EDAHPHS, management and leadership infrastructure differs depending on location, with only some health boards and trusts having their own healthcare science directorate.</p>

<b>Competition</b>	<p>Drives towards inclusivity and high profile research raises the quality of our research. This has gradually led to the replacement of profession-specific grants and NHS-led awards such as HCRW's Research for Patient and Public Benefit Wales (RfPPB) with more widely inclusive opportunities that also provide more mentoring and support. One concern with this is that healthcare science professionals and other NHS researchers then face increased competition, without the time or resources to compete. This limits our ability to successfully get started in research and develop early researchers from within NHS Wales.</p> <p>Examples of highly competitive awards with a large audience:</p> <ul style="list-style-type: none"> <li>❏ HCRW personal awards e.g. the Advanced Fellowship Award - Open to all researchers in a Welsh institution or organisation. Academic applicants will be more prepared to create competitive grant applications.</li> <li>❏ Wellcome PhD fellowships for Health Professionals - Open to all healthcare professionals, social workers and veterinarians.</li> </ul>
<b>Resource limits</b>	<p>Grants not able to cover fundamental infrastructure costs:</p> <ul style="list-style-type: none"> <li>❏ Medical equipment and clinical rooms/laboratories tied up with NHS work.</li> <li>❏ Equipment and laboratory space could be resourced within universities to undertake research, particularly for diagnostic research.</li> </ul>
<b>Publications</b>	<p>Research metrics often include number of publications. This often means medical professionals and those more likely to work on clinical trials that produce a number of publications, surpass other equally important work. The Welsh Blood Service illustrates other ways in which research and innovation can be made visible.<sup>64</sup></p>

## Barrier 7 - Difficulties with PPI:

PPI is a required, essential aspect to establishing quality, patient-centred research and innovative change. Whilst many of the healthcare science professions have direct contact with their service users, a large proportion are 'non-patient facing'.

Research and innovation in highly specialised, scientific laboratory-based work have benefits to service users, but these are indirect, impeding our ability to effectively undertake PPI.

Furthermore, our heavy contribution to diagnostics often means patient contact is fleeting, with few repeat visits, restricting our ability to cultivate relationships with our patients and encourage their engagement in research.

These are particularly important issues to overcome, especially considering that PPI continues to be essential for success with grant funding and healthcare recognition awards. To tackle this issue, healthcare science professionals may need to develop alternative routes and support to reach patient and public volunteers.

## Facilitators - Training programmes in the profession:

Research is a core element of all formal education, including within graduate degrees for Radiographers and ODPs and in the accredited healthcare science training programmes.

For many, these education and training programmes and routes to registration are milestone stages whereby research skills are developed and individuals are provided with the time and space to think innovatively and lead their own projects; for example those on the Scientist Training Programme are required to be a PI on a short masters-level project.

Making use of the skills of trainees and the training provided within these programmes is a crucial enabling factor, not only to increase an individual's leadership skills and proficiency to undertake R&I, but also to help make such activities commonplace within services. Where service needs are factored into research project choice, the programmes can be an effective enabler to progress small-scale local research or to build a body of evidence over time through successive trainee projects. Other staff within teams also benefit with the potential to experience recruiting participants or being researchers on the projects.

It is also important to ensure that these skills are not lost after the training is over and that opportunities to develop further are in place. Furthermore, the training programmes and their equivalence routes could be utilised even further to develop innovative projects, creating an alternative for individuals who are more kinetic, practical thinkers.

## Facilitators - 2 Equivalence routes to registration:

Equally, the need to undertake original research is also a key part of the equivalence routes to registration. These are enabled by the Academy for Healthcare Science and other professional bodies as a way for those working in the NHS to achieve the different professional registrations available at graduate (Biomedical Scientist, Radiographer, ODP, Healthcare Science Practitioner, Clinical Technologist, Genetic Technologist and more), postgraduate (Clinical Scientist) and doctoral (e.g. Consultant Clinical Scientist) levels.

In NHS Wales, funding can be applied for to support activities related to equivalence routes to registration including research and innovation training and MRes/PhD fees alongside professional body requirements such as Fellow of Royal College of Pathology (FRCPath) examinations. As the equivalence route to registration is achieved through building a portfolio of evidence, this relies on support and time to complete within services.

The flexibility of this progression route enables individuals to map their development needs against the portfolio template and plan activities to both meet service needs and achieve their own career progression.

### **Facilitators – 3 Intellectual capital:**

The knowledge and expertise that we accumulate in niche, highly specialised areas of health science is often incomparable. Our inside knowledge and reach across diagnostics, working at the front-line of healthcare provision, places us perfectly between the industries in healthcare innovation and the clinical practice that results in improved patient outcomes and experiences.

Understanding the value of this and navigating the reversal of ‘seller-customer’ relationships with our with industrial partnerships is integral to seeking new modes of generating income, IP and developing the necessary infrastructure needed to establish cutting-edge innovation.

Technical and professional abilities are in scarce supply and are a recognised barrier to innovation.<sup>65</sup> This potentially poses healthcare science as an untapped resource and key facilitators to developing scalable, impactful healthcare innovations.

### **Facilitators – 4 Digital advancement:**

As healthcare science professionals our work is reliant on the equipment available to us. Therefore, advances in technology are key to freeing up our time to undertake innovation and research, which will then in turn, continue the advancement of such technologies.

The rise of artificial intelligence and other digital advancements provides promising hope to cope with the future pressures NHS Wales anticipates in the following years. With our significant contribution to diagnostic testing, it is essential that we inform digital advancements, ensuring technologies are fit for purpose and are both patient and user centred.

The evaluation and widescale investment of this should be a core consideration. Robust NHS data sharing frameworks and enabling digital infrastructure will be key for research and innovation with academic and industry partnership working to secure external investment in research and innovation capacity and capability.

Awareness of accessible and trusted data such as Wales’ SAIL (Secure Anonymised Information Linkage) databank, is also integral for local and national patient and public population research.<sup>66</sup>

Our ability to utilise digital health technologies and demonstrate our ability to use source rigorous, quality research studies online is also an essential aspect to evidence-based practice and meeting standards outlined by HCPC.<sup>27</sup> The HEIW ‘Digital Capability Framework’, provides a toolkit to self-assess our digital skills and access learning to develop these.<sup>31</sup>

### **Facilitators – 5 Multi-disciplinary teams:**

Because of our role in the healthcare service and our integral role in diagnostics, we often collaborate with many other parts of the NHS Wales workforce. We are already established supporters of research, regardless of our awareness to that fact.

Therefore, it should be possible for us, in principle, to move smoothly into more prominent, active research and innovation roles, acknowledged within articles and posters, and from there, into growing the principle and chief investigator or lead innovator role, demonstrating our ability to lead.

We can achieve this with the support and understanding of our fellow NHS colleagues, and by working together collaboratively, pooling together knowledge and resources. Replacing silo working and an ‘us and them’ culture with a more open, communicative approach is key to achieving transformative healthcare improvements through research and innovation.

Strengthening our links with local R&D departments and helping to champion research and innovation both locally and nationally is also crucial to accessing support, opportunities and developing core skills. Moreover, our education and training enable us to work together with HEIs. By enhancing these partnerships, we can not only share ideas and access support research and innovation work, but also help increase the visibility of Healthcare Science.

### **Facilitators – 6 Collaborative forums & networks:**

National forums can bring together individuals from healthcare science, academia, industry and Welsh Government, and help create the necessary platform for cultivating cross-sector relationships and partnerships. UK-wide, Pan-Wales and regional examples include the Academy of Medical Science forum, the Clinical Academic Training forum (CATF), the Wales Cancer Industry Forum, the ARCH Innovation Forum and the Healthcare Science Research and Innovation Group.

Such forums provide opportunities for discussion, ideas sharing, multi-professional support and informed strategic planning to exist and tackle healthcare priorities. Active engagement in such forums can help facilitate the securing of investment into Healthcare Science research and infrastructure necessary to create scalable innovative change.

Local support networks such as Betsi Cadwaladr University Health Board Healthcare Science Network and national professional bodies such as IPEM’s various communities<sup>41</sup> can provide guidance, support and a platform for idea sharing.

Better networked services and professions is an important facilitator for developing multi-site studies, improving the scale and diversity of studies which also providing support for future leaders in research and innovation to get started (e.g. by being site-PI).

## Facilitators – 7 National work in parallel:

National work to transform services, facilitate career progression and drive the necessary change to improve and revolutionise healthcare within NHS Wales is a key facilitator to this strategy.

Service transformation work led by the Healthcare Science Programme Team is actively working to tackle workforce issues across the healthcare science professions, helping to address some of the barriers outlined above.

Key strategies from HCRW, Welsh Government and HEIs relating to research and innovation are of great importance to providing the necessary infrastructure for Healthcare Science to increase its capacity to collaborate, undertake and lead innovation and research.

Health board and trust research, development and innovation strategies are also of importance, working together within local networks.

Service specific work underway such as The Delivery Plan for Advanced Therapies in Wales and Genomics Partnership Wales research strategy will also provide exciting developments and showcase examples of good practice to draw upon.

Finally, similar work for other NHS professions such as HCRW’s PRIORITY project, increasing research capacity for Nursing, Midwifery and AHPs, can also provide crucial context to the overall NHS Wales landscape and highlight common barriers to be tackled together.

It is essential to collaborate across these national programmes and projects, to avoid duplication and maximise our ability to overcome common challenges to research and innovation.

## SWOT analysis

Considering this current landscape, an analysis was undertaken to identify and summarise our strengths, weaknesses, opportunities and threats to achieving our mission for healthcare science.

Strengths	Weaknesses
<ol style="list-style-type: none"> <li>1. Our intellectual capital: as Healthcare Science professionals we have highly specialised knowledge and expertise of great value.</li> <li>2. Research, innovation and scientific inquiry are core elements of our training programmes.</li> <li>3. We are a disciplined workforce, used to working in an evidence-based approach.</li> <li>4. We are already great supporters of research and innovation (directly and indirectly).</li> <li>5. National policies recognise our potential as a workforce to research and innovate.</li> <li>6. National exemplars (see <a href="#">Appendix 3</a>) showcase approaches and help pave the way.</li> <li>7. We are able to ‘innovate ourselves out of the problem’, to explore alternatives ways of meeting current healthcare demands.</li> </ol>	<ol style="list-style-type: none"> <li>1. We struggle to meet current demand, and our time is tied up in operational service delivery.</li> <li>2. Opportunities are missed because of service pressure, workforce shortages and inability to utilise ‘backfill’ funding.</li> <li>3. We are poorly networked and often work in silos. We need a collective voice.</li> <li>4. Lack of promotional drive - we are commonly not adept at ‘selling ourselves’ or promoting our intellectual capital.</li> <li>5. Research and innovation are not universally a part of our culture and there are few leaders in research and innovation available as role models.</li> <li>6. The lack of healthcare science specific funding opportunities.</li> </ol>
Opportunities	Threats
<ol style="list-style-type: none"> <li>1. Welsh Government strategies and frameworks are driven towards developing NHS research and innovation capacity and infrastructure.</li> <li>2. Potential for digital advancements and artificial intelligence to help address capacity issues.</li> <li>3. NHS Wales support for career development, e.g. equivalence routes to registration and the career pathway to Consultant Clinical Scientist.</li> <li>4. Able to work with industry and create a model for sharing intellectual capital and property.</li> <li>5. Growing availability of funding, training, and opportunities for networking and strengthening of the national innovation infrastructure.</li> <li>6. To introduce research and innovation early on in career pathways to drive interest and realise our potential as a culture of ‘change-makers’.</li> </ol>	<ol style="list-style-type: none"> <li>1. Continual, increasing pressures on our services, with ageing population and increase prevalence of diseases and long-term health conditions.</li> <li>2. Competition for funding against other NHS workforces and academia more experienced as researchers and proficient in grant applications.</li> <li>3. Funding calls favour clinical impact, making laboratory scientist research difficult to pursue.</li> <li>4. Losing our researchers and innovators to other NHS organisations or industry due to insufficient career progression.</li> <li>5. We are a poorly understood sector of the NHS workforce, not recognised as lead researchers.</li> </ol>

## Section 3: Recommendations

### Strategic Themes

From the information collated, five strategic themes have been identified as recommended to achieve this vision. Whilst actions to achieve these themes are given from national strategic perspective and for the reader's own action, these will be developed further through the delivery plan to follow. Case studies where such recommendations are in place are given in [Appendix 3](#).

1 - Awareness and Engagement	2 - Training and Leadership	3 - Culture and Adoption	4 - Harnessing and Expanding Opportunities	5 - Translating Research and Innovation
Developing ourselves as key contributors to tackling healthcare priorities	Leading the way in improving healthcare provision	Making research and innovation an essential part of our work	Maximising our potential and our opportunities	Ensuring our research and innovation leads to positive, scalable change

#### Theme 1: Awareness & engagement

**Aim:** To successfully grow a healthcare science workforce that contributes to tackling healthcare priorities through active research and innovation.

#### Objectives:

- ✦ For all the healthcare science workforce to understand the importance and relevance of research and innovation in practice and how this contributes to realising the vision of A Healthier Wales.
- ✦ To ensure understanding of how research and innovation fits into career pathways and how to get started, encouraging competitive engagement with opportunities available.
- ✦ To raise awareness of healthcare science professions as key contributors to the research and innovation landscape.
- ✦ To work with HEIs, NHS R&D departments and key organisations involved in research and innovation to develop signposting of opportunities and horizon scanning.
- ✦ To strengthen our partnerships with NHS R&D departments, industry, academia and research champions as part of achieving the Welsh Government NHS R&D framework.

#### How this will be achieved nationally:

- ✦ Regular promotion of this strategy, the following delivery plan and outputs by the Healthcare Science Programme, profession leads, national networks and groups, and by professional body organisations throughout the timeline of this strategy.
- ✦ Exploring the development of an appropriate signposting solution and model of engagement with HCRW, HEIW, NHS R&D departments and HEIs to raise awareness and ensure transparency of funding, training and support opportunities of specific relevance to healthcare science.
- ✦ Identifying, sharing and promoting quality research outputs and key innovative work led by healthcare science, sharing our successes and the benefits research and innovation can bring to staff, services and healthcare provision.
- ✦ Establishing direct links between NHS R&D departments, innovation forums and healthcare science services by enabling healthcare science research and innovation champions across all health boards and trusts.

#### What you can do:

- ✦ Reflect on the implication of the strategy for your own development or for your understanding of our profession.
- ✦ Engage in the sharing of this strategy and promotion of its messages, as well as in the widescale dissemination of healthcare science research and innovation.
- ✦ Use this strategy as a resource with your own healthcare science service or in engagements with our profession: adopting terminology, using career stage skills and activities in personal development reviews, addressing barriers and making use of facilitators, and sharing case studies.
- ✦ Encourage the use of this strategy as a resource by other NHS professions and wider stakeholders: engaging with our profession, promoting healthcare science clinical academics and clinical researchers, and engaging in collaboration.

## Theme 2: Training & Leadership

**Aim:** For our Healthcare Science profession to become leaders in research and catalysts of creative change in NHS practice to improve the outcomes of our patients, our workforce, and our nation.

### Objectives:

- ☒ To enable the implementation of a clear career progression pathway for research and innovation in our healthcare science profession. To recognise the importance of compassionate leadership across all levels of the career progression pathway.
- ☒ To ensure pathways into senior leadership roles within NHS organisations and equitable access to roles in key bodies such as HCRW.
- ☒ To work with key enabling organisations (e.g. HCRW, NHS R&D departments, HEIs) to facilitate equitable mentorship, training, support networks and leadership opportunities needed for novice researchers and innovators to develop the necessary skills to become leading researchers and innovators.
- ☒ To implement healthcare science clinical researcher and clinical innovator roles across all health boards and trusts for engagement, signposting and support of early researchers and innovators.
- ☒ To explore the development of healthcare science formal clinical academic roles within Wales HEIs.

### How this will be achieved nationally:

- ☒ Implementing a clear relationship between profession leads (EDAHPHS), professional networks (e.g. NHS Executive, professional bodies) and strategic advisory groups (WSAC), through peer groups and executive teams in a more 'one Wales' approach by the end of 2025. To agree responsibilities for these groups to set innovation and research priorities, agendas and align resources that support and promote the healthcare science research and innovation career pathway.
- ☒ To monitor progress on research and innovation metrics (e.g. number of healthcare science PIs or IP applications) to assess progress.
- ☒ Introducing requirements to have healthcare science representation on government-run research funding panels and in forums/strategic groups for which our roles play a vital part. To develop a centralised approach as part of the following delivery plan to the dissemination of progress and key findings from within these communications relevant to the Healthcare Science workforce.
- ☒ Strengthening our links with enabling organisations and working together to co-create mentorship and training schemes inclusive of and targeted at healthcare science.
- ☒ Monitoring impact this via engagement feedback and capacity metrics (e.g. number of publications), to further identify barriers within the research and innovation career pathways and prioritise focus areas of improvement.

- ☒ Agreeing on a national approach with health boards/trusts and HEIs for clinical researcher and clinical academic roles within each profession, providing clear roles of leadership in research and clear links between services and local R&D departments. Reviewing in more detail the current landscape for clinical academics within Healthcare Science and strengthen our relationship with academia and identify Healthcare Science professionals eligible for the title 'Clinical Academic'. To utilise discussions and landscaping to help inform delivery plans by 2025.

### What you can do:

- ☒ Adopt the career pathway outlined in [Figure 2](#) as a tool of self-assessment and utilise this to build research and innovation into job planning, and PADR (Performance Appraisal and Development Review) and Values Based Appraisal discussions with line managers.
- ☒ Support junior staff and those undertaking training programmes or equivalent in developing core skills in research and innovation as outlined in the career pathway ([Figure 2](#)).
- ☒ Utilise existing frameworks and tools such as the Quality of Standards,<sup>9</sup> Digital Capability Framework<sup>31</sup> and Compassionate leadership hub<sup>67</sup> to develop the necessary skillsets required to lead research and innovation.

## Theme 3: Culture & Adoption

**Aim:** To make research and innovation an essential part of our work and to align workforce planning with this.

### Objectives:

- ☒ To ensure research and innovation becomes a cultural norm within healthcare science services with research and innovation activities an integral and protected aspect of job planning, reflected within workforce transformation and workforce planning.
- ☒ To cultivate an environment of psychological safety that promotes equitable, diverse and inclusive scientific inquiry and exploration across all levels of a healthcare science career.
- ☒ To initiate and strengthen this culture in less research/innovation-active specialities of our healthcare science profession, ensuring that resources relevant to innovation and research are equally accessible and available across the healthcare science profession.
- ☒ To identify, utilise and raise the profile of key research and innovator role models and to enable networking opportunities for novice researchers and innovators to take inspiration and guidance from their more experienced colleagues.
- ☒ To ensure buy in from management and our fellow healthcare professionals working closely with us to establish research and innovation as day-to-day practice, and to enhance the impact of such work via collaboration across multi-disciplinary teams.

### How this will be achieved nationally:

- ☒ Executive Directors leading the implementation of flexible, bespoke job plans within the Healthcare Science profession, to ensure ringfenced time for continuing professional development (CPD), research and innovation. To involve workforce planning, recognising and factoring in research activity within IMTPs.
- ☒ Embedding EDI into our innovative research culture, with engaged effort to include under-represented groups within PPI throughout the research process and support the use of Welsh language. To undertake and monitor research and engagement in EDI awareness that addresses healthcare inequalities and encourages diversity within our workforce.
- ☒ Working together and with academia to form an organised, well-connected and inclusive community of researchers and innovators for all career levels across healthcare science, focusing on shared interests and encouraging collaboration and the sharing of experiences, (e.g. CAHPR Cymru,<sup>68</sup> CARIN<sup>69</sup>) ideas, and advice. Working with Digital Health and Care Wales, NHS Wales Library Service, local health boards and trusts to facilitate research and innovation IT infrastructure and easier access to journal papers for all Healthcare Science professionals.

- ☒ Ensuring managers encourage and support our healthcare science workforce in the continuation of research and innovation beyond competency milestones. To establish and nurture commercial partnerships which can help provide semi-predictable capital that can sustainably facilitate research and innovation and help tackle workforce issues. Advocating for more leadership roles for healthcare science professionals (e.g. Clinical Director of Healthcare Science, Professional Lead of Radiography) that can provide a voice for the ongoing needs of the profession, including those mentioned within this strategy.

### What you can do:

- ☒ Actively engage in forums and multi-disciplinary teams to demonstrate our ability to contribute and lead in research and innovation work.
- ☒ Identify key research and innovation priorities and ideas within services and initiates discussion with management on how these might be achieved in order to fulfil and progress through the career pathway in [Figure 2](#).
- ☒ Engage in local and national opportunities to develop skills and promote a culture of research and innovation (e.g. journal clubs) that avoid unnecessary duplication.
- ☒ Practice the principles of EDI throughout all aspects of your role.
- ☒ Accept that rejections and failure are part of the process in research and innovation with grant applications, research trials and testing new innovations in real-world evaluations. Learn from the process, take healthy risks and celebrate the small wins.

## Theme 4: Harnessing and expanding opportunities

**Aim:** To maximise our potential, take smart choices and avoid missed opportunities

### Objectives:

- ☒ To facilitate national monitoring, dissemination and collaboration of research and innovation across healthcare science in Wales.
- ☒ To further review equality of access to opportunities and work with key funders of research and innovation in Wales to create accessible, equitable opportunities for healthcare science, with particular consideration towards our less 'research active' workforce.
- ☒ To strengthen our networking within and across professions to establish a collective voice, support each other, share in learning experiences, and avoid duplication of work.
- ☒ To encourage innovation work to be considered equivalent to research work in our training programmes and their equivalence routes to registration, to develop a workforce with an entrepreneurial mindset and undertaking intrapreneurship (within organisation) activity.

### How this will be achieved nationally:

- ☒ Establishing and facilitating the automatic, mandatory capture of professional identity in research and innovation activity to more accurately record healthcare science involvement in research and innovation projects.
- ☒ Engaging in discussions around potential inequities with funders and enablers of research to establish underlying causes, raising awareness and playing an active role in solutions. Creating, continuing and monitoring development and grant opportunities specific to Healthcare Science, to acquire skills and gain knowledge that can help inform innovative change.
- ☒ Collaborating across health boards, trusts and specialties (in and outside of healthcare science), and Social Care Wales to defragment the current landscape and align existing resources with funding. Raising awareness of current key opportunities to disseminate work and engage in awards and cross-speciality conferences both locally and nationally.
- ☒ Working with National School for Healthcare Science, academia, Academy for Healthcare Science and professional bodies to explore ways of enhancing the innovation arm of training curricular and equivalence portfolio criteria.

### What you can do:

- ☒ Engage and share in local and national opportunities to raise the profile of healthcare science and network with other in and outside the profession (e.g. at health board research events, HCRW conference and innovation programmes).
- ☒ Forging closer relationships with local R&D departments and innovation leads to assist in data capture of research and innovation activity whilst also accessing support, advice and help with forming connections with academia and industry partners.
- ☒ Identify innovation and research opportunities that interest you and include these in your next PADR. Apply for HEIW healthcare science specific funding for course fees.

## Theme 5: Translating research and innovation

**Aim:** To develop the necessary infrastructure for translational research and scalable, innovative change to clinical practice.

### Objectives:

- ☒ To establish an awareness of our own intellectual capital and develop the entrepreneurial skills needed to market our knowledge and expertise appropriately. Initiating and strengthen partnerships with industry with the help of R&D departments and academia, to enter decisions over intellectual capital, helping to maximise influence on the wider innovation landscape and to enable spread and scale of novel technologies and innovative pathways that improve patient experience and outcome.
- ☒ To disseminate research and innovative work both nationally and internationally, demonstrating capabilities to not only undertake the work, but to impactfully promote.
- ☒ To gain the support of managers and other NHS colleagues from the start, making them aware of the work early on to prevent avoidable hold-ups and reduce administrative hurdles, and to enable effective translation into NHS improvement and transformation.
- ☒ To develop our digital capabilities as healthcare science professionals and utilise these to bring added outcomes of increased efficiency into healthcare delivery.

### How this will be achieved nationally:

- ☒ Scoping, developing and accessing ways for our workforce within NHS Wales to develop their entrepreneurial skills.
- ☒ Engaging in conversations with industry to market ourselves as 'field experts' and negotiate mutually beneficial relationships for the betterment of healthcare provision.
- ☒ Enabling open access publishing for research to showcase healthcare science professionals in Wales leading the way in innovating thinking and transformational change. Providing and signposting to support with academic writing and successful publishing.
- ☒ Ensuring our research aligns with local need and national healthcare priorities and national agenda's such as sustainability and value-based healthcare, sharing our findings, successes and next steps with our colleagues and managers to encourage buy-in.
- ☒ Ensuring our research and any innovative changes we develop and implement considers our population demographic, positioning patient and person-centred equality, diversity and inclusion at the heart of everything we do, including our research.
- ☒ Contributing to all aspects of evidence-based healthcare.
- ☒ Working with supportive organisations such as 'Advanced Therapies Wales' that can provide business case support to innovation and innovation projects.<sup>70</sup>

## What you can do:

- ✦ Build your confidence with academic writing and the publication process by submitting work on small projects (e.g. SE or QI work) or a reflective piece in appropriate or profession-specific journals e.g. AHCS Leadership Journal.
- ✦ Use [Appendix 2](#) as a start point to access support and training opportunities for research and innovation. Sign up to newsletters from HCRW, Life Science Hub Wales and many more to stay updated.
- ✦ Recognise your own intellectual capital as a field expert and remember its value when you engage with industry.

## Next steps

Following the publication of this strategy, further collaboration and commitment is required to develop the delivery plan and the monitoring, evaluation and learning framework.

Through the Healthcare Science Research and Innovation Group, this work will be led by the healthcare science profession in collaboration with HCRW, HEIs, key innovation stakeholders, charitable and commercial organisations and Welsh Government. This group is facilitated by HEIW, with oversight from the Healthcare Science Network, Healthcare Science Programme Board and the EDAHPHS Peer Group. Realising the vision set out in this strategy is reliant on the cultivation and strengthening of such partnerships.

Timely response from our profession and all stakeholders is integral to success of the strategy, in the context of a constantly changing research and innovation landscape and ever-increasing demands in our health service.

Delivery will therefore follow this timeline:

Phase 1: 2024-25	Phase 2: 2025-28	Phase 3: 2028-30
Development of a delivery plan and evaluation framework	Delivery of plan and capacity building	Continued delivery and evaluation of impact

## Aligning this work with HCRW strategies:

These recommendations have been carefully considered, not only to increase research and innovation impact within NHS Wales, but also to focus on building the necessary infrastructure to recognise these as core pillars of practice in the profession, with sustainability at the forefront.

Whilst aligning with HCRW's 'Making research careers work',<sup>12</sup> specific consideration is given here to healthcare science profession-led research. [Appendix 4](#) outlines the relationship between these in order to integrate and align delivery plans.

## Useful Contacts:

HCRW- [Healthandcareresearch@wales.nhs.uk](mailto:Healthandcareresearch@wales.nhs.uk)

HEIW Healthcare Science Programme- [HEIW.HCS@wales.nhs.uk](mailto:HEIW.HCS@wales.nhs.uk)

NIHR- <https://www.nihr.ac.uk/about-us/contact-us/contact-us.html>

### NHS Wales R&D contacts:

- ✦ Aneurin Bevan University Health Board (ABUHB) - [ABB.R&D@wales.nhs.uk](mailto:ABB.R&D@wales.nhs.uk)
- ✦ Betsi Cadwaladr University Health Board (BCUHB) - [BCU.Research&Development@wales.nhs.uk](mailto:BCU.Research&Development@wales.nhs.uk)
- ✦ Cardiff & Vale University Health Board (CVUHB) - [Research.Development@wales.nhs.uk](mailto:Research.Development@wales.nhs.uk)
- ✦ Cwm Taf Morgannwg University Health Board (CTMUHB) - [CTMUHB\\_RD@wales.nhs.uk](mailto:CTMUHB_RD@wales.nhs.uk)
- ✦ Hywel Dda University Health Board (HDUHB) - [HDd.Research-Development@wales.nhs.uk](mailto:HDd.Research-Development@wales.nhs.uk)
- ✦ Powys Teaching Health Board - [Bright.IdeasPowys@wales.nhs.uk](mailto:Bright.IdeasPowys@wales.nhs.uk)
- ✦ Public Health Wales NHS Trust - [PHW.Research@wales.nhs.uk](mailto:PHW.Research@wales.nhs.uk)
- ✦ Swansea Bay University Health Board (SBUHB) - [SBU.RANDD@wales.nhs.uk](mailto:SBU.RANDD@wales.nhs.uk)
- ✦ Velindre University NHS Trust - [Velindre.R&DOffice@wales.nhs.uk](mailto:Velindre.R&DOffice@wales.nhs.uk) and Welsh Blood Service - [WBS.Research@wales.nhs.uk](mailto:WBS.Research@wales.nhs.uk)
- ✦ Welsh Ambulance Service NHS Trust - [AMB\\_Research.Development@wales.nhs.uk](mailto:AMB_Research.Development@wales.nhs.uk)

### Innovation support organisations in Wales:

- ✦ The Small Business Research Initiative (SBRI) - [sbri.coe@wales.nhs.uk](mailto:sbri.coe@wales.nhs.uk)
- ✦ Health Technology Wales - [healthtechnology@wales.nhs.uk](mailto:healthtechnology@wales.nhs.uk)
- ✦ The Tritech Institute - [Tritech.HDD@wales.nhs.uk](mailto:Tritech.HDD@wales.nhs.uk)
- ✦ CEDAR - [uhw.CEDAR@wales.nhs.uk](mailto:uhw.CEDAR@wales.nhs.uk)
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- ✦ Life Science Hub Wales - [hello@lshubwales.com](mailto:hello@lshubwales.com)
- ✦ Tec Cymru - [teccymru@wales.nhs.uk](mailto:teccymru@wales.nhs.uk)
- ✦ MediWales - <https://mediwales.com/contact>

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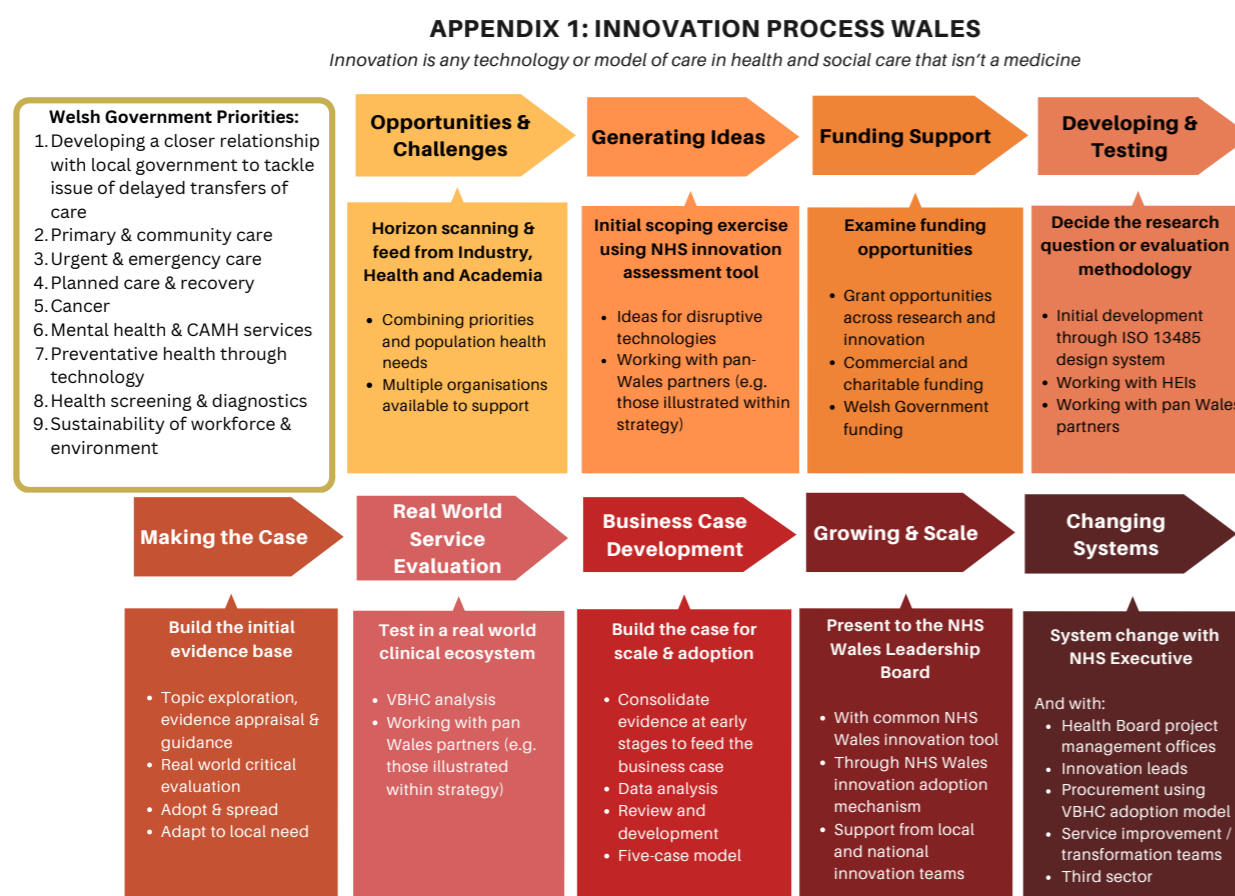
All online links accessed on 20 March 2025 to confirm accuracy before publication.

# Appendices

## Appendix 1: Innovation Process Wales

Illustrating the innovation process for non-medicinal technologies or models of care in Wales healthcare, from identification of an opportunity and/or challenge, through to adoption, spread and scale. Further content will be available through the NHS Wales Innovation Framework and associated materials.

Diagram featured in Research & Innovation for Healthcare Science Professionals in NHS Wales (2025)



Available at: [heiw.nhs.wales/files/appendix-1-innovation-process-wales](https://heiw.nhs.wales/files/appendix-1-innovation-process-wales)

## Appendix 2: Opportunities for NHS Wales Healthcare Science Professionals at Advanced Practice level

Note that this list is not exhaustive of all available opportunities and that there are further funding streams and opportunities once individuals are successful funding holders or post-doctoral level.

### HEIW

- ☞ Funding available for training and education (e.g., MSc/MRes) via the Advanced Practitioner development or healthcare science professional registration funding streams.
- ☞ The multi-professional Welsh Clinical Leadership Training Fellowship can include undertaking research and innovation along with leadership development.
- ☞ Healthcare Science fellowships – such as the Innovation Fellowship with mentoring, bursary and access to Devices for Dignity education platform for a one year project.

### R&D Departments

- ☞ Local support and advice on research careers, design analysis, bid writing, etc.
- ☞ May offer free face to face or online training e.g., PI workshops.

### HCRW

- ☞ Emerging Researcher Scheme – 0.4 Whole Time Equivalent (WTE) salary for 2 years and £5000 grant for research for applicants from NHS Wales and Social Care Wales.
- ☞ Research Training Award – 0.2 WTE salary and tuition fees for M-level degrees relevant to research. Available full or part time for applicants within NHS Wales and Social Care Wales social care or independent health and social care sector in Wales.
- ☞ Free face to face or online training e.g., PI workshops, GCP.
- ☞ Cross-funder awards e.g., Partnership award with the Stroke Association.

### NIHR

- ☞ Health Technology Assessment (HTA), Health & Social Care Delivery Research (HSDR), Public Health Research (PHR) and Efficacy and Mechanism Evaluation (EME) are NIHR programmes open to Wales, specifically aimed at meeting NICE guidelines
- ☞ The NIHR Invention for Innovation (i4i) programme - funding available up to £150,000 for translational research on medical devices, in vitro diagnostics, digital health technologies. Programmes vary on stage of innovation process and range from 3-36 months.
- ☞ Free online e-learning and supportive resources.
- ☞ Associate PI scheme to help support researchers to lead projects.

## The Bevan Commission

- Bevan Fellows – Networking and support with local practice innovation.
- Planned Care Innovation Programme – Support for larger scale innovative change to providing value-based healthcare including implementing new roles.

## Dragon's Heart Institute

- Climb Programme – 10-month training programme in innovative leadership.
- Spread and Scale Academy – 3-day intensive team training course on refining innovative improvement and scaling up change.

## HEI's

- Various MRes, MCs/MA by research, PhDs.
- Courses such as the Value-based Health and Care Executive Education short course.
- Support from academics/clinically active researchers.

## SBRI (Small Business Research Initiative)

- Funding available for research and innovation solutions to unmet needs within healthcare.
- Training also available in project management e.g. PRICE 2 and Agile.
- Workshops and drop-in clinics for support with innovation projects.
- Actively support with funding (and guidance with funding applications), project management, mentoring, signposting and training.
- Hosted by BCUHB, funded by Welsh Government.

## The Tritech Institute

- Advice and support available with research and innovation grant funding submissions, study sponsorship, research study design and more.
- Service 1: Research – organisations commissioning clinical investigations and trials to ensure the effectiveness and safety of their innovations, with technology studies designed as part of the regulatory approval process.
- Service 2: Real World Evaluation – organisations commissioning evaluative research to understand the wider impact of their health and well-being innovations; clinical pathway models, Med-Tech, Digital/AI and services, as part of routine care. Such evaluative research provides the opportunity to assess service and staff user experiences including patient reported outcomes, health economic analysis, usability design and service impact.
- Service 3: Advice – organisations commissioning very specific advice. This might relate to securing regulatory approval of a new technology or advice on how to conduct pilot studies, clinical trials, clinical investigations or initial testing of an innovation.

## CEDAR

- Focuses on research and evaluation of technology and diagnostics, with expertise in:
  - Clinical Trial Management and Qualitative Research,
  - Evidence Synthesis and Reviews,
  - Data Analysis and Evaluation (including for Value in Health),
  - Health Economics,
  - Service Evaluation and Patient Reported Outcome Measures (PROMS).

## MAUMSS

- Facilities and expertise in laboratory sciences and many clinical specialties.
- Designed to encourage and support research within the health board:
  - Encouraging staff within the region to undertake research activities.
  - Encouraging proof of concept and feasibility research to lead to HCRW studies.
  - Working closely with local and regional BCUHB Research & Innovation Groups.

## Life Sciences Hub

- Grant funding application support includes connecting with suitable partners, identifying investment opportunities, signposting to funding schemes and supporting bid development.
- Support and advice can be requested via the Innovation Enquiry Form on their website.

## Improvement Cymru

- National academy with online and in person training on quality improvement for all levels.
- Toolkit guides on QI, including spread and scale, to support individuals to lead projects.
- Local support within in each health board and trust to enable application in priority areas.

## Innovate UK

- A variety of different types of funding available including fellowships such as the Future Leaders Fellowship – for early career researchers and innovators looking to transition to independence and develop plans within a commercial setting.
- Funds 80% of economic costs for up to 4 years, including salary support.

## The Health Foundation

- Funding for training and fellowship awards, including the Generation Q programme, where fellows can obtain a PgCert in Leadership (Quality improvement), with the option to go on and complete the MSc over 2 years (travel and accommodation costs included).
- Online guides, toolkits, and webinars on improvement, research, leadership and more.

## Appendix 3: Case Studies

### Research into Practice:

The All Wales Medical Genomics Service is a key example demonstrating award-winning, pioneering research and innovation with their QuicDNA project, pioneering a quicker, less invasive approach to diagnosing lung cancer.

Collaborating with Health Boards, HCRW and LSHB, in addition to forming industry partnerships with Illumina, Amgen, Bayer and more.

This work showcases our potential to maximise on opportunities and develop cutting-edge technologies, epitomising how Healthcare Science can lead the way to achieving a healthier Wales through research and innovation.



### Healthcare Science in academia:

Dr Emma Rees is Associate Professor of Healthcare Science (Swansea University) and Clinical Scientist (Swansea Bay University Health Board). Emma is considered a pioneer in her profession, forging a new career path as a leader of clinical research.

After several years of clinical experience, Emma took a role at Swansea University which allowed her to pursue clinical and academic work. Since completing her PhD at the Wales Heart Research Institute, Emma has developed a portfolio of funded research and innovation which explores how point-of-care ultrasound can improve patient pathways and outcomes.

Her work is built on close engagement with stakeholders, from patients to policy makers. Emma has also built a dedicated echocardiography lab in the university's Health and Wellbeing Academy. The lab supports NHS services, clinical trials, and education for healthcare professionals. Emma is a strong advocate for clinical academic roles and is passionate about mentoring others to lead high quality research that benefits patients and healthcare systems.

### Clinical Researcher Roles:

Dr Jenna Tugwell-Allsup is one of two research radiographers based at BCUHB, a role fairly unique in Wales.

Jenna leads her own research projects, facilitates and mentors research of others and plays an important role both locally as chair of R&D meetings, audit and quality improvement lead and honorary lecturer at Bangor University, and nationally as a member of the Society of Radiographers Research Advisory Group, the International Advisory Board for Radiography Journal and the Healthcare Science Research and Innovation Group.



Jenna's role provides a bridge between research and clinical practice, key to encouraging and supporting research across the radiography professional and inter-professionally, whilst also providing the necessary dedicated time to undertake research underpinning clinical practice, with her research activity and projects in last 2 years surrounding artificial intelligence local validation.



### Leading and supporting innovative healthcare solutions:

TriTech Institute is a venture by Hywel Dda University Health Board offering specific services in innovative healthcare solutions comprising of industry-leading engineers, scientists, pharmacists, nurses and medics. Led by Professor Chris Hopkins, Consultant Clinical Scientist, the TriTech Institute offers a single point of access to NHS and academic experts, a regional testbed, and an agile and efficient approach.

The TriTech Institute's mission is to research, develop and evaluate health and well-being innovations on a local, national, and global scale. The TriTech Institute offers a single point of access to Health & Social Care in Wales with academic experts, a regional clinical NHS testbed, and an agile and efficient approach.

Collaborating with the life science sector and various Higher Education Institutions (HEIs) across Wales and the UK, the team of clinical scientists, researchers, engineers, data scientists, nurses, pharmacists and doctors conducts research and real-world evaluations on healthcare innovations. The team is composed of individuals holding dual NHS/HEI honorary contracts and encompasses a variety of backgrounds including NHS, HEI and industry.

### Negotiating for research and workforce capacity:

The Neurophysiology service at Cardiff & Vale University Health Board have transformed a collaborative research opportunity into a forward thinking, capacity building venture. To enable continuation of important research, they successfully secured funding from partner services in Ophthalmology and Intensive Care for new equipment and additional staff, thus also helping to address wider issues of workforce capacity.

Demonstrating entrepreneurial skill and a dedication to service transformation, their collaborative research work with other services has strengthened cross-specialty relationships and raised the profile of this essential service.

## Leading the way in innovative research:

Chloe George is an accomplished Consultant Clinical Scientist and Head of Component Development at the Welsh Blood Service. She has been instrumental in driving research in blood transfusion, with a focus on cold-stored platelets. Chloe secured funding to establish a research facility that now supports multiple scientists, contributing to translational research that directly impacts patient care.



Her work includes leading innovative research projects, publishing peer-reviewed studies, and collaborating internationally. Chloe was recognised as Healthcare Scientist of the Year in the 2022 Advancing Healthcare Awards for her ground-breaking work in platelet storage, improving transfusion outcomes, and advancing healthcare practices. Through her leadership, Chloe continues to mentor trainees, promote the role of scientists in the NHS, and contribute to the future of transfusion medicine.



## Demonstrating patient-centred innovation:

Dr Jonathan Howard is a rehabilitation engineer in Swansea Bay University Health Board who was awarded a pilot associate innovation fellowship, funded by HEIW, providing access to Devices for Dignity (D4D) online training platform and events.

His work focuses on the co-design and creation of simple but effective, bespoke products that aid individuals with upper limb limitations to perform everyday tasks that many of us take for granted.

This ingenuity and forward thinking continues to positively impact the lives of his patients and has recently won him a full Healthcare Science Innovation Fellowship with HEIW and D4D to extend this work towards a system to share patient needs and associated innovations.

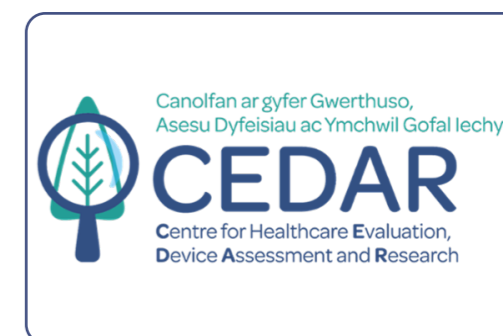
## Workforce solutions and research:

Dr Chris Earing, Respiratory Physiologist provides a prime example of how research can provide a potential solution to workforce issues. Whilst undertaking his doctorate as a Sport Science fellow at Bangor University, Chris investigated the ventilatory response to hypercapnia in scuba divers and obstructive sleep apnoea in patients. This led to developing practical skills within a multi-disciplinary clinical team at Betsi Cadwaladr University Health Board and the decision to become a healthcare scientist. Chris continued his keen interest, promoting a research culture within his department and supporting another PhD student who also became a practicing physiologist.

In addition to this, Chris also chaired the Clinical Physiology Welsh Scientific Advisory Sub-Committee, helping to network physiologists across Wales, and has been appointed as senior lecturer in Nursing and Allied Health at Wrexham University.

## Combining research and clinical practice:

Dr Michal Pruski is a senior Clinical Scientist with a dual role in patient-facing clinical practice and as a researcher in the Centre for Healthcare Evaluation, Device Assessment and Research (CEDAR), both located in the Medical Physics and Clinical Engineering department at the University Hospital of Wales.



Work within CEDAR has played an instrumental role in changing and improving local and national services. When working on projects relating to his clinical experience, Michal is able to use his clinical knowledge to scrutinise the evidence to a greater degree, ensuring the final product of work is robust and of high quality. His role in CEDAR on projects outside his speciality have provided valuable insight to how broader healthcare services function and has helped develop an understanding of economic evaluation across the NHS.

Michal shares the benefits of this dual role: "The research process also allowed me to expand my knowledge of the field, and the resulting reports provided me with objective evidence of my experience, which helped to shield myself against imposter syndrome." The knowledge and transferable skills in research and evaluation work gained within both roles enabled Michal to develop his leadership skills, contributing to his Higher Specialist Scientist Training as well to his ability to support trainees undertaking audit, quality improvement or research projects.



## Collaborating with industry:

Francesca Lewis, Radiotherapist and Metastatic spinal cord compression coordinator for South Wales Spinal Network, was awarded RCBC First into Research fellowship in 2023. After being inspired by a talk from Toyota at an Improvement Cymru conference, Fran was able to immerse herself in the car maker's innovative culture by spending 3 days at the Toyota factory in Deeside, North Wales, organised by Improvement Cymru and hosted by Toyota.

Building a relationship with Toyota, Fran then decided to start her journey in research, exploring how NHS services within Wales can learn from Toyota's successful Kaizen culture, adopting a culture of constant improvement, with an environment that supports innovation. Since starting this work with the Spinal Network, Fran plans to continue her research and her partnership with Toyota. Fran provides a prime example of how strengthening our relationships with industry can pave the way for new learning and new solutions to futureproofing our NHS.

## Networks of research:

The Welsh Audiology Research Network (WARN) brings together interested and established researchers across all career levels within Audiology. The network has developed its own research strategy for Wales and hosts an annual meeting for Audiology researchers across Wales to present and share their work. This work establishes strengthen collaboration across Health Boards and provides early, aspiring researchers with visible, accessible role models and mentors.



### Senior roles in supporting research:

Professor John Geen is a Consultant Clinical Biochemist and the Assistant Director for R&D at Cwm Taf Morgannwg University Health Board. John has Visiting and Honorary Professorships at the University of South Wales (in Clinical Science) and Cardiff Metropolitan University (in Clinical Biochemistry).

Professor Geen has been instrumental in raising the profile of Healthcare Science and providing the necessary voice for our workforce at key strategic meetings, helping shape policy on research with HCRW and Welsh Government. John provides a key example of how healthcare science professionals can thrive in senior research roles, helping to steer the necessary strategic changes to increase research awareness, opportunities and capacity.

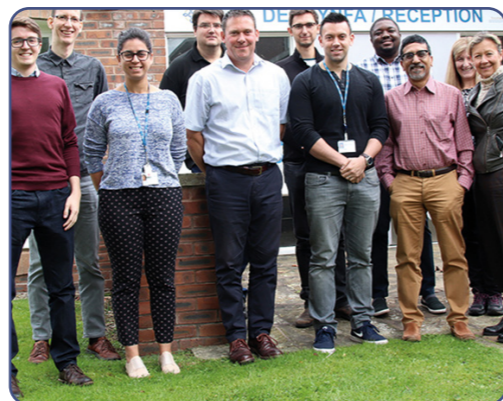
John, as a strong advocate of clinical research and healthcare science, continues to highlight the important role of healthcare science professionals in research, as primary researchers and research leaders, and through our contribution to the research of others. He is a pillar of support for early researchers from all professions and continues to bridge between clinical services, R&D, academia and Welsh Government.

### Research facilities on hospital site:

The Maelor Academic Unit of Medical & Surgical Sciences (MAUMSS) is a novel initiative by the Betsi Cadwaladr University Health Board, designed to encourage and support research within the Health Board and to promote healthcare research across North Wales and beyond.

Professor Stephen Fôn Hughes is a Consultant Biomedical Scientist and co-director of MAUMSS. As a Professor of Biomedical Science with Wrexham Glyndwr and Staffordshire Universities, scientific advisor for the British Urology Researchers in Surgical Training (BURST), and regional champion for the Wales Cancer Research Centre, Stephen leads research across many different healthcare disciplines. He also has a passion for promoting continuous professional development and lifelong learning, supervising postgraduate students for MSc, MRes and PhD studies, as well as being specialist portfolio assessor for the Institute of Biomedical Science (IBMS).

MAUMSS, located in Wrexham, has several laboratories containing state-of-the-art molecular, analytical and diagnostic equipment, along with meeting rooms and hot-desk facilities. Staffed by an interdisciplinary team of healthcare scientists, medical professionals, academics and postgraduate students, there are many opportunities to get involved or gain support with research.



## Appendix 4: Relationship to HCRW recommendations<sup>8</sup>

HCRW Recommendations	How these relate to the Healthcare Science R&I Strategy actions
<b>Strategy, funding &amp; leadership</b>	
1. Develop a clear, structured, visible research career pathway for all health and social care disciplines, across all sectors and at all stages of careers.	<ul style="list-style-type: none"> <li>❖ Use of this strategy as a resource within our Healthcare Science profession: adopting terminology, using career stage skills and activities in personal development reviews, making use of facilitators, and sharing case studies.</li> <li>❖ Use of this strategy as a resource by other NHS professions and wider stakeholders: engaging with our profession, promoting healthcare science clinical academics/ researchers, and engaging in collaboration.</li> </ul>
2. Invest more funding in research careers, to fill identified funding gaps in Wales, whilst quantifying the scale of disparity of funding opportunities for researchers across the UK, to enable the levelling up of investment.	<ul style="list-style-type: none"> <li>❖ Engaging in discussions around potential inequities with funders and enablers of research to establish underlying causes, raising awareness, and playing an active role in suitable, sustainable solutions.</li> <li>❖ Creating healthcare science specific research and innovation grant opportunities, available to all specialties within our profession.</li> </ul>
3. Review, assess and address the need for research capacity building and research career pathways in social care research in Wales, while addressing the disparity of opportunity between health and social care research.	<ul style="list-style-type: none"> <li>❖ Creating, continuing, and monitoring carefully considered development opportunities specific to healthcare science, to acquire skills and gain knowledge that can help inform innovative change.</li> </ul>
4. HCRW to develop a joint strategy and implementation plan... for enhancing research careers in Wales which is overseen by an implementation group, including a vision for developing research capacity and capability among health and social care professionals.	<ul style="list-style-type: none"> <li>❖ Introducing requirements to have Healthcare Science representation on government-run research funding panels and in forums/ strategic groups for which our roles play a vital part.</li> <li>❖ Having active healthcare science representation at the HCRW Communications Alliance.</li> </ul>

HCRW Recommendations	How these relate to the Healthcare Science R&I Strategy actions
<b>Strategy, funding &amp; leadership</b>	
5. HCRW, Health Education and Improvement Wales and Social Care Wales should work together to support the enhancement of research careers through a collaborative leadership approach.	<ul style="list-style-type: none"> <li>❑ Collaborating across health boards, trusts and specialties to defragment the current landscape and align our existing resources against grant challenges.</li> <li>❑ Working together and with academia to form an organised, well-connected community of researchers and innovators for all career levels, focusing on shared interests and encouraging collaboration and the sharing of experiences, ideas, and advice.</li> </ul>
6. HCRW should invest in a high-level leadership role to lead this area of work, raising the profile of research careers, co-ordinating national developments, Wales wide collaborations with key partners and facilitating UK wide collaboration.	<ul style="list-style-type: none"> <li>❑ Providers of funding, training and research careers directly engaging with NHS healthcare science services, professional bodies and HEIs to raise awareness of opportunities in both the current and future healthcare science workforce.</li> <li>❑ HCRW and HEIW ensuring that online platforms effectively signpost funding, training and support opportunities in research and innovation of specific relevance to healthcare science and share quality research outputs.</li> </ul>
7. Continue to collaborate with UK wide funding partners, including government funding partners, research councils and charities to ensure training and development opportunities for Welsh researchers, enabling cross funder investment where appropriate.	<ul style="list-style-type: none"> <li>❑ Healthcare science services establishing and nurturing commercial partnerships which can help provide semi-predictable capital that can sustainably facilitate research and innovation and help tackle workforce issues.</li> </ul>

HCRW Recommendations	How these relate to the Healthcare Science R&I Strategy actions
<b>Infrastructure</b>	
8. Create an all Wales service to provide a package of support, guidance and training for health and social care researchers in developing their research careers for example through an integrated HCRW Faculty.	<ul style="list-style-type: none"> <li>❑ Strengthening our links with enabling organisations and working together to co-create mentorship and training schemes inclusive of and targeted at healthcare science professionals</li> </ul>
9. Review the research mentorship schemes across Wales, with a view to enhancing the provision of mentorship schemes for researchers and developing a standardised framework as part of a unified all-Wales approach.	<ul style="list-style-type: none"> <li>❑ Ensuring mentorship schemes follow a pan-Wales, uniform approach, avoiding unnecessary duplication and inequities across professions.</li> <li>❑ Monitoring the impact of training and mentorship schemes, to further identify barriers within the research and innovation career pathways and prioritise focus areas of improvement.</li> </ul>
10. Enable co-ordination of support for research careers across Wales, as well as enhanced collaboration amongst key stakeholders and infrastructure groups, to facilitate the development of research careers through a shared responsibility.	<ul style="list-style-type: none"> <li>❑ Implementing a clear relationship between profession leads (EDAHPHS), professional networks (e.g. NHS Executive, professional bodies) and strategic advisory groups (WSAC) to set priorities, agendas and align resources through peer groups and executive teams in a more 'one Wales' approach.</li> <li>❑ Advocating for more leadership roles for healthcare science professionals (e.g. Clinical Director of healthcare science, Professional Lead of Radiography) that can provide a voice for ongoing needs of professions, including those mentioned.</li> </ul>

HCRW Recommendations	How these relate to the Healthcare Science R&I Strategy actions
<b>Culture and ecosystem</b>	
11. Work with professional bodies and UK wide partners to consider opportunities for integrating research into professional training from an early stage.	<ul style="list-style-type: none"> <li>Working with National School for Healthcare Science, academia, Academy for Healthcare Science and professional bodies to explore ways of enhancing the innovation arm of training curricular and equivalence portfolio criteria.</li> </ul>
12. Explore mechanisms for supporting NHS organisations and local authorities to embed research into their strategies for staff recruitment and retention, and workforce development planning, enabling the development of a nurturing research environment for health and social care professionals.	<ul style="list-style-type: none"> <li>The whole healthcare science profession engaging in widescale dissemination and promotion of this strategy.</li> <li>All managers encouraging and supporting our healthcare science workforce in the continuation of research and innovation beyond competency milestones.</li> <li>NHS R&amp;D departments and innovation forums directly working with healthcare science services to improve relationships, build understanding, and raise the profile of our profession and of the invaluable support available.</li> <li>Workforce Planning leads in health boards and trusts recognising and factoring in research activity within IMTPs and workforce planning.</li> </ul>
13. Support NHS organisations and local authorities to invest in support for research careers, investing in researcher development, protected time for their researchers, research leadership posts and exploring clinical/ practice academic posts.	<ul style="list-style-type: none"> <li>EDAHPHS spearheading the implementation of flexible, bespoke job plans for the healthcare science profession, ensuring ringfenced time for research and innovation.</li> <li>Working with NHS Wales Library Service, local Health Boards and Trusts to facilitate access to relevant journals for all healthcare science professionals.</li> <li>Health Boards/Trusts and HEIs creating clinical researcher/academic roles within each profession, providing clear roles of leadership in research and clear links between services and local R&amp;D departments.</li> </ul>
14. Work with universities to identify gaps in academic leadership, opportunities for joint clinical/ practice academic posts and explore solutions to enable longer term, secure employment opportunities for researchers.	<ul style="list-style-type: none"> <li>Reviewing in more detail the current landscape for clinical academics within healthcare science to help inform delivery plans and to help strengthen our relationship with academia.</li> </ul>

HCRW Recommendations	How these relate to the Healthcare Science R&I Strategy actions
<b>Communications &amp; engagement</b>	
15. Develop a unique selling point for research careers in Wales as a vehicle to attract and retain researchers, for example, focussing on a nurturing environment for researchers.	<ul style="list-style-type: none"> <li>Enabling open access publishing for research that showcases healthcare science professionals in Wales are leading the way in innovating thinking and transformational change.</li> </ul>
16. Develop a programme of work to raise awareness and the profile of research amongst health and social care professionals, their employing organisations and the regulators, promoting research careers in Wales, particularly in underdeveloped areas.	<ul style="list-style-type: none"> <li>Raising awareness of current key opportunities to disseminate work and engage in awards and cross-speciality conferences both locally and nationally.</li> <li>Actively engaging in forums and multi-disciplinary teams to demonstrate our ability to contribute and lead in research and innovation work.</li> </ul>
17. Develop plans to monitor equality, diversity and inclusion data amongst the researcher population, publishing data reports and action plans to help facilitate the equal representation of all groups in the Welsh researcher population.	<ul style="list-style-type: none"> <li>Establishing and facilitating the automatic, mandatory capture of profession-specific research activity so that we can more accurately record Healthcare Science research involvement.</li> <li>Embedding EDI into our research culture, with engaged effort to include under-represented groups within PPI throughout the research process and support the use of Welsh language.</li> <li>Continuing to undertake research that addresses healthcare inequalities and encourages diversity within our workforce.</li> </ul>