



# The importance of research to NHS Wales

**This briefing provides an overview of the investment and work being undertaken across the NHS in the area of research and highlights some of the initiatives that are happening across Local Health Boards and NHS Trusts in Wales.**

## Key Points

The provision of world-leading health and social care research is a vital component of NHS activity. Our vision is for Wales to be recognised as a world leader in this area, not only for its excellent standards of scientific research, but also its ability to transform research outputs into policy and practice. We hope to develop a thriving research community that brings together the world's leading scientists and academics, but also a broader research sector that involves stakeholders and the public, to develop and introduce new models of care and initiatives that improve patient outcomes and experience.

Undertaking high quality research is a vital component of the daily activities of NHS Wales. Research is of critical importance to the commissioning and delivery of services because it establishes the evidence base required to develop existing treatment options for patients and establish innovative models of care.

Furthermore, research is about reviewing existing working practices and highlighting opportunities for more efficient and more collaborative working. It is by investing

in these areas that the NHS can provide the most effective treatment options for patients, share knowledge and understanding of conditions and treatment plans, streamline NHS resources to where they will have the greatest impact and improve the general health and well-being of the population of Wales.

As well as research that leads to new treatment options and scientific breakthroughs, NHS Wales must also seek to develop its research in the areas of ill health prevention; informing the public about the wider determinants of health and well-being; and the importance of adopting a 'health in all policies' approach to population health management.

Using resources in an efficient and cost effective manner is a priority for NHS Wales and allows us to develop the current research landscape. Recent developments are promising, but Brexit could pose a challenge for collaborative research in the medium to long term. This must be considered if Wales is to maintain the excellent standards of research in the future.

# What do we know about research in Wales?

## 1. Funding

The Welsh Government invests around £43 million each year in health and social care research in Wales. We need to ensure that expenditure is delivering the greatest value for the health and care system and the Welsh economy as a whole. This requires us to recognise the importance of research within NHS Wales and invest in projects that deliver services to meet our current and future patient needs, while simultaneously allowing domestic businesses to grow.

The Welsh Government, Local Health Boards and NHS Trusts have made significant progress in advancing, promoting and supporting effective research projects in recent years. Below are some examples of such initiatives and programmes:

### a. Health and Care Research Wales

Health and Care Research Wales is a national organisation comprising several distinct elements of infrastructure and funding schemes. It is funded and overseen by the Welsh Government Research and Development Division and provides an infrastructure to support and increase capacity in research. Health and Care Research Wales also delivers a range of responsive funding schemes and manages resources to promote, support and deliver research with a particular focus on public health research. This includes research into: the prevention, detection and diagnosis of disease; the development and evaluation of interventions; the provision of health and social care services; and the implementation of research findings into practice.

### b. Horizon 2020

Horizon 2020 is the biggest EU Research and Innovation programme and aims to fund research

initiatives based around three core ideas – excellent science; industrial leadership; and research to tackle societal challenges.

Since its launch, Welsh organisations have secured just over €76m of Horizon 2020 funding. This has involved 162 participations, over 1,600 international collaborations and has helped Welsh organisations take part in ground-breaking research projects to make innovative and scientific breakthroughs.

Horizon 2020 also plays a crucial role in creating world leading collaborations and potential solutions to problems, ranging from new treatments for diseases such as cancer, dementia and diabetes, to stimulating novel commercial developments addressing climate change and global communication.

To help Welsh organisations access funding from the competitive Horizon 2020 programme, the Welsh Government has established the SCoRE Cymru fund to support bid-writing and travel costs. This includes travel costs associated with meeting potential or existing partners and attending key events (up to £1,000 per journey) and proposal development costs, including bid writing, specific legal/technical advice or impact/market research (up to £10,000).

### c. Science for Wales

Science for Wales is a 60-page document that sets out a five year strategy for research in Wales. The plan is to support the Welsh economy by creating research jobs and businesses and place Universities at the heart of a drive to build a strong and dynamic science base.

At the heart of the Science for Wales agenda is Sêr Cymru ('Stars Wales'), which is funded by £50 million from Welsh Government, plus Universities matching funds over five years. Sêr Cymru aims to boost Welsh science by bringing a few internationally recognised researchers to Welsh Universities. Life sciences and health is cited specifically as one of the three key challenges when it comes to specific research topics under the programme.

## 2. Research through collaboration

There are a number of collaborative research projects and initiatives taking place across Wales.

**a. The Welsh Government, through Health and Care Research Wales, is part of the UK Prevention Research Partnership (UKPRP).** The UKPRP engages a wide range of academic disciplines and builds multi-disciplinary networks of researchers on prevention and co-develops research programmes with policymakers, providers and professionals to translate policy into practice. The ambition is to invest between £40 - £50 million over the next 6-7 years in research programmes that deliver the most impactful outcomes.

**b. The Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement** brings together experts from a range of disciplines to tackle specific public health policy issues such as diet, nutrition and increasing physical activity levels, particularly among children and young people. The Welsh Government made an initial investment of £850,000 to the Centre and received a research grant of £5 million in return.

**c. The UK Farr Institute** is funded by a consortium of UK Government and charity funders, led by the Medical Research Council. Building on the internationally recognised expertise of the SAIL (Secure Anonymised Information Linkage) Databank, Swansea University has been recognised as one of four centres of excellence within the UK Farr Institute. The centre won funding of £4.3m in 2014 and undertakes both observational and interventional research across all disease areas with an emphasis on methodological innovation and development in e-records. In 2017, the Farr Institute consortium was re-formed as Health Data Research UK, and the SAIL Databank is well positioned to be a leading contributor to this endeavour.

**d. The National Centre for Population Health and Well-being Research (NCPHWR):** Public Health Wales NHS Trust (PHW) aims to co-

ordinate multi-institutional, multi-disciplinary, multi-agency health and social care research, collaboration with policy and practitioners, and public involvement across Wales. PHW is leading on knowledge transfer and will facilitate NCPHWR to work with Public Health Network Cymru to support engagement and collaboration with practitioners in PHW, local health teams, Health Boards, Local Authorities, third sector organisations and other key stakeholders.

**e. A Regional Collaboration for Health (ARCH)** is a unique collaboration between Swansea University, Abertawe Bro Morgannwg University Health Board (UHB) and Hywel Dda UHB to transform the NHS in South West Wales and develop the next generation of doctors, nurses, health workers, scientists, innovators and leaders. ARCH also seeks to boost the local economy by encouraging investment and creating new jobs.

ARCH is grounded in the belief that it is by strategically integrating and regionally planning the approach to health service development and research in the health and life science sector that they will deliver improved health and well-being outcomes for the people of Wales and maximise the benefits of such initiatives. It is by recognising that planning collaboratively across a specific geographical region will amplify the advantages and provide solutions to the significant challenges that the region, and indeed Wales, faces.

**f. International Consortium for Health Outcomes Measurement (ICHOM):** The primary objective of ICHOM is to transform health and care systems worldwide by measuring and reporting patient outcomes in a standardised way. ICHOM was founded in 2012 and brings together working groups, organised around the medical condition, consisting of patients, health professionals, researchers, outcome measurement experts and policy makers from across the world. Working groups follow a structured series of teleconferences, facilitated by ICHOM, with each teleconference covering a set topic, followed by a survey for working group members to complete. The end result is a globally agreed set of outcomes that reflects what matters most to patients. ICHOM aims to be used in both routine clinical practice as well as an endpoint in clinical studies.

## 3. Links to Universities

One of the most noteworthy opportunities we need to harness in Wales is the potential to work with the University sector (and beyond) to develop our research potential and drive an ecosystem of vibrant life sciences and health activity across Wales. It is of critical importance to the health and well-being of the population of Wales that health research, technology and innovation increases and expands, and that Health Boards and Trusts establish productive links with Universities to ensure that any pilots, programmes and initiatives are evaluated.

Already in Wales, Health Boards and Universities work collaboratively on a number of research projects. However it is vital that there is investment to ensure that the University sector can carry out robust, evidence based evaluations when Health Boards and Trusts introduce new initiatives and pilots within their area. It is through this increased evaluation of research projects and pilot studies that the research sector establishes the evidence base required to support service change, improve patient outcomes and enable local initiatives to be scaled up across Wales.

## 4. Brexit

### a. Workforce

The life sciences sector in Wales employs around 11,000 people based at more than 350 companies and delivers a turnover of circa £2bn per year. These include companies in the ground-breaking fields of medical technology – biopharmaceuticals, regenerative medicine, diagnostics, e-health and biotechnology.

Research is international and intrinsically collaborative. Scientific breakthroughs are not developed in isolation and the free movement of researchers, innovators and specialist technicians gives the UK a competitive advantage by opening up access to skills and international networks.

### b. EU collaborative research

Clinical research is a key component of NHS activity across the UK and the NHS has a long tradition of EU collaborative research. EU research funding programmes have acted as catalysts for this collaborative work, filling gaps in the research pipeline, and allowing researchers across Europe to gather forces to find responses to common challenges, both at clinical and operational levels, that confront health systems in Europe.

EU research grants have also been crucial for NHS Wales' ability to attract and retain some of the most renowned clinicians in the world, who often decide to work for the NHS due to its excellent reputation in leading EU collaborative research initiatives such as Horizon 2020. We would like to ensure that NHS Wales continues to participate in EU collaborative research programmes post-Brexit.

### c. The Brexit Health Alliance

The Welsh NHS Confederation is a member of the Brexit Health Alliance. The Alliance seeks to ensure that issues such as healthcare research and access to technologies and treatment of patients are given the prominence they need as the UK prepares to leave the EU.

The Alliance does not adopt a stance on the merits or otherwise of Brexit - the aim is simply to make sure that the UK, and consequently Wales, is in the strongest possible position by March 2019. To this effect, the Alliance advocates a negotiated implementation period that adequately reflects the time needed to achieve key outcomes, including the following, relating to research:

- Maximum levels of research and innovation collaboration with the EU, so that UK patients and the public can benefit from EU networks and clinical studies; and
- An immigration system that is straightforward and welcoming to researchers, innovators, and their families, at all career stages and from all over the world.

## Research projects across NHS Wales

The case studies below highlight the range of research projects provided by the NHS across Wales.

### **Rural Health and Care Wales - Hywel Dda UHB (HD UHB), Betsi Cadwaladr UHB (BC UHB), Powys Teaching Health Board (PT HB) and Welsh Ambulance Services NHS Trust (WAST)**

In January 2014, the Welsh Government commissioned the Welsh Institute for Health and Social Care to explore the options for the provision of high quality and sustainable healthcare in Mid Wales. In October 2014, the Mid Wales Healthcare Study, undertaken by Professor Marcus Longley, was published and made twelve recommendations. The twelfth and final recommendation was that the three Health Boards covering the Mid Wales area, Hywel Dda UHB, Betsi Cadwaladr UHB and Powys Teaching Health Board, working with the local Universities and other partners, should develop and support a "centre of excellence in rural healthcare". The recommendation for this centre was that it should focus on "research, development and dissemination of evidence in health service research that addresses the particular challenges of Mid Wales". The Centre for Excellence in Rural Health and Social Care (CfERH) was formally launched on 24th March 2016, later to be renamed "Rural Health and Care Wales" in March 2017.

The vision for Rural Health and Care Wales is to become a world-leading organisation in rural health and social care research, training, recruitment and best practice. The aims of the organisation are to: provide a focal point for the development and collation of high quality research pertinent to rural health and wellbeing; Improve the training, recruitment and retention of a professional workforce within rural communities; and be recognised as an exemplar in rural health and well-being on the international stage.

### **Clinical Research and Innovation Centre and EMBARC - Aneurin Bevan University Health Board (AB UHB)**

The Clinical Research and Innovation Centre is an example of the strategic investment by AB UHB which provides a focal point for researchers and delivery staff to participate in ground breaking research. Since the Centre opened in 2016, one of the most significant research studies to take place at the Centre has been the EMBARC project.

The EMBARC (European Multicentre Bronchiectasis Audit and Research Collaboration) network was established to facilitate multidisciplinary collaborative research in non-CF bronchiectasis. The aims of the EMBARC group are to create the EMBARC registry, a European bronchiectasis registry to facilitate research and quality improvement initiatives across healthcare systems; to build a network of researchers and clinical experts in bronchiectasis to guide future research and clinical priorities; to attract new researchers and clinicians to the field of bronchiectasis; and to support and encourage early career researchers in the field of bronchiectasis through involvement in network activities.

As well as providing world class research facilities, the Centre also allows patients within the locality to receive treatment closer to home and the local population to participate in clinical trials.

## **New blood-based biomarker research to improve diagnosis of colorectal cancer - Abertawe Bro Morgannwg UHB (ABM UHB)**

An accurate blood-based biomarker introduced early into the diagnostic pathway would be able to provide prompt reassurance for symptomatic patients in primary care and permit a more streamlined referral pathway into secondary care. ABM UHB's Department of Colorectal Surgery has undertaken a research project in collaboration with the Centre for NanoHealth and the Department of Physics at Swansea University to determine whether such a biomarker can be identified.

The project involved Raman spectroscopy – an established technology based on the spectroscopic analysis of inelastically scattered light for changes that reflect the molecular and structural composition of biological samples under investigation. The Health Board's study set out to establish whether unique Raman spectral signatures could be associated with defined stages of colorectal cancer. The first set of findings are currently being validated, and Swansea Trials Unit are involved in progressing towards a clinical trial of the biomarker in the diagnostic pathway.

## **Revolutionising Dementia Care Research – BC UHB**

On 20th June 2017, Alzheimer's Society UK announced that it had committed a £2 million research grant to a group of UK Universities, including Bangor University supported by BCUHB, as part of its biggest ever single investment in dementia care research.

The research grant will be invested over five years and will enable expert researchers to create a 'Centre of Excellence'. The Centre will focus on improving quality of life for people with dementia and increase the number of researchers working in dementia and associated disciplines. The Centre will also be supported by the Dementia Services Development Centre (DSDC), which is known internationally for its high quality research and for its development and evaluation of creative psychosocial interventions for people with dementia and their carers. The DSDC also collaborates with research networks within Bangor University, across Wales, UK nations and internationally and is a core part of the Bangor Institute of Health and Medical Research.

## **Clinical Innovation – Cardiff and Vale UHB (CV UHB)**

A partnership to turn innovative clinical research into cutting edge products and clinical services has been developed by CVUHB and Cardiff University. The agreement strengthens a commitment to deliver better patient healthcare and boost the economy in Wales. It aims to accelerate the translation of clinical innovation into improvements in health and clinical services. Based on a long-standing relationship, the agreement brings both organisations closer to work on a range of challenges such as tackling dementia, developing innovative products and services for better health outcomes, and improving diagnostics linked to precision medicine.

This innovative work builds on the existing Clinical Research Facility at the University Hospital of Wales, which was brought about by a successful Wellcome/Joint Infrastructure Fund bid. It provides a crucial facility for the translation of basic biomedical science developments into clinical practice, and a high quality clinical environment in which patients can undergo research programmes safely and effectively according to scientifically robust, ethically approved studies, including both clinical trials and other forms of clinical investigation. Supporting Welsh Government's initiative to develop the life science sector, the partnership aims to increase commercially exploitable intellectual property, stimulate wealth creation and establish Wales as a centre of excellence in clinical innovation.

## **Sepsis Boxes - Cwm Taf UHB (CT UHB)**

Potentially lifesaving toolkits to tackle sepsis, the life-threatening blood poisoning condition, were trialled at Prince Charles Hospital and Royal Glamorgan Hospital in CT UHB in April 2016. Cwm Taf Critical Care Outreach Teams (CCOTs) were selected by the Bevan Commission to be part of a trial of a 'disposable sepsis box'.

The single-use sepsis box contains, behind six numbered doors, the items required to perform the sepsis six care bundle. By doing so, it facilitates the administering of sepsis six care where it is needed, when it is needed and in the correct order. It ensures everything is to hand and quickly located and guides the clinician through the sepsis six pathway. When compared to the sepsis bags that have already contributed to improved treatment to sepsis, the single-use sepsis box has the additional benefits of easier stock management and improved infection control.

## **The Carewell Project - PT HB**

The Carewell project is a collaborative effort between six regions across Europe, including PT HB, the Apulia region in Italy and the Lower Silenia region in Poland. European partners supporting the scheme include the Institute of Rural Health and the Region of Southern Denmark.

The aim of Carewell is to research, propose, implement and validate integrated models of care for patients with multiple comorbidities that are cost-effective. Carewell's research is focused on two key areas: home-based patient care and methods of preventing patient hospitalisation; and improving communication channels between health and care professionals and patients. As well as promoting the use of research and technology in patient care, Carewell aims to provide effective and cost-efficient solutions to patient care, promote integrated care programmes in new geographical regions and provide the organisational tools and models that allow for the development and implementation of integrated health and care services.

## **PARAMEDIC-2 Trial - WAST**

The Welsh Ambulance Service has embarked on a trial to evaluate the safety and effectiveness of adrenaline in cardiac arrests. The PARAMEDIC-2 trial is being conducted to identify how best to treat people who have a cardiac arrest to ensure their best chance of surviving with good neurological outcomes.

Adrenaline has been used as part of the standard treatment of cardiac arrests for more than 60 years, but recent studies have questioned whether this treatment is safe or harmful. The PARAMEDIC-2 trial will look at whether adrenaline, which can be administered during resuscitation, influences a person's chance of long term survival. WAST is one of just five ambulance services in the UK to take part in the study, which is funded by the National Institute for Health Research's Health Technology Assessment programme and Health and Care Research Wales.

PARAMEDIC-2 has become the largest cardiac arrest drug trial in Europe. This is a great achievement that showcases the engagement with high quality research within the pre-hospital setting in Wales and is likely to be core evidence in defining future emergency advanced life support.

## **Novel phase 1 cancer trials - Velindre NHS Trust**

Velindre and AstraZeneca work collaboratively to analyse existing pre-clinical and clinical data involving AstraZeneca's drug pipeline. The research undertaken as part of this work is sponsored by pharmaceutical company Orion Pharma, which approached Velindre to manage Wales' first ever First In Human solid tumour study. After becoming the global leading recruiter for this study, Orion requested that Velindre become their only UK site for a follow up study, allocating a Cardiff Oncologist as UK Chief Investigator. Before such an infrastructure existed in Wales, patients and academics with an interest in the research were required to travel to Oxford or London to access them, which meant that Welsh Investigators were unable to design and implement Phase 1 trial protocols.

As a result of such a rapid expansion of their Phase 1 trial portfolio, Wales has elevated its national and international reputation in cancer research. Furthermore, Welsh patients have more convenient access to First In Human trials, which can offer opportunities beyond conventional NHS treatments. The drug used in the first Orion trial has now advanced to Phase 3 and is showing promise of becoming the new standard of care in prostate cancer. These trials are not a cost burden on NHS Wales – on the contrary, commercial income from the trials has exceeded staff costs, allowing reinvestment into other areas and new research projects.

## **Electronic Longitudinal Alcohol Study in Communities (ELASTiC) - Public Health Wales NHS Trust**

Recent collaborations of research studies where Public Health Wales has acted either as the Chief Investigator or Co-Investigator include the ELASTiC project.

The aims of the ELASTiC project are: to determine pathways into alcohol use and misuse and the life-course effects of alcohol misuse on health and well-being; to access existing longitudinal data and link with routine health and administrative data; to develop statistical methods and modelling techniques to analyse and interpret them; to understand the impact of varying definitions of alcohol use on outcomes; and to produce multi-disciplinary outputs which are relevant to academics, policy makers and practitioners that challenge harmful alcohol use in the UK and the world. The research project also includes a range of leading academics from Cardiff, Swansea and Bristol Universities.

## Parliamentary Review into Health and Social Care in Wales

The Welsh NHS Confederation welcomed the Parliamentary Review because it provides a significant opportunity to build consensus around the changes needed to address the long term challenges facing the health and social care system in Wales. In its written response to the Review, the Welsh NHS Confederation put forward the following asks in relation to health research in Wales:

- Welsh Government to work with the NHS to review existing digital strategy across health and care to agree clear national priorities and programmes to be implemented in a clear timeframe;
- Instilling a national focus on improving data quality across health and social care;
- Welsh Government encouraging life science companies to invest and locate in Wales;
- The maintenance of research funding, with greater focus on short to medium term value adding activity for health and social care; and
- Welsh Government working with the NHS to explore new strategic partnerships with life science companies.

## Conclusion

The undertaking of world-leading research projects is a critical component of NHS Wales in relation to employment, the economy and supporting the large scale service re-design required to bring about improved patient outcomes.

Research is of critical importance to the delivery of health and care services because it establishes the evidence base required to develop existing treatment options for patients and also new innovative support to improve patient experience and services.

### How can the Welsh NHS Confederation help you?

Please get in touch if you want further details on any of the issues raised in this briefing. Please contact Nesta Lloyd-Jones, Policy and Public Affairs Manager:

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The Welsh NHS Confederation is the only national membership body which represents all the organisations that make up the NHS in Wales: the seven Local Health Boards and three NHS Trusts.

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