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Optimising Academic Public Health Research in Wales

‘The whole becoming greater than the sum of the parts’

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Contents

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A steering group, with membership of the following people, provided overall guidance on the project, and advice on the design and interpretation of analyses.

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An expert panel comprising senior academics from across the UK also commented on the findings (Appendix 1), the authors are grateful for their time.

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Abbreviations

Academic Public Health Research	APHR
Chief Medical Officer	CMO
Development, Evaluation, Complexity and Implementation in Public Health Improvement Centre	DECIPHer
Health and Care Research Wales	HCRW
Health Determinants Research Collaborations	HDRC
Higher Education Institution	HEI
National Institute for Health and Care Research	NIHR
Public Health Wales	PHW
Research Excellence Framework	REF
Secure Anonymised Information Linkage Databank	SAIL Databank
Strengths, Weaknesses, Opportunities and Threats	SWOT
UK Health Research Analysis	UKHRA
Units of Assessment	UoA
University of South Wales	USW
Welsh Government	WG

Executive Summary

A robust Academic Public Health Research (APHR) environment in Wales is crucial for addressing population health challenges, advancing innovation, and supporting economic growth. Despite a rich history of public health research and a favourable policy environment, the APHR landscape in Wales faces challenges due to limited capacity, reduced funding, and a lack of a strategic approach across the system. Reversing this downward trend requires a multi-faceted, long-term strategy amid broader financial pressures across the research environment in Wales.

There is currently no coherent strategy for public health research in Wales, leading to fragmentation and inefficiencies. While Public Health Wales (PHW) is well-positioned to facilitate strategic developments, effective leadership must also involve Welsh Government (WG), the Chief Medical Officer (CMO), and collaborations with Higher Education Institutes (HEIs), the National Health Service (NHS), local authorities, and the third sector. A focus on Wales' unique strengths and priority areas will be crucial to ensure impact and sustainability.

This report has identified several opportunities for APHR in Wales:

- Strategic Coordination: A unified APHR strategy focused on Wales' unique strengths and aligned with population health priorities could enhance the ability to attract resource and increase the sustainability and impact of research programmes.
- Capacity Building: Expanding sustainable funding for research posts, fostering interdisciplinary collaboration, and leveraging WG and UK-level initiatives can bolster APHR infrastructure.
- Workforce Development: Investing in career pathways, joint posts, and training programmes for early-career researchers and other public health professionals is critical for future growth.

Recommendations and next steps

Develop a Vision and Strategy: PHW, in collaboration with all HEIs in Wales, should lead the development of a cohesive APHR strategy which defines core values, short- and long-term goals, and actionable steps. This should draw on Wales' AHPR assets and collaboration, to enhance research capacity, research funding success, and research impact.

Focus on Wales' Strategic Strengths: Identify priority areas for research that balance innovation with applied public health needs and foster collaboration between HEIs and other national and international stakeholders to maximise Wales' research potential.

Enhance Funding and Partnerships: Build stronger relationships with national and international funders to ensure funding streams address public health challenges in Wales, support increased investment in the Welsh APHR infrastructure, and encourage competitive grant applications by strengthening institutional capacity and collaboration.

Support the Next Generation of public health researchers: Develop a sustainable pipeline of public health researchers equipped to address future challenges. Create clear career pathways, improve research training, and promote secondments and joint posts between PHW, HEIs and other partners.

The APHR system in Wales has the potential to address pressing health challenges through high-quality, impactful research. The report underscores the need for a cohesive strategy, enhanced funding, stronger collaboration mechanisms, and focused development of career pathways to sustain and grow public health research capacity in Wales. It calls for key stakeholders to think differently and work together to maximise the strengths and assets of the system and develop the next generation of public health researchers. By fostering strategic coordination, enhancing capacity, and investing in public health career development, Wales can create a thriving APHR environment that benefits population health, policy, and the economy.

Optimising Academic Public Health Research in Wales

Introduction

A strong academic public health research (APHR) environment is fundamental to the effectiveness and sustainability of the public health research and delivery system in Wales, with better alignment between research and national priorities called for by the Reid Review[1]. In 2023, the Academy of Medical Sciences policy paper on 'Improving the health of the public through research'[2] called for investment in public health research, making best use of data and novel methods for research, using health evidence for all policies, and developing the next generation of public health researchers and practitioners. Within Welsh Government's long-term vision 'A Healthier Wales' (2019)[3], the importance of research in contributing to population health and well-being is highlighted by the need to "*pursue quality and value through co-ordinating our research, innovation and improvement activity*" in health and care. 'Saving and Improving Lives: The Future of UK Clinical Research Delivery' (2021)[4], also emphasises the "*need to ensure we focus our attention and our efforts on research which aims to address the most pressing population health needs*".

The Chief Medical Officer (CMO) for Wales, Health and Care Research Wales (HCRW) and Public Health Wales (PHW) identified APHR as a research area which was facing challenging times in Wales, but which has the potential to be sustained and strengthened for the benefit of the population. As a first step in this process, there was a need to understand the current APHR landscape through a review of the system in Wales. In the summer of 2023, PHW commissioned an external public health consultant to begin work to undertake a review of APHR in Wales to understand the research landscape, explore the strengths and weaknesses of research undertaken, understand opportunities and threats, and identify areas for development and investment as a public health research system. The review would act as a foundation to develop a co-produced strategy and vision for APHR in Wales. Prior to this work, a comprehensive account of relevant public health research activity underway did not exist, nor did a sense of the views of wider stakeholders about APHR. This report builds on two reports by Paranjothy and colleagues in 2019[5] which called for a shared agenda for research priorities between academia and the public health system, identified the need for a greater number of joint posts, secondment opportunities and pathways for developing careers in academic public health and funded PhD programmes for public health registrars[6 7].

Public health research has a distinguished history in Wales. The Cochrane Collaboration at Cardiff University is named in honour of Archie Cochrane, a pioneer of both cohort studies and randomised trials. Julian Tudor Hart, a GP working in Wales, first defined the 'inverse care law', to describe how people who most need healthcare are least likely to receive it. Wales has developed several important assets to support public health research, from data and science infrastructure to those within the NHS such as genomics and chronic and infectious disease surveillance programmes[8]. There is also a favourable policy context for public health research with WG's *Prosperity for all*[9] and *A Healthier Wales*[10] publications and the supportive policy context enshrined in the Well-being of Future Generations Act (Wales 2015)[11].

Methods and Analysis

To understand the current APHR landscape in Wales and to develop a comprehensive overview of the system in Wales, we:

- undertook desktop research to map the existing infrastructure, existence of units, departments and senior public health researchers involved in public health across all Higher Education Institutes (HEIs) in Wales;
- used two publicly available datasets - the UK Health Research Analysis (HRA) (2018 and 2022) and the Research Excellence Framework (REF) for 2021;
- conducted interviews with senior academics, public health policy and practice leads, and funders; and invited responses from all HEIs through an online 'Call for Evidence' survey;
- took a broad view of the definition of public health as a framework for analysis; these were the six long-term strategic priorities of PHW [12], the three domains of public health[13] and key words relevant to public health (Appendix 1).

Specific details on each of the sources of evidence are provided below.

UK Health Research Analysis Data from 2018 and 2022

To enable us to understand the scale and extent of public health research projects and funding into Welsh institutions, we undertook an analysis of the UKHRA databases for both 2018[14] and 2022[15] (pre- and post-COVID pandemic). Set up in 2004 by the UK Clinical Research Collaboration, the UKHRA[16] provides the most comprehensive overview of UK health research funding from all sectors, including the governments of the four nations of the UK, charities, societies, and professional bodies. There is no 'public health' category in the UKHRA datasets, so to analyse the data, we developed a broad sampling framework. We identified the HRA groups relevant to public health, selected the relevant research activity codes within these groups, and then sense checked these codes using the 2018 dataset project list. We mapped research activity codes to research activity groups, sense-checking using actual projects from the 2018 dataset. The analysis has certain caveats and assumptions, which are detailed in Appendix 2.

Research Excellence Framework 2021 Impact Case Studies

To provide us with an indication of research excellence, strength and impact of public health research activity in Wales (as perceived by HEIs), we analysed all 347 REF 2021 Impact Case Studies[17] submitted by HEIs by:

1. searching for key words associated with public health (Appendix 1).
2. mapping the results against PHW's six long-term strategic priorities and the three domains of public health.

Case studies submitted from the Open University (OU) were excluded, as the majority of the research is conducted by academics based in Milton Keynes and we could not discern which of those involved Wales-based researchers.

Qualitative data collection

An external consultant in public health (commissioned by PHW) conducted 18 semi-structured 1:1 interviews between August and October 2023. Thirteen of these were with senior representatives from all HEIs across Wales and 5 were with representatives from Welsh Health Boards, WG, PHW, Wales and UK-based research funders. The interviewees were each asked about their views on APHR in Wales, key strengths, weaknesses, opportunities and threats (SWOT) for the future.

To invite a broader response from academia, Welsh HEIs were also invited to submit evidence to PHW through an online 'Call for Evidence' survey conducted between August and October 2023. This survey asked respondents to describe their key public health research projects and publications, plans, aspirations, and constraints. We received 21 responses to this call, with all but one HEI in Wales responding. We analysed responses to understand the alignment of projects and publications to PHWs'; six long-term strategic objectives, as well as to identify research funders for those projects. Respondents' views on research strengths, achievements, impact on policy and practice, collaborations and plans were brought together with the interview data to corroborate findings.

Limitations

The above data has been taken together and triangulated to help us to capture strengths, weaknesses, threats and opportunities and to identify key areas for development. Interpretation of results was refined through a UK representative steering group, an external panel of senior UK academics and through the Knowledge, Research and Information Committee in PHW. We recognise the inherent limitations in the routine data available and a non-representative pool of interviewees and respondents to the Call for Evidence. It should be noted that the UKHRA only shows funding awarded to the lead partner, and therefore we were not able to include projects where Welsh HEIs were involved as a partner. Funding from the National Institute for Health and Care Research (NIHR) is considered for the purposes of UKHRA as within HCRW, which means in this analysis we cannot distinguish between NIHR and HCRW as distinct funding sources. Full details of the limitations for the UKHRA data analysis are in Appendix 2.

Findings

Our findings are grouped into three core themes which are discussed below.

Theme 1: There are mixed levels of research infrastructure in Wales with limited capacity for academic public health research

People

There are currently nine HEIs operating in Wales[18]. Cardiff University is the largest with 985 research-only staff, followed by Swansea University with 485 research-only staff (2022/23 figures). The smallest HEIs for staff with research-only roles are Cardiff Metropolitan University (n=35) and Wrexham University (n=5)[19].

We found that within universities in Wales, it is hard to discern what is being done by whom across the academic public health roles, and several comments made by interviewees was that public health research is not strong overall and lacks critical mass. Our desktop research found that there are three substantive university-appointed specialist public health academics in Wales; two at Swansea University and one at Cardiff University. Cardiff (n=4) and Swansea (n=6) universities have Professors/Associate Professors of Public Health, and Swansea has two Personal Chairs. This may be because of the medical degrees offered at Cardiff University School of Medicine and Swansea University Medical School, both located in South Wales, has meant the more traditional focuses of public health may have developed in those institutions. Medical training has recently been expanded in Wales, with the North Wales Medical School at Bangor University beginning student intake in September 2024. All Public Health Speciality registrars in Wales undertake a Master's in Public Health either at Cardiff University or at the University of Liverpool (dependent on their base) and are supported by an academic supervisor (either based in PHW or a HEI) throughout their training. All the remaining universities in Wales have aspirations in the field of public health research, but comments suggest that they perceive a South Wales bias.

A strength mentioned by HEIs was 'good individuals', but it was seen as being difficult to retain good people. The impression is that public health research relies on a small number of people and that the critical mass is vulnerable. This was also raised as a constraint by respondents to the Call for Evidence, who added that reduced funding across the university sector resulted in limited time available for academic staff, especially to prepare bids, as well as short-term insecure contracts. Other resource constraints mentioned in the Call for Evidence and by some interviewees were the lack of a clear career structure and a lack of succession planning. One interviewee posed the question, 'Where will the next generation of public health researchers come from?'. People noted difficulties in retaining good people especially with the 'porosity' of the border with England, and that 'people get poached'.
During the interviews, the potential for those training to be consultants in public health to move into research in HEIs in order to develop more public health-trained academics was alluded to. There are some academic supervisors who supervise registrars' dissertations, but this was described as not being the norm, having been more common in the past. Several interviewees spoke of their disappointment regarding the loss of joint PHW/HEI posts which had been funded by PHW in the past. However, a comment was made that those posts could have been better connected strategically, with clear objectives and governance.

Infrastructure

Interviewees from an academic institution (n=13) were asked to what extent their HEI had a strong public health research focus. Responses suggest a highly variable picture across HEIs in Wales:

- three said they had very little currently
- five said they had some, and comments included 'within the wider institution', 'we have no one with public health in their title', and 'public health research is not well-defined'
- four said they had a strong focus

The disparity between the small number of HEIs who have a particular track record in public health research, and those who are less developed in public health research was mentioned as a weakness. Our desktop analysis identified a complex map of academic institutes and infrastructure in Wales with often limited capacity for APHR. DECIPHer at Cardiff University and the SAIL database at Swansea University were mentioned as key academic units with strength, but under weaknesses, some interviewees commented that they didn't understand the governance of SAIL, nor found it accessible as access had a financial cost and this seemed inconsistent with a publicly funded resource. Some interviewees saw an opportunity to 'make more of' SAIL, strengthening the connection with PHW's evidence needs and to use it to derive insights and answer profound questions. Others said that other data linkage systems beyond Wales were 'catching up'.

Funding for the infrastructure mentioned above is provided by HCRW; available only to HEIs in Wales. Although many NIHR infrastructure awards are England-only initiatives, some externally funded public health infrastructure, for example the Health Determinants Research Collaboration, has recently been awarded by NIHR to two Welsh local authorities. These are Torfaen and Rhondda Cynon Taf; the former partnering with the University of South Wales (USW) and the latter with Cardiff University. Since 2017, Bangor University has hosted a small Public Health Collaborating Unit, funded by PHW. PHW and other public health delivery organisations undertake and commission research and regularly collaborate closely with HEIs across Wales[20 21].

Wider Public Health Research System

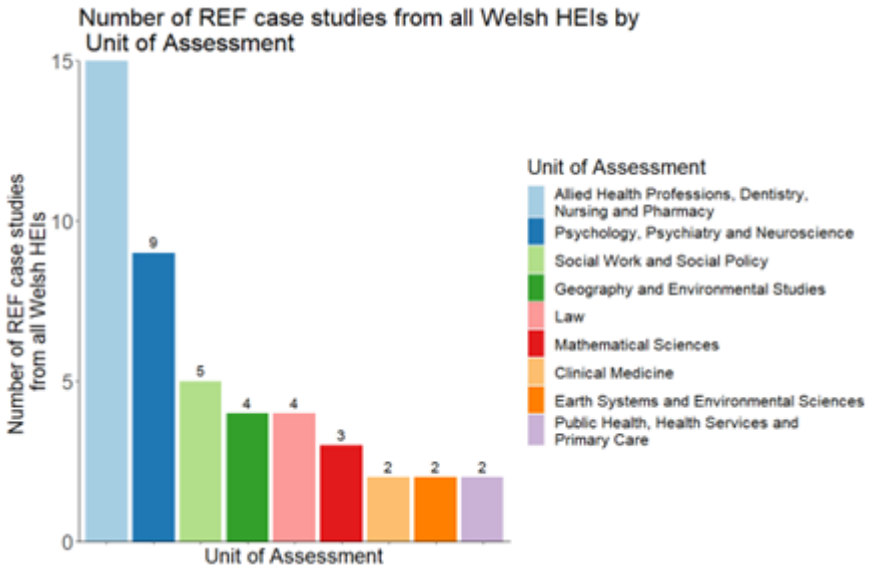
In PHW, Research and Development (R&D) is a core function, and the organisation has set out its Areas of Research and Evaluation Interest[22]. PHW's Research and Evaluation Strategy 2023-2026[23] outlines the research assets within the organisation including a World Health Organization Collaboration Centre (WHO CC) on Investment for Health & Well-being[24], a partnership with the HCRW Evidence Centre[25] and a small number of research-only roles. There are staff within PHW who hold honorary academic roles and there are academics with honorary contracts with PHW. Over the last 10 years, PHW has provided funding to joint academic and service delivery posts, although the number of these positions has declined over time.

Theme 2: Public health research activity in Wales has international impact, but external funding into Wales is decreasing and there is a lack of a strategic approach

Breadth of Public Health Research

Interviewees based in HEIs (n=13) discussed both the diversity of public health research and the idea that there is 'lots' of it, as a strength of APHR in Wales. The breadth of research produced by HEIs was also found through our analysis of REF Impact Case Studies 2021. Only two case studies were submitted into the Unit of Assessment (UoA) category "public health" (by Swansea University which had not submitted into this category previously), however there is a significantly greater amount of public health research underway in Wales than can be seen at first glance. Of the 280 case studies submitted from Wales, we identified 59 case studies submitted by seven of the universities that could be described as public health research (Fig. 1). Of these 59, *Allied Health Professions, Dentistry, Nursing and Pharmacy* is the UoA category that has the most case studies (n= 15, 25%) under our criteria. The analysis shows that there is diverse public health research undertaken, but the challenge is that because it is broad, difficult to define and diffused across many disciplines, it therefore may not be 'labelled' as such. It is interesting to note that out of the 59 case studies, six had international links including with Japan, Europe, Mauritius, the United States and Brazil. It should be noted that PHW also has international research links through the WHO CC and through its UK-leading infection services reference laboratories.

Figure 1: Number of REF 2021 Case Studies Identified as Public Health Research categorised by Unit of Assessment (UoA) (plot only includes UoA categories with two or more case studies[26])



Interviewees were asked into which of the three domains of public health their research activity would fall, with almost half of the respondents responding that it was across all three. The majority of the others identified Health Improvement, followed by Health Services Quality Improvement, and Health

Protection. When we mapped REF 2021 case studies across the domains, Health Service Quality Improvement had the most case studies (n = 29, 49%). Of the topics mentioned which were perceived

as representing the greatest achievements in the previous five years in the call to evidence, the top one reported was research conducted during the COVID-19 response (mentioned by 4 respondents). The second most mentioned topic was early years/adverse childhood experiences (mentioned by 2 respondents).

Funding

Within Wales, public funding for research in HEIs is provided through two main routes:

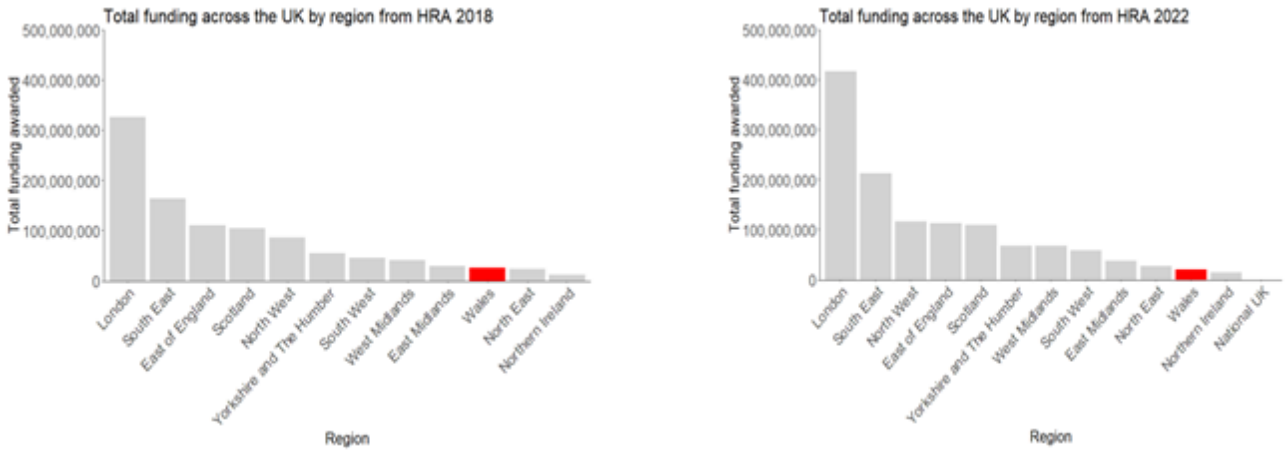
1. a block allocation by the Higher Education Funding Council for Wales (HEFCW) via a quality-related (QR) system of periodic assessment (which includes funding based on the outcome of REF 2021). As of August 2024, Medr[27] took over funding and regulatory responsibilities from HEFCW,

2. funding awarded in peer-reviewed competitions from external grant funders.

Public health researchers in Wales have access to UK Research and Innovation (UKRI) and its research councils (except Research England) and to all NIHR project and programme funding awards[28]. HCRW, which is funded by WG, runs a range of responsive funding schemes and personal awards for researchers in Wales, and manages the NHS Wales R&D research delivery funding[29]. Total R&D spend by HCRW was approximately £39.3m in 2022, which included 68 direct awards (£9.9m), indirect funding to support Welsh research infrastructure, and NHS R&D schemes[30].

Our analysis of UKHRA data by funding awarded to those projects identified as public health-related research, indicated that the proportion of UK funding for projects led by Welsh HEIs decreased between 2018 and 2022 (Fig. 2). This also corresponded with a drop in projects, from 272 in 2018 to 225 in 2022. In 2018, Wales received 2.6% of awarded funding across the UK, which then decreased to 1.6% in 2022. In comparison, England increased its funding from 85.9% in 2018 to 88.6%, although both Scotland (10.3% in 2018; 8.7% in 2022) and Northern Ireland (1.2% in 2018; 1.2% in 2022) also saw a drop in funding. If we compare the proportion of funding received relative to its population size, Wales would expect between 4% - 5% of total awarded funding[31]. It should be noted that the total fund available to public health-related research in the UKHRA, rose from £10.3 billion in 2018 to £12.6 billion in 2022.

Figure 2: UKHRA funding by region in 2018 and 2022 According to our Analysis of Public Health Research



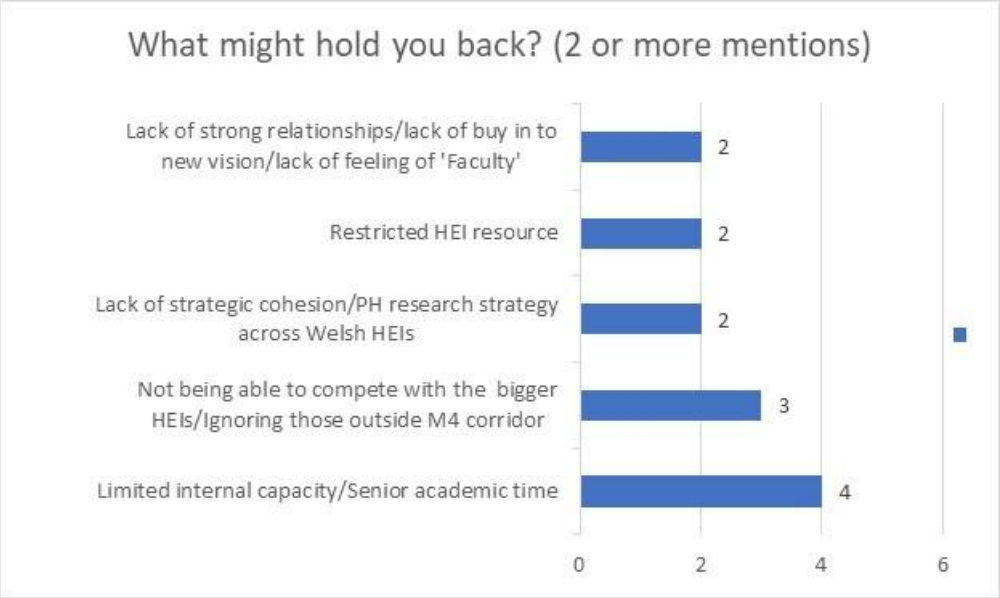
Further analysis of UKHRA indicates that:

- the four funders awarding the most grants to Wales in 2018 for public health research were the Medical Research Council (MRC) (£7.8m), followed by HCRW (£6.5m), Wellcome Trust (£2.5m) and Cancer Research (CR) UK (£2.2m).
- in 2022, this order changed with HCRW placed as the top research funder (£7.1m), followed by the MRC (£2.2m), CRUK (£1.6m) and the Economic and Social Research Council (ESRC) (£1.3m).

Data submitted via the call for evidence survey contained 21 mentions of NIHR as a funder, followed by 16 of HCRW, then 11 mentions of WG.

Alongside the data reported above, financial challenges facing HEIs were of significant concern to interviewees, including a lack of funding within HEIs for research and posts. When discussing what might hold them back from achieving their aspirations (Fig. 3), the issue that arose most often was limited internal capacity and limited senior academic time.

Figure 3: HEI interviewee responses on what might hold them back



Recruitment freezes were mentioned as commonplace and it was suggested that "tough times" might also lead to increased vulnerability of some public health research efforts, particularly where there was a lack of profile or critical mass (this also relates to concerns highlighted in Theme 1). Many interviewees pointed to a tendency to become more insular as resources become more stretched, which may act against an impetus to collaborate with other institutions and in fact increase competitiveness. Some interviewees reported a perception that HEIs in Wales were not as well funded as elsewhere in the UK, and it was difficult to get funding at a UK-level. The theme of 'missing out' on some UK funding was mentioned under weaknesses and competing at this level was seen as a challenge. However, building and strengthening the relationship with funders was highlighted by some interviewees as presenting an opportunity. One said, "we should be more proactive, go with ideas" and others thought that we should think more strategically about NIHR public health opportunities.
It should be noted that since this report was compiled, HEIs across Wales have reported plans to make redundancies due to the current financial environment[32].

Theme 3: Opportunities and aspirations for academic public health research in Wales

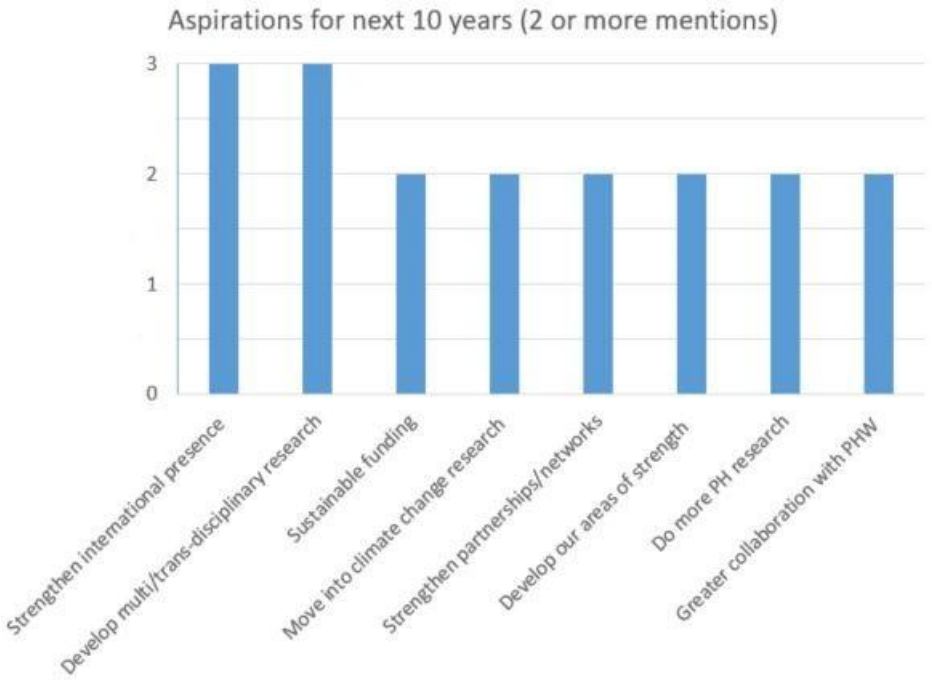
Collaboration

Developing collaborations was an important theme that arose throughout the analytical work, and this was reinforced through frequent comments by interviewees about the lack of connectivity between the different parts of the system (NHS, PHW and HEIs) being a weakness. One interviewee put it simply as 'We don't talk enough'. It was suggested that if the public health research system could be better coordinated, we could see 'the whole becoming greater than the sum of the parts', with another suggesting 'we can bring more resource in if we are more coordinated'. There was a suggestion that senior PHW and HEI personnel could combine as a 'Faculty' to identify the big problems, and meet evidence needs alongside establishing a public health research forum for collaborations, sharing and

learning about projects. The policy environment in Wales was described as unique in the UK, and several interviewees mentioned legislation that was favourable to public health and could be seen to present opportunities to evaluate policy initiatives at a wide scale.

HEI interviewees were asked about their aspirations for the next 10 years. Tapping into international/EU opportunities and strengthening international presence were top of the list of opportunities and aspirations identified, as well as developing multi-disciplinary and inter-disciplinary research (Fig. 4). Several of the respondents to the Call for Evidence survey also mentioned aspirations to do more international public health research and to seek international funding.

Figure 4: HEI interviewee responses on aspirations



Strengthening public health research

Interviewees were also asked to name the biggest single factor which would strengthen or sustain public health research in Wales. Table 1 provides their responses.

Table 1: Single biggest factor that would strengthen or sustain public health research in Wales

Single biggest factor which would strengthen or sustain public health research in Wales	
Resource Money and capacity Research funding Basic stable resource for public health research	**Getting organised** Collaboration, PHW to get us in the same room Know where research activity is so we can make links systematically rather than personally HEI 'Faculty' linked to PHW Strong relationships which appreciate organisational cultures Build networks to get more dialogue between institutions.
Careers Think about career pathways and capacity Allow for more early career researchers from all over the UK and world to come to Wales PHW co-funding academic posts Opportunities for PHW staff to do research Demystify public health to attract people to it	

Discussion

What we learned

A strong APHR environment is fundamental to the effectiveness and sustainability of the public health research and delivery system in Wales. As evidenced by the findings above, there is unlikely to be a single action which will reverse the downward trend in funding and activity for APHR in Wales. The recommendations discussed below will take time to develop and deliver, especially as they are set against a backdrop of financial pressures across the whole public health research system.

Taking a strategic and systems approach

There is currently a lack of a coherent strategy for public health research in Wales and the lack of connectivity across the system was highlighted by interviewees. However, whilst greater connectivity is required, it will not be sufficient alone to address the significant challenges faced by the sector.

The idea of PHW facilitating strategic developments was welcomed. PHW was seen by many interviewees as the logical organisation to facilitate the work of developing a strategy due to its role as a stable anchor institution, its knowledge of public health evidence gaps, its ability to 'package' evidence for the right stakeholders to transform practice, and its need to evaluate public health programmes. Whilst PHW would be the right organisation to facilitate, some suggested that leadership would also need to come from WG and the CMO for Wales, with the most meaningful research coming from optimal connections between PHW, NHS, HEIs, local government and the third sector. Several interviewees pointed to the need to involve both HEI strategic leadership as well as public health academics in developing a strategy.

Fundamentally, the strategy will need to address the point that Wales cannot 'do everything' and to identify focussed key strengths, balancing population evidence needs and corporate institutional priorities to agree areas of excellence which Wales can develop. The diffuse nature of the public health research in Wales may present a challenge however to identifying mutual research interests. Alongside this, mechanisms will need to be found which support the development of capacity and capability in those universities with a less developed research agenda. There was clear enthusiasm from interviewees in finding ways for Welsh HEIs to collaborate with each other, recognising that the smaller HEIs are committed to strengthening their public health research offer and want to learn from the more established institutions. A 'hub and spoke' structure was mentioned as a model which could help to structure such collaborations.

A more strategic approach to research funding which makes the most of Wales' strengths and considers the future research funding environment is needed across the whole system including:

1. investment in sustainable posts across the system by HEIs/NHS/Local Government

2. collaboration with funders to ensure there is investment in APHR infrastructure and capacity building in Wales

3. working with both UK and international funders to ensure that calls address public health gaps in evidence and priorities for Wales, encouraging academia to respond to build competitive bids/awards drawing on expertise in Wales.

UKRI, NIHR and HCRW funding programmes are of great interest, and it is worth noting recent developments in Wales such as successfully obtaining two HDRC Awards[33] which will develop research capacity in local government. Strategic Delivery Plans such as MRC's 2022-2025[34] also has a focus on place-based research addressing local health challenges which could be realised for Wales.

It will be important to recognise the variety of mutual opportunities and interdependencies which exist between public health service delivery and APHR, which will not only have an impact on research activity underway but could also present wider opportunities for all involved. Benefits can apply to teaching, research and service delivery, with universities informing the practice of public health, and public health delivery informing academic programmes[35].

Development of the vision and strategy going forward will need to take account of these likely interdependencies and potential areas for development, recognising that focusing solely on research may represent a missed opportunity.

Bridging the differing environmental constraints

The differing constraints impacting public health services and HEIs will need to be considered when working together more closely as partners. A recent report from Universities UK on financial sustainability in UK universities[36] pointed to financial pressures including a decreased unit of funding for domestic students; a slowdown in funding from grants, at the same time as increasing costs; increasing reliance on other income streams to subsidise teaching and research; and expectations that they will need to rely more on international fee income. HEIs are also reporting a recent trend that external funding from the research councils and charity sector are not fully covering overheads[37], with the Higher Education Policy Institute (HEPI)[38] suggesting that university research across the UK is underfunded against its true costs, with the shortfall being partially filled by cross-subsidies from international students' tuition fees.

Within this context, the research work of HEIs is shaped by income connected to the REF, with its emphasis on the rigour, significance and originality of research outputs against a 5-point scale, which rewards research which is 'world leading'[39] and impactful. In contrast, public health delivery - PHW, Health Boards, local government and their partners - seek timely research/evidence about the health and wellbeing of the population of Wales in order to make a measurable improvement to the health of the population of Wales[40]. Their evidence needs may not necessarily or consistently align with the activity of HEIs, yet there is opportunity for public health priorities to be submitted to research funders to influence the funding landscape.

Recognising that the drivers which constrain partners could lead to increasing divergence in what public health services and HEIs may be interested in doing in terms of research, will be important in identifying feasible and attractive joint strategic developments between partners.

Supporting the next generation of public health researchers

The Academy of Medical Sciences has pointed to the need to develop the next generation of public health researchers and practitioners[41] and previous reports in Wales[42 43] have sought greater cross-fertilisation between public health delivery and academic public health through a focus on joint positions, secondment opportunities, pathways for developing careers in academic public health, and funded PhD programmes for public health registrars.

Echoing those arguments, our findings reflect the presence of 'good individuals', but a lack of a clear public health research career structure, problems retaining research staff, and opportunities to train public health registrars in research. An urgent issue highlighted was the lack of succession planning, and it had been noted that key people were reaching retirement age.

A task for the strategy will be to formulate how to grow the next generation of public health researchers. This could include:

- planning and specifying career pathways, with the range of entry points for those from different backgrounds
- supporting public health registrars to pursue research careers
- seeking greater focus on research methods training within Master's in Public Health
- encouraging public health delivery staff to take up research training
- supporting those working in wider public health research in HEIs to engage more closely with public health agencies and to pursue formal training in public health
- encouraging secondments and joint positions between PHW, Health Boards, Local Government and HEIs.

HEIs, PHW and Health Boards could put in place the conditions for a thriving collaborative environment with opportunities for rotations between settings, and for sharing skills and knowledge. The benefits of such an approach have been reinforced by the Steering Group for this report, referencing a model in Manchester, UK which saw a strong relationship between the local health authority, the public health training scheme, the university offering the Master's in Public Health and senior researchers from a wide range of academic backgrounds attached to the university. This collaborative model shared many features of an approach described in the US[44].

The focus in Wales on joint posts, some of which had been lost, represented a more limited attempt at joining up research and teaching, which had been hampered by a lack of strategic connection and clear joint governance.

Conclusions

The report highlights the challenges and opportunities for APHR in Wales. Despite a rich history and strong individual contributors, the sector is constrained by reduced funding, and limited research infrastructure, particularly in smaller institutions. Public health research efforts are diverse but lack focus, while connectivity between HEIs, PHW, and other stakeholders could be improved. Wales' unique legislative environment and untapped potential for collaboration and funding provide avenues for growth. To address these challenges, the report underscores the need for a cohesive strategy, enhanced funding, stronger collaboration mechanisms, and focused development of career pathways to sustain and grow public health research capacity in Wales.

There is strong support from senior academics and other stakeholders for the development of a clear vision and strategy for academic public health research in Wales, and consensus that PHW is ideally placed to play the convening role in this. Key stakeholders working together should identify a strategic and collaborative set of actions which provide benefits for the population of Wales and the whole academic public health system, maximising the strengths and assets of the system in Wales, and developing the next generation of public health researchers.

A thriving APHR environment in Wales has the dual benefit of ensuring that public health research is meeting evidence gaps to improve population health, as well as increased employment, innovation and economic investment. Research studies also highlight the mutual advantages of collaborative relationships between public health policy and practice with benefits including teaching, research and service delivery, with universities informing the practice of public health, and public health informing academic programmes. The outputs of this report will help the research community alongside partners to support the development and co-production of a joint vision for Wales. This will help the system to respond optimally to the pressing health needs facing our population, with high quality, high-impact research which shapes public health policy and practice.

Recommendations

Using existing architecture where possible, PHW, on behalf of the CMO Wales and HCRW will identify and convene a group of stakeholders in Wales to:

1. Develop a Strategic Vision:
    - formulate a co-produced, Wales-wide strategy and vision for APHR that leverages key strengths and aligns with population evidence needs,
    - define the core values that will guide that vision - drawing on the themes outlined in this report,
    - define the key goals and milestones for the vision - short and longer term
2. Develop a Strategic Framework:
    - identify strengths and areas of strategic focus with the greatest opportunities for growth and future sustainable investment - balancing innovation alongside purposeful applied research
    - build relationships and strategic collaborations with Welsh, UK and international funders to align funding priorities with Wales' public health gaps, priorities and capabilities
    - enhance collaboration and connectivity between PHW, HEIs, local government, and health boards through joint posts, secondments, and shared governance
    - invest in workforce development to strengthen the pipeline of public health academics of the future
    - ensure the value and impact of APHR is captured for Wales

By addressing these recommendations, Wales can establish a sustainable and impactful APHR environment that meets its public health needs and contributes to public health advancements.

Appendices

Appendix 1

Summary of the Key Discussion Points from the Expert Panel on the Academic Public Health Research in Wales

30th April 2024

Expert panel members

- Professor Ruth Hunter, Queen's University Belfast
- Professor Gerard McCartney, University of Glasgow
- Professor Stephen Palmer, University of York
- Professor Jane Powell, UWE

Focus and Strategy: Wales must focus on areas where it has a distinct competitive strength, both locally and internationally, rather than attempting to excel in all areas. The Welsh Cancer Research strategy is highlighted as a successful example of this focused approach.

State of Public Health Research in Wales: Discussions around decline in public health research activity in Wales over the past decade, noting a decrease in senior public health academics and joint efforts with PHW.

Historical Context and Leadership

Past Disinvestment: A historical perspective on the decline in public health research leadership in Wales. Key researchers and resources have been lost to other institutions outside Wales.

Realistic Approach: A pragmatic approach that involves collaboration with larger research institutions in the UK and globally, rather than attempting to build independent, large-scale research capabilities within Wales.

Challenges and Opportunities

Engagement and Collaboration: Highlights a lack of communication within the public health research community in Wales. They advocate for increased networking, scientific conferences, and events to foster collaboration and vibrancy in the research environment.

Role of PHW: Agreement that PHW is crucial for coordinating public health research efforts in Wales. There is recognition of the need for PHW to engage with HEIs and external funders to support the strategic direction of public health research.

Funding and Resources: Noting the challenges in securing research funding and the impact of devolution on collaboration. There is an acknowledgment that Wales receives a disproportionately low share of health research funding compared to its population size.

Research Strategy: There is consensus on the need for a clear research strategy that aligns with the goal of improving health outcomes and reducing health inequalities. However, concerns are raised about the potential conflict of interests between universities seeking funding and PHW's public health objectives.

Community and Global Relevance: Advocate for involving local communities in the research process to ensure the research is relevant and beneficial to them. At the same time, there is a call for Wales to participate in broader, global research collaborations.

Future Directions:

Long-Term Vision: The discussion underscores the need for a long-term vision for public health research in Wales that is collaborative and community focused. This involves engaging various stakeholders, including HEIs, PHW, the WG, and local communities.

Strategic Focus Areas: There is a call to identify and focus on specific public health challenges relevant to Wales, such as pandemic preparedness, mental health, housing, energy, food crises, and the transition to net zero.

Conclusion: Overall, the conversation pointed towards a need for a coordinated, strategic approach to public health research in Wales, leveraging local strengths while engaging in broader collaborations to ensure sustainability and impact.

Appendix 2

Key Terms Used to Define Public Health

Public Health Domain	Key word
Health Improvement	Health Promotion
	Behavioural science
	Health Psychology
	Healthy Lifestyles
	Health Inequalities
	Wider determinants of health
Health Protection	Infectious/communicable diseases
	Antimicrobial resistance
	Vaccination and immunisation
	Screening
Health Services Quality Improvement	Population needs
	Population health management
	Access to services
	Uptake of services
	Health economics
	Health equity
	Healthcare policy
	Health services planning and evaluation

Appendix 3

UKHRA Analysis Plan, Caveats and Assumptions

To develop our sampling frame, we have mapped research activity codes to research activity groups, sense-checking using the project list from the 2018 dataset (rather than 2022 due to the delayed publication of the 2022 dataset).

Definitions of the research activity groups and selected UKHRA Research Activity Codes to public health

RESEARCH ACTIVITY GROUP	RESEARCH ACTIVITY GROUP Description	RESEARCH ACTIVITY CODE
2. AETIOLOGY	Aetiology looks at the risks, causes and development of disease	2.2 Factors relating to physical environment
		2.3 Psychological, social and economic factors
		2.4 Surveillance and distribution
		2.5 Research design and methodologies (aetiology)
		2.6 Resources and infrastructure (aetiology)
3. PREVENTION	Focused on primary preventions (i.e. direct Interventions to prevent disease) and to promote wellbeing (i.e. indirect interventions to reduce the risks of ill health) Areas of research coded to Prevention include vaccines and preventative medicines alongside behavioural and environmental interventions, from initial conception to translational activity	3.1 Primary prevention interventions to modify behaviours or promote well-being
		3.2 Interventions to alter physical and biological environmental risks
		3.3 Nutrition and chemoprevention
		3.4 Vaccines
		3.5 Resources and infrastructure (prevention)

4. DETECTION/ DIAGNOSIS	Focuses on biomarker discovery and development, the use of new diagnostic technologies and population screening	4.1 Discovery and preclinical testing of markers and technologies
		4.2 Evaluation of markers and technologies
		4.3 Influences and impact
		4.4 Population screening
		4.5 Resources and infrastructure (detection)
5. TREATMENT/ TREATMENT DEVELOPMENT	Begins the translation of basic research into experimental medicine in preclinical settings and/or model systems	5.6 Psychological and behavioural
		5.7 Physical
		5.9 Resources and infrastructure (development of treatments)
6. TREATMENT EVALUATION	Involves testing and evaluation of interventions in human clinical/applied settings, such as therapeutic trials	6.6 Psychological and behavioural
		6.7 Physical
		6.8 Complementary
		6.9 Resources and infrastructure (evaluation of treatments)
		6.6 Psychological and behavioural
7. DISEASE MANAGEMENT	Covers research on individual patient needs and practitioner experiences, including research into quality of life, disease self-management and palliative care	7.3 Management and decision making
8. HEALTH SERVICES	Examines healthcare at an organisational level, including service provision as well as welfare, economic and policy issues	8.1 Organisation and delivery of services
		8.2 Health and welfare economics
		8.3 Policy, ethics and research governance
		8.4 Research design and methodologies (health services)
		8.5 Resources and infrastructure (health services)

For Information on all the activity codes contained in the UKHRA, access Research activities - HRCS Online

The UKHRA data approach to analysis includes the following caveats:

- There is no "public health" category in the UKHRA. Therefore, a broad definition for public health research was taken as can be seen by the research activity codes in the table.
- The proportion of projects related to public health varies across the research activity codes (e.g. 4.4 Population Screening v 5.6 Psychological/Behavioural)
- The UKHRA shows the funding awarded by lead partner – funding to co-applicants is not shown.
- Recipient institutions included in the Welsh "industry" category may also be national institutions.
- Funding awarded to the Office of National Statistics was noted as a Welsh recipient, but it has been excluded from this analysis as they are a national organisation.
- Funding for topics where the health component is only implied or a long-term consideration is excluded from the UKHRA, therefore, it is possible that research relevant to public health may not be captured. For example, climate change will have eventual health impacts, but not all climate change research would be considered health relevant.
- The UKHRA makes a distinction between grants focussed on directly supporting specific research programmes and projects and funding that support more indirect aspects such as infrastructure (which may include administration, building maintenance or support for national facilities). While both types of support are essential for health research, the UKHRA's main analysis focuses on the directly funded, usually peer reviewed, research where funding can be directly attributed to a set of clearly defined research objectives. Such awards can be classified using Health Research Classification System (HRCS) by type of research activity and area of health or disease i.e. directly funded research, training awards and projects, plus clearly defined programme and unit awards (direct awards only).
- It was not possible to map each project against the PHW strategic priorities or the three PH domains.

The UKHRA data approach to analysis includes the following assumptions:

- The analysis used annualised values for 2018 and 2022 data.
- Only annualised value awarded to public health research activities were included (i.e. if funding awarded is split between public health and non-public health research activities, annualised value used for analysis is proportionate to PH research activities).

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