OPTIMISING ACADEMIC PUBLIC HEALTH RESEARCH IN WALES
Final Report:

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

June 2024

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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 with senior academics from across the UK also commented on the findings (see Appendix 1 for summary of discussions).

The authors wish to thank all those who contributed as interviewees or respondents to the call for evidence.

Abbreviations

Health & Care Research Wales	HCRW
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
UK Health Research Analysis	UKHRA
Units of Assessment	UoA

Introduction

In the summer of 2023, Public Health Wales (PHW) launched a project to understand the extent to which academic public health research in Wales responds to PHWs strategic priorities, alongside the strengths, weaknesses, opportunities and threats facing the public health research sector in Wales. Prior to this report a comprehensive account of relevant research activity underway did not exist, nor did a sense of the views of wider stakeholders about academic public health research.

The analytical work presented in this report takes PHW's strategic priorities as a starting point from which to explore the breadth and scope of public health research activity in Wales. The ultimate goal of this work is to facilitate the co-production with partners of a strategy and vision for the public health research system in Wales.

This work builds on a number of earlier reports in Wales. Paranjothy and colleagues[1] described a favourable policy context for public health research, including Welsh Government's (WG's) *Prosperity for all*[2] and *A Healthier Wales*[3] publications and the supportive policy context enshrined in the Well-being of Future Generations Act (Wales 2015)[4]. They called for a greater number of joint posts between academia and public health, secondment opportunities, pathways for developing careers in academic public health, funded PhD programmes for public health registrars, and a shared agenda for research priorities[5 6] . Before recommendations could be taken forward from these reports, the COVID-19 pandemic disrupted forward activity. Better alignment between research and national priorities, generally, had been called for by the Reid Review[7].

Important UK-wide context for this report comes from the Academy of Medical Sciences, whose 2023 policy paper on Improving the health of the public through research[8] called for:

- investment in health of the public research and practice
- harnessing data and novel methods for research and practice
- facilitating the use of health evidence for all policies
- developing the next generation of public health researchers and practitioners.

A focus on the join-up between 'Service Public Health' and 'Academic Public Health' is not new. Service Public Health refers to any part of the system which is concerned with the delivery of public health programmes, whereas Academic Public Health is concerned with teaching and research delivered by universities. Research studies highlight the mutual benefits of collaborative relationships between the two. Benefits can apply to teaching, research and service delivery, with

[1] Paranjothy S, Behbod B, Bellis M et al (2020) Briefing paper II: Vision for academic public health in Wales
[2] Welsh Government (2017) Prosperity for all: the national strategy https://wcva.cymru/wp-content/uploads/2020/01/Prosperity-for-all.pdf
[3] Welsh Government (2018) A Healthier Wales; long term plan for health and social care
[4] Well-being of Future Generations (Wales) Act 2015 https://www.futuregenerations.wales/about-us/future-generations-act/

[5] Paranjothy S, Behbod B, Bellis M et al (2019) Appendix 1 - briefing paper: academic public health
[6] Paranjothy S, Behbod B, Bellis M et al (2020) Briefing paper II: Vision for academic public health in Wales
[7] Reid G (2018) Review of Government Funded Research and Innovation in Wales https://www.gov.wales/sites/default/files/publications/2019-04/review-of-government-funded-research-and-innovation-reid-review.pdf
[8] Academy of Medical Sciences (2023) Improving the health of the public through research: an update statement https://acmedsci.ac.uk/file-download/47202231

universities informing the practice of public health, and service public health informing academic programmes[9].

Public Health research has a distinguished history in Wales. The Cochrane Collaboration is named in honour of Archie Cochrane, a British medical researcher who worked at Cardiff University. He was a pioneer in both cohort studies and randomised trials and contributed significantly to the development of the science of epidemiology. Another notable figure in the field was Julian Tudor Hart, a GP working in Wales who first defined the 'inverse care law', to describe how people who most need healthcare are least likely to receive it. Wales has retained important assets to support public health research, from the data and science infrastructure to those within the NHS such as genomics and chronic and infectious disease surveillance programmes.[10] .

Research and Development (R&D) is a core remit of PHW, and the organisation has recently set out its Areas of Research and Evaluation Interest[11]. PHW's Research and Evaluation Strategy (2023-2026)[12] outlines the research assets within the organisation including a World Health Organisation Collaboration Centre (WHO CC) on Investment for Health & Well-being[13] and being partner in the Health and Care Research Wales (HCRW) Evidence Centre[14].

PHW and other public health service organisations undertake and commission research and regularly collaborates closely with Higher Education Institutions (HEIs) across Wales[15] [16]. A significant number of staff within PHW hold honorary academic roles and some academics have honorary contracts with PHW. 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 location) and are supported by an academic supervisor (either based in PHW or a HEI) throughout their training. Over the last 10 years, PHW has provided funding to joint academic/service delivery posts, though the number of these positions has declined over time.

There are currently nine HEIs operating in Wales[17]. Cardiff University is the largest HEI with 985 'research only' staff, followed by Swansea University with 485 research only staff in 2022/23. The smallest HEIs for staff with research only roles are Cardiff Metropolitan University (35) and Wrexham University (5)[18].

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[9] Erwin PC, Grubaugh JH, Mazzucca-Ragan S, Brownson RC. The Value and Impacts of Academic Public Health Departments. Annu Rev Public Health. 2023 Apr 3;44:343-362. doi: 10.1146/annurev-publhealth-071421-031614

[10] Paranjothy S, Behbod B, Bellis M et al (2020) Briefing paper II: Vision for academic public health in Wales

[11] Areas of Research and Evaluation Interest for Public Health Wales: 2024. https://phw.nhs.wales/services-and-teams/knowledge-directorate/research-and-evaluation/areas-of-research-and-evaluation-interest-for-phw/

[12] Public Health Wales Research and Evaluation Strategy 2023-2026 https://phw.nhs.wales/about-us/working-together-for-a-healthier-wales/public-health-wales-research-and-evaluation-strategy-2023-2026/section-4-our-goal/

[13] Policy and International Health, WHO Collaborating Centre on Investment for Health & Well-being https://phw.nhs.wales/services-and-teams/policy-and-international-health-who-collaborating-centre-on-investment-for-health-well-being/

[14] Health and Care Research Wales Evidence Centre https://researchwalesevidencecentre.co.uk/node/34

[15] National Centre for Population Health & Wellbeing Research https://ncphwr.org.uk/

[16] The Public Health Collaborating Unit (PHCU) https://phwwhocc.co.uk/teams/the-public-health-collaborating-unit-phcu/

[17] Study in Wales https://www.studyinwales.ac.uk/

[18] Higher Education (HE) academic staff (excluding atypicals) by HE provider, mode of employment, activity standard occupational classification, sex, source of basic salary, academic employment function, terms of

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 the Research Excellence Framework (REF) 2021[19]), 2) funding won in peer reviewed competitions from external grant funders.

Funding for public health researchers in Wales includes access to UK Research and Innovation (UKRI) and its research councils (except Research England). All National Institute for Health and Care Research (NIHR) project and programme funding awards are open to researchers in Wales[20] but this does not include infrastructure awards and NIHR personal awards. NIHR also currently funds several England-only initiatives including the NIHR Academy, NIHR School of Public Health Research (9 collaborative institutions), and 14 NIHR Health Protection Research Units[21]. HCRW, which is funded by WG, run a range of responsive funding schemes and personal awards for researchers in Wales and manage the NHS Wales R&D research delivery funding [22]. 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[23].

As part of the development of the remit for this report, we took a broad view of the definition of public health, informed by PHW's six long-term strategic priorities[24], the three domains of public health[25] and relevant key words (Appendix 2), which we used to search through databases.

Methods and Analysis

Through data collection and analysis, we set out to understand the extent to which academic public health research in Wales responds to the evidence needs of PHW, alongside the strengths, weaknesses, opportunities and threats faced by the sector in Wales.

There is currently no routinely collected database of public health research activity or external research funding available for Wales, so to try to capture this we:

1. undertook desktop research to map the existing infrastructure, existence of units and departments involved in public health as well as senior public health researchers (professorial level) across all HEIs in Wales.

employment, contract levels and academic year. Higher Education Statistics Agency (HESA). https://www.hesa.ac.uk/data-and-analysis/staff/table-7. Accessed March 2024.

[19] Higher Education Council for Wales: Funding Allocations for Academic Year 2023/2024 https://www.hefcw.ac.uk/wp-content/uploads/2023/07/W23-19HE-HEFCW-Funding-Allocations-for-Academic-Year-2023_24-English.pdf

[20] Researchers in Scotland, Wales and Northern Ireland to access further NIHR research funding https://www.nihr.ac.uk/news/researchers-in-scotland-wales-and-northern-ireland-to-access-further-nihr-research-funding/33914

[21] Research Units. https://www.nihr.ac.uk/explore-nihr/support/research-units.htm

[22] Health and Care Research Wales https://healthandcareresearchwales.org/about

[23] UK Health Research Analysis 2022 (UK Clinical Research Collaboration, 2023) https://hrcsonline.net/wp-content/uploads/2024/01/UK_Health_Research_Analysis_Report_2022_web_v1-0.pdf

[24] Public Health Wales. Working Together for a Healthier Wales. Our Long Term Strategy 2023 to 2035 https://phw.nhs.wales/about-us/working-together-for-a-healthier-wales/

[25] Public health in practice: the three domains of public health (2005) S. Griffiths, T. Jewell and P. Donnelly https://www.sciencedirect.com/science/article/pii/S0033350605000570#:~:text=Public%20health%20encompasses%20three%20domains,importance%20of%20reducing%20health%20inequalities.

2. used two existing publicly available datasets: the **UK Health Research Analysis (UK HRA)** data from 2018[26] and 2022[27] and **R**EF 2021 Case Studies[28] submitted by HEIs in Wales.

Alongside these, to gain a more in-depth insight into the academic public health research landscape from key stakeholders in Wales, we:

1. conducted one-to-one semi-structured **interviews** with 18 key stakeholders, 13 of them had a senior role within each HEI in Wales and 5 were representatives from the public sector and research funders.
2. invited responses from all HEIs, public health research centres and senior public health researchers across Wales through an online '**Call for Evidence'** survey.

The above data has been taken together and triangulated to help us to capture strengths, weaknesses, threats and opportunities; and identify key areas for development, recognising inherent limitations in the routine data available and a non-representative pool of interviewees and respondents to the Call for Evidence. (NB will add Appendix on the methods and limitations)

UK Health Research Analysis Data from 2018 and 2022

We undertook an analysis of the UK HRA 2018[29] and 2022[30] databases to enable us to see the extent of recent public health research projects and funding into Welsh institutions.

Set up in 2004 by the UK Clinical Research Collaboration, the UKHRA[31] 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 dataset so to analyse the data, we developed a sampling framework. We identified HRA categories relevant to public health and included research coded under those categories. We mapped research activity codes to research activity groups, sense-checking using actual projects from the 2018 dataset (Appendix 3).

Our analysis has certain caveats and assumptions which are detailed in Appendix 3. It should be noted that the UKHRA only shows the funding awarded to the lead partner, and therefore did not include projects where a Welsh HEI had involvement but did not lead as the institution employing the chief investigator

Research Excellence Framework (REF) 2021 Impact Case Studies

In order to provide an indication of research excellence, strength and impact of public health research activity in Wales as perceived by HEIs themselves, we analysed the REF 2021 Impact Case Studies[32] submitted by HEIs under Units of Assessment (UoA). Table 1 shows the Public Health, Primary Care and Health Services Research UoA, relative to the range of health-related research submissions under REF.

[26]UK Health Research Analysis 2018 (UK Clinical Research Collaboration, 2020) https://hrcsonline.net/reports/analysis-reports/uk-health-research-analysis-2018/
[27] UK Health Research Analysis 2022 (UK Clinical Research Collaboration, 2023) https://hrcsonline.net/reports/analysis-reports/uk-health-research-analysis-2022/
[28] REF 2021, Impact case study database https://results2021.ref.ac.uk/impact
[29]UK Health Research Analysis 2018 (UK Clinical Research Collaboration, 2020) https://hrcsonline.net/reports/analysis-reports/uk-health-research-analysis-2018/
[30] UK Health Research Analysis 2022 (UK Clinical Research Collaboration, 2023) https://hrcsonline.net/reports/analysis-reports/uk-health-research-analysis-2022/
[31] UK Health Research Analysis https://hrcsonline.net/
[32] REF 2021, Impact case study database https://results2021.ref.ac.uk/impact

Table 1: REF 2021 UoA totals in health-related topics by UK HEIs, with contributions from Welsh HEIs shown

UoA	Institution	GPA ranking in REF2021 (compared to REF2014)
Clinical medicine (31 entries)	Cardiff	25th (down from 8th)
Public health, primary care and HSR (33 entries)	Swansea	31st (no previous entry)
Allied health professions, dentistry, nursing, pharmacy (91 entries)	Swansea	4th (no previous entry)
	Bangor	15th (up from 20th)
	Cardiff	16th (down from 4th)
	USW	68th (up from 70th)
	Cardiff Met	77th (down from 64th)
Psychology, psychiatry and neuroscience (93 entries)	Cardiff	7th (down from 2nd)
	Bangor	33rd (down from 17th)
	Swansea	49th (down from 27th)
	Aberystwyth	81st (down from 29th)
	Trinity St David	91st (no previous entry)
Biological sciences (44 entries)	Cardiff	20th (down from 13th)
Social work and social policy (76 entries)	Swansea	31st (down from 14th)
	USW	41st (down from 26th)
	Glyndwyr	64th (no previous entry)

All data from Times Higher Education REF2021 analysis. Methodology details at https://www.timeshighereducation.com/news/ref-2021-times-higher-educations-table-methodology

We analysed all 368 REF 2021 case studies on any topic submitted by HEIs in Wales by:

1) searching for key words associated with public health (Appendix 2).

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 conducted is by academics based from Milton Keynes and it is not discernible 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 between August and October 2023. Thirteen of these were with senior representatives from all HEIs across Wales and 5 were with representatives from Health Boards, Welsh Government, PHW, and Wales and UK research funders. The interviewees were each asked about their views on academic public health research in Wales, key strengths, challenges, and opportunities for the future.

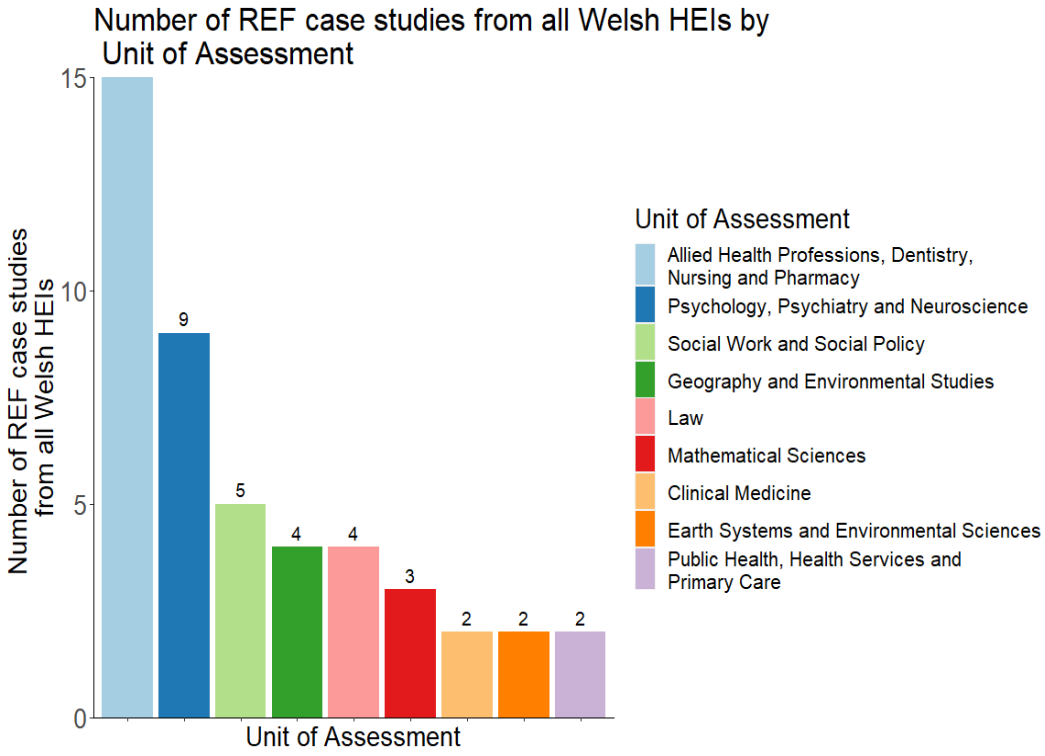
To invite a broader response from academia, Welsh HEIs were invited to submit evidence to PHW through an online 'Call for Evidence' survey conducted between August and October 2023. This survey asked respondents to describe key public health research projects and publications, future plans, aspirations,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

Findings

The Public Health Research landscape in Wales: activity and funding

Through analysis of REF 2021, we identified 59 case studies which could be described as public health research, out of a total of 368 submitted by HEIs in Wales. This seems to indicate that there is a significantly greater amount of public health-related research underway in Wales, than would appear from the UoA alone (two only). Analysis of the 59 by UoA found that *Allied Health Professions, Dentistry, Nursing and Pharmacy* is the category which has the most case studies (n = 15, 25%) under our criteria. Whilst the *public health, health services and primary care* category had only two case studies (Figure 1). It is interesting to note that out of these 59, 6 had international links including with Japan, Europe, Mauritius, the United States and Brazil.

Figure 1: Number of REF 2021 Case Studies Identified as Public Health Research by UoA (plot only includes UoA categories with 2 or more case studies – please see Appendix 9 for the full list)

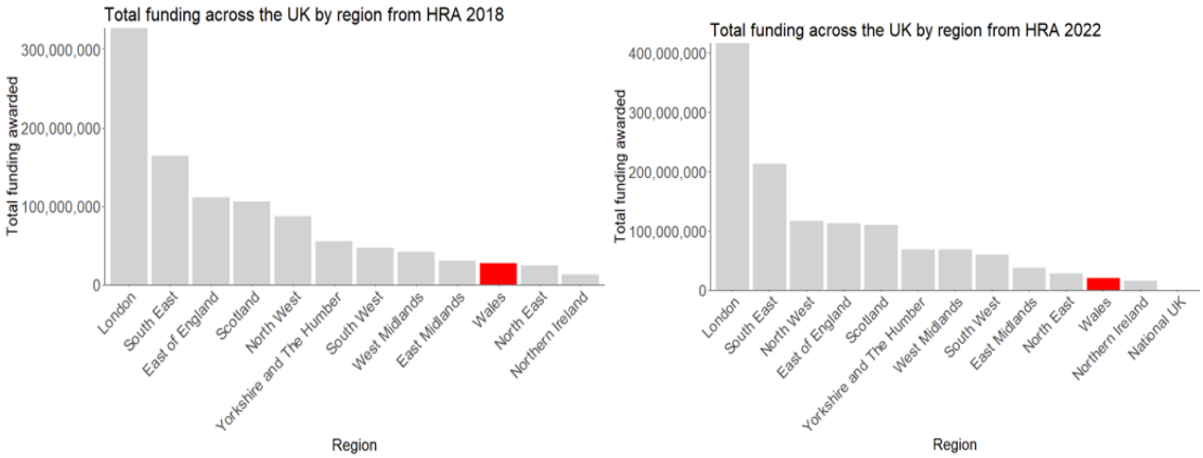


Analysis of UKHRA data using our framework indicated that there were 272 Welsh-led public health related research projects in 2018, and that this dropped by 17% to 225 in 2022.

Analysis of UKHRA data by funding awarded to the projects identified indicated that the proportion of UK funding for projects led by Welsh HEIs decreased between 2018 and 2022 (Figure 2).). In 2018, Wales received 2.6% of awarded funding across the UK, which then decreased to 1.6% in 2022. If we compare the proportion of funding received relative to population size, Wales would expect between 4% - 5% of total awarded funding[33].

[33] Population estimates for the UK, England, Wales, Scotland and Northern Ireland: mid-2021 https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2021

Figure 2: UKHRA funding by region in 2018 and 2022 According to our Analysis of Public Health Research (y axis to be made the same)



Further analysis of UKHRA indicates that:

- the four funders awarding the most grants to Wales in 2018 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 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).

Funding from NIHR is considered for the purposes of UKHRA as within HCRW. This means we cannot distinguish in this analysis between NIHR and HCRW as distinct funding sources. Data submitted in the call for evidence survey contained 21 mentions of NIHR as a funder, followed by 16 of HCRW, then 11 mentions of Welsh Government.

Our desktop analysis of research infrastructure, centres and senior academics identified 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. Cardiff and Swansea University both have a School of Medicine and the North Wales Medical School at Bangor University is due to begin student intake in September. Cardiff, Swansea, Bangor universities and the University of South Wales (USW) all offer a Master of Public Health programme. Public health research is most extensive at Cardiff (the largest university in Wales) and spans social, biomedical, and healthcare sciences, dentistry, medicine and psychology.

In REF 2021, Swansea University submitted case studies for the first time to the *Public Health, Health Services and Primary Care* category and achieved a Grade Point Average (GPA) ranking of 31st. Four out of a total 13 submissions made use of the SAIL Databank.

Since 2017, Bangor University has hosted a small Public Health Collaborating Unit, funded by PHW. Cardiff University and USW are partnered with two Welsh local authorities on their NIHR Health Determinants Research Collaborations.

Public health research activity at Cardiff Metropolitan University includes environmental health, physical activity and wellbeing. In USW, social prescribing and health inequalities are public health

research activity highlights. The University of Aberystwyth offers rural health, environmental health and psychology. At Wrexham University, the public health research offering includes homelessness, dementia, trauma, and substance misuse. University of Wales Trinity Saint David's public health research activity includes psychology, design for health and wellbeing, and digital information and technology. At the OU in Wales, two strategic research areas align with public health – digital health and wellbeing, and global public health.

Insights about public health research, achievements, aspirations, and constraints

Academic interviewees were asked to what extent their HEI had a strong public health research focus. Responses suggest a highly variable picture across HEIs:

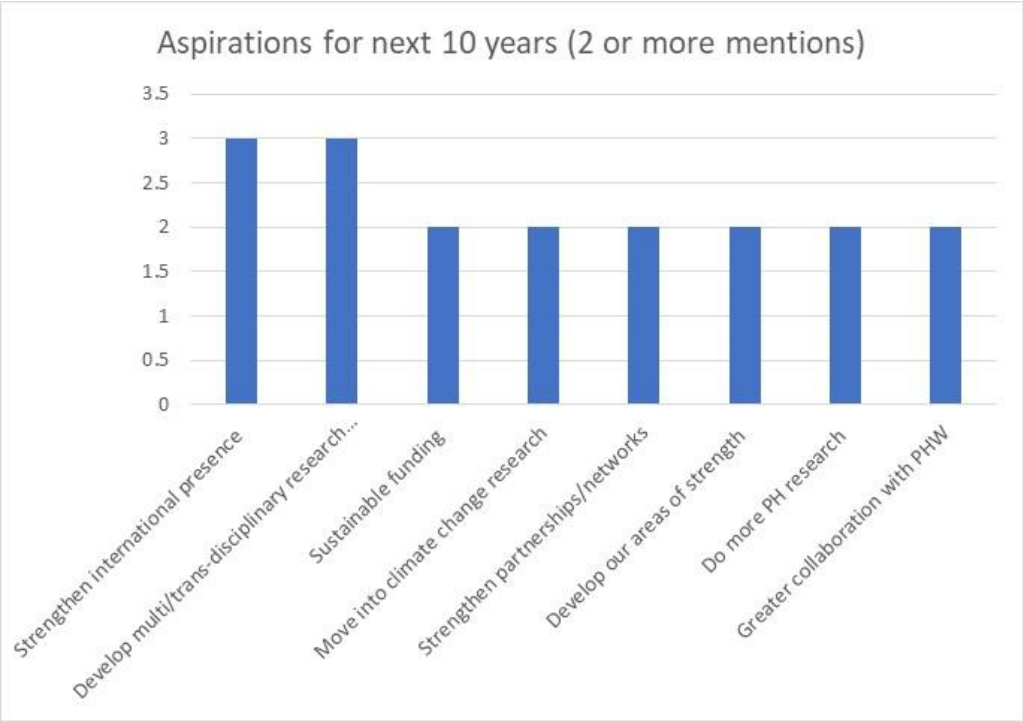
- three said they had very little currently
- five said they had some, and comments included 'within the wider institution', 'we have no one with public health in their title', and 'public health research is not well-defined'
- four said they had a strong focus

They were asked into which of the public health domains their research activity would fall. Almost half respondents said it was across all three. The majority of the others identified Health Improvement.

Of the topics mentioned which were perceived as representing greatest achievements in the previous five years, the top one was around the COVID-19 response (mentioned by 4 respondents). The second most mentioned topic was early years/adverse childhood experiences (mentioned by 2 respondents).

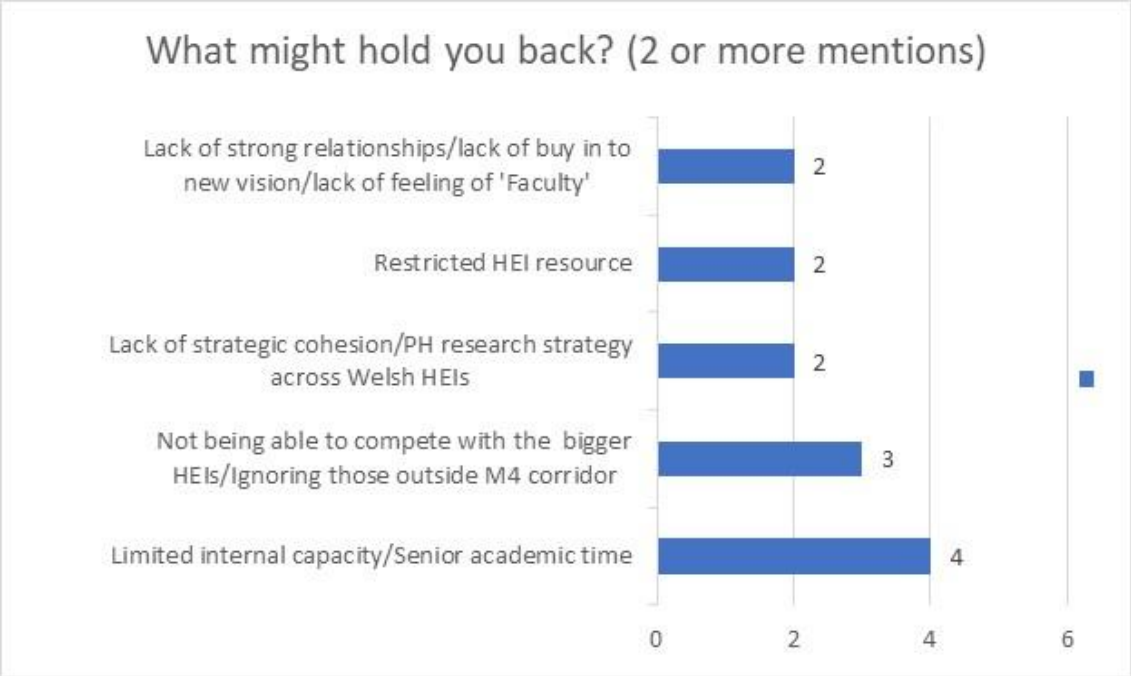
HEI interview respondents were asked about their aspirations for the next 10 years. There was some coherence around strengthening international presence and around developing multi-disciplinary and inter-disciplinary research. Several of the respondents to the Call for Evidence survey also mentioned aspirations to do more international public health research and to seek international funding.

Figure 3: HEI interviewee responses on aspirations



HEI respondents were asked what might hold them back from achieving their aspirations. The issue that arose most often was limited internal capacity/limited senior academic time. 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, and it also resulted in short-term insecure contracts. Other constraints mentioned in the Call for Evidence were a lack of succession planning.

Figure 4: HEI interviewee responses on what might hold them back



Interviewee views about Strengths, Weaknesses, Opportunities and Threats (SWOT) of public health research in Wales

All interviewees were asked about SWOTs facing academic public health research in Wales, and we present here those which were identified by two or more people (Table 2):

Table 2: SWOTs identified by interviewees

Strengths	n=	Weaknesses	n=
Size of Wales	5	**'We don't talk enough' – lack of connectivity and alignment across NHS, PHW, HEIs to build public health research capacity**	9
SAIL	4	**Public health research not strong overall, lack of critical mass**	4
DECIPHer	3	**Access to SAIL as a publicly funded resource**	3
Unique policy environment and favourable legislation	3	**Financial challenges facing HEIs**	2
Stable NHS and Public Health structures	3	**Difficulty at UK level getting funding**	2
Supportive and stable context	2	**Not easy to retain good people**	2
Good individuals	2	**Lack of senior public health researchers**	2
Strong academic culture	2	**Disconnect between HEIs and training of public health registrars**	2
Research infrastructure	2	**No one has the overall picture of public health research**	2
Epidemiological research, and breadth and depth of population data	2	**Small HEIs forgotten, South Wales NHS focus**	2
Diversity and lots of public health research	2		
Opportunities	**n=**	**Threats**	**n=**
Develop LA, NHS, PHW, HEI collaborations	4	**Funding for research and posts is a problem**	11
Tap into international resources and networks	4	**Lack of succession/career planning**	5
Build and strengthen relationships with funders	3	**Porosity of border**	2

Establish a public health research forum, focus for overview of research	3	**Stretched resources causing more insular attitudes**	2
Be more strategic about joint posts	3	**Lack of profile increases vulnerability in tough times**	2
Make more of SAIL	2	**Devolved nations miss out on some UK funding**	2
Think more strategically about NIHR public health opportunities	2		
Train public health registrars in research	2		
Greater focus on teaching, research and supervision	2		

An analysis of the SWOT overall shows that some of the same points came up as strengths, weaknesses, opportunities and threats.

There were comments that public health research is not strong overall/lacks critical mass, and that there was a diversity of research, suggesting that public health research in Wales covers lots of topics. The disparity between the two or three HEIs who have a particular track record in public health research, and those whose research is less developed was mentioned as a weakness. Each of those with a less developed public health research offer has aspirations in the field, but comments suggest that they perceive a South Wales bias.

A strength mentioned was 'good individuals' but it was seen as being difficult to retain good people, meaning that the small critical mass available is vulnerable. This comment was reinforced by one about a lack of senior public health researchers. The lack of a clear career structure was mentioned by several people, together with 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, and that 'people get poached'.

Financial challenges facing HEIs were of significant concern, including a lack of funding within HEIs for research and posts. Recruitment freezes were common which could lead to increased vulnerability, particularly where there was a lack of profile or critical mass. 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 that it was difficult to get funding at UK level.

The disconnect between HEIs and the public health training scheme was seen as a weakness, and there was an opportunity to do more to train registrars in research and to develop public health-trained academics. 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.

Some interviewees pointed to the interconnectedness of teaching, supervision and research generally, indicating that a focus on research in isolation would ignore the potential value of better join up on a variety of areas of mutual interest.

Opportunities identified by interviewees included the need for greater coordination and collaboration across the system. 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.

Tapping into international/EU opportunities was equal top of the list of opportunities identified, and 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.

Several interviewees spoke of their disappointment regarding the loss of joint PHW/HEI posts which had been funded by PHW in the past. However, the comment was made that those posts could have been better connected strategically, with clear objectives and governance.

SAIL was mentioned as a key 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. 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 were 'catching up'.

Topic and research design ideas were discussed with interviewees; carrying our natural experiments was one which was frequently mentioned and seen as something that could be done uniquely in Wales because of the consistent organisational structures.

Developing collaborations was an important theme that arose throughout the analytical work and this was reinforced through frequent comments about the lack of connectivity between the different parts of the system. One interviewee put it simply as 'We don't talk enough'. Some interviewees thought there was an opportunity to do much more together, and one interviewee stated, 'We can bring more resource in if we are more coordinated'.

Several interviewees pointed to the need to involve both HEI strategic leadership as well as public health academics in developing a strategy. Interviewees were asked about how to make it happen, and it was pointed out that developing the strategy would take time, need wide representation and buy-in and a focus on building relationships. It would need 'careful steering to square the unequal starting points'.

There was the suggestion that a public health research forum could be established. This would provide a space for sharing learning about projects, for forming collaborations and applying for resource, and one interviewee said it could provide a focus for developing a register of public health research activity – responding to the weakness identified about no-one having an overview.

Interviewee views on strengthening or sustaining public health research in Wales

Interviewees were asked to name the biggest single factor which would strengthen or sustain public health research in Wales (Table 6). The twelve responses reiterate some of those factors described in the above SWOT analysis.

Table 3: 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 of Findings – what we learned

We had set out to understand the extent to which academic public health research in Wales responds to the strategic priorities of PHW with a view to developing a public health research vision and strategy with partners. As we proceeded in the analytical work, we recognised that PHW, and other service public health organisations in Wales ('Service Public Health'), are consumers and commissioners of evidence and will draw on the best evidence available, regardless of its origin. Therefore we questioned to what extent substantial alignment between evidence needed and evidence produced in Wales was possible or desirable. We also recognised that a thriving academic public health research sector producing high impact outputs had intrinsic positive impact for institutions and for the population of Wales through:

- economic benefit, as funding is brought into Wales leading to employment, and investment in anchor institutions
- through the building of academic skills and capacity.

Thus, public health research that does not necessarily directly meet the evidence needs of the Welsh population has value.

We have synthesised findings from the analyses described, with the discussions of the Steering Group and Expert Panel, to recommend some next steps below. There is unlikely to be a single action which will reverse the downward trend in funding and activity for public health research in

Wales, and the actions below will take time to develop and deliver especially as they are set against a backdrop of extreme financial pressures across the whole public health research system.

Whilst there is more public health research underway in Wales than can be seen at first glance, that activity appears to be decreasing, and the funder 'mix' appears to be shifting. There is dwindling capacity to bid and carry out public health research and no overall plan for developing the next generation of researchers. There is insufficient communication between stakeholders in the public health academic research system and a lack of join up on teaching, supervision and research.

There is strong support from senior academics and other stakeholders for the development of a vision and strategy for academic public health research in Wales, and consensus that PHW is ideally placed to play the convening role in this. There is also agreement around some of the strengths and opportunities which make Wales unique.

Taking a strategic and systems approach

There is currently a lack of a coherent strategy for public health research in Wales. The top weakness identified by interviewees was the lack of connectivity across the NHS, PHW and HEIs and one of the top opportunities was to develop collaborations to address population health issues. 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', and greater resource could be brought into Wales. 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 need to come from WG and the Chief Medical Officer. It was suggested that the most meaningful research will come from optimal connections between PHW, NHS, HEIs, local government and the third sector.

A more strategic approach to research funding, which makes the most of Wales's strengths and considers the future research funding environment is needed. It is important to note that NIHR pays 80% of the 'full economic cost' of carrying out research, higher than other funders. NIHR programmes will be of great interest, and it is worth noting recent developments such as the Health Determinants Research Collaborations (HDRC) programme which seeks to develop research capacity in local government. Wales has recently been successful in obtaining two HDRC Awards – Rhondda and Torfaen[34]. MRC's 22-25 Strategic Delivery Plan[35] (Objective 2) also has a focus on "place" based research addressing local health challenges.

Fundamentally, the strategy would need to address the point that Wales cannot 'do everything' and to identify key strengths and to focus on those, balancing population evidence needs and corporate intuitional priorities to agree areas of excellence which Wales can develop. Alongside this, mechanisms will need to be found which support the development of capability in those universities with a less developed research agenda. There was clear enthusiasm from interviewees in finding

[34] https://www.nihr.ac.uk/news/nihr-invests-a-further-55m-to-tackle-health-inequalities-through-local-government-research/34972

[35] https://www.ukri.org/publications/mrc-strategic-delivery-plan/

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.

It will be important to recognise the variety of mutual opportunities and interdependencies which exist between Service Public Health and Academic Public Health, which not only will have an impact on the 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 Service Public Health informing academic programmes[9], meaning that the following can be enhanced:

- Public health programmes being evaluated by academics with deep context knowledge
- Public health teaching being informed by the real-world of public health practice
- Public health practice/skills being developed through academic input, e.g. finding and using evidence*
- Formal public health training schemes benefitting from cross-fertilisation between Service Public health and Academic Public Health.

** The Public Health Knowledge and Skills Framework[36] sets out knowledge and skills across the range of public health roles in the UK, and describes core skills for public health staff in finding and using evidence.*

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 different constraints impacting public health services generally, and HEIs specifically will need to be considered when working together more closely as partners. A recent report from Universities UK on financial sustainability in UK universities[37] 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[38], with the Higher Education Policy Institute (HEPI)[39] suggesting that

[36] The Public Health Knowledge and Skills Framework https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/777278/PHSKF_sub-functions_explained.pdf

[37] Universities UK & PwC (2024) UK higher education financial sustainability report https://www.universitiesuk.ac.uk/sites/default/files/field/downloads/2024-01/pwc-uk-higher-education-financial-sustainability-report-january-2024.pdf

[38] UKRI: Research financial sustainability: issues paper (2023) https://www.ukri.org/publications/research-financial-sustainability-data/research-financial-sustainability-issues paper/#:~:text=Research%20performed%20in%20universities%20resulted,income)%20of%20around%2069%25

[39] From T to R revisited: Cross-subsidies from teaching to research after Augar and the 2.4% R&D target. HEPI report 127. https://www.hepi.ac.uk/wp-content/uploads/2020/03/From-T-to-R-revisited.pdf

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 of tightening resources, 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'[40], and the need for large research funding awards which fully account for overheads.

In contrast, Service Public Health, namely PHW, but also the Health Boards 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[41]. Their evidence needs may not necessarily or consistently align with the activity of HEIs with their substantial focus on the REF Framework.

Such drivers could create increasing divergence in what Service Public Health and HEIs may be interested in doing in terms of research. Therefore, joint strategic developments between partners will need to identify research focuses and ways of working which are aligned to and feasible within the different constraints facing each.

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[42] and previous reports in Wales[43] [44] have sought greater cross-fertilisation between Service Public Health and Academic Public Health through a focus on 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 insufficient attention to training public health registrars in research. An urgent issue was the lack of succession planning, and it had been noted that key people were reaching retirement age.

The question was posed about where the next generation of public health researchers will come from.

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

- specifying and documenting 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 in master's in public health courses
- encouraging Service Public Health staff to take up research training

[40] Thompson, D.R.; McKenna, H.P. Research Quality—Lessons from the UK Research Excellence Framework (REF) 2021. *Nurs. Rep.* **2022**, *12*, 510-514. https://doi.org/10.3390/nursrep12030048

[41] Public Health Wales (2023) Research & Evaluation Strategy 2023-26 https://phw.nhs.wales/about-us/working-together-for-a-healthier-wales/public-health-wales-research-and-evaluation-strategy-2023-2026/

[42] Academy of Medical Sciences (2023) Improving the health of the public through research: an update statement https://acmedsci.ac.uk/file-download/47202231

[43] Paranjothy S, Behbod B, Bellis M et al (2019) Appendix 1 - briefing paper: academic public health

[44] Paranjothy S, Behbod B, Bellis M et al (2020) Briefing paper II: Vision for academic public health in Wales

- 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 and HEIs.

HEIs, and PHW and Health Boards could put in place the conditions for a thriving collaborative environment with opportunities for rotating between settings, and for sharing skills and knowledge.

The benefits of such an approach have been reinforced by the Steering Group referencing a model 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 the approach described in the US[9].

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

There is a strong history of public health research in Wales, some unique and notable research assets, and more public health research underway than can be seen at first glance.

But research activity and capacity to bid for resource appear to be decreasing. There is no overall plan for developing the next generation of researchers, insufficient communication between stakeholders, and a lack of join up on teaching, supervision and research.

The groupings used to organise views about the single biggest factor which would strengthen or sustain public health research in Wales - Resource, Careers and Getting organised – could prove useful for the emerging strategy.

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 in Wales.

Appendices

Appendix 1

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

30th April, 2024

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 Public Health Wales (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's 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's 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 Welsh Government, and local communities.

Strategic Focus Areas: There's 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 actual projects from 2018 (rather than 2022)

At the research activity code level, some are more PH-related than others (population screening v psychological/behavioural)

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)
	Begins the translation of basic research into experimental	5.6 Psychological and behavioural
		5.7 Physical

5. TREATMENT/ TREATMENT DEVELOPMENT	medicine in preclinical settings and/or model systems	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 HRA, you can access them here **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 below 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.
- While both types of support are essential for health research our 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 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).

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).
- It was not possible to map each project against the PHW strategic priorities or the three PH domains.