Public Health Wales
Research Highlights
2017/18
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Public Health Wales welcomes correspondence in Welsh or English.
Looking to 2030, Public Health Wales has identified seven key priorities for population health. These priorities have been identified through listening to the views of people in Wales (Stay Well in Wales see page 17) and our staff; and taking into account key policies in Wales such as the Public Health (Wales) Act and the Wellbeing of Future Generations (Wales) Act.

Research has an important role within Public Health Wales, helping us to identify the major challenges we face as a population, and examine approaches to overcoming these issues. The evidence we gain from research can help us make decisions about where and how to best invest to support population health.

Examples of our recent research highlights are presented in this overview. Research carried out in collaboration with a range of national and international partners from police, housing associations, schools and prisons - as well as universities and other NHS organisations. As we look to 2019 and beyond, we will build upon these successes, and through our new World Health Organization Collaborating Centre on Investment for Health and Well-being, build the knowledge needed to deliver on our priorities for population health in Wales.
The year in numbers

- 20 active research projects in any single month
- £968,665 external income brought in to Public Health Wales to support research activities in 2017/18
- 2 new Clinical Research Time Award Fellows
- 77 academic publications by Public Health Wales staff
- £6.8m funding secured through a bid to the Police Transformation Fund
- 1001 Welsh residents were asked for their opinions on a range of public health issues as part of the Stay Well in Wales project
Research with impact

Our research builds evidence and knowledge, helping us understand how to improve the health and wellbeing of the Welsh population. The following studies highlight how recent research is helping us achieve this ambition.
What was the challenge?

Training has been developed to increase awareness of vulnerability, trauma and Adverse Childhood Experiences (ACEs) across SWP and some partner agencies. In recognition that the Education and Housing sectors are uniquely placed to identify and support vulnerable individuals, a wider multi-agency approach to vulnerability was needed. This had the potential to identify early intervention opportunities for vulnerable children and families following police contact.

What was done?

Building on learning from past research with SWP we adapted the training to housing and schools. Training was delivered to 93 housing officers across South Wales and 95 school staff from three primary schools. We assessed impact by examining attitudes related to trauma-informed care before and after training. Evaluation of the training examined whether participation resulted in increased ACE awareness and explored the impact on early intervention support across the three sectors. Analysis of Police safeguarding referrals was also carried out to identify any change in demand and the recording of ACEs.
What was the impact?

EVERYONE has a role to play in understanding and responding to vulnerability

- **Training:**
  - greater awareness and improved staff confidence to respond to vulnerability across all sectors;
  - improved understanding of responsibilities and thresholds to safeguarding and vulnerability of partner agencies.

- **New pilot processes:**
  - streamlined information sharing processes resulted in increased and relevant cross-partner communication;
  - improved engagement with children and families through enhanced supportive neighbourhood policing.

Increased need to build resilience and work together with local partners and wider communities

Our findings have been used to shape the national programme to support policing and criminal justice in Wales, building community resilience using early intervention and encouraging a preventative approach to understanding vulnerability with the aim of reducing harm and crime. This work led to the Early Action Together programme¹, launched in 2018, which seeks to develop a national ‘collaborative approach to policing vulnerability in Wales: Developing a multi-agency ACE-informed approach for early intervention and root cause prevention’.

¹ Partners in this programme include the four police and crime commissioners and the four chief constables for South Wales, North Wales, Dyfed-Powys and Gwent; the Community Rehabilitation Company; Her Majesty’s Prison and Probation Service in Wales; Her Majesty’s Courts and Tribunal Service (Wales); the Wales Youth Justice Board.
In 2017, the Commonwealth adopted a peace-building theme and asked Public Health Wales to contribute to the current evidence on preventing violence across the world. Key publications on violence prevention were reviewed to understand how a public health approach to interpersonal violence could be applied and extended to advance our understanding of extremist violence. A novel approach considering the global drivers for violence and shared risk factors across different violence types was also taken. Health leads and ministerial representatives from across the Commonwealth helped to identify examples of the effective implementation of different programmes or approaches to violence prevention, with particular focus on low and middle income countries.

Mark Bellis shared the findings and recommendations during the Health Ministers of Commonwealth Nations meeting on preventing interpersonal, collective and extremist violence. More than 200 senior officials and observers from 38 countries attended the event, including 27 health ministers.

The report will help Heads of Government and other ministers to inform the development of a Commonwealth violence prevention action plan and support national violence prevention strategies. Furthermore, Public Health Wales will work with the Faculty of Public Health on a public health response to preventing radicalisation in the UK.
What was the challenge?

Studies have shown that teachers report a lack of training in supporting student emotional health and their own wellbeing, despite evidence that they are consistently at increased risk of common mental health disorders compared with other occupations. Teachers working with continued heightened levels of stress and distress may result in longer-term mental health problems, poor performance at work, sickness absence, and health-related retirement. Only a few studies have introduced training for teachers in supporting students, and none to date have included a focus on improving teacher mental health.

What was done?

During a two year study, 24 schools were recruited. The primary objective was to evaluate the effectiveness of providing peer support for secondary school teachers, and teacher training in mental health first aid. Teachers and students had their mental wellbeing and attendance measured during the study, and compared with schools delivering usual practice. In addition, the study looked at the cost-effectiveness of the training. The work was funded by the National Institute for Health Research (NIHR) as part of their Public Health Research programme.

What will happen next?

This study is built on a pilot by the University of Bristol, University of Exeter and the London School of Hygiene and Tropical Medicine, with the addition of Public Health Wales and the University of Cardiff. Evidence from the pilot study indicates that study participants who attend the training will develop a greater awareness of their own mental health needs, and will feel more confident in supporting others. If the intervention is found to be effective, a guidance document for schools will be published. Results of the study will be available in 2019.
What was the challenge?

The first Welsh ACEs survey in 2015 identified strong relationships between childhood adversity and poor health throughout life. However, it also found that many people who suffered ACEs managed to avoid their harmful impacts on health. The ability to successfully deal with difficulties such as those caused by ACEs is known as resilience. Supporting the development of resilience in children is a key priority yet little is known about how resilience is built.

What was done?

In 2017, Public Health Wales conducted a second Welsh ACE survey to look at what may help to build resilience. The household survey included approximately 2,500 English or Welsh speaking adults. People were asked about their experience of ACEs before the age of 18, health-related behaviours and questions about resilience in childhood. Surveys included overall childhood and adulthood resilience scales and asked participants about childhood relationships with trusted adults, participation in sports and leisure activities, community culture and traditions, financial security and perceptions of service supportiveness.

What was the outcome?

The first report from the survey found strong associations between ACEs and mental illness. Individuals who suffered ACEs had lower resilience in both childhood and adulthood. However, those who reported greater resilience had lower levels of mental illness. Higher levels of resilience were associated with factors such as having a trusted adult relationship in childhood, sports participation, community engagement and higher financial security. This work has recently been published in *BMC Public Health*.

Study findings have been incorporated into ACE awareness training being provided to organisations across Wales. They are also supporting the development of work with Sports Wales and other sport organisations to increase awareness on ACEs and explore how the resilience-building potential of sports can be strengthened in Wales.

### Supporting our priorities

**Improving mental well-being and resilience**

Public Health Wales

**Welsh Adverse Childhood Experiences and Resilience**

Karen Hughes¹, Mark Bellis¹, Kat Ford² and Lucia Homolova¹

¹Policy, Research and International Development Directorate, Public Health Wales
²School of Healthcare Sciences, Bangor University

Around 2,500 adults in Wales were asked about their experience of ACEs before the age of 18, health-related behaviours, and access to resilience resources.

Adults suffering four or more ACEs growing up were...

- **3x more likely** to report currently receiving treatment for a mental illness.
- **6x more likely** to report having ever received treatment for a mental illness.
- **9x more likely** to report having ever felt suicidal or self-harmed.

**Karen Hughes**

**Mark Bellis**

**Kat Ford**

**Lucia Homolova**

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Alcohol misuse is an international health concern. However, little attention has been paid to the immediate emotions associated with drinking different types of alcohol. Understanding why people choose different drink types and whether different drinks cause different emotions may help inform more effective public health interventions.

In 2017, data from the international cross-sectional opportunistic Global Drug Survey (GDS) was used to analyse which drink types were associated with different emotions in alcohol consumers from 21 countries. The survey also explored whether emotions associated with different drinks influenced choices of drinks in different settings.

Results indicated there is variation in the types of emotions individuals experience from alcoholic beverages, with spirits more frequently associated with emotional changes of all types. Respondents’ level of alcohol dependency was strongly associated with feeling all emotions, with the likelihood of aggression being significantly higher in possible dependent versus low level drinkers.

Understanding emotions associated with different alcoholic drink types is necessary to address alcohol misuse and provide insight into what emotions influence drink choices.

The study, published in the BMJ Open, is the 4th most read article on the BMJ Open website (April 2018). The paper gained international media interest with just over 100 news outlets covering the study and over 200 Twitter users sharing the results.
**CASE STUDY**

Is it all smoke without fire? Welsh primary school children’s perceptions of e-cigarettes

Lorna Porcellato¹, Kim Ross-Houle¹, Zara Quigg¹, Jane Harris¹, Charlotte Bigland¹, Rebecca Bates¹, Hannah Timpson¹, Ivan Gee¹, Julie Bishop², Ashley Gould² and Alisha Davies³

1 Public Health Institute, Liverpool John Moores University
2 Health Improvement Division, Health and Wellbeing Directorate, Public Health Wales
3 Policy, Research and International Development Directorate, Public Health Wales

8 primary schools across Wales took part in the study

498 children (ages 7-11) completed a questionnaire on awareness of e-cigarettes, vaping and smoking

About 99% of children thought it was inappropriate for children to smoke e-cigarettes or tobacco

The popularity of e-cigarettes has raised concerns that they may act as a gateway to tobacco smoking for young children. Current research is largely focused on adolescents and young adults. In view of the recognised influence of early years on attitude and habit formation, better understanding of what young children think about e-cigarettes is needed.

Public Health Wales commissioned Liverpool John Moores University to conduct a study into primary school children’s awareness of e-cigarettes, their beliefs about vaping and smoking and their understanding of the risks. Eight primary schools across Wales were selected. A class-administered booklet encompassing a draw and write exercise and questionnaire was completed by 498 children (ages 7-11). In addition 96 children participated in 24 discussion groups.

Almost all children were aware of e-cigarettes and were able to differentiate between electronic and tobacco cigarettes. Children had few intentions to use either e-cigarettes or tobacco cigarettes when older. Almost all the children thought that using e-cigarettes (98.8%) and smoking tobacco cigarettes (99.2%) was inappropriate for children their age. Half thought it was okay for adults to use e-cigarettes (50%) or tobacco cigarettes (46.2%). Understanding children’s views about e-cigarettes will help develop effective health promotion interventions that highlight potential risks and prevent uptake.
What was the challenge?

Older people living in care homes are prescribed far more antibiotics than the general population because of the higher number of infections they have, close-proximity living, weakened immunity and existing health conditions. Little else other than vaccination and hygiene methods prevent infection in care home residents. A recent study carried out by this team (PAAD study) has shown that 72% of care home residents lack mental capacity to consent for themselves. Evidence also shows that those lacking capacity are likely to be more frail and have an increased vulnerability to infection. Thus, a research study was designed to examine whether care home patients, including those lacking mental capacity and who are most frail, experience health benefits and reduced infections from taking a daily probiotic supplement.

What is being done?

This study involves collaboration between clinical and academic researchers from the South East Wales Trials Unit in Cardiff University, University of Oxford, University of Southampton and Public Health Wales. The study aims to compare probiotics with placebos in care home patients, recruited from around the UK. Faeces and saliva samples are taken from patients at baseline, 3, 6 and 12 months and sent to Public Health Wales Specialist Antimicrobial Chemotherapy unit. Samples are processed for C. difficile, Anti-Microbial Resistant organisms and Candida species.

What is the expected outcome?

This trial will provide evidence for whether a safe and accessible intervention is effective in the prevention of infection, antibiotic use and antibiotic resistance in care home residents. The study will investigate the effect of daily doses of probiotic on antibiotic use. Other outcomes will examine infection, well-being, service use, mortality, and microbiology results.

The findings will help to make evidence-based decisions on whether or not taking a probiotic product promotes health and well-being in care home residents.
Assessing the Incidence of Viral Hepatitis in Black and Minority Ethnic Groups Living in Wales, UK, Using ‘Onomap’, a Name-Based Ethnicity Classification Software Package

Daniel Thomas¹ and Amy Phillips¹

¹ Health Protection Division, Public Health Services Directorate, Public Health Wales

In 2014/15, there were 2,710 notifications of hepatitis in Wales

What was the challenge?

Although ethnicity is one of many factors which determine peoples health, it is poorly recorded in clinical data sets. We investigated the use of ‘Onomap’, a name-based ethnicity classification software package, developed by the Department of Geography at University College London, to measure ethnic inequalities in the incidence of communicable disease in Wales.

What was done?

We assigned ethnicity to clinical notifications of hepatitis A, B, C and E for tests carried out by laboratories in Wales in 2014 and 2015. The accuracy of Onomap was measured using three data sets containing patient names and self-reported ethnicity. This was a collaborative project involving Public Health Wales Communicable Disease Surveillance Centre and Microbiology, Cardiff Metropolitan University School of Health Sciences, Aneurin Bevan University Health Board, Cwm Taf University Health Board, and Narodowy Instytut Zdrowia Publicznego, Poland.

What was the outcome?

Hepatitis notifications were most frequent in ‘White British’, but rates were considerably higher in other ethnic groups. In general, testing rates were highest in the ethnic groups with highest notification rates, although the Chinese population living in Wales appeared to be under-tested for hepatitis B relative to their risk. Onomap performed least well for ‘Black’ groups. Onomap is therefore a useful tool for monitoring ethnic inequalities in communicable disease, although systematic differences in sensitivity should be considered when interpreting findings. Measuring ethnic variations in testing by age, area of residence, and social deprivation can provide further information about how best to better target services.

6,640 patient names were tested using Onomap, a name-based classification software tool, to explore the accuracy of predicting ethnicity
What was the challenge?

Work by Public Health Wales has shown that 9% of all antibiotics prescribed in Wales were by dental practices. Recent interventions have led to a 22% reduction of antibiotic prescribing by dentists in Wales. However, it may be possible to further improve the level of antibiotic prescribing in dentistry because audit data suggests many antibiotics are prescribed without obvious clinical justification. Our study explored the feasibility of linking dental prescribing with Dental Services databases, and provide feedback on antibiotic prescribing profiles to dental practitioners and practices in Wales.

What was done?

In collaboration with Cardiff University School of Dentistry, NHS Business Services Authority, Dental Services and NHS Wales Shared Services Partnership, we explored the feasibility of producing individual antibiotic prescribing profiles of dentists in Wales. Linking and analysing data from two databases (the Dental Prescribing Database and the General Dental Services database) gave us an opportunity to explore ways to produce meaningful prescribing profiles for dentists in Wales.

What was the outcome?

The research shows that with some improvements in the existing data collection systems, it is possible to produce accurate personalised feedback profiles for NHS dental practitioners and practices in Wales.

Following this work, discussions were held with the NHS Wales Shared Services Partnership to understand the implications of making improvements to the dental prescribing databases.

This research was presented by Anwen Cope at the British Association for Community Dentistry conference in 2017 where it won the Roger Anderson Poster Prize. A news feature also appeared in the first issue of the Health and Care Research Wales @ResearchWales magazine.
What was the challenge?

There are approximately 2,400 lung cancer cases diagnosed in Wales each year, accounting for more deaths in Wales than breast and bowel cancers combined. International studies have shown that Wales has lower lung cancer survival than most other high-income and many medium-income countries. There is also a steep gradient in lung cancer cases between the least and most deprived areas in Wales (around a quarter of all cases are diagnosed in the earlier stages in Wales). Survival from early stage lung cancer is higher amongst the wealthier areas of Wales. However, little is understood about influences on survival factors, or the extent to which those factors explain variations in lung cancer survival in Wales.

What was done?

A review was undertaken with Bangor University looking at a number of data sources to identify the potentially modifiable factors associated with lung cancer survival. The project aimed to:

- identify factors that could influence the variation in lung cancer survival in Wales
- identify whether those factors are measured in either the Wales national registry, in any other cancer-specific databases or in the Secure Anonymised Information Linkage (SAIL) databank
- determine the completeness of these factors in each data source.

What was the outcome?

Several of the datasets reviewed contained adequate data on several important factors that influence lung cancer survival in Wales. We identified several categories of modifiable factors that could influence lung cancer survival e.g. body mass index, quitting smoking after diagnosis, pre-treatment quality of life, medical insurance, and diagnostic intervals. The next stage is to carry out a multi-variate analysis using routine data to quantify the distribution and extent of factors that influence the variation in lung cancer survival in Wales.
In 2017, Public Health Wales captured the opinions of stakeholders and staff to inform the development of their long-term strategy; as part of this, the organisation wanted to ask the public for their views.

The ‘Stay Well in Wales’ survey was designed to find out what the Welsh public believe are the biggest contributors to poor health and well-being, and what action they would like us to take to deal with these issues. The project involved a face-to-face household survey and an online survey open to all Welsh residents aged 16 years and over. We worked with Bangor University to run the survey and become one of the first nations in the world to ask the public what measures they feel are necessary for them to live healthier lives.

The public highlighted smoking, drug abuse, alcohol misuse, physical inactivity and unhealthy eating habits as the top-five contributors to poor health and well-being in Wales, although other issues such as social isolation, poor parenting and difficulties accessing healthcare also had high ratings.

Responses from 1,001 Welsh residents demonstrated a commitment to a preventative model of public health. When given the option to agree, disagree or neither, 53% agreed the NHS should spend less on treating illness and more on preventing it (15% disagreed). Further results included:

- 88% agreed that schools should teach children more about how to live a healthy life; 5% disagreed.
- 76% agreed that employers should do more to look after their workers’ health; 8% disagreed.
- 76% agreed that they support 20mph speed limits where they will reduce road traffic injuries; 12% disagreed.

To read the full report, visit www.publichealthwales.org/staywellinwales.
Public Health Wales staff earn Clinical Research Time Awards

Lim Jones, Consultant Medical Microbiologist, and Sarah Jones, Consultant in Environmental Health Protection, were both successful in their applications for the Health and Care Research Wales Clinical Research Time Award funding grant.

This funding will give them protected research time to develop their research interests within Public Health Wales and for the benefit of the wider population.

Lim Jones said:
“Antimicrobial resistant (AMR) bacterial infections pose a major and growing challenge to healthcare in Wales. This is a priority area for Public Health Wales. Securing the clinical research time award will allow me dedicated time to pursue an academic program targeted at improving the diagnosis, management and prevention of AMR infections. This will be in partnership with clinical, university and industry colleagues.”

Sarah Jones said:
“I have a long standing research interest in road traffic injuries and more recently in air pollution and active travel as well. Each year in Wales, road crashes lead to around 3,000 emergency admissions and 14,000 Emergency Department attendances. Road traffic causes up to two-thirds of air pollution, which causes respiratory diseases, heart problems, strokes, dementia, cancers and low birth weight and premature babies.

“This award will give me the time to develop high quality research in transport and health, including road traffic crashes, air quality, noise and active travel. I want to look at this from a policy and planning perspective, to benefit the health of people in Wales and to benefit NHS Wales.”
Public Health Wales Research Strategy: activities in the last year

Our research strategy outlines four key priority areas

1. We said we would help our staff develop research skills and become lead investigators.

This year:
- We supported applications to the competitive Clinical Research Time Awards, a Health and Care Research Wales funded programme to provide staff with protected research time. In 2017/18 two Public Health Wales staff, Lim Jones and Sarah Jones were awarded funding (£145,000).
- We developed and commissioned a training and development programme on research and evaluation for our staff.

2. We said we would generate knowledge through supporting national collaborations and provide funding to pump-prime new research.

This year:
- Our research on ACEs has had significant impact for Wales, leading to an investment of £400,000 from Welsh Government to Cymru Well Wales and the development of the ACE Support Hub to tackle the impact of ACEs.
- A collaborative bid between Public Health Wales, the four police and crime commissioners and chief constables, and a range of criminal justice and voluntary sector organisations across Wales received funding of £6.87 million from the Home Office for a three year period from 2017-2020.
- Public Health Wales Research and Development Division has made available small grant funding of up to £10,000 to support new research projects. In 2017/18 we received six applications and three were funded. Additionally, eight applications were received for the Research and Development’s Practitioner-led Research Fund. This provides funding of up to £40,000 to commission one project in collaboration with a university partner.

https://www.aceawarewales.com/
3. We said we would initiate international research collaborations and partnerships plus widen collaborative partnerships with academia in Wales.

4. We said we would communicate our findings by supporting staff to present their research, including at conferences and linking with academic partners.

This year:

- The Policy, Research and International Development directorate of Public Health Wales achieved designation as a WHO Collaborating Centre on Investment for Health and Well-being.
- We have sponsored a number of European Union (EU) Knowledge Exchange Skills Scholarships (KESS-2) and co-host students throughout their research programmes.
- The Research and Development Division has facilitated conferences, seminars and workshops promoting public health priorities across all sectors in Wales. In March 2018 we hosted the Research in Wales event where several Public Health Wales staff gave oral or poster presentations.
- We have liaised with the Evidence Service to receive quarterly reports of all publications where Public Health Wales staff are authors.

Research in Wales Showcase Event: Research with Impact

Over 400 delegates from Public Health Wales and our partner organisations attended Public Health Wales’ ‘Research in Wales’ event on Thursday 8 March in Cardiff, or watched a live stream of the day at #RIW2018. The event, which was supported by the Public Health Wales Network Team, had a strong networking element with over 30 stalls and posters from partner organisations in order to raise awareness of different areas of work and collaborative opportunities. Presentations, Mentimeter results and photos from the day can be found on the R&D Community website.
Looking back, looking forward

The Public Health Wales Research and Development (R&D) Office provides research governance support to its staff. All research projects taking place across the organisation are reviewed by the Public Health Wales R&D Office, and where required, obtain research approvals before commencing.

Public Health Wales receives core funding (currently almost £210,000) from the R&D Division of Welsh Government to support research. This is used to support the R&D Office and promote the development of new research.

Over the coming year we will be developing our new research strategy. We are looking forward to consulting widely with Public Health Wales staff and partner organisations to help shape our priorities and approach to research in the future, in support of our ongoing organisational Long Term Strategy. We will also be funding small-scale feasibility studies with a view to extending these to high quality externally funded projects, which help build the evidence base for future public health interventions and policies. We will continue to work closely with the national research coordinating function, Health and Care Research Wales, to support the delivery of commercial studies and high quality research projects in Wales.

Furthermore, the WHO CC will develop, collect and share evidence, knowledge and tools on how best to invest in better health, reduce inequalities, build stronger communities and resilient systems in Wales, Europe and worldwide. It will help advance applied research to inform and influence policy and practice.

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Acknowledgements

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Public Health Wales

what we do

We exist to protect and improve health and wellbeing and reduce health inequalities for people in Wales. We work locally, nationally and internationally, with our partners and communities, in the following areas:

- **Health Protection**
  Providing information and advice and taking action to protect people from infectious diseases and environmental hazards

- **Microbiology**
  Providing a network of microbiology services which support diagnosis and management of infectious diseases

- **Health Improvement**
  Providing information, advice and taking action, across sectors, to promote health, prevent disease and reduce health inequalities

- **Screening**
  Providing screening programmes which assist the early detection, prevention and treatment of disease

- **Health intelligence**
  Providing public health data analysis, evidence finding and knowledge management

- **Safeguarding**
  Providing expertise and advice to help protect children and vulnerable adults

- **NHS quality improvement and patient safety**
  Providing the NHS with information, advice and support to improve patient outcomes

- **Policy, research and international development**
  Influencing policy, supporting research and contributing to international health development

- **Primary, community and integrated care**
  Strengthening public health impact through policy, commissioning, planning and service delivery

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