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Powys Teaching Health Board

Annual Report of the Director of Public Health 2016/17



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FOREWORD

Dear Reader

Welcome to the 2016/17 Annual Report of the Director of Public Health for Powys. Considering recent reports, the 2011/12 report focused on the importance of prevention in maximising health and well-being. For 2012/13, the report focused on the key determinants of health and well-being and the importance of partnership working. My 2013/14 report focused on the health and well-being of children and young people in Powys. The 2014/15 report was based on a recent series of analyses and intelligence products published by Public Health Wales, an approach which was continued in the 2015/16 report.

My 2016/17 report focuses on health protection. Health protection - one of the three domains of public health practice - is essentially concerned with protecting the population from threats to its health. The term is broad and encompasses matters such as environmental protection, food and water safety and communicable disease. In this context, the report also considers tobacco control, population screening and adverse childhood experiences.

I hope that the report will prove to be interesting and useful for a wide audience, including (but not limited to) members of the public and professional and managerial staff (including planning staff) from both Powys Teaching Health Board and Powys County Council. I make eight recommendations for local action in the report; progress with these recommendations will be reviewed in my 2018/19 report. As expected, I also review progress with the recommendations of my 2014/15 report, in this report.

As ever, I am very grateful to the many individuals who contributed ideas, information and text for the report. I hope you find it an enjoyable and useful read – I welcome all questions, comments and suggestions via PowysPHT.Admin@wales.nhs.uk. The report will be made available via the Powys Teaching Health Board website at www.powysthb.wales.nhs.uk

Dr Catherine Woodward

**Director of Public Health, Powys Teaching Health Board
GMC 3085499**

December 2017

SUMMARY OF RECOMMENDATIONS

1	Due to the potential complexity associated with cross-border outbreaks, PTHB should work with Public Health Wales to explore, design and implement a programme of cross-border training with other health and local authority partners in Wales and England.
2	The Powys Vaccination Group should work with Public Health Wales to agree further action – encompassing primary care and the PTHB school nursing service - to increase local uptake of the Men ACWY vaccine, including in the “catch-up” cohorts.
3	Working with partner organisations, PTHB should increase awareness of the dangers of carbon monoxide exposure and the safety benefits of carbon monoxide alarms in homes and holiday rentals, amongst the Powys population.
4	PTHB should work with the Public Health Wales Environmental Health Protection Team, local GPs and Powys County Council to ensure that GPs are aware of the indications and arrangements for the testing of private water supplies.
5	PTHB should work with Dyfed Powys Police to explore and agree opportunities for further local collaboration to reduce the burden of road traffic crashes on the Powys population.
6	As part of the implementation of the Powys Health and Care Strategy, PTHB should work with the Public Health Wales Screening Division to further develop a prioritised and evidence-based approach to address social inequity in screening uptake in the Powys population.
7	The Powys Tobacco Control action plan should be reviewed in light of the new national delivery plan and presented for consideration and approval by PTHB later in 2017/18.
8	PTHB should continue to review and develop its response to adverse childhood experience through the Children and Young People’s Partnership of the Powys Regional Partnership Board.

ACKNOWLEDGEMENTS

The content for the 2016/17 Annual Report of the Director of Public Health for Powys is based on contributions from a number of staff employed by Public Health Wales. In particular, I would like to express my thanks to the following colleagues, who authored chapters and/or contributed content:

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- Dr Christopher Johnson, Consultant in Health Protection, Health Protection Division, Public Health Wales
- Dr Sarah J Jones, Consultant in Environmental Health Protection, Health Protection Division, Public Health Wales
- Dr Alison Merry, Consultant in Public Health, Powys Local Public Health Team, Public Health Wales

Powys Teaching Health Board (PTHB) staff also supported the report. My thanks go to Cate Langley, PTHB Head of Midwifery and Sexual Health Services; Andrew Evans, PTHB Deputy Director of Primary, Community and Mental Health Services; Beverley Gregory, PTHB Senior Nurse for Infection Prevention and Control; and Warren Tolley, PTHB Primary Care Dental Advisor. I would also like to thank Tin Mellerick-Wheeler, PTHB Communications Manager, for his support with design and print. Finally and in particular, I would like to thank Stuart Bourne, PTHB Deputy Director of Public Health, for co-ordinating production of the report and for his diligence in reviewing the progress with previous recommendations.



Chapter 1: Introduction

Stuart Bourne, Deputy Director of Public Health and Consultant in Public Health, Powys, Local Public Health Team

Introduction

1.0 Dr John Snow was one of the founders of the public health movement in the UK. In 1854, during a cholera outbreak in London's Soho district, Snow plotted cases of the disease on a map and identified a water pump in Broad Street as the source. When the handle of the pump was removed, cases of cholera began to diminish. Health protection and controlling and containing the spread of infectious diseases has been one of the core functions of public health ever since.

1.1 In the 21st Century, despite major advances in hygiene and infection control, protecting people from communicable disease remains a crucial public health activity. This is done through primary prevention, for example via childhood immunisation, or through intervening early when outbreaks of infectious disease occur to break the cycle of transmission. In this year's annual report there is a particular focus on health protection. Chapter 2 reports on recent trends in the notification of some of the main childhood diseases (e.g. meningitis, measles, whooping cough, scarlet fever), as well as describing childhood immunisation rates and reporting on cases of food poisoning in Powys. Chapter 3 considers health protection through a wider lens, looking at modern day concerns (road traffic accidents) as well as issues that have been ever present (the quality of the water we drink and the air we breathe).

1.2 Today, protecting the health of the population is about more than infectious disease. Modern developments in laboratory and imaging technology mean that diseases can be detected much earlier, often before signs and symptoms occur. This offers the potential for earlier, sometimes curative treatment. Chapter 4 provides a review of screening performance in Powys for the range of disease and conditions covered by Public Health Wales screening programmes. Levels of uptake in Powys are presented, along with comparator figures for other parts of Wales.

1.3 Since the ban on smoking in public places was introduced in 2007, the health-harming effects of second-hand tobacco smoke on population health have improved. However, at individual and population level, smoking remains a very significant cause of preventable mortality and a significant contributor to health inequalities. The emergence of electronic nicotine delivery systems (ENDS) in recent years has added a new dimension to these considerations. Chapter 5 reviews the current evidence and emerging public policy regarding both tobacco and ENDS use, as well as describing the current performance of stop smoking services in Powys and across Wales.

1.4 Chapter 6 describes current research about the effects of adverse childhood experiences (ACEs) on health and well-being in later life, including how ACEs are thought to exert an effect across the life course. While the term "ACEs" might be new, the recognition that there is a cycle of

disadvantage affecting the poorest in society has been known for a long time. The ACEs programme is helping to re-frame and re-energise the debate in Wales, but ensuring that every child has the best possible start in life remains the fundamental issue. For this reason, "Starting Well" is one of the foundations of the new Health and Care Strategy for Powys, which was agreed by Powys Teaching Health Board and Powys County Council earlier in 2017.

1.5 This year's annual report also provides an update on the status of the recommendations made in the 2014/15 Annual Report of the Director of Public Health for Powys. The position with the eight recommendations from that report are summarised below.

Review of the recommendations in the 2014/15 Annual Report of the Director of Public Health for Powys

Recommendation 1

Powys Teaching Health Board should request that future Director of Public Health Annual Reports are audited at least once every three years to ensure consistency with Faculty of Public Health guidance on the structure and format of Annual Reports.

1.6 The audit of the 2013/14 annual report, using Faculty of Public Health Guidance, was presented in the 2014/15 report (sections 1.15 - 1.17). This year's annual report will be audited, with findings presented in the 2017/18 report.

Recommendation 2

The health assets with some of the widest disparities in Powys are education and training/qualifications. The Powys Local Service Board All Age Programme Board should consider the importance of education and training when setting new priorities for the Powys One Plan from 2017 onwards.

1.7 Since this recommendation was made, the Powys Local Service Board has been replaced by the Powys Public Service Board in line with the requirements of the Well-being of Future Generations (Wales) Act 2015. The issue relating to education and training was recognised in the Powys Well-being Assessment, which is being used to inform the priorities of the Powys Well-being Plan. The disparity in education and training qualifications in Powys was specifically referenced in the Powys Well-being Assessment.

Recommendation 3

Many of the indicators included in Our Healthy Future remain important measures of health and wellbeing locally and nationally. Efforts should be made as part of the consultation on the Public

Health Outcomes Framework to ensure that these measures form part of the final set of indicators.

1.8 The relevance of the Our Healthy Future indicators to public health was communicated back as part of the Public Health Outcomes Framework consultation process. As a consequence, just one of the indicators from Our Healthy Futures is absent from the Public Health Outcomes Framework indicator set (the rate of alcohol-specific admissions).

Recommendation 4

In the past ten years an additional 5% of adults have become overweight or obese. Almost sixty percent of the adult population are now overweight or obese in Powys. Promoting healthy weight must remain a priority, and the existing "Healthy Weight" strategy for Powys should be reviewed to ensure it remains evidence based and comprehensive in its approach. An investigation into the declining rate of consumption of 5 portions of fruit and vegetables a day in Powys should be addressed as part of the review.

1.9 The promotion of healthy weight is identified as a priority within Powys Teaching Health Board's IMTP and the importance of addressing obesity in children has been identified in the Powys Well-being Assessment. Multi-agency approaches to promoting healthy weight are coordinated by the Powys Healthy Weight Steering Group, led by the Director of Public Health. This group has reviewed its action plan to ensure a comprehensive and evidence-based approach across the life-course and to ensure that the plan contributes to priorities within the IMTP. The national "10 Steps to a Healthy Weight" approach is used to inform actions to promote healthy weight from conception to age five, and there are strong links to work being undertaken by the Healthy Pre-School and Healthy Schools programmes. A new programme, "Bach a Iach" (Small and Healthy), has been developed to encourage pre-schools to promote healthy eating and physical activity and has led to an additional 25 pre-school settings joining the Healthy Pre-school Scheme. An investigation of "five a day" consumption has been undertaken and will be presented to the Healthy Weight Steering Group and the PTHB Nutrition, Hydration and Catering Group later in 2017.

Recommendation 5

The completeness of recording of the causes of stillbirth of Powys babies should be reviewed; improvement measures should be put in place where indicated.

1.10 National challenges remain in the identification of the causes of stillbirth, and in some cases, the understandable reluctance of some families to consent to a post-mortem examination is a factor. In Wales, there has been extensive national work, through the Maternity Network (of which PTHB is a member), to improve the quality of conversations between health professionals and families, to improve consent rates. Work has also been

done to improve access to post-mortem and in relation to the timeliness of reporting. Further work is planned to explore the potential role of community midwives regarding advice and obtaining consent. The local development of midwifery-led ultrasound should play a role in the identification of babies at risk of intrauterine growth retardation, which can be a factor in stillbirth.

Recommendation 6

The findings from this year's Annual Report should be presented to each of the primary care clusters in Powys and used to promote discussion about how best to use the current range of intelligence products produced to support primary care development.

1.11 A set of presentation slides were developed following the 2014/15 Annual Report, and were used as the basis for presentations at primary care cluster meetings in Powys during 2016.

Recommendation 7

Rates of elective surgical procedures in Powys are generally lower than in Wales. The two main exceptions to this are apicectomy procedures and wisdom teeth removal where rates are relatively high. The comparative rates in Powys and Wales should be re-assessed, and the factors contributing to this pattern investigated by commissioners to ensure evidence-based referral pathways are in place in Powys.

1.12 Regarding apicectomy, NICE guidance is followed and there is an increasing number of referrals into the Powys endodontic service from the hospital dental service, for an opinion on orthograde re-root treatment prior to an apicectomy. This helps to ensure that, where possible, re-root treatment is carried out in preference to a retrograde root filling.

1.13 Both the hospital and primary care oral surgery services follow NICE guidance on wisdom tooth extraction. Extraction of symptomatic impacted, carious, periodontally involved and buccally-displaced wisdom teeth remains a common procedure, for good clinical reasons. It is not currently possible to compare like-for-like data across Wales or health boards.

Recommendation 8

Rates of unscheduled care activity in Powys are relatively low. Although this is not necessarily a negative finding, Powys Teaching Health Board should seek assurance that these relatively low rates are not associated with adverse clinical outcomes in the Powys population.

1.14 The approach taken by the health board's Unscheduled Care Programme has been to try and reduce avoidable unscheduled care demand by developing a range of primary and community-based care services which

help people to keep healthy and remain living independently in their own homes for as long as possible, and - should an acute episode of care become necessary - to facilitate their return home as quickly as safely possible.

1.15 Unscheduled care activity, measured by emergency ambulance transports, A&E attendances, emergency admissions and emergency admission average length of stay in acute hospitals, are used by the health board as key indicators to measure the effectiveness of this approach. The health board continues to demonstrate lower than Wales and England averages for these indicators and this is particularly true in relation to key long-term conditions.

1.16 In order to assess the impact on clinical outcomes, the health board has sought assurance from the mortality data held in the Health Maps Wales database provided by the NHS Wales Informatics Service. Using data from 2015, this database shows no evidence that mortality is higher for Powys residents as a result of lower rates of unscheduled care activity. The database shows that the age-standardised mortality rates for Powys residents are generally lower than those for the rest of Wales including for cancer and cardiovascular, liver and respiratory disease. The health board will continue to review these figures on an annual basis.

Chapter 2: Communicable Disease and Immunisation

Dr Alison Merry, Consultant in Public Health, Public Health Wales, Powys Local Public Health Team
Dr Christopher Johnson, Consultant in Health Protection, Health Protection Team, Public Health Wales
Dr Catherine Woodward, Director of Public Health, Powys Teaching Health Board



Key Messages for Powys:

- Immunisation remains one of the most effective interventions for providing protection against some communicable disease. Improving immunisation rates and ensuring the timely identification of cases and appropriate health protection interventions to prevent spread remain of the utmost importance.
- The 95% national target for uptake of three doses of the 5 in 1 vaccine at one year of age was exceeded in Powys in 2016/17, where the rate was 96.3% (uptake in Wales was also 96.3%).
- The 95% national target for the proportion of children up-to-date with routine immunisation at four years of age was not achieved in Powys in 2016/17. However, uptake in Powys in 2016/17 was higher than the previous year (86.2% compared to 84.9%) and was also higher than Wales as a whole (84.6%).
- Two doses of MMR are needed to provide full protection against measles, mumps and rubella. The 95% national target for two doses of MMR by age five was not achieved in Powys or in Wales in 2016/17 (rates of 87.7% and 90.3% respectively). There will continue to be a risk of measles outbreaks until the uptake of MMR is increased.
- Actions to improve immunisation uptake are coordinated by the Powys Vaccination Group. Current priorities include work to improve the child health information system, to ensure that call/recall procedures are robust, to actively follow-up children who have missed an immunisation and to reduce practice-level variation in uptake rates.

Introduction

2.0 This chapter considers some of the more important communicable diseases responsible for serious illness in individuals and/or potentially community outbreaks (not including blood-borne infection). The chapter provides a high-level summary of the epidemiology of the conditions and (where relevant) of vaccine uptake and some of the actions being taken to improve local uptake rates.

2.1 Immunisation is one of the most effective interventions available for protecting against communicable disease. Improving immunisation rates and ensuring the timely identification of cases and appropriate health protection interventions to prevent spread are of the utmost importance. Data on the uptake of immunisations offered in the routine national schedule are published by Public Health Wales on a quarterly and annual basis, supporting comparison of local and national uptake rates. Confidence intervals and other tests of statistical significance are not routinely available for immunisation uptake rates.

2.2 The management of outbreaks requires specialist advice which is provided by the Health Protection Service in Public Health Wales. This service also includes the All Wales Acute Response Service (AWARe) and the Communicable Disease Surveillance Centre, which monitors trends and reports activity.

2.3 There is a legal duty on registered medical practitioners and laboratories to notify specific infectious diseases to the "Proper Officer" of the relevant local authority. For Powys, the consultants in the Public Health Wales Health Protection Service are authorised by Powys County Council to act in this regard.

2.4 Notifications provide some of the basis for communicable disease surveillance and response, supplemented by reports from other sources. This includes laboratory data for infectious agents not covered by the legislation, anonymous data submitted by GUM clinics and other forms of hospital incident reporting.

2.5 The Public Health Wales Health Protection Service works closely with local authority environmental health officers (EHOs) to investigate the source of incidents and outbreaks and take appropriate action. Joint working also covers incidents relating to private water supplies and pollution control. For more serious incidents, action is taken in close partnership a wide range of stakeholders including staff from PTHB and the local Public Health Team. There is close liaison with the local Director of Public Health for all issues relating to communicable disease and immunisation, including during an outbreak situation.

1

Recommendation 1: Due to the potential complexity associated with cross-border outbreaks, PTHB should work with Public Health Wales to explore, design and implement a programme of cross-border training with other health and local authority partners in Wales and England.

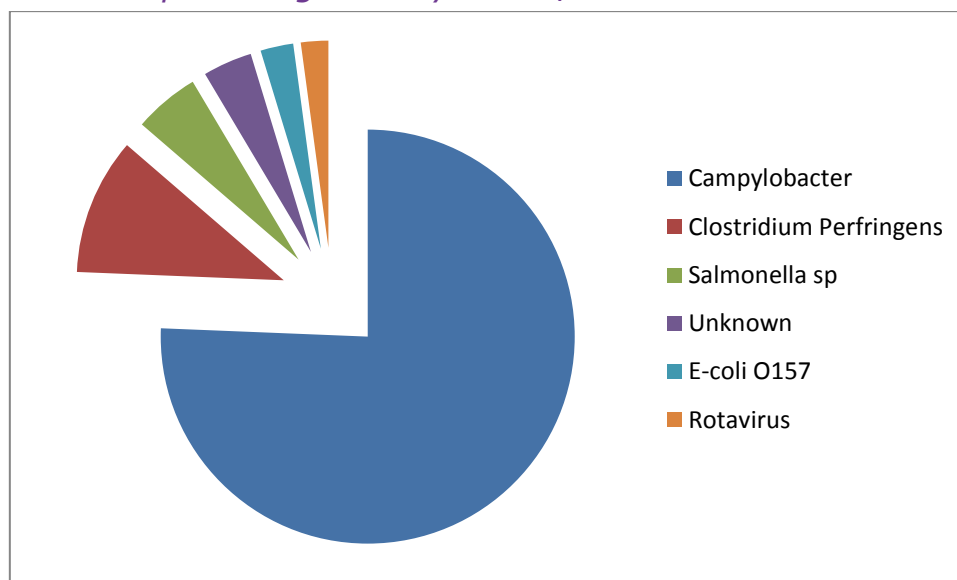
Gastrointestinal Infection: Food Poisoning

2.6 “Food poisoning” is an important cause of gastrointestinal infection, which arises after the consumption of food or drink that is contaminated with a disease-causing bacterium, virus or parasite. Over 250 organisms are known to cause this type of disease. The most common types of bacteria to cause infection include *Campylobacter*, *Salmonella*, *Listeria*, *Shigella*, *Clostridium* and *Escherichia coli* (*E. coli*).

2.7 The symptoms of food poisoning vary depending on the cause. The most common symptoms include malaise, vomiting, abdominal pain and diarrhoea. Other symptoms include fever, chills, bloody stools, dehydration, muscle aches and exhaustion.

2.8 Two hundred and thirty four cases were reported in Powys in 2016/17, compared to 4,139 in Wales. The most common organism demonstrated to be responsible was *Campylobacter* (Figure 2.0). Incidents were distributed across Powys (Figure 2.1).

Figure 2.0: Food poisoning in Powys 2016/17



Source: Public Health Wales

Note: All *Clostridium perfringens* cases were associated with a single food poisoning outbreak; identification of the organism was based on test cases within the outbreak.

Figure 2.1: Distribution of food poisoning incidents in Powys, 2016/17



Source: Public Health Wales

Influenza

2.9 Influenza (also known as 'flu) is a common and highly infectious respiratory illness caused by the influenza virus. It is spread in small airborne droplets produced when an infected person coughs or sneezes and can also be spread through contact with hands or hard surfaces which are contaminated with the virus. The symptoms of 'flu typically come on rapidly and include fever, cough (usually dry), runny nose, sore throat, headache, bodily aches and pains and fatigue. The incubation period (the time from infection to illness) is around two days. For most people who are fit and well, influenza is a mild to moderate illness - they feel ill for a week or two and then make a full recovery. But influenza can also present with more severe symptoms amongst certain "at risk" groups – including people with an underlying medical condition, older people, pregnant women and children. These groups are at an increased risk of serious complications.

2.10 The influenza virus circulates every year and in the UK the 'flu season typically runs from October to April. There are three types of influenza virus: A, B and C, although types A and B are of most concern (type C is detected less frequently and usually causes milder infections). The composition of the seasonal influenza vaccine is updated each year in light of advice from the World Health Organisation.

Immunisation against Influenza

2.11 In summary, influenza immunisation is offered from the age of 65 years and to other nationally defined groups (including people with an underlying medical condition, pregnant women and certain childhood groups). Table 2.0 and Figures 2.2 and 2.3 provide a summary of elements of performance during 2016/17; the national targets for uptake amongst

the 65 years and over and the under 65 years at risk populations were not achieved in Wales.¹⁴

2.12 In Powys, as part of a new approach to local delivery of the 'flu immunisation programme, the PTHB localities work closely with the primary care clusters to implement local action plans to increase uptake and reduce variation in influenza immunisation (including direct provision). The importance of robust call and recall arrangements also continues to be highlighted to primary care.

Table 2.0: Influenza immunisation: annual uptake in Powys and Wales, 2016/17

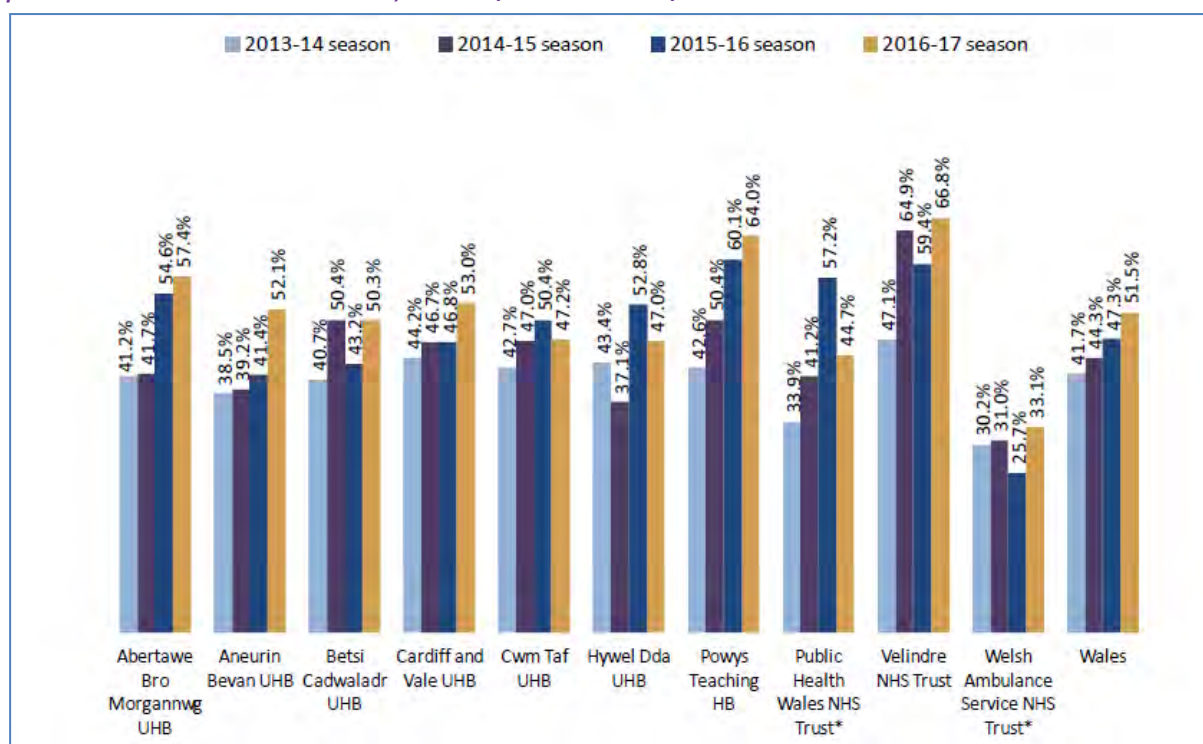
Eligible Group	Uptake Target for 2016/17	Annual Uptake in 2016/17 (Powys)	Annual Uptake in 2016/17 (Wales)
65yrs and over	75%	63.9%	66.7%
Under 65yrs at clinical risk	75%	46.0%	46.9%
Pregnant women	75%	85.7%*	76.8%*
Staff with direct patient contact	50%	64.0%	51.5%**
Children aged Two	n/a	51.4%	45.4%
Children aged Three	n/a	46.6%	45.1%
Children aged Four	n/a	69.9%	67.7%
Children aged Five	n/a	67.9%	67.7%
Children aged Six	n/a	65.1%	66.4%
Children aged Seven	n/a	67.4%	65.7%

Source: Public Health Wales^{11,14}

* Data from national Point of Delivery Survey 2016/17

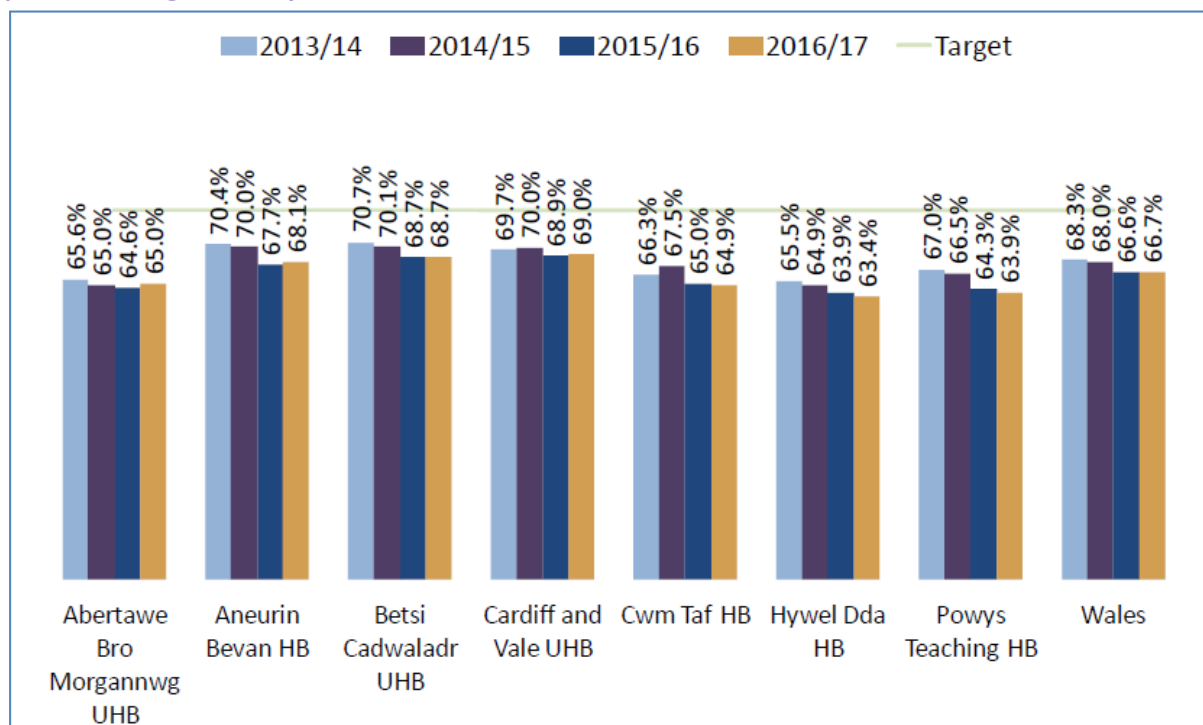
** The figure for Wales includes Health Boards and NHS Trusts

Figure 2.2: Uptake of influenza immunisation in NHS staff with direct patient contact in Wales, 2013/14 - 2016/17



Source: Public Health Wales Seasonal Influenza Annual Report 2016/17

Figure 2.3: Uptake of influenza immunisation in health boards in Wales in patients aged 65 years and over, 2013/14 – 2016/17



Source: Public Health Wales Seasonal Influenza Annual Report 2016/17

Measles, Mumps and Rubella (“MMR”)

2.13 Measles is a highly infectious acute viral illness caught through direct contact with an infected person or through the air via droplets from coughs or sneezes. Symptoms include fever, cold-like symptoms, fatigue, conjunctivitis and a distinctive red-brown rash. Measles can have serious, potentially fatal complications.

2.14 Mumps is an acute viral illness transmitted by direct contact with saliva or droplets from the saliva of an infected person. Humans are the only known host of the mumps virus. In mumps, one or both of the parotid salivary glands, located just below and in front of the ears, swell up and become painful. There may be swelling around the ovaries (in girls) or testes (in boys, after puberty). However, around a third of people infected with the virus develop no symptoms and in most other cases symptoms are fairly mild. One potentially serious complication associated with mumps is infertility in males.

2.15 Rubella (German measles) is a viral illness transmitted by direct contact with saliva or droplets from the saliva of an infected person. Humans are the only known host of the rubella virus. The virus causes a transient red rash, swollen lymph glands around the ears and back of head, and occasionally in adults, arthritis and arthralgia (pain in a joint caused by inflammation). Rubella is a clinical diagnosis and mimics many other diseases such as measles, so accurate diagnosis is difficult. Rubella can cause serious birth defects to the unborn baby if contracted during pregnancy.

2.16 There were eight notifications of measles, 11 of mumps and one of rubella in the Powys population during 2016/17. Notification of clinically suspected disease does not necessarily equate to a true case; during 2016/17, only two of the eight cases notified were confirmed as having had measles. Data available from Public Health Wales shows there has not been a case of laboratory confirmed rubella in Wales since before 2012.

2.17 During 2016/17, there was an increase in the number of cases of measles in the UK and a number of significant measles outbreaks in Europe. During this period there were 464 reported cases of measles in the UK, with numbers peaking during July and August.⁷ This coincided with reports of increased transmission across England and Wales, associated with attendance at music festivals. The increased incidence of measles cases at mass gatherings and transmission in outbreak areas can increase the risk of measles being introduced into populations where vaccine uptake is not optimal, potentially resulting in further outbreaks.⁸

Immunisation against Measles, Mumps and Rubella (MMR)

2.18 Measles, mumps and rubella can be prevented by two doses of the highly effective and safe MMR vaccine which children routinely receive at

the age of one year and at three years, four months. The proportion of children who have received both doses of MMR at age five is a national target, set at 95%.⁹

2.19 In 2016/17, 94.0% of Powys two year olds and 95.1% of Powys five year olds had received their first dose of MMR (MMR1), compared to 95.1% of two year olds and 96.7% of five year olds nationally (Table 2.1).² The uptake of both doses of MMR (MMR2) amongst five year olds was 87.7% in Powys compared to 90.3% in Wales. This was a reduction compared to the previous year, when uptake of MMR2 at age five years in Powys was 90.3% (91.6% in Wales).^{2, 3} The uptake of MMR2 amongst Powys 15 and 16 year olds was 82.3% (87.4% in Wales) and 84.0% (88.9% in Wales) respectively.² In 2015/16, only 85.7% of five to 16 year olds in Powys were fully protected by two doses of MMR; uptake was particularly low in children aged 12 to 15 years.¹⁰

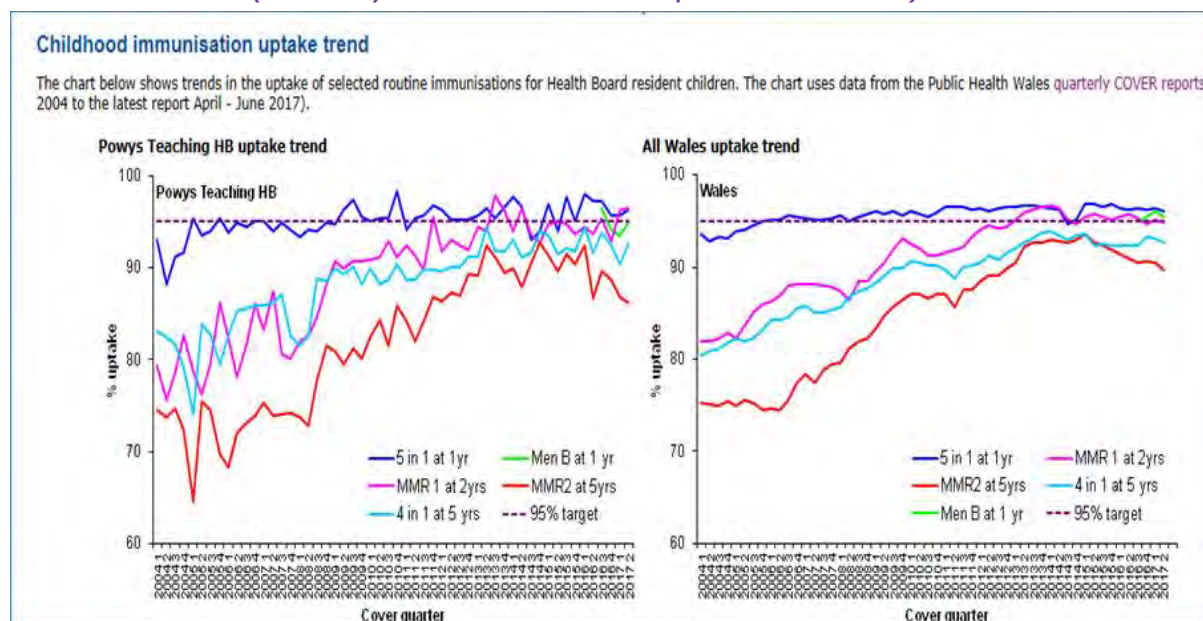
Table 2.1: Uptake of one and two doses of MMR in Children reaching their second, fifth, 15th and 16th birthdays during 2016/17

Age	Uptake of 1 dose of MMR		Uptake of 2 doses of MMR	
	Powys	Wales	Powys	Wales
Two years	94.0%	95.1%	n/a	n/a
Five years	95.1%	96.7%	87.7%	90.3%
15 years	89.8%	92.6%	82.3%	87.4%
16 years	90.7%	93.8%	84.0%	88.9%

Source: Public Health Wales²

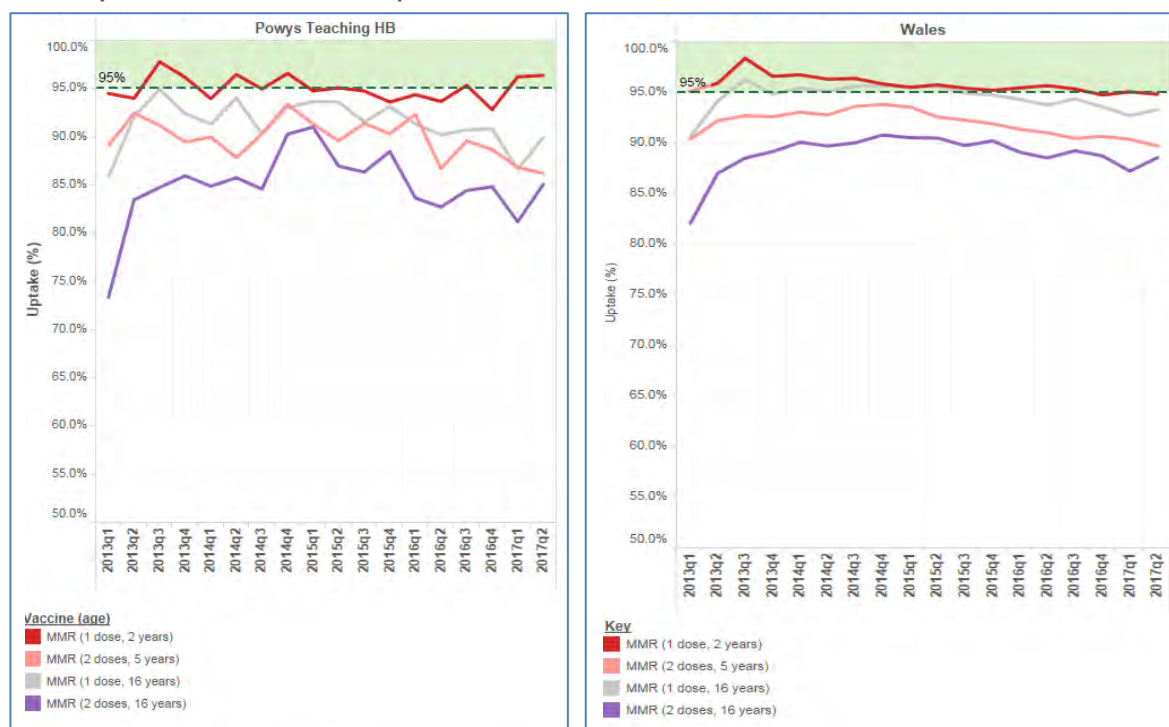
2.20 Figures 2.4 and 2.5a and 2.5b summarise historical and more recent trend information for elements of the routine childhood immunisation programme, including MMR. The information demonstrates the need for a continuing focus on childhood immunisation rates to address and maintain performance at target levels. Areas in Wales where the uptake of MMR is below 95% remain at risk of measles outbreaks.

Figure 2.4: Powys Teaching Health Board trends in routine childhood immunisations (January–March 2004 to April–June 2017)



Source: Public Health Wales Health Protection Division

Figure 2.5a and b: Quarterly trends for MMR1 uptake at ages two and 16 years and MMR2 uptake at ages five and 16 years, Powys and Wales, January–March 2013 to April–June 2017



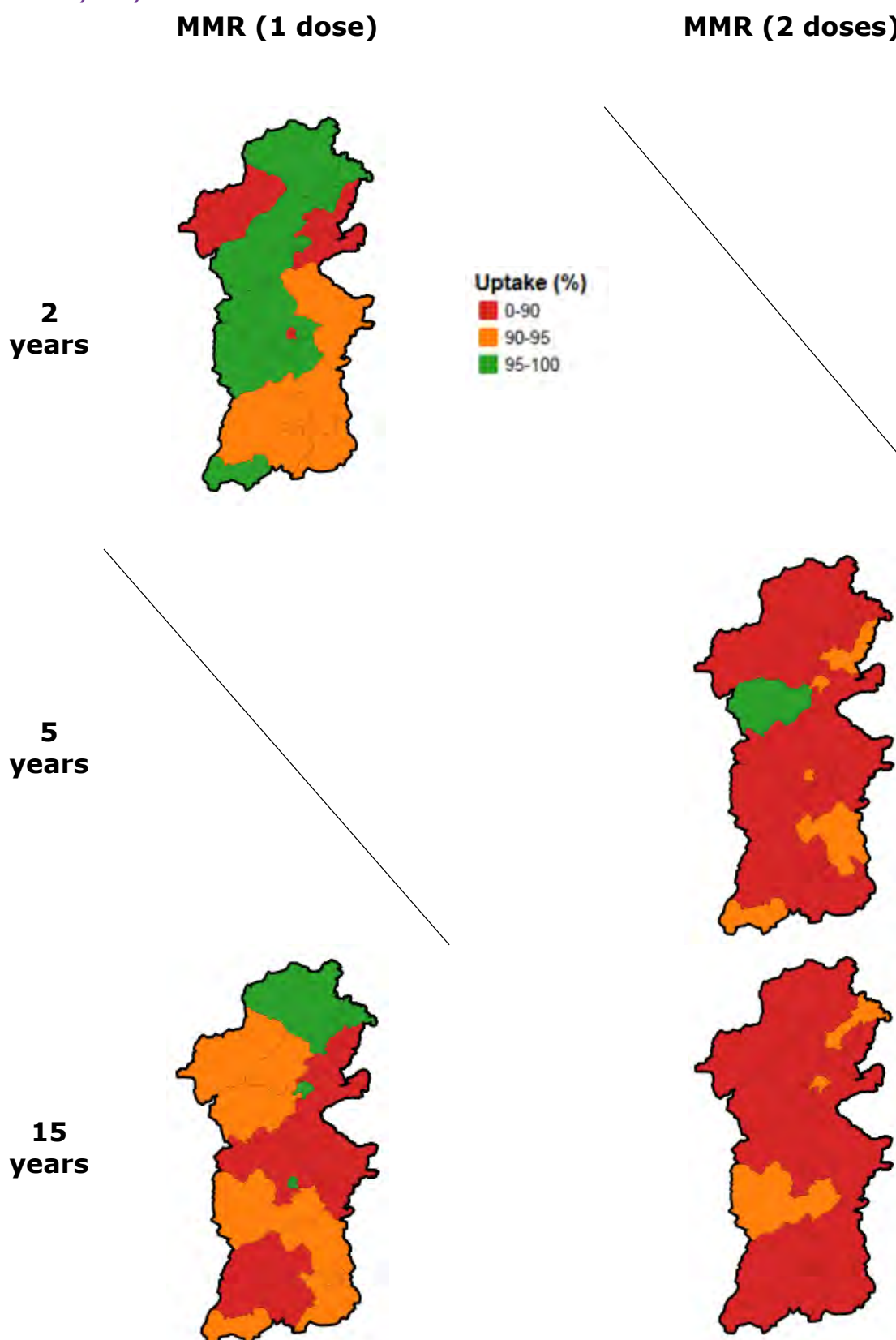
Source: Public Health Wales Health Protection Division

2.21 Figure 2.6 summarises MMR uptake rates within Powys. Variation in the uptake of MMR is also observed between primary care clusters and practices. For example, the uptake of MMR2 at age five amongst Powys practices during the period July 2016 to June 2017 ranged from 77.8% to

96.3%. Variation has also been identified in uptake rates for the first and second doses of MMR. For example, 95.3% of Powys five year olds have received one dose of MMR; 86.2% have received both doses.

2.22 Led by the Director of Public Health, PTHB undertook an MMR catch-up programme during 2016/17 with the aim of increasing the proportion of children who have received both doses of MMR. This included writing to the parents/carers of all children for whom the PTHB Child Health System showed that the child was not up-to-date with MMR, providing information on MMR and strongly encouraging that the child be immunised.

Figure 2.6: Geographical variation in uptake of one and two doses of MMR in children reaching their second, fifth and 15th birthdays during 2016/17 in Powys by MSOA of residence



Source: Public Health Wales

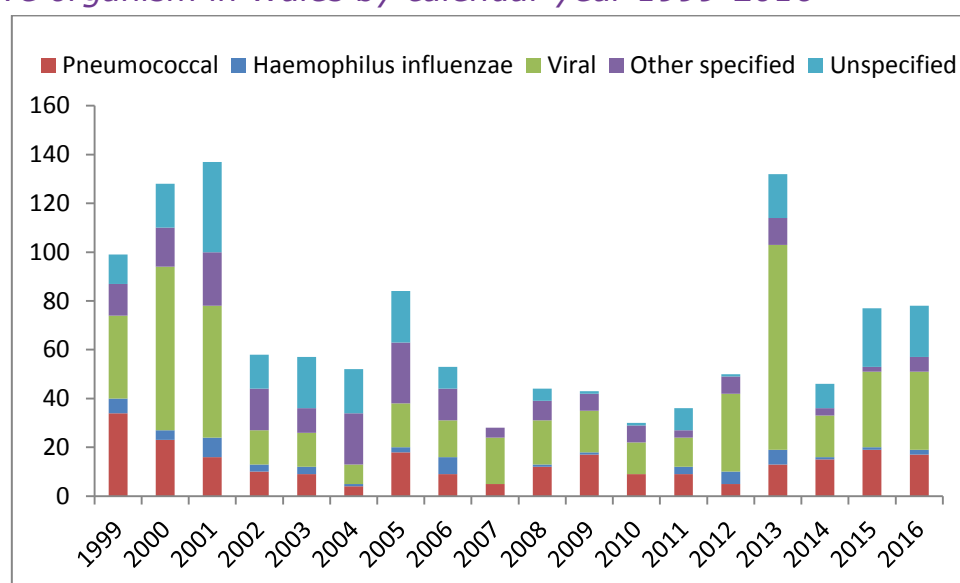
Meningitis (Non-Meningococcal)

2.23 Meningitis is an infection of the meninges, the membranes that cover the brain and spinal cord. It can be caused by a variety of different organisms including bacteria, viruses and fungi. The less common form of the disease, bacterial meningitis, is always associated with severe illness and can be fatal. By contrast, viral meningitis, which can be caused by several different viruses, is more common but usually less severe.

2.24 In the UK, the most common cause of bacterial meningitis is infection with the meningococcal bacteria *N. meningitidis* which is discussed in the next section. This section explores meningitis caused by viral infection or bacteria other than *N. meningitidis*, including *Haemophilus influenzae* type b (Hib), *Streptococcus pneumoniae* (pneumococcal meningitis), and the bacteria that cause listeria and tuberculosis.

2.25 During 2016/17 there was one notification of non-meningococcal meningitis amongst Powys residents. This compares to 75 notifications for Wales. The majority of these were viral meningitis, although amongst those of bacterial origin, pneumococcal meningitis was the most common (Figure 2.7).

Figure 2.7: Number of cases of meningitis (non-meningococcal) by causative organism in Wales by calendar year 1999-2016



Source: Statutory Notifications of Infectious Diseases (NOIDS) for England and Wales at: <https://www.gov.uk/government/collections/notifications-of-infectious-diseases-noids>

Immunisation against Non-Meningococcal Meningitis

2.26 The following vaccines protect against non-meningococcal forms of meningitis and are included in the routine childhood immunisation schedule¹:

- Haemophilus influenzae type b (Hib) vaccine, which forms part of the 5 in 1 vaccine and is given at eight weeks, 12 weeks and 16 weeks;
- Hib vaccine (as Hib/Men C booster) given at the age of one year;
- Pneumococcal conjugate vaccine (PCV) given at eight weeks, 16 weeks and one year.

Uptake of the 5 in 1 and PCV Vaccines

2.27 In 2016/17 the uptake of three doses of the 5 in 1 vaccine at age one year was above the 95% target at 96.3% in both Powys and in Wales (Table 2.2). The 95% target has been consistently achieved in Powys in recent years as shown in Table 2.2.²⁻⁴

2.28 However, in 2016/17 the uptake of PCV and the Hib/MenC booster at age two was slightly below target in Powys at 94.5% and 93.5% respectively. The uptake of each of these vaccines was slightly lower in Powys than in Wales and there has been a slight fall in the uptake of PCV and Hib/MenC booster at age two over the past five years as shown in Table 2.2. It is noteworthy that only a small number of additional vaccinations would have been required in order for the 95% target across the county to have been achieved in 2016/17 (five for PCV). There is some evidence of geographical variation across the county (Figure 2.8).

Table 2.2: Uptake of 5 in 1, PCV and Hib/Men C booster vaccines in resident children reaching their first and second birthdays during 2012/13 to 2016/17 (Powys and Wales)

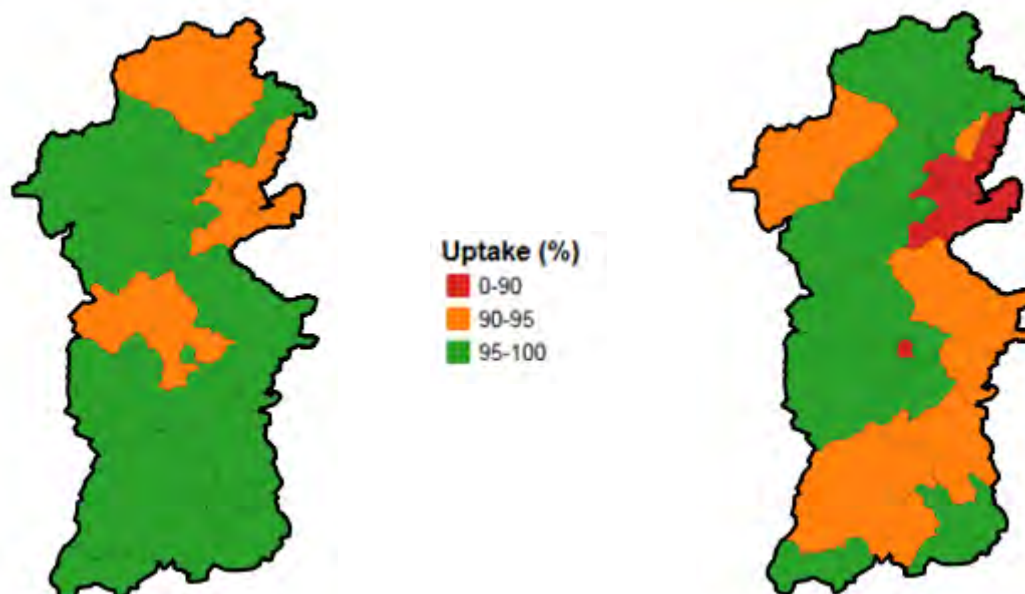
	Year	Powys	Wales
5 in 1 at age one	2012/13	95.4%	96.5%
	2013/14	96.9%	96.7%
	2014/15	96.0%	96.6%
	2015/16	96.0%	96.6%
	2016/17	96.3%	96.3%
PCV at age two	2012/13	95.0%	95.2%
	2013/14	95.5%	96.1%
	2014/15	95.4%	95.7%
	2015/16	94.7%	95.6%
	2016/17	94.5%	95.4%
Hib/MenC booster at age two	2012/13	94.1%	94.4%
	2013/14	94.4%	95.3%
	2014/15	95.2%	95.0%
	2015/16	94.3%	94.7%
	2016/17	93.5%	94.5%

Source: Public Health Wales²⁻⁶

Figure 2.8: Geographical variation in uptake of 5 in 1 and PCV immunisations in resident children reaching their first and second birthdays during 2016/17 by MSOA of residence

**5 in 1 primary (3 doses)
in children turning one
year of age**

**PCV (3 doses) in children
turning two years of age**



Source: Public Health Wales

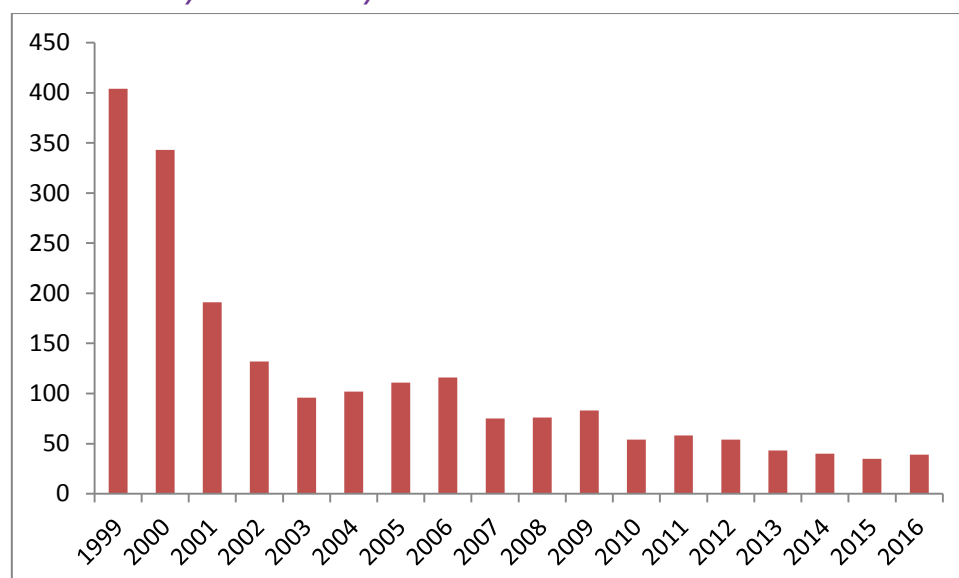
Meningococcal Disease

2.29 Meningococcal disease is the collective name given to disease caused by *Neisseria meningitidis* infection. The disease can present as either meningococcal meningitis or meningococcal septicaemia, or both. *N. meningitidis* is carried harmlessly by about 30 percent of the population and forms part of the normal flora at the back of the throat. Where a pathogenic strain causes disease, prompt notification is important - detailed contact tracing is required, so that defined close contacts can receive antibiotic prophylaxis and further preventive advice and support.

2.30 Since Meningitis C (Men C) vaccine was introduced in 1999, overall levels of invasive meningococcal disease have decreased (Figure 2.9); capsular group B strains account for around 80% of laboratory-confirmed cases (Figure 2.10). In 2015, a new vaccine for Meningitis B (Men B) was introduced into the UK schedule. However, recent years have seen an increase in the number of cases caused by Group W in the UK (Figure 2.10).

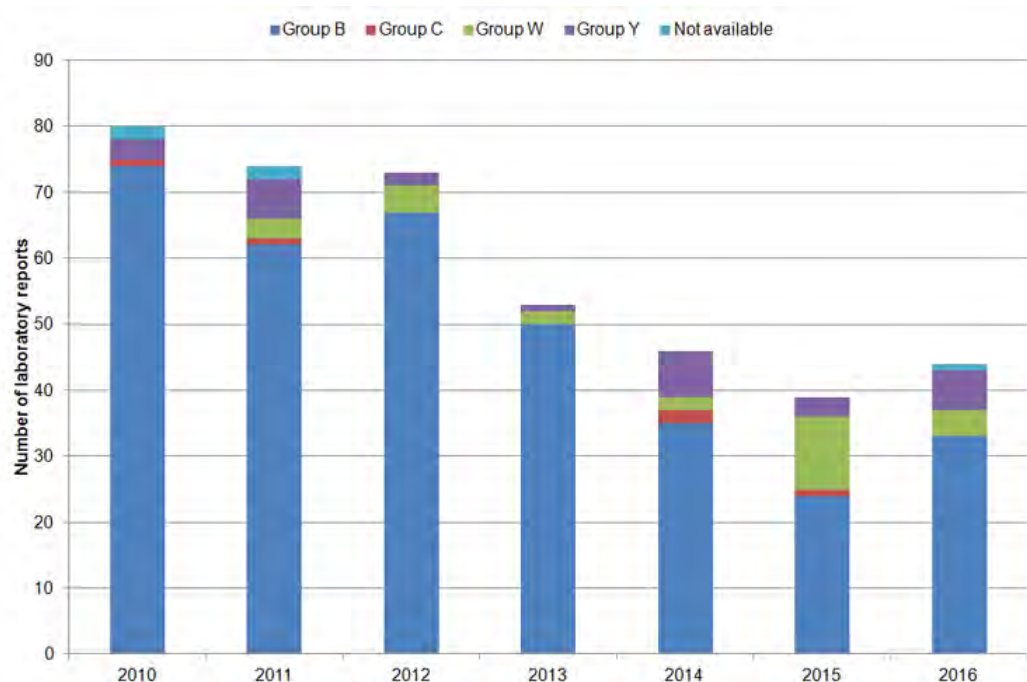
2.31 During 2016/17 a total of 56 cases of laboratory confirmed cases of meningococcal disease were recorded in Wales. There was one case in Powys during that period.

Figure 2.9: Number of cases of laboratory confirmed meningococcal disease in Wales by calendar year 1999-2016



Source: Statutory Notifications of Infectious Diseases (NOIDS) for England and Wales at: <https://www.gov.uk/government/collections/notifications-of-infectious-diseases-noids>

Figure 2.10: Number of laboratory reports of Neisseria meningitidis by serogroup in Wales 2010-2016



Source: reconciled data from Public Health Wales IBID laboratory confirmed cases and the Public Health England Meningococcal Reference Unit available at: <http://www.wales.nhs.uk/sites3/page.cfm?orgId=457&pid=32261>

Immunisation against Meningococcal Disease

2.32 The current (2017) UK routine childhood immunisation schedule for meningococcal disease includes the following vaccines:¹

- Men B vaccine at eight weeks, 16 weeks and one year (introduced in September 2015);
- Men C vaccine (as Hib/Men C) given at 12 months;
- Men ACWY vaccine at 14 years (given in schools);
- Men ACWY vaccine for university entrants (given in GP practices).

2.33 The following changes were introduced in 2015/16 and 2016/17:

- Introduction of Men B immunisation for infants (from September 2015);
- Introduction of Men ACWY conjugate vaccine with a catch-up programme for 14-18 year olds and for those younger than 25 attending university for the first time;
- Discontinuation of the infant dose of meningococcal serogroup C (Men C) conjugate vaccine given at 12 weeks (from July 2016);
- Withdrawal of the adolescent Men C vaccine (from August 2015).

2.34 Men C vaccine is now given as the combined vaccines Hib/Men C and Men ACWY, with the first dose of Men C vaccine given at 12 months of age. This programme reflects changes in the epidemiology of the disease.

2.35 In Powys, the uptake of the Men C vaccine at age one in 2016/17 was below 95% and lower than in previous years, due to the discontinuation during 2016/17 of this vaccine for babies aged 12 weeks (Table 2.3). The uptake of Men ACWY vaccine at age 15 years was 82.5% in Powys, compared to 80.0% in Wales.² This data is for the first school year nine cohort group to receive the Men ACWY vaccine (Table 2.3). Within Powys variation is illustrated in Figure 2.11.

Table 2.3: Summary of uptake of immunisations for meningococcal disease in resident children and young people reaching their first and 15th birthdays from 2012/13 to 2016/17 (Powys and Wales)

	Year	Powys	Wales
MenC at age one	2012/13	95.5%	96.1%
	2013/14	95.6%	97.4%
	2014/15	96.2%	97.2%
	2015/16	96.9%	97.4%
	2016/17	93.9%	94.4%
MenACWY at age 15	2012/13	n/a	n/a
	2013/14	n/a	n/a
	2014/15	n/a	n/a
	2015/16	n/a	n/a
	2016/17	82.5%	80.0%

Source: Public Health Wales²⁻⁶

Figure 2.11: Uptake of Men C and Men ACWY vaccines in children reaching the appropriate age between April 2016 and March 2017 by MSOA

Men C primary (1 dose) in children turning 1 year of age



Men ACWY in children turning 15 years of age



Uptake (%)
 0-90
 90-95
 95-100

Source: Public Health Wales

2.36 Health board level data on the Men ACWY academic year catch-up cohorts immunised in general practice indicate that uptake figures in Powys are amongst the highest in Wales for young people born in 1997/98 and 1998/99, but the lowest for young people born in 1996/97 (Table 2.4).

Table 2.4: Uptake of the Men ACWY vaccine in the general practice catch-up campaign in young people born in academic years 1996/97, 1997/98 and 1998/99 (Welsh Health Boards, data as at 18/09/17)

Health Board	Birthday between 01/09/96 and 31/08/97	Birthday between 01/09/97 and 31/08/98	Birthday between 01/09/98 and 31/08/99
Abertawe Bro Morgannwg UHB	42.9%	45.1%	34.4%
Aneurin Bevan UHB	41.4%	35.9%	36.7%
Betsi Cadwalladr UHB	46.1%	48.3%	50.6%
Cardiff and Vale UHB	38.9%	41.6%	35.0%
Cwm Taf UHB	40.6%	35.5%	37.8%
Hywel Dda UHB	36.5%	33.6%	38.4%
Powys Teaching Health Board	36.0%	49.8%	50.5%

Source: Public Health Wales

2

Recommendation 2: The Powys Vaccination Group should work with Public Health Wales to agree further action – encompassing primary care and the PTHB school nursing service - to increase local uptake of the Men ACWY vaccine, including in the “catch-up” cohorts.

Scarlet Fever

2.37 Scarlet fever is an infectious disease caused by the Group A *Streptococcus* bacterium (*Streptococcus pyogenes*). Scarlet fever is highly infectious and can be caught through direct contact with an infected person or through the air via droplets from coughs or sneezes. The characteristic symptom is a widespread, fine pink-red rash, said to feel like sandpaper. Other symptoms include a high temperature, a flushed face and a red, swollen tongue.

2.38 Although scarlet fever is generally a mild disease, the notification of cases serves a useful purpose as the bacteria may occasionally become more invasive and cause serious illness (septicaemia). Notifications enable seasonal peaks to be monitored and outbreaks to be identified. The risk of serious illness occurring or complications developing are increased when scarlet fever and chickenpox are circulating at the same time. In such instances, Public Health Wales may recommend that varicella (chickenpox) vaccination is offered to children in the affected setting(s).

2.39 In general, scarlet fever is diagnosed by clinical assessment rather than by laboratory analysis. In Powys, there were 13 notifications of scarlet fever in 2016/17, compared to 1,560 in Wales.

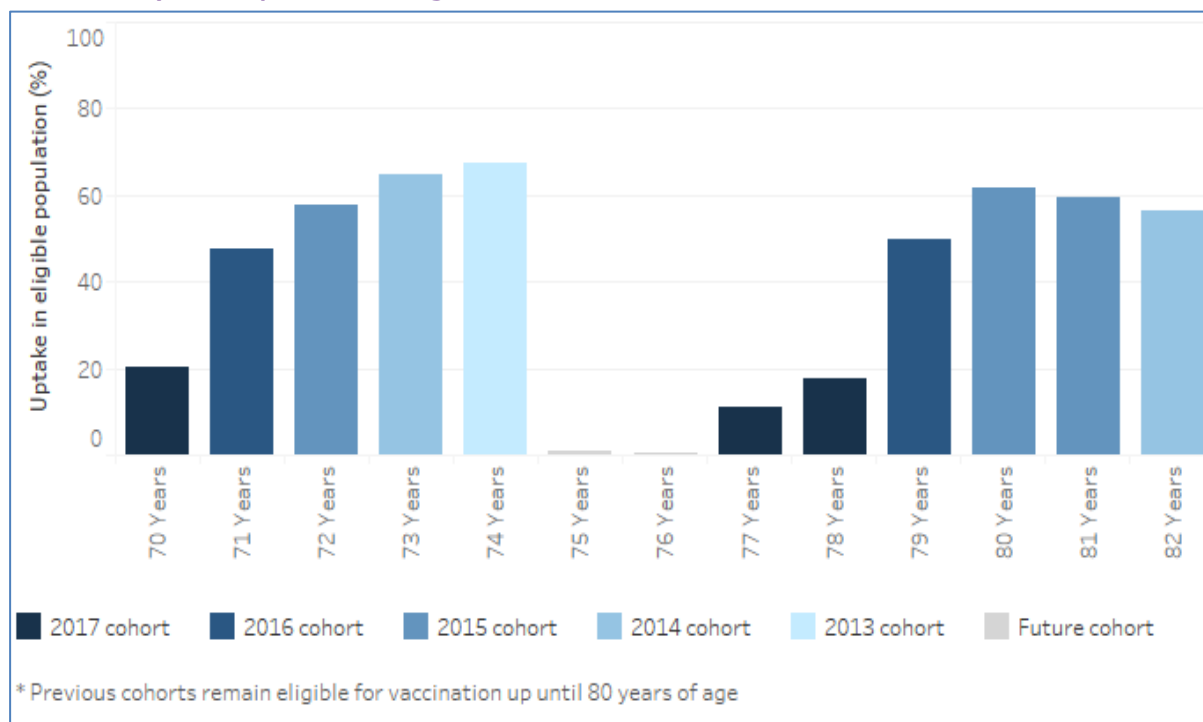
Shingles

2.40 Chicken pox and shingles are both caused by the varicella zoster virus. The virus can remain dormant in nerve cells following a chicken pox infection and may reactivate at a later date - often decades later - to cause shingles. Shingles is a very unpleasant condition, characterised by an itchy, painful rash with red fluid-filled blisters in the skin area supplied by the affected nerve. Long-term problems, including pain, persist in around 4% of cases. The severity of shingles increases with age and around 1 in 1,000 cases of result in death, with people aged 70 and over at the highest risk. It is estimated that there are around 50,000 cases of shingles annually in England and Wales.

2.41 A shingles vaccination programme was introduced in Wales for people aged 70 to 79 years in 2013, with a complex phased roll-out. Uptake varies by age due to the phased introduction and is highest amongst people aged 73, 74, 80, 81 and 82 (Figure 2.12). Table 2.5 shows that the uptake of shingles vaccine in Powys is broadly comparable to that across Wales for each cohort (there is no national uptake target for the shingles

vaccine).¹³ In summary, roll-out has been supported by a national information campaign; materials have been highlighted at local level to Powys practices. Information for patients, links to information for professionals and an online shingles vaccine eligibility checker are available at: www.wales.nhs.uk/sitesplus/888/page/43922

Figure 2.12: Shingles immunisation uptake by age (Audit+ data as at 27/08/17), Powys Teaching Health Board



Source: Public Health Wales¹⁵

Table 2.5: Uptake of the shingles vaccine amongst the eligible population in Powys and Wales

Age (as at 01/09/17)	Uptake in eligible population (Powys)	Uptake in eligible population (Wales)
70 years	20.4	20.3
71 years	47.5	47.1
72 years	57.6	57.8
73 years	64.7	63.1
74 years	67.3	64.2
75 years	0.9	1.7
76 years	0.6	1.0
77 years	10.8	12.8
78 years	17.5	19.8
79 years	49.8	47.5
80 years	61.7	56.7
81 years	59.6	59.2
82 years	56.5	50.1

Source: Public Health Wales¹⁵

Whooping Cough

2.42 Pertussis (whooping cough) is a highly infectious bacterial disease of the respiratory tract caused by *Bordetella pertussis*. The condition is spread by breathing in droplets expelled by an infected person when they talk, cough or sneeze. The highest rates of pertussis infection is observed in infants; school-aged children can be the source of infection for younger siblings at home. Pertussis also occurs amongst adolescents and adults.

2.43 The infection starts as an irritating cough which leads onto outbursts of coughing (paroxysms), usually within one to two weeks. Coughing spasms may be followed by a period of vomiting. Not all patients, particularly young babies, will have the characteristic 'whoop'. The illness lasts for around six to eight weeks. Pertussis can cause particularly serious illness in babies under six months and may lead to severe complications and even death - over 50% of infants with pertussis require hospital admission. Serious illness is less common amongst older children and adults.

2.44 In Powys there were 13 notifications of whooping cough in 2016/17, six of which were confirmed by laboratory testing. This compares to a total of 351 cases notified in Wales.

Immunisation against Whooping Cough

2.45 Pertussis is a vaccine-preventable disease; the pertussis vaccine is currently included in the infant schedule as part of the 5 in 1 vaccine, administered at eight, 12 and 16 weeks of age. Pertussis immunisation is also offered to pregnant women, in order to protect newborns from the infection until the baby is old enough to receive protection through the routine immunisation programme.

2.46 Powys exceeded 95% uptake of three doses of the 5 in 1 vaccine in children aged one year in 2016/17, as discussed above (Table 2.2).² The 2016/17 Point of Delivery survey reported that the uptake of pertussis vaccination in pregnant women was 71.4% in Powys compared to 78.3% in Wales.¹¹

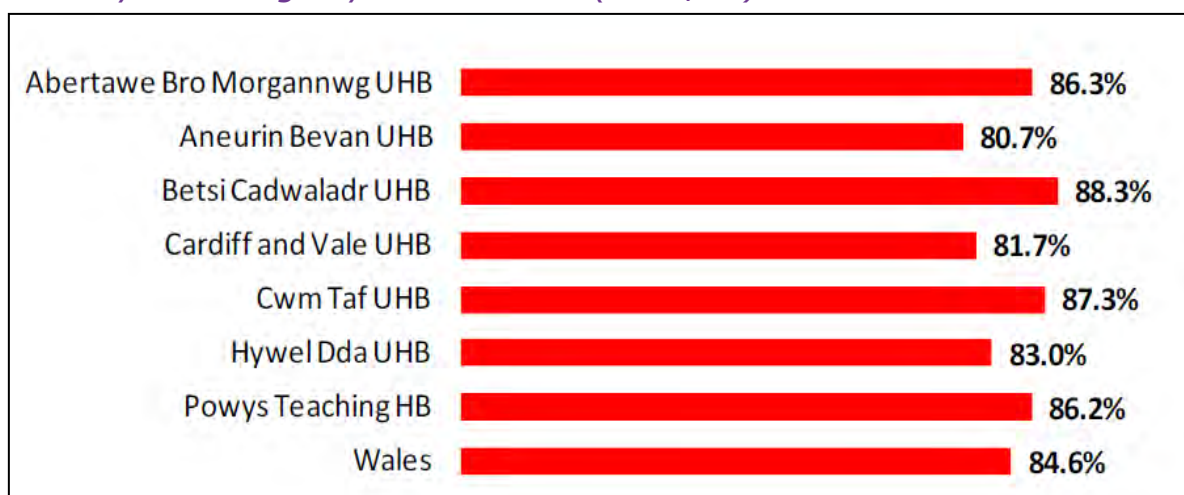
2016/17 National Target: Overview of Childhood Immunisation

2.47 The percentage of children up-to-date with the routine immunisation schedule at age four is a national Public Health Outcomes Framework indicator and was also the basis for a national target during 2016/17.^{9,12} The measure is based on the uptake of the 4 in 1 pre-school booster, the Hib/Men C vaccine and the second dose of MMR.

2.48 In 2016/17, the proportion of children up-to-date at age four was higher in Powys (at 86.2%) than in Wales (84.6%) (Figure 2.13).

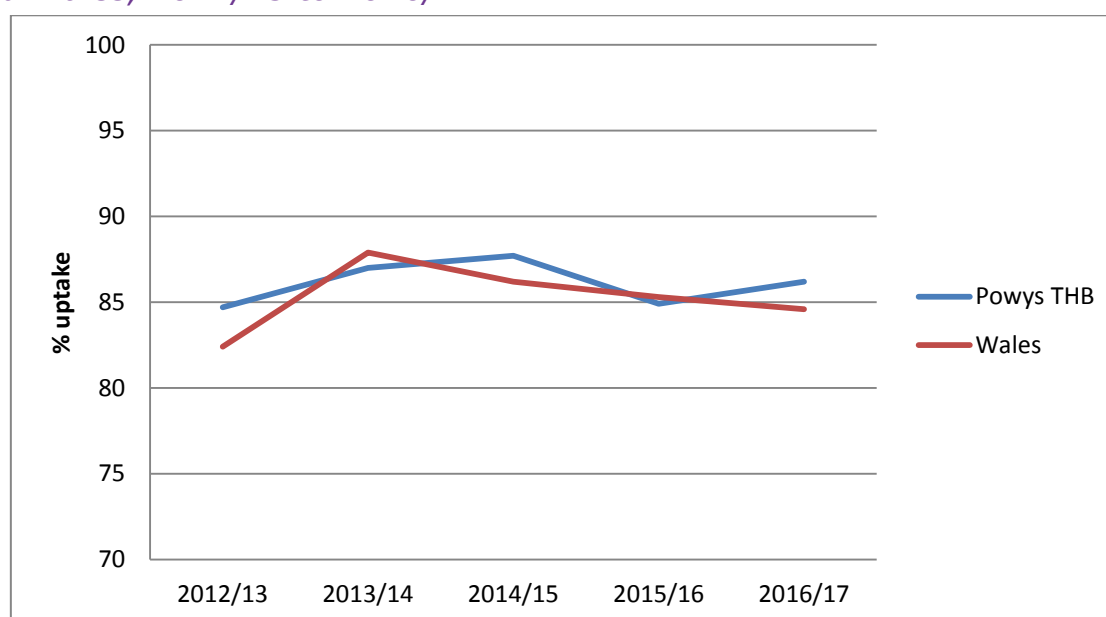
Performance in Powys had improved compared to 2015/16, although it was slightly lower than in 2013/14 and 2014/15 (Figure 2.14).^{2, 3}

Figure 2.13: Percentage of children up-to-date with all scheduled vaccines at four years of age by health board (2016/17)



Source: Public Health Wales²

Figure 2.14: Percentage of children up-to-date at four years of age, Powys and Wales, 2012/13 to 2016/17



Source: Public Health Wales

2.49 Of the three vaccines encompassed within the overall up-to-date at age four indicator, MMR2 has the lowest uptake (Table 2.6); the lower uptake of this vaccine has the effect of depressing overall performance on up-to-date at four.

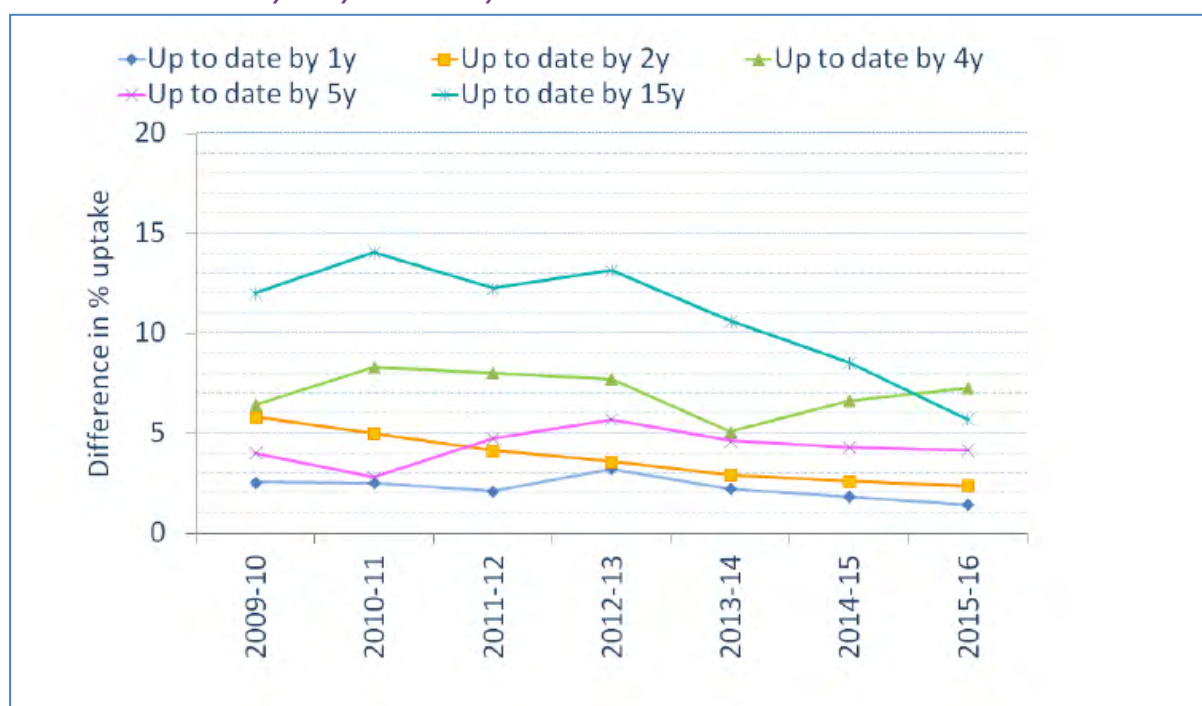
Table 2.6: Summary of uptake of selected immunisations in resident children reaching their fourth birthday during 2015/16 and 2016/17 (Powys and Wales)

	4 in 1 pre-school booster		Hib/MenC		MMR2	
	15/16	16/17	15/16	16/17	15/16	16/17
Powys	90.8	91.0%	91.3	91.8%	87.4	87.8%
Wales	88.2	87.9%	94.1	93.3%	87.7	86.4%

Source: Public Health Wales^{2,3}

2.50 An inequality gap in the uptake of childhood immunisation is observed within Wales, with higher levels of uptake in the least deprived areas and lower levels in the most deprived areas.² The gap is smallest for younger children (aged one and two), larger amongst older children and is tending to narrow (Figure 2.15).¹³

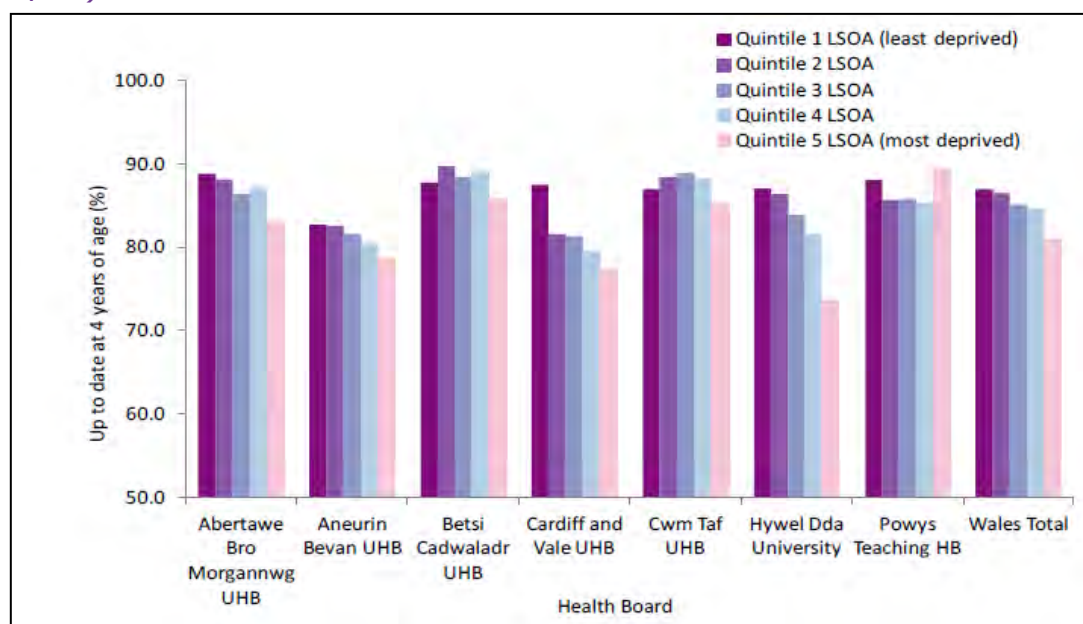
Figure 2.15: The difference (inequality gap) between quintiles of highest and lowest deprivation percentages of children up to date with immunisations by key birthdays



Source: Public Health Wales¹³

2.51 A broadly similar picture is apparent at health board level. However, in Powys in 2016/17, the highest proportion of children who were up to date at four years was in the most deprived quintile (Figure 2.16); further work has demonstrated that the difference in rates between the most and least deprived quintiles in Powys is not statistically significant.

Figure 2.16: Percentage of children who are up to date with routine immunisations by four years of age, by quintile of deprivation of the Lower Super Output Area in which they reside (Welsh Health Boards and Wales 2016/17)



Source: Public Health Wales²

Note: Vaccine uptake is presented for children reaching their 4th birthday between 01/04/2016 and 31/03/2017 and resident on 31/03/2017.

2.52 The Powys Vaccination Group coordinates action to increase the uptake of childhood immunisation in Powys. As part of this, the PTHB Immunisation Co-ordinator offers advice and support to Powys practices on specific measures to improve practice uptake rates, based on practice-level information. During 2017/18, other action included measures to improve the PTHB child health information system and the management of non-immunised children by PTHB health visitors and school nurses. Actions are also in-hand to review and address the immunisation status of individual children at school entry (aged five and 11 years), to improve arrangements to secure parental consent and to address variation in immunisation uptake rates at practice/cluster level. Further specific work to improve MMR2 rates is also planned.

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Chapter 3: Environmental Health Protection

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Key Messages for Powys:

- Outdoor air quality in Powys is the best in Wales.
- Wood burners are likely to be more common in Powys, requiring collective advocacy to raise awareness of the dangers of carbon monoxide (CO) inside the home and to encourage greater use of CO alarms.
- Private drinking water supplies are more common than anywhere else in Wales and can pose health risks in some situations.
- Outside the home, reducing vehicle speeds throughout the health board area would likely contribute to reducing the burden of road traffic casualties on health and other public services.

Introduction

3.0 The all-Wales Environmental Health Protection service delivers proactive and reactive services to reduce public health risks from hazards in the home, built and natural environments. In the provision of these services, consideration is given to associated socio-economic and cultural factors and the political and policy drivers that affect them (Figure 3.0).

Figure 3.0: The Welsh Environmental Health Protection Service Model



Source: Public Health Wales

3.1 In practice, this means that the service covers a broad range of issues, e.g. from acute incident response, to individual concerns about possible environmental links with cancer clusters. The basis of the service is in the traditional environmental health fields of chemical exposures and air, land, water, but what is delivered encompasses all non-communicable health concerns with a link to wider built and physical environment concerns, for example, falls and road traffic injuries.

3.2 In this chapter, we highlight some of the main environmental health protection issues that actually or potentially affect Powys. Some of these are based on recent queries from Powys, others are from rural communities in the rest of Wales and so could reasonably affect Powys.

Environmental Incidents, Enquiries and Consultations: Summary of Service Activity

3.3 Between 1 April 2016 and 31 March 2017, there were eight incidents and enquiries specific to the Powys area. These related to issues including private water supplies, land contamination and electromagnetic fields.

3.4 Compared with the rest of Wales, Powys benefits from a relative lack of industrial processes which are usually the source of environmental pollution incidents.

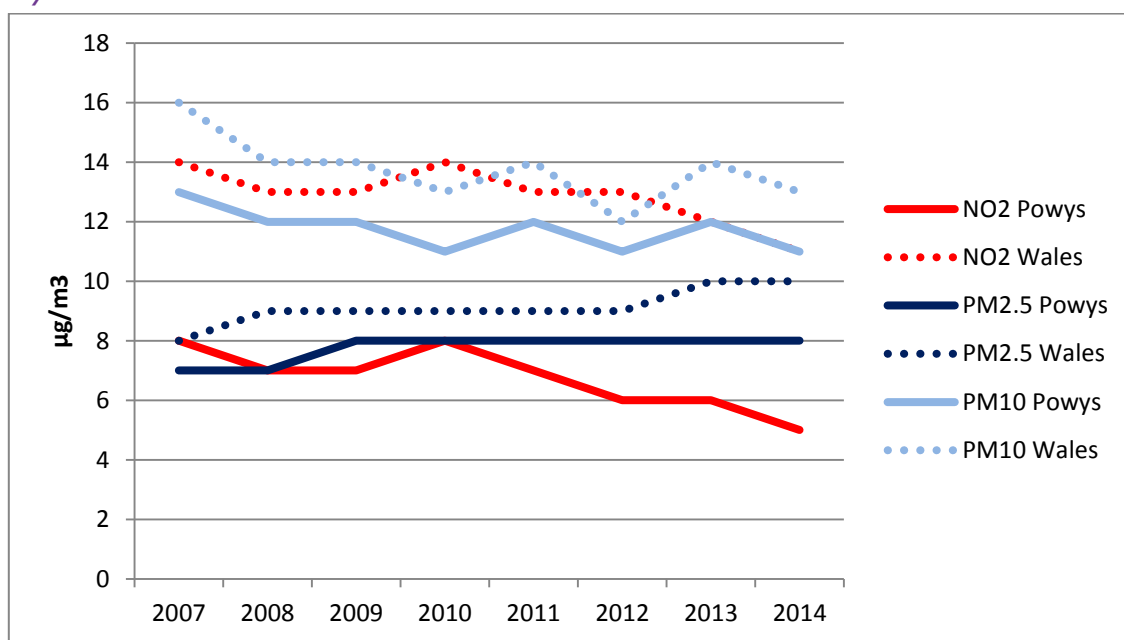
3.5 Planning and environmental permit applications for industrial developments are reviewed by Public Health Wales. This review includes a public health risk assessment which outlines recommendations to manage identified environmental hazards that may impact on public health.

3.6 In the past 12 months, 12 such applications have been considered, mainly relating to large scale farming processes, such as intensive poultry farming units.

Air Quality

3.7 Powys is a large, almost exclusively, rural area with relatively few industrial facilities and limited transport networks. This means that in terms of two of the most common primary pollutants of concern, nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}), Powys has the best air quality in Wales. As such, the burden of air pollution on health is lower than the rest of Wales (Figure 3.1).

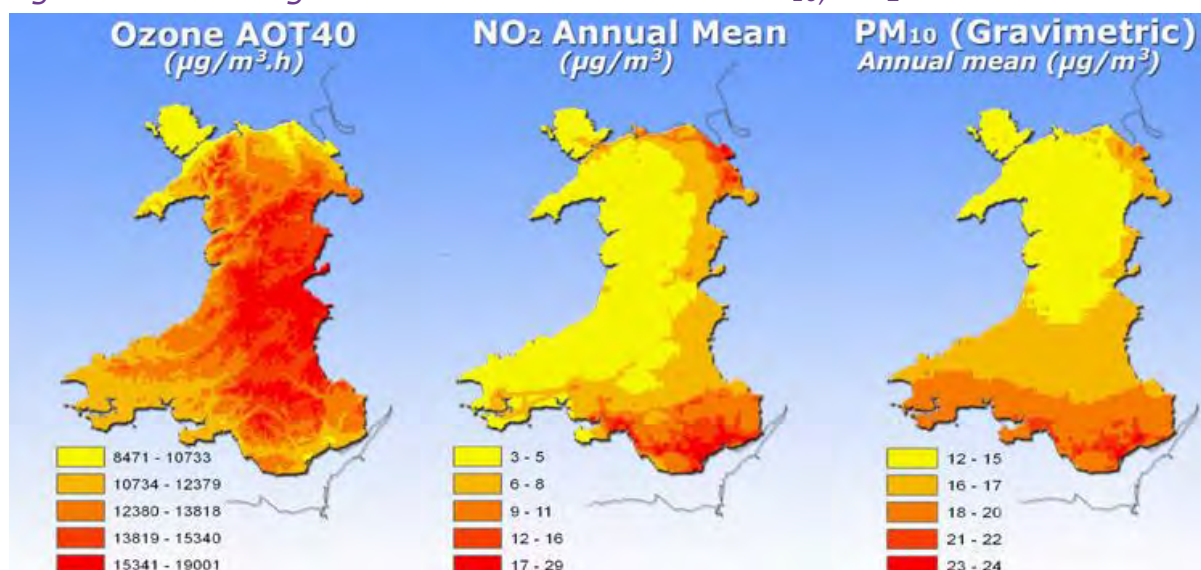
Figure 3.1: Trends in average annual concentrations of PM_{2.5} and NO₂, Powys and Wales.



Source: Public Health Wales

3.8 Ozone, however, a secondary pollutant resulting from chemical reactions in the atmosphere, rather than direct source emissions, tends to be higher in rural areas (Figure 3.2). Levels are affected by weather conditions. Ozone can affect respiratory health, but population weighted averages have not been calculated for Wales, health boards or local authorities, making it impossible to calculate health burden.

Figure 3.2: Average annual concentrations of PM₁₀, NO₂ and Ozone



Source: http://www.welshairquality.co.uk/images/maps_large_annualmeans.jpg

3.9 While outdoor air quality in Powys is generally good, the rural characteristics of Powys may increase the likelihood of risks from exposure to indoor air pollution.

Indoor Air Pollution: Woodburners

3.10 In urban areas, woodburners have become a fashionable addition to the home; in rural settings, they may be the main source of home heating. Regardless of where and why woodburners are used, the risks associated with their use are the same.

3.11 In November 2015, a registered engineer, working in a rural part of Wales, was prosecuted for the faulty installation of wood burners, potentially increasing the risks of carbon monoxide (CO) exposure and fire in over 500 homes. Only a few of the affected homes had been provided with a CO alarm, even though this should have been part of the installation.

3.12 Public Health Wales worked with the local authority, the regulator and Wales Fire and Rescue Service to distribute more than 200 CO alarms to affected properties.

3.13 Carbon monoxide poisoning can affect anyone at any time. The gas is formed when there is incomplete combustion of fossil fuels and cases regularly occur in the autumn when people start using heating systems after the summer break. However, cases also occur in summer in caravans and on boats, or when barbeque equipment is taken into tents or caravans.

3.14 The symptoms of carbon monoxide poisoning are common and non-specific (Figure 3.3). The vague nature of the symptoms make it very difficult to estimate how many cases occur each year. However, it is easy







to prevent - having a working CO alarm and ensuring that appliances are well maintained and regularly serviced will reduce the risk of poisoning.

3

Recommendation 3: Working with partner organisations, PTHB should increase awareness of the dangers of carbon monoxide exposure and the safety benefits of carbon monoxide alarms in homes and holiday rentals, amongst the Powys population.

Figure 3.3: Carbon monoxide poisoning prevention and awareness

CARBON MONOXIDE POISONING - BE AWARE & STAY SAFE			
BE AWARE			
What is Carbon Monoxide? <ul style="list-style-type: none"> * It is a gas produced when fuel is not burnt properly * It can be produced by gas, oil, coal and wood * You can't see it, taste it or smell it 	Can it kill? <ul style="list-style-type: none"> * Yes, around 40 people die each year in England and Wales * Around 4000 people attend A&E * Carbon monoxide poisoning can lead to brain damage 		
STAY SAFE			
Can I prevent it? <ul style="list-style-type: none"> ✓ Fit a carbon monoxide alarm. Only use ones that will make a sound so that you can hear it ✓ Know the signs of poisoning (shown on the back of this card) ✓ Get your gas, oil, coal and wood appliances serviced every year 	What to do if your alarm goes off <ul style="list-style-type: none"> ✓ Open doors and windows. If you can, turn off the appliance and leave the room ✓ If anyone in your home has the signs of poisoning see your GP or if urgent, phone 999 ✓ Your appliance will need to be checked by an engineer before you use it again 		

CARBON MONOXIDE POISONING	
<p>You can't see it, taste it or smell it. It can kill quickly and with no warning</p> <p>Knowing the signs could save your life</p>	
<p>The 6 main signs are:</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="text-align: center;">  <p>HEADACHES</p> </div> <div style="text-align: center;">  <p>NAUSEA</p> </div> <div style="text-align: center;">  <p>DIZZINESS</p> </div> <div style="text-align: center;">  <p>BREATHLESSNESS</p> </div> <div style="text-align: center;">  <p>COLLAPSE</p> </div> <div style="text-align: center;">  <p>LOSS OF CONSCIOUSNESS</p> </div> </div>	

3.15 Linked to the internal home environment and the air that we breathe is the presence of radon gas.

Indoor Air Pollution: Radon

3.16 Radon is a naturally occurring radioactive gas. It cannot be seen and has no smell. Radon can increase the risk of lung cancer, with the risk greatest in people who are also smokers.

3.17 Powys, like other parts of Wales, sits on radon producing rocks. In outdoor air, radon levels are very low; but where buildings are located and how they are used can affect indoor radon levels. Public Health Wales, with Welsh Government, has been working to ensure that all schools in Wales have assessed their radon risk and, if appropriate, arranged measurement and remediation. Schools in Powys have taken part in this process; 48 of 103 (46.6%) have already carried out testing, nine (8.7%) of which had radon levels above the action level, with remediation now underway.

The Quality of Drinking Water

3.18 Almost half (44%) of all private drinking water supplies in Wales are in Powys. There are over 6,000 supplies in Powys, the majority of which serve single domestic dwellings¹. These cover around 18% of the Powys population², a greater proportion than any other local authority in Wales. This can present a public health challenge since, unlike public water supplies (supplied by a water company) which are of very high quality and tested regularly, the quality of private water supplies can vary considerably.

3.19 All private water supplies in Wales are regulated under the Private Water Supplies (Wales) Regulations (2010)³. Each local authority must risk assess all private water supplies, in their area, every five years, unless the supply is to a single home with no commercial activities. However, the owner or occupier of the premises can request a review. This regulatory approach is intended to ensure that private supplies are of similar quality to public supplies. However, weather and seasons can affect the composition of the water at any time and, potentially, affect health.

3.20 Assessing the burden of these supplies on health and health services in Powys is difficult, partly because the register is not complete and partly because of the non-specific nature of symptoms resulting from poor water quality. However, it should still be possible to support general practitioners in identifying when a private water supply could be causing problems and arranging appropriate tests of that supply.

4

Recommendation 4: PTHB should work with the Public Health Wales Environmental Health Protection Team, local GPs and Powys County Council to ensure that GPs are aware of the indications and arrangements for the testing of private water supplies.

Road Traffic Crashes

3.21 In rural areas, road traffic crashes may be more serious because of higher travel speeds, longer times to be reached by emergency services and longer transfer distances for casualties to hospital.

3.22 During 2015, Powys had the highest population burden of all and killed and seriously injured (KSI) casualties, as well as young driver crash casualties and motorcycle casualties (Table 3.0). However, when taking a road-length based approach, rates are among the lowest in Wales.

Table 3.0: Road traffic casualty rates all and killed and seriously injured casualties (KSI), by Health Board, per 100,000 population and per 1000km of road

Popn rate per 100,000	All casualties		Young Driver (17 to 19 years) casualties		Motorcycle casualties	
	All	KSI	All	KSI	All	KSI
Betsi						
Cadwaladr	267.7	47.8	26.9	4.0	21.2	10.8
Aneurin Bevan	162.6	19.3	15.1	1.0	12.5	3.1
Cardiff and Vale	223.2	28.9	14.6	2.3	16.7	6.6
Cwm Taf	237.2	28.0	24.3	1.0	12.5	3.7
Abertawe Bro Morgannwg	230.6	29.5	25.5	2.9	19.2	6.0
Hywel Dda	324.1	57.9	35.7	6.0	31.1	12.8
Powys	445.6	102.5	43.7	9.8	53.5	27.1

Road length rate per 1000 km	All casualties		Young Driver (17 to 19 years) casualties		Motorcycle casualties	
	All	KSI	All	KSI	All	KSI
Betsi						
Cadwaladr	191.6	34.2	19.3	2.9	15.1	7.7
Aneurin Bevan	218.3	25.8	20.3	1.4	16.8	4.2
Cardiff and Vale	504.9	65.3	33.1	5.1	37.8	14.9
Cwm Taf	428.2	50.5	43.8	1.8	22.5	6.7
Abertawe Bro Morgannwg	459.8	58.8	50.8	5.8	38.4	12.1
Hywel Dda	147.0	26.3	16.2	2.7	14.1	5.8
Powys	107.4	24.7	10.5	2.4	12.9	6.5

Source: STATS19. 2015 data

3.23 At 5,500km, the length of road in Powys is 16% of the total Welsh road length. Just 400km of Powys road (7.2%) is in the lower speed (usually 30mph) built-up areas - most of the rest is national speed limit, 60mph road. The rural nature of Powys roads means that the appropriate speed is usually far below the national limit - yet some drivers and riders may view the speed limit as a target. This can result in crashes. Reducing speed limits would have the effect of discouraging inappropriate speed.

3.24 The distance to an acute hospital may mean that, when a crash does occur, accessing medical care may take longer, potentially compromising

treatment, recovery and outcome. Ensuring that seat belts are used by all adults - and that child restraints are used and are age-appropriate - is important in a rural community.

3.25 Road traffic crashes disproportionately involve young people and this is particularly true of crashes in rural areas. Young people are at greater risk of crashing than their parents, because of their age and relative lack of driving experience.

5

Recommendation 5: PTHB should work with Dyfed Powys Police to explore and agree opportunities for further local collaboration to reduce the burden of road traffic crashes on the Powys population.

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Chapter 4: Annual Screening Report

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Dr Catherine Woodward, Director of Public Health, Powys Teaching Health Board

Key Messages for Powys:

- The uptake/coverage targets were achieved in the Powys population for breast, cervical and newborn hearing screening in 2015/16.
- The targets for abdominal aortic aneurysm (AAA) and bowel screening were not achieved in the Powys population in 2015/16 (AAA screening missed by 0.2%). The bowel screening rate in Powys had improved since 2014/15. Comparison with previous years is not possible for AAA screening.
- There are inequalities in screening uptake/coverage in Powys, including a social gradient in the uptake/coverage of AAA, bowel, breast and cervical screening. For bowel screening, uptake is lower in men than it is in women, across the social gradient.
- Action should continue at both national and local level to increase participation in the national screening programmes, including addressing local inequality in uptake rates.

What is Screening?

4.0 Screening programmes aim to identify people who may be at increased risk of developing a disease or condition but who do not yet have symptoms. Screening looks for early signs of disease so that people who are identified as being at risk can be offered information, advice, further tests and/or treatment as appropriate in order to reduce their risk of disease or its complications occurring or progressing. This chapter provides an overview of the population-based national screening programmes in Wales. The content of this chapter is based on the latest available intelligence from the Public Health Wales Screening Division for 2015/16.

Population-Based National Screening Programmes in Wales

4.1 The following NHS national screening programmes are offered to eligible populations in Wales:

Mother and Baby Screening:

- Antenatal screening for mothers: blood tests and ultrasound
- Newborn hearing screening for babies aged 0-2 weeks

Screening for Women:

- Cervical cancer screening: smear test (ages 25 to 64)
- Breast cancer screening: breast mammography (ages 50 to 70 and over 70s on request)

Screening for Men:

- Abdominal aortic aneurysm screening: ultrasound test (age 65 and over 65s on request)

Screening for Men and Women:

- Bowel cancer screening: home test kit (ages 60 to 74)

Screening for People who have Diabetes

- Diabetic eye screening: eye test (over the age of 12)

4.2 The Screening Division of Public Health Wales is responsible for the delivery, including quality control, of the abdominal aortic aneurysm; breast cancer; cervical cancer; bowel cancer; newborn hearing and (since April 2016) diabetic eye screening programmes.

4.3 On occasion, some Powys residents receive their screening in England, if they are registered with an English practice. An NHS data sharing arrangement ensures that data on Powys residents screened in

England are included in the screening performance data reported for the Powys population.

4.4 Information about screening for people with learning difficulties is available at <http://www.screeningforlife.wales.nhs.uk/learning-disability-resources>

4.5 Advice and information on the screening tests recommended for people who are transgender is available from Public Health Wales at <http://www.screeningforlife.wales.nhs.uk/transgender-information>

Measuring Participation in Screening

4.6 Two measures of participation – population uptake and coverage - are used to assess screening programmes. Population uptake is the proportion of the screening population routinely invited for a screening test, for whom a screening test result is recorded within the same invitation period. Population coverage is the proportion of the screening population eligible and resident at a particular point in time, who have been screened at least once within a defined time period (this varies between programmes).

Uptake and Coverage of Screening in Powys

4.7 The latest available data on the uptake/coverage of bowel, breast, cervical, abdominal aortic aneurysm and newborn hearing screening in Powys and Wales are summarised in Table 4.0 and discussed in more detail in this chapter.¹ Tests for statistical significance are not routinely undertaken for the uptake or coverage of screening programmes.

Table 4.0: Uptake/Coverage of Screening Programmes, Powys and Wales 2015/16

Programme	Target/Standard	Powys	Wales
Bowel Screening Uptake	Target 60%	55.6%	54.4%
Breast Screening Uptake	Minimum standard 70%	75.5%	72.5%
Cervical Screening Coverage	Target 80%	80.5%	77.8%
AAA Screening Uptake	Target 80%	79.8%	79.1%
Newborn Hearing Screening	Target 95%	99.4%	99.5%

Source: Public Health Wales Informatics Team

Note:

Data is from 2015/16 apart from:

- Cervical screening coverage is taken as a snapshot on 31st March 2016 and shows the proportion of women aged 25-64 that have been tested in the last 5 years on that date
- Breast screening has been calculated from GP practice level rates, based on the results for the most recent completed screening round in that practice.

4.8 In 2015/16 the uptake of bowel screening was 55.6% in Powys and 54.4% in Wales (Table 4.0), which did not meet the 60% target; in the previous year (2014/15) uptake was 52.5% in Powys and 50.8% in Wales.¹

4.9 In 2015/16 the uptake of breast screening was 75.5% in Powys and 72.5% in Wales (Table 4.0) which met the 70% minimum standard; in 2014/15 uptake was 74.0% in Powys and 72.4% in Wales.¹

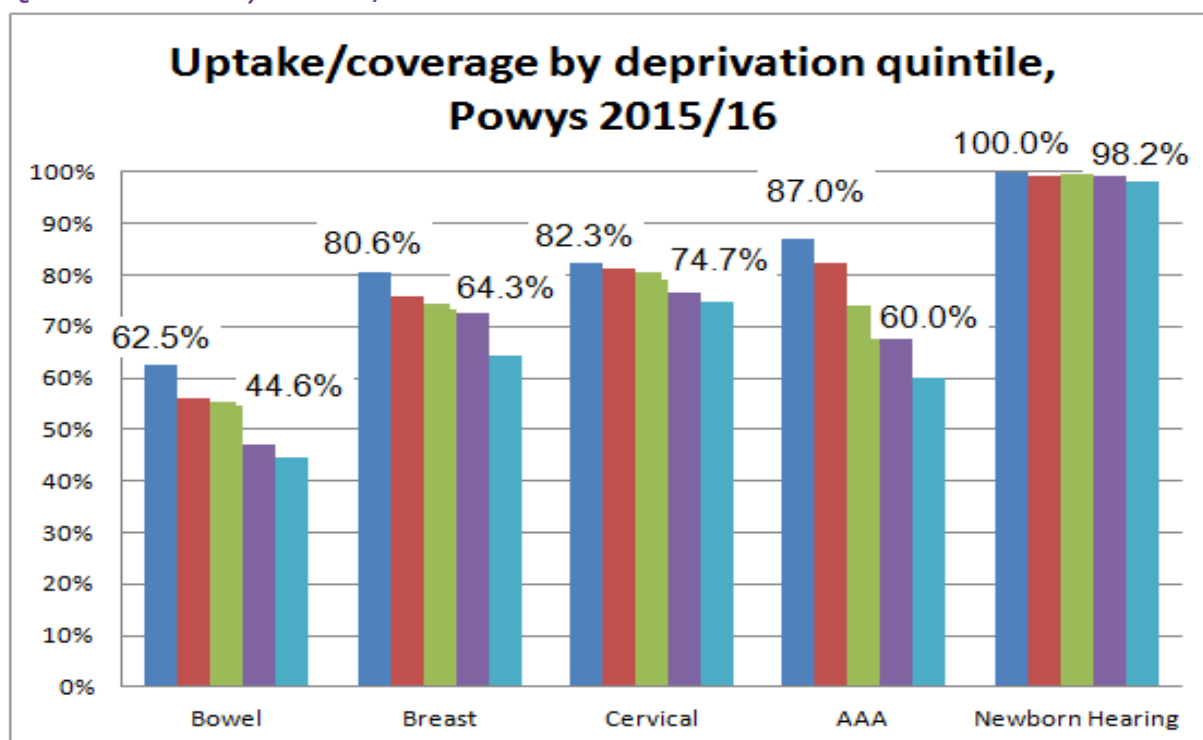
4.10 In 2015/16 the coverage of cervical screening was 80.5% in Powys and 77.8% in Wales (Table 4.0): the 80% target was achieved in Powys although not in Wales as a whole. Coverage in the previous year (2014/15) was 80.8% in Powys and 78.0% in Wales.¹

4.11 In 2015/16 the uptake of abdominal aortic aneurysm screening was 79.8% in Powys and 79.1% in Wales (Table 4.0). The 80% target was not met, although uptake in Powys was just 0.2% short of the target (see paragraph 4.16 regarding uptake in 2014/15).

4.12 In 2015/16 the uptake of newborn hearing screening was 99.4% in Powys and 99.5% in Wales (Table 4.0) and the 95% target was achieved. In 2014/15 the uptake of this programme was 99.0% in Powys and 99.5% in Wales.¹

4.13 A social gradient in uptake is seen in the adult screening programmes in Powys, as summarised in Figure 4.0.¹

Figure 4.0: Uptake/Coverage of Screening Programmes by Deprivation Quintile in Powys 2015/16



For each screening programme, each column represents a deprivation quintile from least deprived (left) to most deprived (right). Source: Public Health Wales Informatics Team

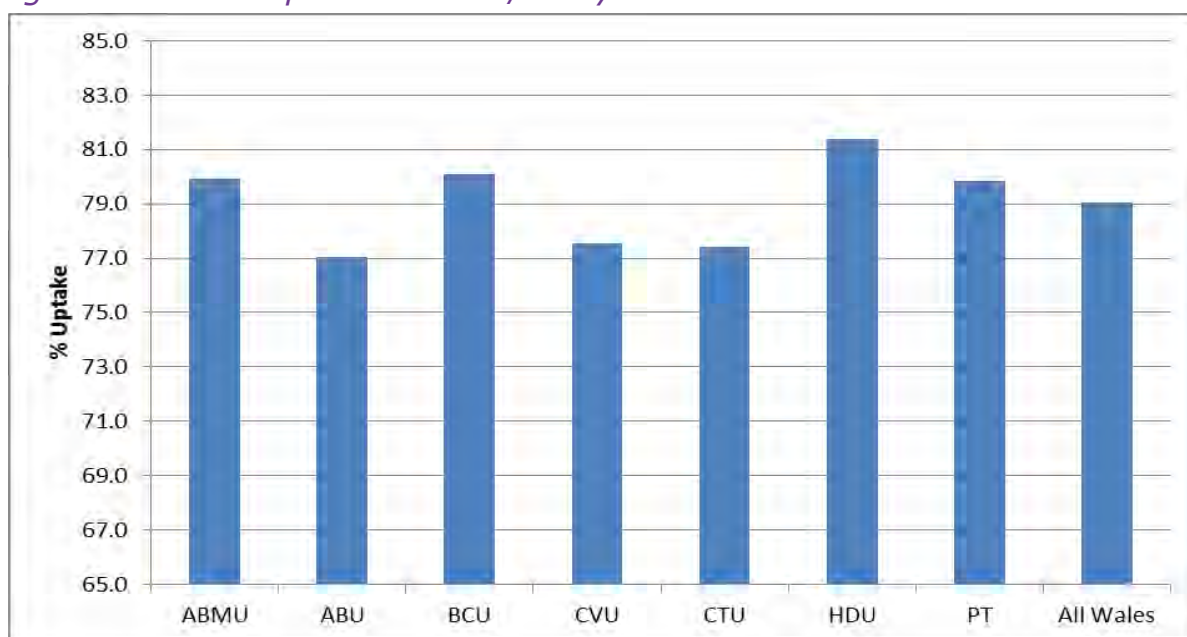
Abdominal Aortic Aneurysm Screening



4.14 Abdominal aortic aneurysm (AAA) screening is offered to 65 year old men and involves a simple ultrasound scan to measure the diameter of the widest part of the aorta. Depending on the findings, men are either discharged (diameter less than 3cm), offered annual screening (small AAA), quarterly screening (medium AAA) or referred to the local Vascular Network Multidisciplinary Team (large AAA).²

4.15 The uptake target for AAA screening is 80%. Uptake in Powys in 2015/16 was just below target at 79.8% (Wales 79.1%), as shown in Table 4.0. Figure 4.1 shows how uptake in PTHB compares with other health boards (2015/16 data).²

Figure 4.1: AAA Uptake in 2015/16 by Health Board of Residence



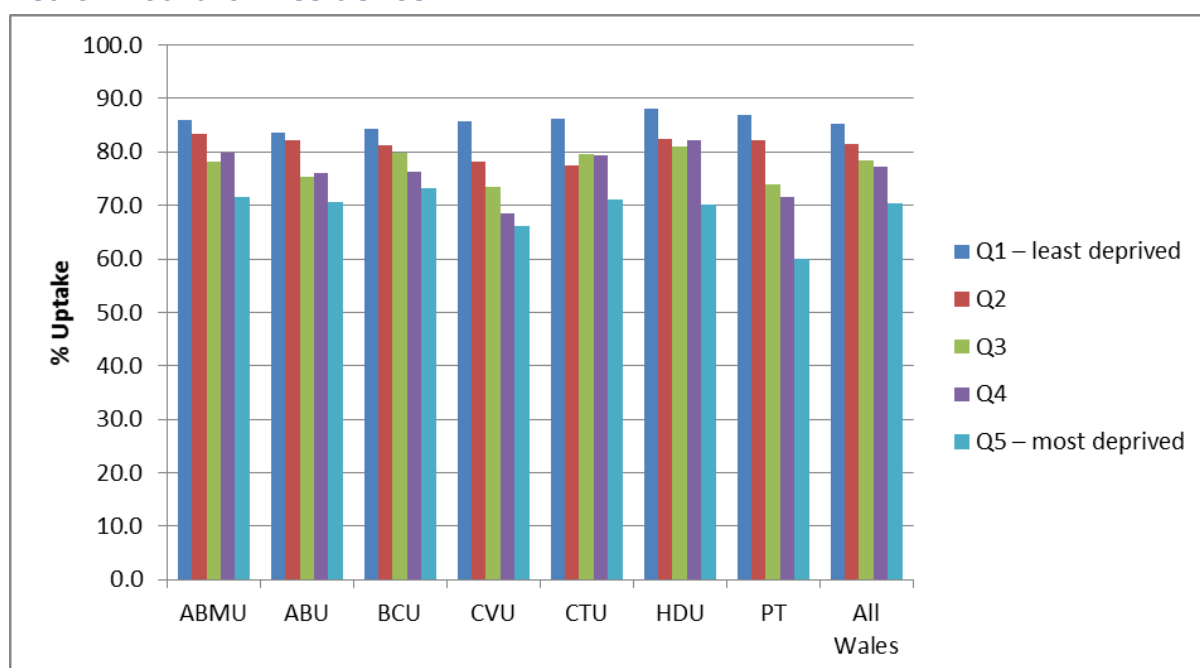
Source: Screening Division, Public Health Wales

4.16 The method for calculating uptake rates for abdominal aortic aneurysm screening changed in 2015/16 to facilitate benchmarking with the other UK programmes. As a result, direct comparison cannot be made between uptake in Wales in 2015/16 and during previous years. Trend data is therefore not presented for AAA screening. The recorded uptake of abdominal aortic aneurysm screening in 2014/15 was 71.5% in Powys and 75.4% in Wales. In 2015/16, using the new methodology, the recorded uptake was 79.8% in Powys and 79.1% in Wales.¹

4.17 Six hundred and sixty one men were screened in Powys in 2015/16; six were found to have an AAA with a diameter of 3cm or more.²

4.18 A social gradient in AAA uptake is apparent in Powys with 87.0% uptake in the least deprived fifth and 60.0% in the most deprived fifth (Figure 4.0).¹ Powys currently has the steepest social gradient in AAA uptake in Wales (Figure 4.2).²

Figure 4.2: AAA Screening Uptake in 2015/16 by Deprivation Quintile and Health Board of Residence



Source: Screening Division, Public Health Wales

4.19 Recent work by Public Health Wales to improve the uptake of AAA screening has included a national campaign run in partnership with the Welsh Rugby Union during the Six Nations Rugby Tournament, to increase awareness of AAA screening. Public Health Wales has reported that awareness was 8.9% higher following this campaign. Since May 2015, AAA screening has also been available following self-referral by men over 65 years, who have not previously been screened.³

4.20 In order to promote uptake, screening clinics are held in a number of venues across Powys, helping to reduce travel time for men. Use of the Tenovus Cancer Care Charity 'Man Van' in Brecon town centre is also being piloted to further improve uptake.¹

4.21 Although uptake of AAA screening in Powys as a whole has almost reached the 80% target, the social gradient in local AAA screening uptake remains of concern.

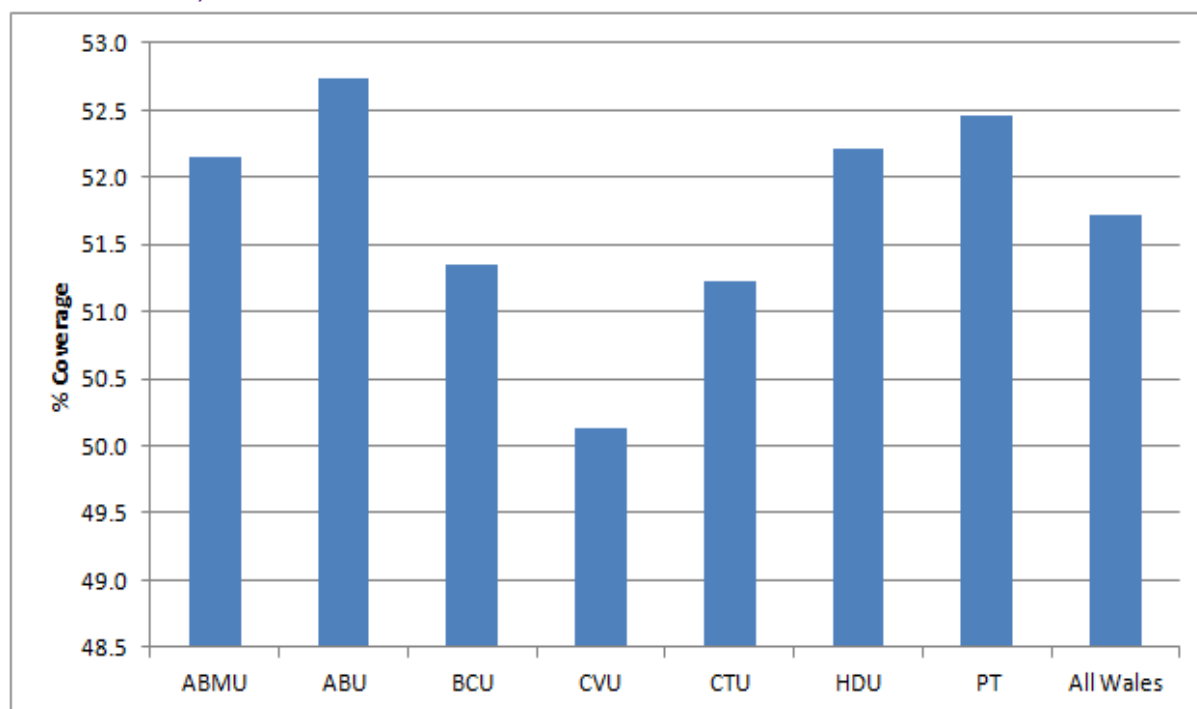
Bowel Screening



4.22 Bowel screening aims to reduce the number of people dying from bowel cancer by identifying cancer early when treatment is more successful and by identifying and removing polyps that may otherwise become malignant. Men and women aged 60 to 74 years are sent a test kit every two years, which they return by post for laboratory testing. If the test is positive, further investigation including colonoscopy is offered. Bowel Screening Wales (BSW) aims to reduce deaths from bowel cancer by 15% by 2020.⁴

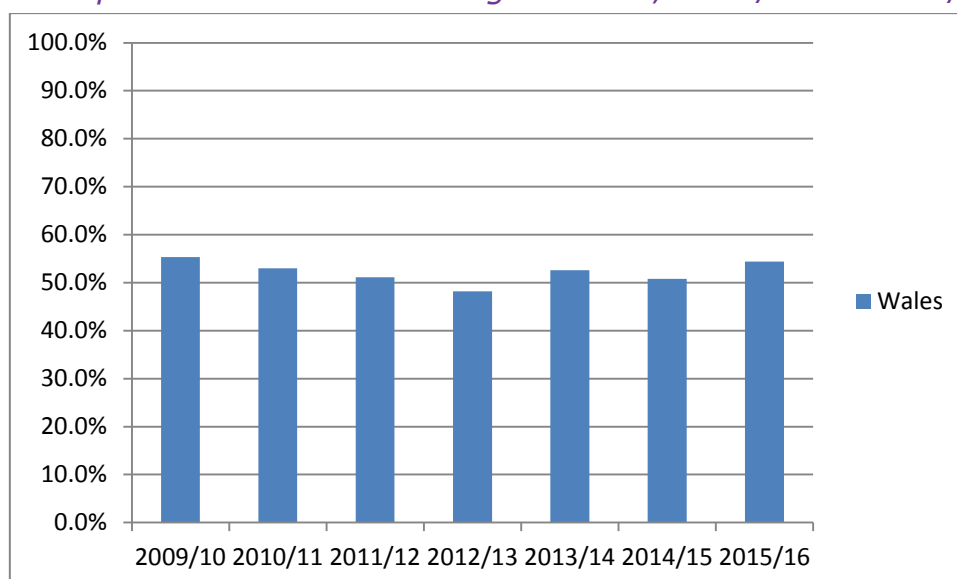
4.23 Overall bowel screening coverage (within 2.5 years) in Powys was 52.5% compared to 51.7% in Wales, as at October 2016. The 60% target was not achieved locally or in Wales (Figure 4.3). 14,942 Powys residents were screened within this 2.5 year period. Coverage in females was 55.8% in Powys and 53.6% in Wales, whilst coverage in males was 49.0% in Powys and 49.8% in Wales. Figure 4.4 shows that levels of uptake of bowel screening have remained broadly static in Wales since 2009/10.

Figure 4.3: Bowel screening coverage (within 2.5 years) by health board of residence, as at 1st October 2016



Source: Screening Division, Public Health Wales

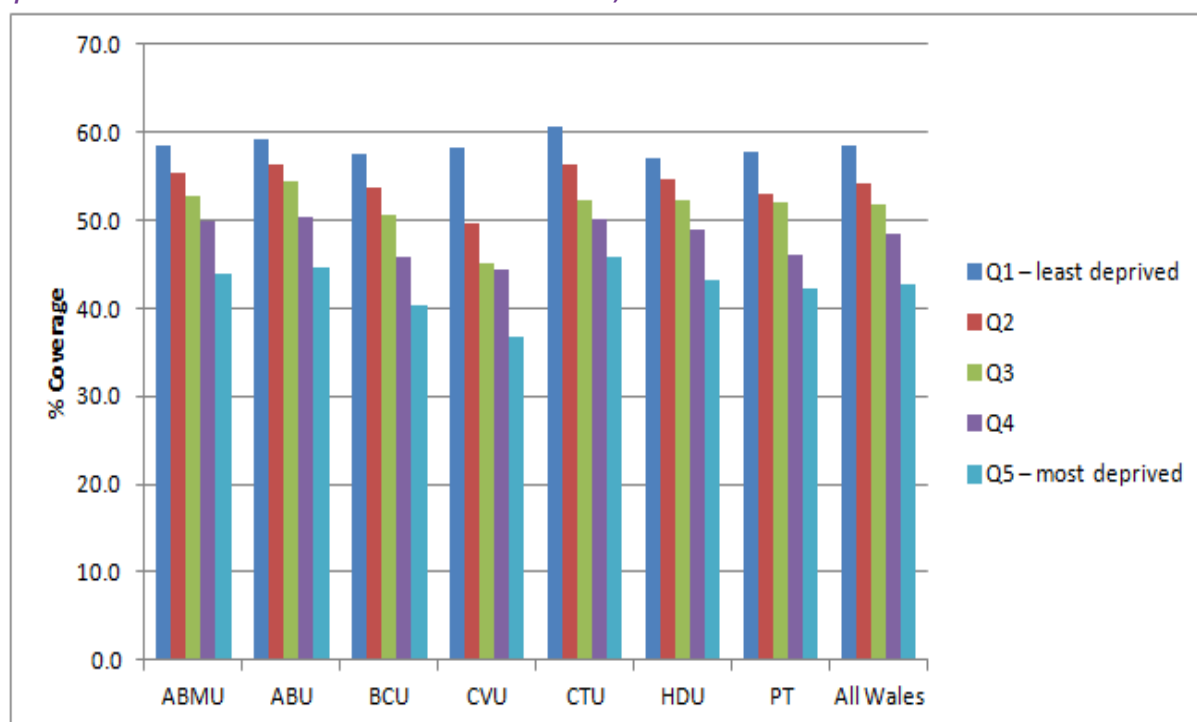
Figure 4.4: Uptake of Bowel Screening in Wales, 2009/10 to 2015/16



Source: Public Health Wales Screening Division⁴

4.24 There is a social gradient in bowel screening coverage in Powys and in Wales (Figure 4.5).

Figure 4.5: Bowel screening coverage (within 2.5 years) by deprivation quintile and health board of residence, as at 1st October 2016



Source: Screening Division, Public Health Wales

4.25 To improve uptake amongst men, BSW now sends advance notification letters to men before the first invitation to bowel screening, following trials showing that this is effective in increasing uptake. Recent work piloted in three GP clusters in Wales has also shown that GP endorsement by letter or 'phone call improves uptake in deprived

populations with a poorer screening history and is more effective than opportunistic brief interventions in this context. Work is underway to provide GPs with non-responder data electronically, which will provide opportunities to encourage uptake and reduce inequality. Faecal Immunochemical Testing is due to be introduced from 2018/19. This is expected to improve the detection of cancer and, since it is easier for patients to use, should also increase uptake.^{3,4}

Breast Screening



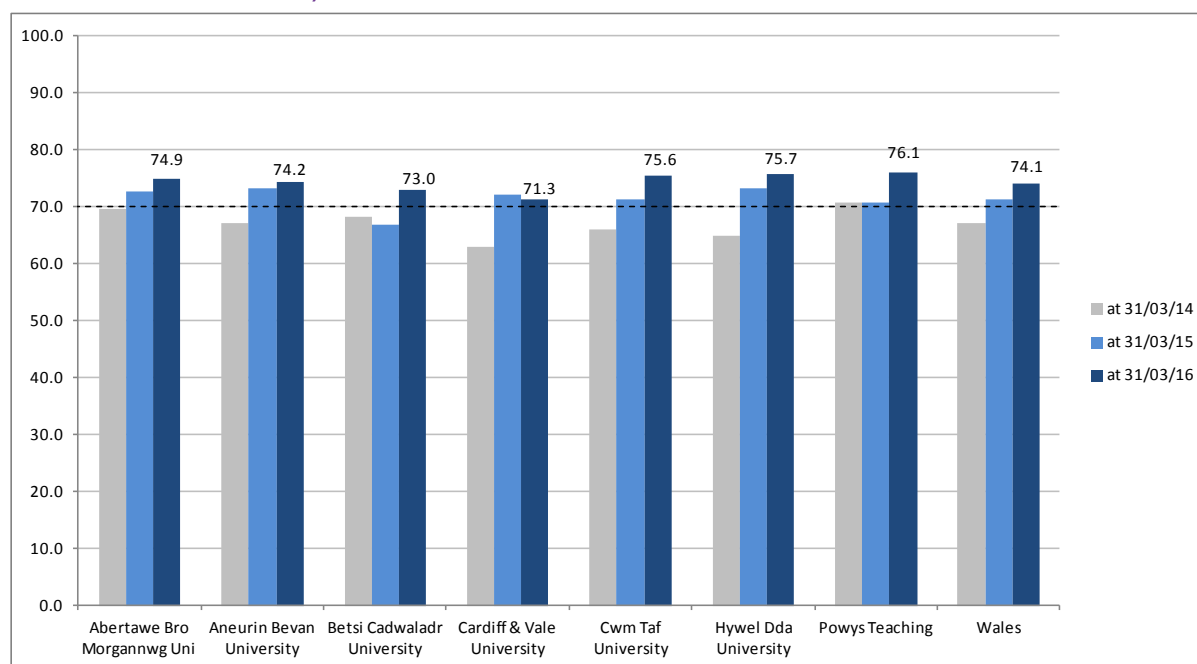
4.26 Breast screening via Breast Test Wales (BTW) aims to reduce morbidity and mortality from breast cancer and is offered to women aged 50-70yrs. It involves a mammogram examination of the breasts once every three years. If any abnormalities are found the woman is invited to an assessment clinic for further investigation.

4.27 The minimum standard is for 70% of invited women to attend for screening and the target is 80%.

4.28 The uptake in the most recent breast screening round (as at November 2016) was 75.5% in Powys and 72.5% in Wales (Table 4.0). In the previous round (as at November 2015) uptake was 74.0% in Powys and 72.4% in Wales.⁵

4.29 In the period 2014 to 2016, coverage of breast screening in Powys was 76.1% compared to 74.1% in Wales (Figure 4.6).

Figure 4.6: Breast screening coverage %, women aged 53-70, by Health Board of Residence, 2014-2016



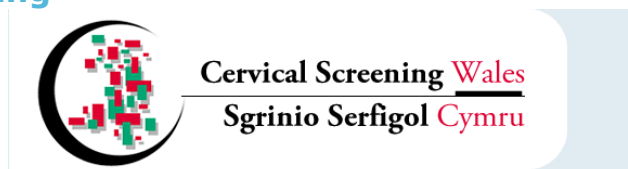
Source: Screening Division, Public Health Wales

4.30 A social gradient is also seen in the uptake of breast screening (Figure 4.0).¹

4.31 During the past two years, Breast Test Wales (BTW) has undertaken work to address round length issues (invitations issued within 36 months of previous screen), following implementation of digital mammography in 2013.⁵ BTW has also visited several sites in Powys over the last 12 months, including Brecon, Newtown, Welshpool and Machynlleth. BTW reviews the sites visited by its mobile breast screening units for suitability on a continual basis, in order to provide as convenient access as possible for local women. An 11th mobile breast screening unit will become operational in Wales during 2017.^{1,3} Work has also recently been undertaken to improve the assessment pathway, to deliver shorter waits for tests following an abnormal screening mammogram.

4.32 Public Health Wales has highlighted that the age profile of the workforce is one of the most significant challenges faced by the national breast screening service.

Cervical Screening



4.33 Cervical Screening Wales (CSW) invites women aged 25 to 49 years for screening every three years; and women aged 50 to 64 years for screening every five years.

4.34 The coverage of cervical screening in Powys was 80.5% in 2015/16 which met the 80% target.⁶ Coverage across Wales as a whole was 77.8%.⁶ In 2014/15, coverage within five years was 80.8% in Powys and 78.0% in Wales.^{6,7}

4.35 There is a social gradient in the uptake of cervical screening (Figure 4.0). In 2015/16, the uptake in Powys amongst women in the most deprived fifth of the population was 74.7%, compared to 82.3% in the least deprived fifth.¹

4.36 Waiting times for screening test results have improved across Wales in the last twelve months. CSW is currently exploring opportunities to work with primary care to increase awareness and access in the local population and to improve the number of women attending for cervical screening. CSW is expanding human papillomavirus (HPV) testing in Wales. Roll out of HPV “test of cure” was completed in October 2015 and HPV triage for women with borderline/low grade cytology was introduced in May 2016. A new method of cervical screening is now being introduced in Wales, based on primary testing for HPV (which causes cervical cancer). This involved an initial roll-out to 20% of women in Wales from April 2017, with full implementation anticipated during 2018/19. The screening procedure itself will remain the same, but the test is more sensitive and will identify women who require treatment more effectively. It is anticipated that this will lead to more appropriate referrals to healthcare services, earlier treatment and faster discharge back into routine screening.^{1,6}

Newborn Hearing Screening



4.37 Newborn hearing screening is offered during the first week of life with the aim of identifying babies with significant hearing impairment as early as possible, so that prompt support can be offered. The target is for 95% of babies born in Wales to be screened. The majority of babies born in hospital

(including Powys babies born in an English hospital) are screened in that hospital (Figure 4.7); where this is not possible - and for babies born outside hospital - screening is undertaken in a community hospital or clinic. The majority of babies managed in neonatal intensive care and/or special baby care units are also screened before discharge.

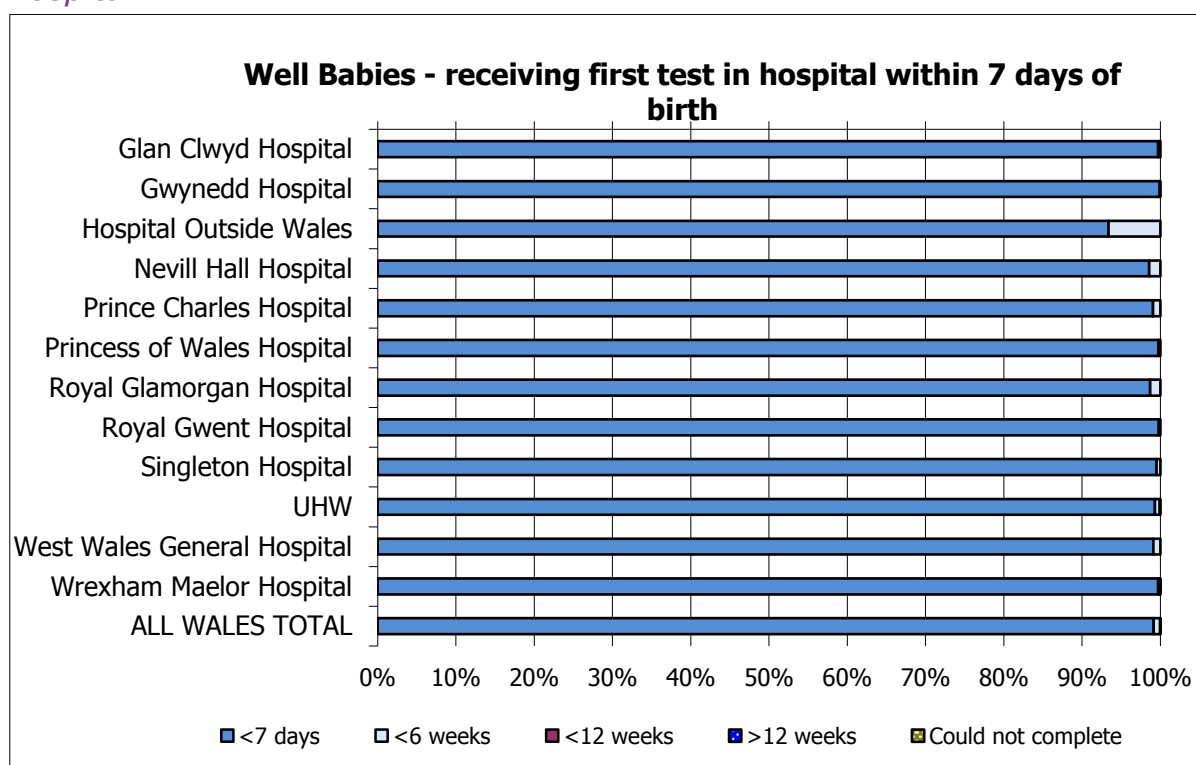
4.38 Babies who have a clear response on screening are discharged from the screening programme; those who do not show a clear response at the end of the screening process (around 1-2%) are referred for diagnostic assessment.

4.39 The minimum standard for the percentage of eligible babies who are offered screening is $\geq 99\%$. In 2015/16, screening was offered to 100% of the 1,213 eligible babies in the Powys population (100% in Wales).⁸

4.40 The minimum standard for the percentage of eligible babies who enter the screening programme is $\geq 95\%$. This was exceeded in 2015/16 with 99.0% of babies (1,201) tested in the Powys population (99.5% in Wales).⁸

4.41 The minimum standard for the percentage of eligible babies receiving the first screening test within the first week of life is $\geq 70\%$. This standard is met for babies born in hospital settings (Figure 4.7).

Figure 4.7: Newborn Hearing Screening: Eligible babies born in an (Acute) Hospital



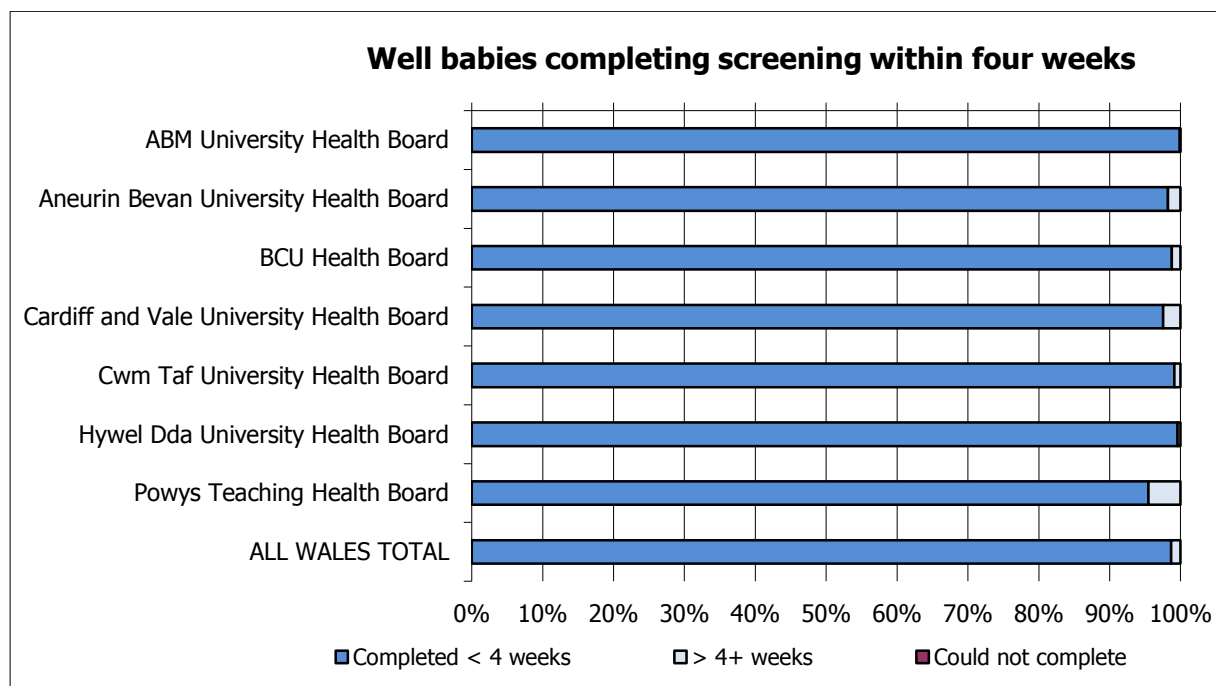
Source: Public Health Wales Screening Division⁸

4.42 The minimum standard for the percentage of eligible babies who complete the screening programme within four weeks of birth is $\geq 90\%$. In

2015/16, 95.4% of eligible Powys babies (98.7% in Wales) completed screening within four weeks, compared to 94.6% in 2014/15 (98.7% in Wales) and 88.4% in 2013/14 (98.1% in Wales).^{8,9,10} (Figure 4.8) The national standard has been achieved in Powys and local performance continues to improve.

4.43 In 2015/16, 100% of high risk babies entering the screening programme completed screening in Powys and Wales. The minimum standard is $\geq 95\%$.⁸

Figure 4.8: Percentage of Eligible Babies Receiving their Newborn Hearing Test within Four Weeks of Birth



Source: Public Health Wales Screening Division⁹

Diabetic Eye Screening



4.44 Diabetic retinopathy is a complication of diabetes which, if left undetected and untreated, can lead to sight loss. Diabetic retinopathy may have no obvious symptoms until it is well advanced. Diabetic eye screening aims to detect diabetic retinopathy at an early stage, ensuring prompt referral and treatment and thereby preventing avoidable loss of vision in affected patients.

4.45 All patients with a confirmed diagnosis of diabetes registered with a GP in Wales should be referred to the Diabetic Eye Screening Wales Service. This includes patients with insulin dependent diabetes mellitus and patients

with non-insulin dependent diabetes mellitus. Patients who meet the screening criteria are offered an annual retinal screening examination. Diabetic eye screening is a straightforward procedure in which digital photographs of the retina are taken. Patients requiring further investigation or treatment are referred to specialist eye services.

4.46 The Diabetic Eye Screening Wales (DESW) Service (previously the Diabetic Retinopathy Screening Service for Wales) transferred to the Screening Division, Public Health Wales from Cardiff and Vale University Health Board on 1st April 2016. Standards have been agreed for the programme and work is now underway to further assess performance against these standards. Public Health Wales has identified the need to improve failsafe procedures for diabetic eye screening. There has also been an investment in new mobile vans to replace some of the older fleet. Future plans for the service include reviewing the screening interval for those identified at low risk of retinopathy, in line with the position of the UK National Screening Committee.

4.47 Referral at the time of a diagnosis of diabetes is of fundamental importance - GPs should refer all patients for diabetic eye screening without delay, once a diagnosis of diabetes has been made. Referral was previously included in the national Quality and Outcomes Framework. A Public Health Wales website for the programme is currently under development (national referral guidance is available at <http://www.eyecare.wales.nhs.uk/drssw>).

4.48 The Powys Diabetes Planning and Delivery Group encompasses the early detection and treatment of diabetic eye disease in its delivery plan, working with DESW. The plan identifies the need for additional clinic capacity in order to ensure timely and equitable access to diabetic eye screening in the eligible Powys population, particularly in the south Powys/Brecon area. This increased capacity has now been secured; access to screening will be kept under review by this Group. Other actions for 2017/18 include (but are not limited to) monitoring the performance on referral to eye screening at diagnosis and on necessary referral to eye care services for assessment and treatment following screening.

Screening Engagement

4.49 The national Public Health Wales Screening Engagement Team works across the screening programmes to encourage people in Wales to make an active decision to participate in screening.¹ As part of its approach, the Screening Engagement Team trains “community champions” from low uptake areas and groups across Wales, so that they can promote screening in local communities and the workplace. During 2016, the Team also collaborated with the Powys Local Public Health Team and PTHB learning disability nurses in joint work to support equitable access to screening services for people with a learning disability. The initial focus was on consent and capacity, examining processes and the type of information

provided to enable service users and carers to make informed decisions. In addition, the Powys Public Health Team hosted a local visit by the Screening Engagement Team to the 2016 Royal Welsh Show, which provided a wider opportunity for public engagement.

6

Recommendation 6: As part of the implementation of the Powys Health and Care Strategy, PTHB should work with the Public Health Wales Screening Division to further develop a prioritised and evidence-based approach to address social inequity in screening uptake in the Powys population.

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Chapter 5: An Update on Tobacco

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Key Messages for Powys:

- Smoking continues to be a leading cause of preventable ill health and mortality in the Powys population.
- Based on a current projection, the national smoking prevalence target of 16% of the adult population by 2020 may not be achieved in Powys.
- Tobacco control measures will be key to successful delivery of the Powys Health and Care Strategy.
- As part of this, work to improve smoking cessation rates should continue, including support for the 'Help Me Quit' campaign through targeted use of social media and wider promotion work.

The Health Risks of Tobacco

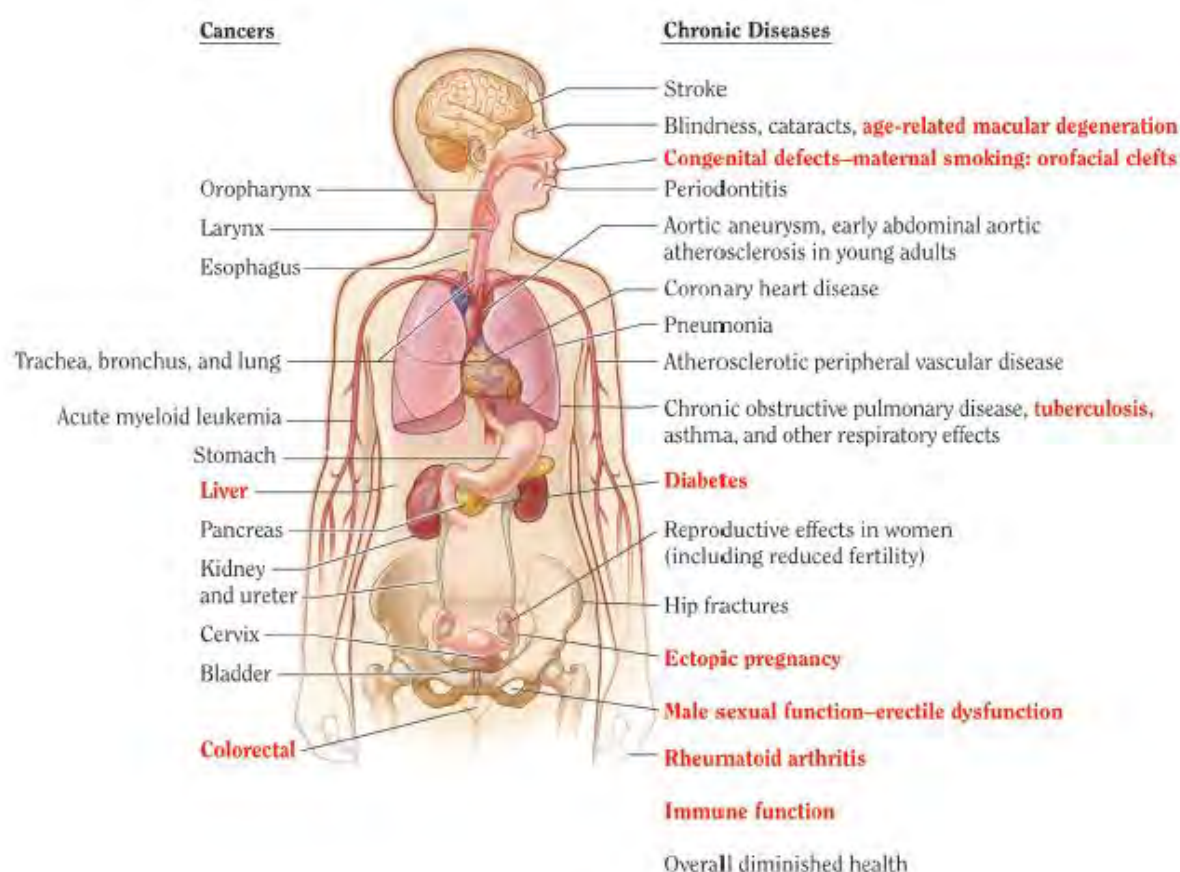
5.1 During the past 50 years, the strength of the empirical evidence on the harm caused by smoking (and passive smoking) has increased significantly.¹ Among the general adult population, smoking is estimated to contribute to nearly 20% of all deaths, and is responsible for around a third of the health inequality in mortality experienced between the most and least deprived in society.² In Powys, smoking continues to be a leading cause of preventable mortality, accounting for over 200 deaths a year among the adult population.³

5.2 Cigarette smoke contains more than 4,000 chemicals, many of which are irritants and toxins, some of which are known to cause cancer.^{3,4,5} Tobacco smoking harms nearly every organ in the body, and is responsible for a multitude of different diseases (Figure 5.0).^{3,4} For example, smoking is implicated in around 90% of cases of lung cancer and 80% of cases of chronic obstructive pulmonary disease.^{3,4,5}

5.3 Exposure to second-hand smoke (passive smoking) also increases the risk of developing a range of diseases. Infants and children are amongst those at particular risk, including from chest infections, exacerbated asthma, glue ear and an increased chance of cot death.⁵

5.4 Treating the consequences of smoking will have major resource and cost implications for Powys Teaching Health Board as well as the wider NHS in Wales. As an example, figures recently published by Public Health Wales suggest that smoking accounts for nearly 1,300 hospital admissions each year among the 35+yrs Powys population.³ Although a financial figure is not placed on this, this level of activity will represent a significant avoidable cost pressure to PTHB each year. Across Wales, conservative estimates suggest that 20% of all admissions and bed days are attributable to smoking-related disease⁶, costing more than £430 million pounds a year.⁷ The cost of smoking to wider society (including loss of productivity, premature death, absenteeism and fires) has been estimated at around £790 million in Wales (£31 million in Powys).⁷

Figure 5.0: Some of the Risks of Smoking



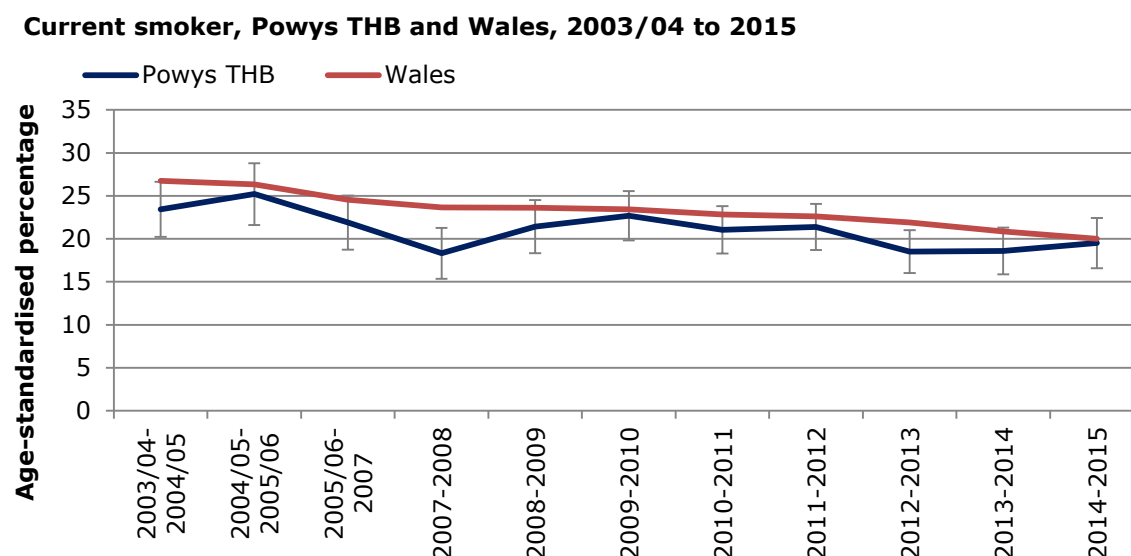
Source: Centres for Disease Control and Prevention ⁸

Trends in Smoking Prevalence

5.5 Based on the most recent National Survey for Wales, the smoking prevalence rate in Powys is 19% (age-standardised, 16+yrs), equating to just under 21,000 smokers.⁹

5.6 In summary, smoking prevalence in Powys has not, in general, differed significantly from the national rate, both of which have been declining (Figure 5.1). The national target of a 20% smoking prevalence rate by 2016 was achieved in Powys by 2014-15.¹¹

Figure 5.1: Percentage of adults (16+yrs) reporting to be a current smoker, age-standardised percentage, PTHB and Wales, 2003/04 - 2014/2015



Source: Public Health Wales Observatory

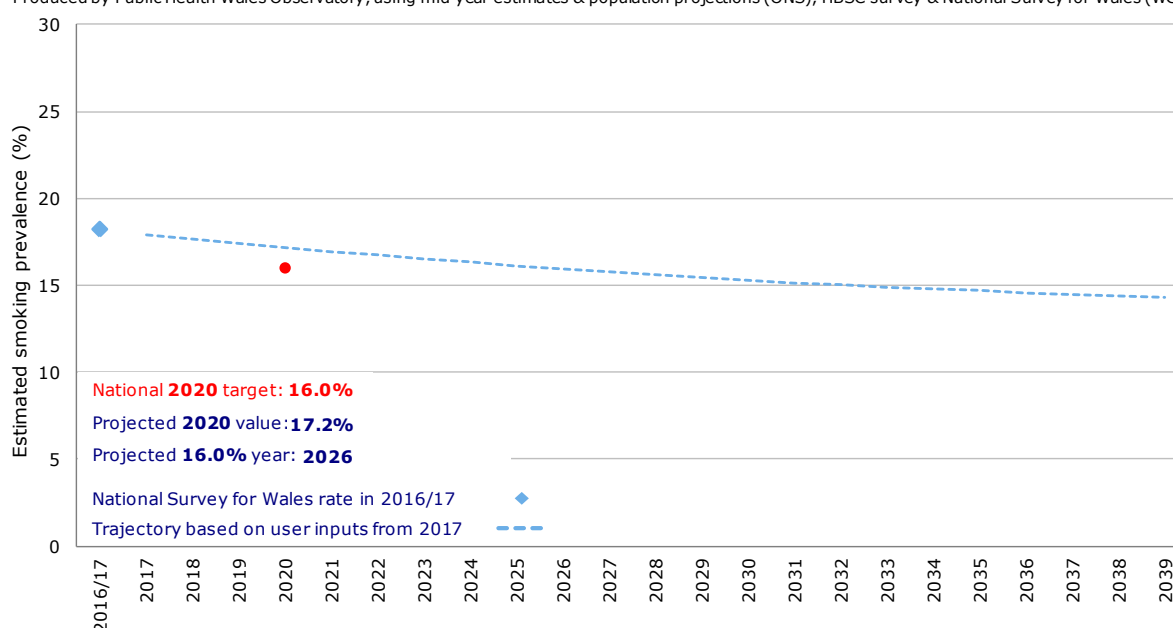
Note: This does not include the most recent 2016/17 smoking prevalence figure of 19% for both Wales and Powys.

5.7 However, based on modelling by Public Health Wales, the 2020 target of a 16% adult smoking prevalence may not be achieved in Powys or Wales (Figure 5.2). Under this approach, the estimated local prevalence of 17.2% by 2020 would be very similar to a (projected) national rate of 17.3%. (These are modelled estimates under a range of assumptions and, as such, are inevitably prone to some uncertainty).¹²

Figure 5.2: PTHB smoking prevalence: estimated projection, all persons aged 16+, PTHB, 2017-2039

Estimated smoking prevalence projection, all persons aged 16+, Powys THB, 2016/17 to 2039

Produced by Public Health Wales Observatory, using mid-year estimates & population projections (ONS), HBSC survey & National Survey for Wales (WG)



Source: Public Health Wales Observatory

The Powys Tobacco Control Strategic Group

5.8 The Powys Tobacco Control Strategic Group is a multiagency partnership which leads the tobacco control strategic plan¹³ for Powys. The plan was recently reviewed and refreshed and was approved by PTHB in May 2017. The partnership's objectives include providing a strategic overview and direction for implementation of the Powys tobacco control plan, and reviewing and responding to emerging evidence and guidance on tobacco control. Current priorities include implementation of evidence-based initiatives in schools to help prevent children from starting to smoke, and delivery of a range of activities to increase referral rates into smoking cessation services. The plan specifically supports approaches adopted in the Powys Health and Care Strategy – through its focus on wellbeing, tackling the "Big Four" and "Doing What Matters".

Stop Press!!

5.9 The national Tobacco Control Delivery Plan for Wales was published during September 2017¹¹. Its headline themes include the reduction of smoking prevalence, reducing exposure to second-hand smoke and further work to prevent the uptake of smoking. Delivery will be co-ordinated by the national Tobacco Control Strategic Board – specific actions for health boards have been highlighted.

Figure 5.3: Tobacco Control Delivery Plan for Wales 2017-20



Source: Welsh Government

7

Recommendation 7: The Powys Tobacco Control action plan should be reviewed in light of the new national delivery plan and presented for consideration and approval by PTHB later in 2017/18.

The PTHB Smoke Free Policy

5.10 As part of the overall tobacco control strategy in Powys, the PTHB Smoke Free Policy was reviewed and updated during 2015/16, at the request of the Director of Public Health. Following staff consultation, the policy was approved by the PTHB Board in May 2016.¹⁴ In summary, the policy is designed to encompass the role of PTHB as both a commissioner and provider of NHS services. The policy's aims include to:

- Promote and reinforce a smoke-free social norm
- Protect all staff, patients and all other visitors from exposure to second hand smoke and/or third hand tobacco smoke and electronic nicotine delivery system (e-cigarette) vapour
- Support staff and patients who want to quit smoking

5.11 The policy will be reviewed following enactment of the Public Health (Wales) 2017 Bill and in light of emerging information and evidence relating to e-cigarettes.

The PTHB Staff Smoking and Tobacco Survey

5.12 A survey of PTHB staff was undertaken during 2016/17 to explore smoking habits, attitudes and opinions amongst the health board's employees. Key findings included that around 12% of staff currently smoke, with around 10% of staff smoking daily. There was some evidence

of fewer quit attempts than may be expected amongst the staff who smoke. Most staff are aware of the PTHB Smoke Free Policy, although around 27% are not. A range of actions are now being taken forward to address the findings of the survey, which will be repeated in the future.

Smoking Cessation

5.13 NHS smoking cessation services provide evidence-based, behavioural support delivered over a number of weeks. The model is based on withdrawal-orientated behaviour change techniques, which encompass building rapport, giving advice and encouragement and activities designed to maximise motivation to quit.^{15,16} Typically, the behavioural support will include a variety of other components, including provision of pharmacotherapy (e.g. nicotine replacement therapy) and advising on strategies to cope with stress and relapse situations.¹⁵ Face-to-face behavioural support combined with pharmacotherapy is known to be effective in improving rates of long-term smoking cessation; there is evidence that NHS smoking cessation services more than triple the chances of quitting, compared to smokers who attempt to quit unaided.^{15,16}

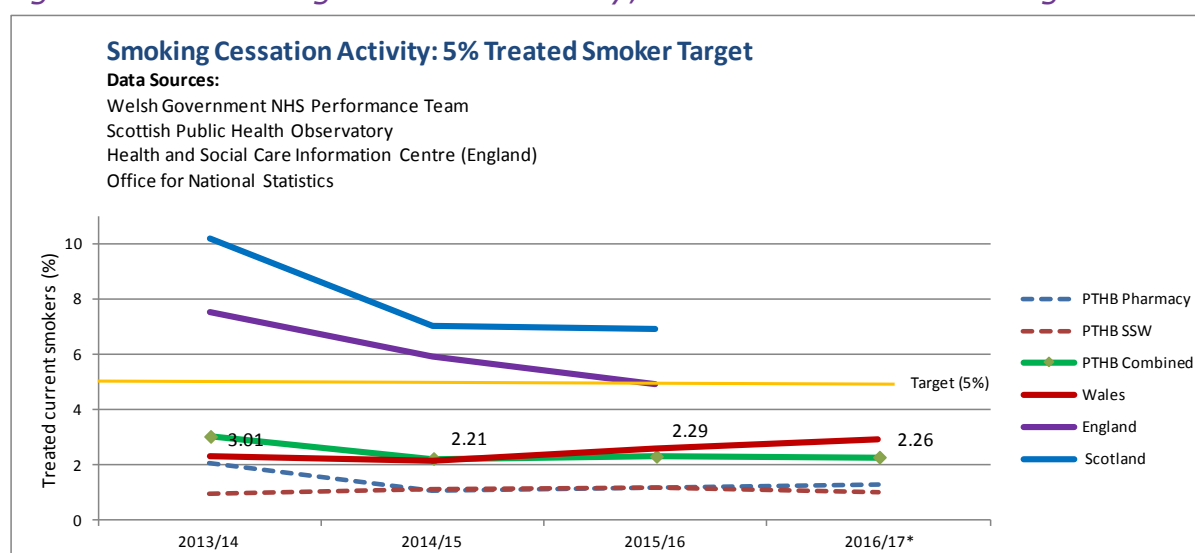
5.14 In 2013/14, Welsh Government introduced two annual smoking cessation targets (in addition to the prevalence targets described earlier in the chapter):^{17,18}

- 5% of current smokers to make a quit attempt via smoking cessation services;
- A 40% carbon monoxide-validated quit rate at four weeks.

5.15 Two smoking cessation services operate in Powys – the national Public Health Wales Stop Smoking Wales service, offering telephone, one-to-one and group support; and the local one-to-one service, offered by most community pharmacies in Powys.¹⁹ (Some GP surgeries also offer smoking cessation support, although the data for this activity is not currently included within performance data, as it may not be comparable).²⁰

5.16 Figure 5.3 summarises national and local performance in relation to the 5% quit target, since 2013/14. In summary, the target has not been achieved in Wales, in Powys or in other Welsh Health Boards during this period. The 40% validated quit rate was achieved in Powys for 2016/17. A review of smoking cessation services in Wales is now in progress.

Figure 5.4: Smoking Cessation Activity, 5% Treated Smoker Target



Sources: Welsh Government NHS Performance Team, Scottish Public Health Observatory, Health and Social Care Information Centre (England), Office for National Statistics

5.17 In the meantime, based on a single brand, a free 'phone number, a new website, targeted social media content and a range of adverts, the national "Help Me Quit" campaign is designed to encourage smokers to engage with a national contact centre and to make it easier for smokers to access smoking cessation support.²²

5.18 To date, activity in Powys has included deployment of two mobile advertising vans in the areas with relatively high smoking prevalence and wide dissemination of the "Help Me Quit" campaign materials across key settings, to maximise the local impact of the campaign.

Figure 5.5: "Help Me Quit" promotional poster



Source: Public Health Wales

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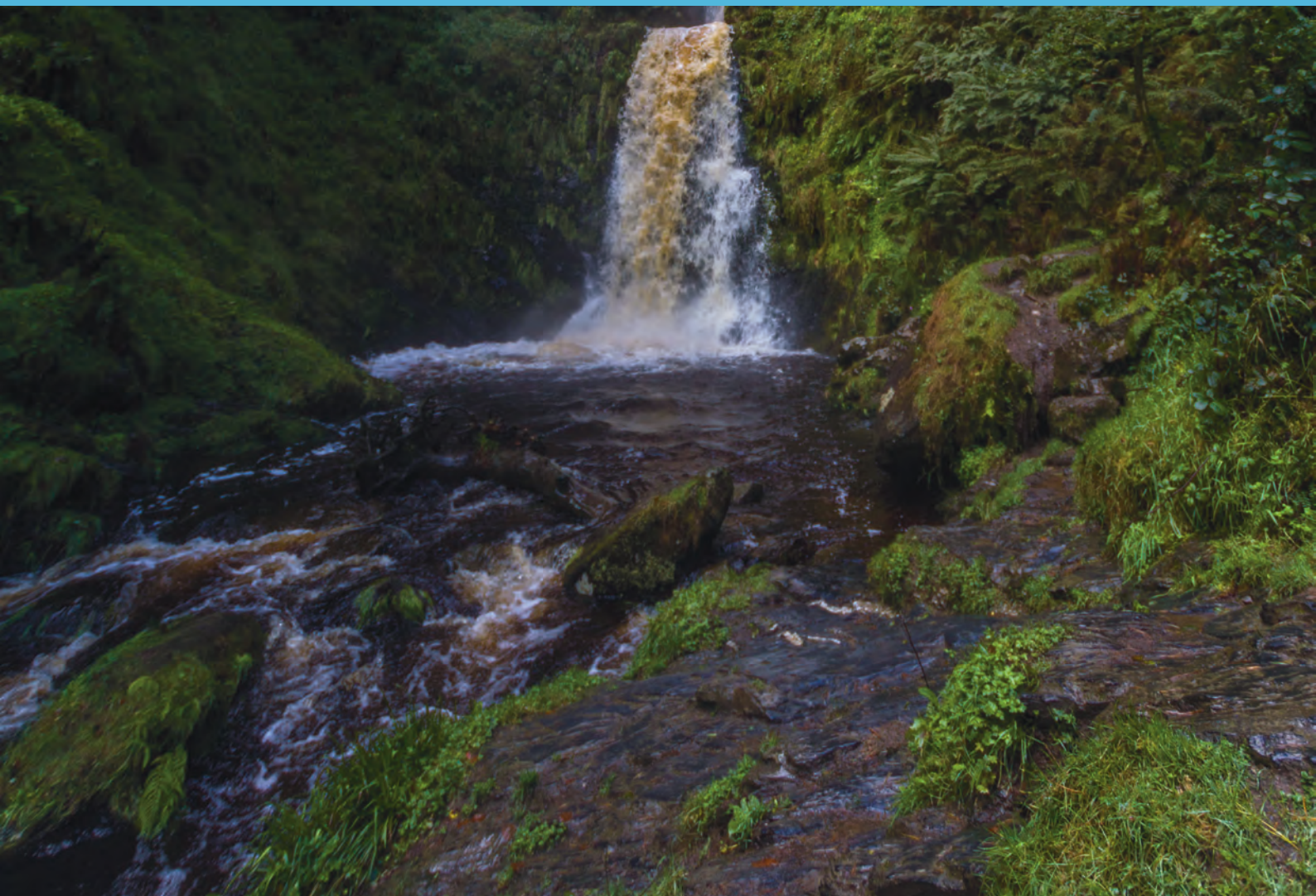
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Chapter 6: Adverse Childhood Experiences

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Key Messages for Powys:

- Adverse experiences during childhood resonate across the life course, affecting brain development, emotional well-being and behaviour.
- Dealing with the consequences of ACEs places demands across statutory and non-statutory agencies; all public sector organisations have an interest in responding to this issue.
- Local implementation of the Well-being of Future Generations (Wales) Act 2015 provides a mechanism for a multiagency approach to addressing ACEs in Powys. More specifically, the place of ACEs within the context of the Social Services and Well-being (Wales) Act 2014 and the duties of the Powys Regional Partnership Board are important issues to consider going forward.
- Efforts should be targeted at communities and individuals where ACEs are particularly prevalent. The response should be based on an approach which prioritises prevention and early intervention.

Introduction

6.0 Young people exposed to adversity often have poor health outcomes in adulthood. There is a growing body of evidence linking adverse childhood experiences (ACEs) with impaired health and social functioning in later life in a dose-response fashion, suggestive of a causal relationship.^{1,2} Evidence is emerging about how chronic stress in childhood affects the normal development of the brain, immune and endocrine systems, causing biological and physiological changes which can leave affected children at increased risk of physical, emotional and behavioural problems during later life.^{1,2} This chapter summarises current research on ACEs, including preventive interventions.

What are ACEs?

6.1 ACEs are stressful experiences during childhood that (negatively) affect children either directly (for example, abuse and neglect) or indirectly through their living environments (for example, parental conflict, substance misuse and mental illness). Importantly, ACEs are increasingly being linked to effects throughout the lifecourse, contributing to a number of physical and mental health problems in adulthood and ultimately greater disability and (premature) mortality.^{1,2} The long term impact of ACEs is illustrated in Figure 6.0.

Figure 6.0: The effect of ACEs across the lifecourse.



Source: <https://www.cdc.gov/violenceprevention/acestudy/about.html>

6.2 The precise definition of an ACE is debated.³ Most studies use a broadly similar core set of nine ACEs; however, over 16 different ACEs have been recorded in the literature.⁴ The nine ACEs used as the basis for a recent study by Public Health Wales⁵ are shown in Figure 6.1 - this definition provides the basis for discussion during the rest of this chapter. However, it should be noted that there are some notable exclusions even from this definition. For example, being a young carer can have a significant emotional and psychological impact, in some instances. Children who (adversely) experience poverty and/or economic disadvantage are another notable exception.

6.3 Regardless of the exact research definition, there is a consistent association in the published literature between exposure to at least 4 ACEs and poor later life chances.⁶ The association is strongest for exposure to ACEs and subsequent mental illness, drug misuse, violence and sexual risk taking; and weaker for lifestyle issues, such as physical activity and obesity.⁴ This association is regarded as evidence for the existence of a causal pathway based on cumulative exposure to stress, trauma and/or adversity, rather than the specific effect of exposure to any single adversity in childhood. However, uncertainties remain in relation to their later adult impact of acute versus chronic exposure to ACEs, and the impact of different exposure intensities and the timing of exposure during childhood.⁸ Nevertheless, the focus remains on reducing a child's exposure to multiple ACEs, rather than attempting to prioritise and address any individual ACE in isolation.

Figure 6.1: ACEs included in the Welsh Adverse Childhood Experiences (ACE) Study



Source: Public Health Wales

How do ACEs affect individuals?

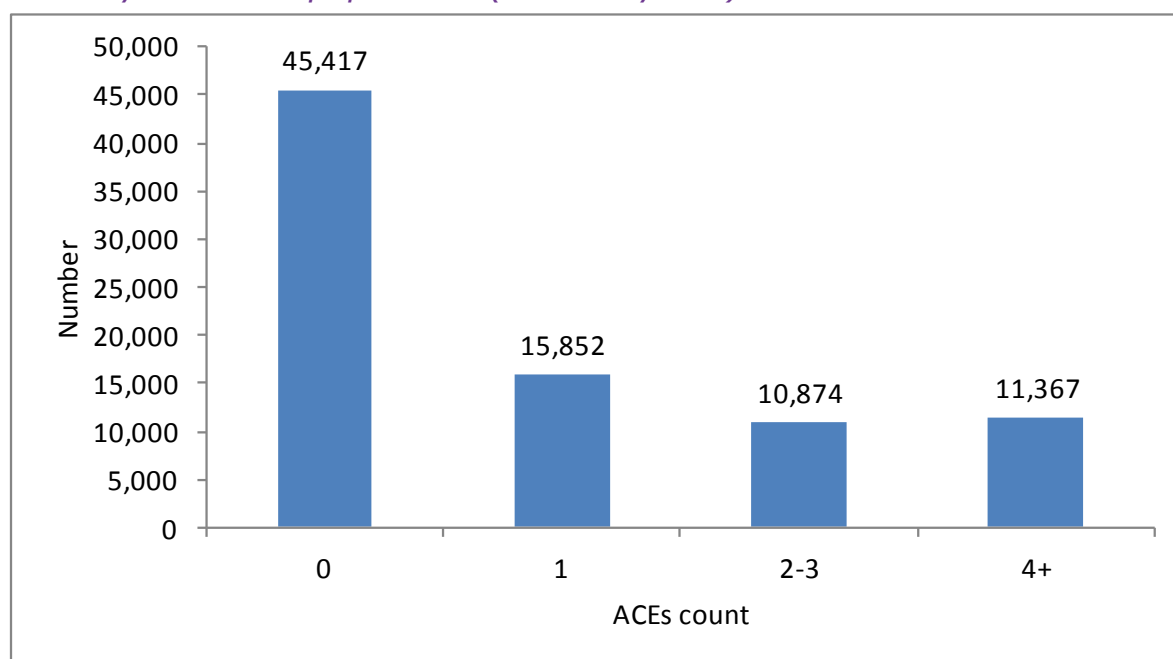
6.4 When a child is challenged in their emotional or physical well-being to such an extent that their ability to cope is exceeded, stress ensues. Chronic, prolonged periods of stress during childhood have been shown to influence brain development in a way which could exert long-term effects.⁷ Stressful experiences in childhood may also induce significant physical and biological changes to the brain, which in turn influence the physiological response to stress in later life. The effects can be manifest behaviourally as poor emotional regulation, poor cognitive functioning, short attention span and greater risk taking behaviour. There is also some suggestion that “toxic stress” in childhood detrimentally affects the long-term development of the endocrine and immune systems, reducing resistance to both physical and mental illness.⁷ The exact effects of ACEs may vary as different regions of the brain undergo development at different stages. In particular, the temporal lobes are important because they are relatively slow to mature and act as the centres for many higher-order functions (including inhibitory control, emotion regulation and sustained attention).⁸ It is thought that those areas of the brain which are slower to develop are more likely to be shaped by negative experiences in childhood, whenever they occur.

Overview: The Epidemiology of ACEs

6.5 In 2015, Public Health Wales undertook the first Welsh ACE survey to provide a baseline measure of the prevalence of ACEs in Wales.⁵ This study had a number of aims, including investigation into the prevalence of ACEs, and the association between ACEs and health-harming behaviour. Adults aged 18 to 69 years were recruited to the study, based on a representative sample size of 2,000 individuals. It is possible to apply the findings of the national study to the Powys population, although the derived estimates should be treated with a degree of caution. The limitations of applying the findings from a national sample relate to the differing demographics and economic circumstances of the Powys population, compared to Wales. If a similar sampling exercise were conducted in Powys, it is likely that the age of respondents would tend to be higher and that fewer individuals would be drawn from the lower socioeconomic groups. These population differences are likely to mean that national figures have potential to overestimate the picture in Powys, when applied locally.

6.6 As shown in Figure 6.1, ACEs fall into two main categories – direct childhood maltreatment and wider household dysfunction. The national study was based on the nine ACEs shown in Figure 6.1; respondents were surveyed in relation to ACEs experienced by the age of 18 years. Figure 6.2 applies the findings of this research to the Powys population.

Figure 6.2: Distribution of overall ACE experience by 18 years amongst the Powys resident population (18 – 69 years)

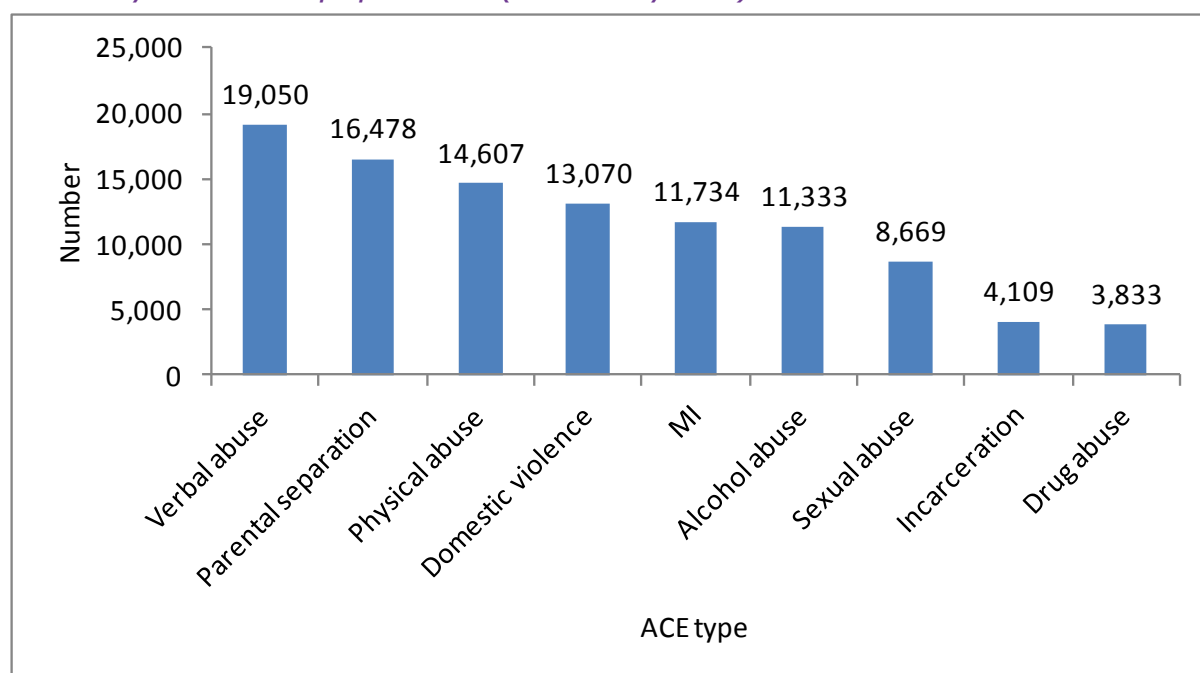


Source: Public Health Wales

6.7 An ACEs count of 4+ is reported to be the tipping point for significant health impact; applying the national study indicates that there could be over 11,000 18 to 68 year olds in Powys who had experienced this level of adversity by the age of 18 years. It is not possible to derive the place of residence within Powys using this approach.

6.8 As well as exploring the number of ACEs experienced during childhood, the national study investigated the prevalence of the nine different types of ACE shown in Figure 6.1. Figure 6.3 applies the findings of this research to the Powys population.

Figure 6.3: Distribution of type of ACE experience by 18 years amongst the Powys resident population (18 – 69 years)



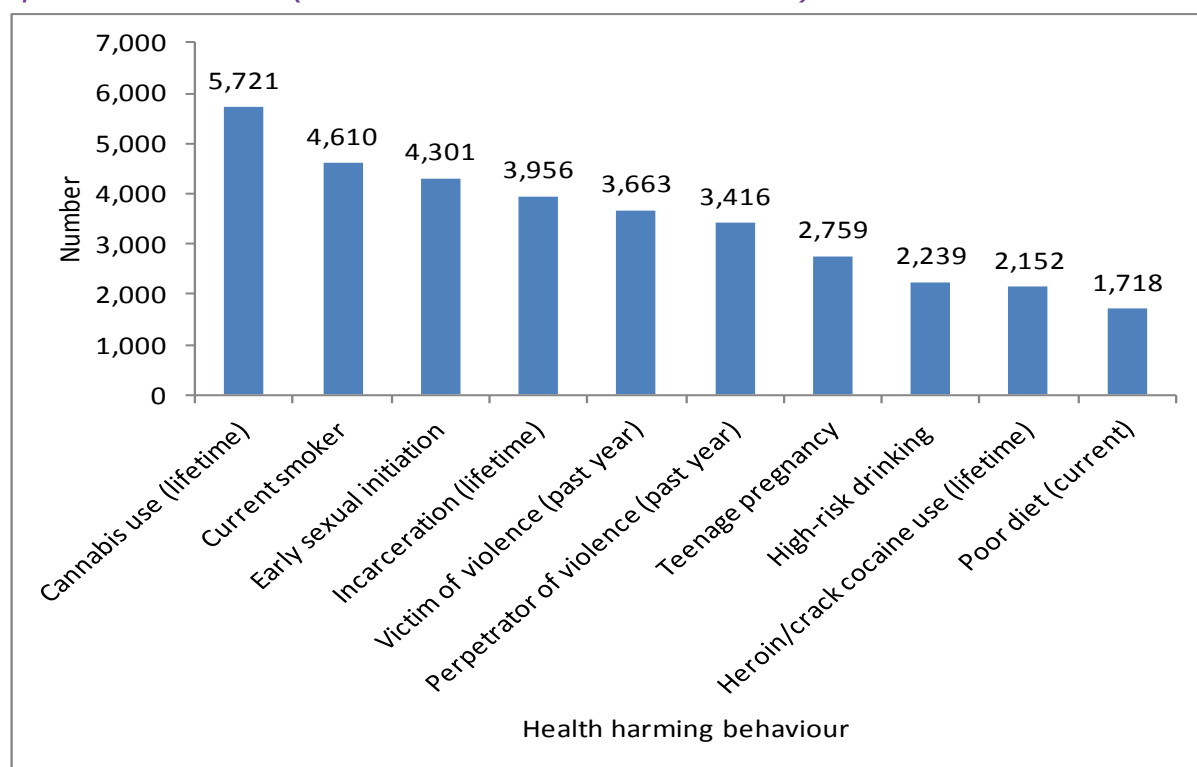
Source: Public Health Wales

6.9 The two most common ACEs summarised in Figure 6.3 are verbal abuse and parental separation; in this study, both were experienced by more than 20% of survey participants. Verbal abuse was defined as experiencing swearing, insults, put-downs or threats of physical harm from a parental figure in the household.

6.10 It is worthwhile noting that the numbers in Figures 6.2 and 6.3 do not match. When asked to consider each ACE specifically (Figure 6.3), more respondents recorded experiencing an ACE in childhood than when asked to simply record the number of ACEs experienced (Figure 6.2). Figure 6.2 suggests somewhere between 83,068 and 93,942 ACEs among adults in Powys, whereas Figure 6.3 suggests 102,883. This discrepancy is not commented on in the national research, but is possibly due to inconsistent recall to different questions among respondents to the national survey.

6.11 The national study also explored the presence of specific health-harming behaviours or outcomes in later life; these findings were linked back to the ACEs count. Comparing the prevalence rates of the later behaviours at different levels of ACEs allows a theoretical estimate of the number of harmful behaviours which would be removed/prevented if people with, for example, 4+ ACEs had the same prevalence rate of health-harming behaviour as people recording zero ACEs (Figure 6.4). In theory, these would be the episodes avoided if the levels of ACEs experienced could be reduced from 4+ to zero.

Figure 6.4: Modelled impact of preventing health-harming behaviours – episodes avoided (ACES reduced from 4+ to zero)



Source: Public Health Wales

6.12 Figure 6.4 gives an indication of the potential impact across a range of behaviours if multiple (i.e. 4+) ACEs were prevented from accruing in individuals in Powys. The range of social and welfare issues listed illustrates a potential positive impact on demand across the public sector, suggesting that it is in the interest of a range of partner agencies to work to prevent multiple ACEs occurring. Studies are now also identifying associations between multiple ACEs and broader harm to life prospects, including education, employment and poverty.⁹

Preventing and Addressing the Consequences of ACEs

6.13 An effective response to ACEs presents the opportunity for the so-called “triple dividend”.¹⁰ The current health status of young people could be improved; their health in later life could be improved; and the health outcomes of their own children could be improved. Population-level approaches based on partnership and multidisciplinary action focussed on prevention and early intervention are required.

6.14 In summary, the literature on addressing ACEs highlights the following high-level areas of good practice:

- Focus efforts in communities and areas where multiple ACEs are likely to be present
- Ensure the workforce is ACE-informed
- Provide programmes which seek to improve parenting skills

- Screen for ACEs in the antenatal and early years settings
- Screen for ACEs among adults in contact with public services
- Ensure local implementation of national programmes designed to address ACEs
- Deliver resilience programmes in schools and youth settings.

6.15 There are a number of national policy drivers already underway which aim to address ACEs. These include Building a Brighter Future: the Early Years and Childcare Plan 2013-2023, and the Healthy Child Wales Programme.¹¹⁻¹² There is a strong association between deprivation and experiencing multiple ACEs. Poverty alleviation is therefore another important area for intervention, which, in Wales, is being addressed through anti-poverty programmes such as Families First.

6.16 Recent advice issued to Public Service Boards (PSBs) in Wales also suggests addressing ACEs through the lens of the Well-being of Future Generations (Wales) Act.¹³ This emphasises a three step approach: intervening early where children are experiencing ACEs; improving the skills of parents and care givers; and addressing wider issues in the family setting, through a joint approach with families.

6.17 In health settings, prevention could be supported through maternity and health visiting services delivering interventions which aim to strengthen parenting skills.⁴ Screening families for risk factors for ACEs as part of routine child health care, with onward referral and support is also recommended.⁵ Among adults, screening for ACEs is recommended to help patients and professionals to better understand the underlying causes of health problems and to enable informed treatment options. Resilience programmes to develop problem-solving and coping skills in children are also recommended. These could be delivered in schools, youth justice settings, social care services and other community settings where children are present.⁸

How Public Service Boards can address ACEs:¹³

- Use partner data and insights to understand and highlight the **long-term** impact of ACEs on individuals, their families, their future children and grandchildren.
- Take a **preventative** approach and identify the risk of ACEs at pre-birth and at birth.
- Involve families to understand what would help and build **protective** factors.
- **Integrating** the early help services for parents.
- **Collaborate** and act together e.g. is housing appropriate and tenancies stable? What information is provided to schools about the family's resilience as a child transitions into school?
- **Collaborate** so there is better understanding of life outside of school for a family e.g. knowing if the police have visited the home as a result of violence, or if a parent is in prison, drawing community-based services into the school or to the family to provide integrated support.
- **Involve** individuals in understanding what would help to support them in overcoming the impact of experiencing ACEs.
- Act now for the **long-term** well-being of future generations by **involving** those affected by ACEs to understand how to stop them from being repeated.

8

Recommendation 8: PTHB should continue to review and develop its response to adverse childhood experience through the Children and Young People's Partnership of the Powys Regional Partnership Board.

Further information

Public Health Wales ACEs web pages:

www.wales.nhs.uk/sitesplus/888/page/88504

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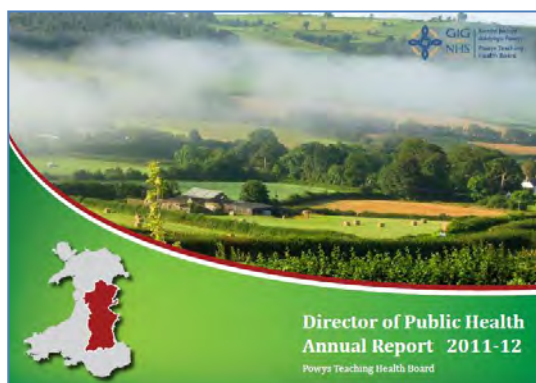
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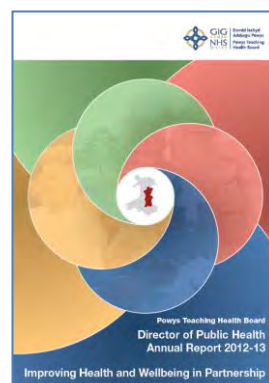
APPENDIX: INDEX OF PAST CONTENT

2011-12



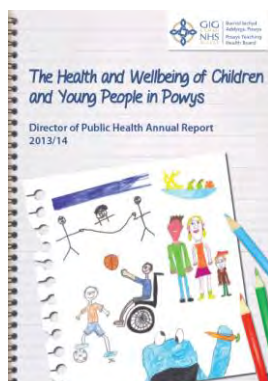
1. Ffion's story
2. What affects our health?
3. Specific health issues in Powys
4. What affects Ffion's health as she journeys through life?
5. Ffion's story retold: Can you change my life?

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