

Immunisations and screening

5.1 Immunisations

5.2 Newborn screening



Key messages

- Immunisation is one of the most effective and cost effective ways to protect children against serious infectious diseases.
- The recommended uptake of childhood immunisations is 95%. This uptake confers herd immunity, stopping person to person spread of disease, so as even those who cannot be vaccinated due to their age or underlying health conditions are protected.
- In Wales in 2012/13, 82% of children had completed all the recommended immunisations by their fourth birthday. The percentage of children who were up to date with their routine immunisations varied depending on area of residence. Uptake was lower for children residing in the more deprived areas of Wales.
- Uptake rates for routine immunisations in babies at one year of age are all at or close to the 95% target.
- More than 1,400 cases of measles were reported during a significant outbreak in Wales between November 2012 and May 2013. The majority of confirmed cases were in older children and teenagers. In 2012, only 83% of 16 year olds in Wales had completed a two dose course of the measles, mumps and rubella (MMR) vaccine. An extensive catch-up campaign was launched in 2013 to increase uptake of MMR, particularly in 10-18 year olds. If future large outbreaks are to be avoided there remains a need to ensure that children who have missed out on immunisation previously are offered catch-up vaccinations at every opportunity.
- In September 2008, vaccination against human papillomavirus (HPV) was added to the UK childhood schedule to protect girls from most common types of HPV which can lead to cervical cancer later in life. Uptake of a complete three dose course of HPV vaccine in girls (2011/12 school year 9) was 87%.
- Newborn screening tests allow for the detection of serious and treatable disorders in babies and facilitate early appropriate treatments and other support to be made available.
- In Wales, more than 99% of eligible newborn babies have been screened for hearing impairments and this figure meets the national minimum standard of 95% or more. Of the babies screened, 1.3% were referred for a hearing assessment, with half of those referred for assessment later found to have normal hearing.



Immunisation is described by the World Health Organization as one of the most successful and cost-effective health interventions.¹ It is one of the safest ways to protect children against serious infectious diseases, some of which can be fatal or cause permanent harm to a child's health and well-being.²

Newborn screening tests allow for the detection of serious and treatable disorders in babies and facilitate early appropriate treatments and other supports to be made available.³

This chapter presents information on childhood immunisation statistics for 4 year old children who are up to date with their routine immunisations, girls receiving the HPV immunisation and MMR immunisation uptake. This chapter also presents information on newborn hearing screening.

5.1 Immunisations

Children and young people in Wales are protected against many serious infectious diseases through immunisation and are offered vaccinations in accordance with the UK Department of Health routine immunisation schedule.⁴ The Department of Health publication *Immunisation against infectious disease: the green book* provides the latest information on vaccines which are routinely recommended for children and adults in the UK.⁵

Up to date with immunisations by age four

Babies and young children are routinely immunised against a range of diseases including diphtheria, tetanus, pertussis, polio and haemophilus influenzae type b, pneumococcal infection, meningococcal Group C disease, rotavirus, measles, mumps and rubella.

Public Health Wales monitor uptake levels of all routine childhood immunisations and report them individually through the Coverage of Vaccination Evaluation Rapidly (COVER) scheme.⁶ The proportion of children who are up to date with all of their immunisations by their fourth birthday is also reported as an overall marker of compliance with the routine schedule of immunisations.

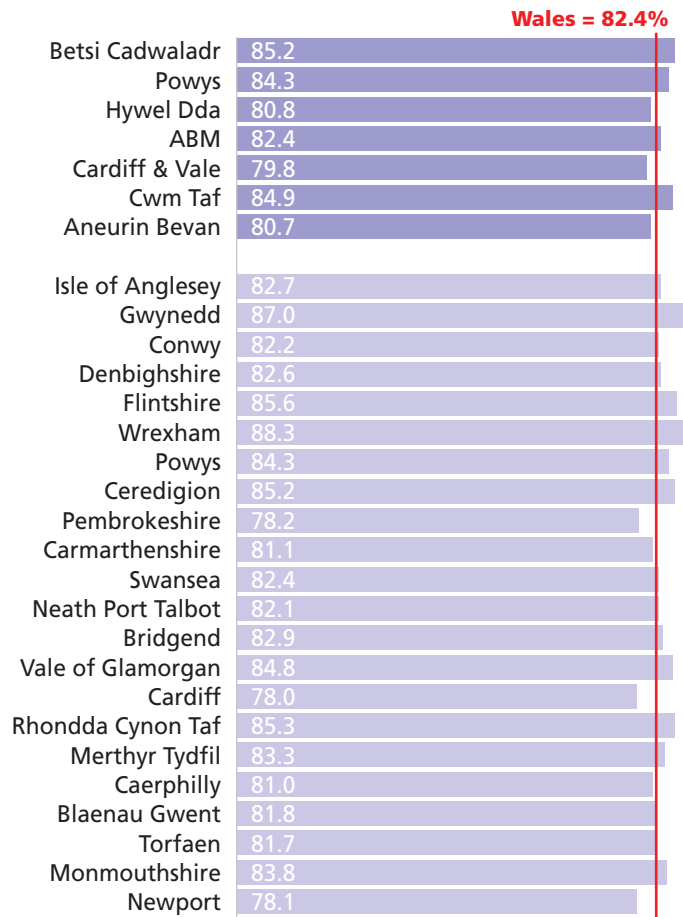
Welsh Government have set a Tier 1 target for health boards, that 95% of all their resident children are up to date with all their routine immunisations by 4 years of age.⁷ A 95% uptake for each of the individual immunisations is required to achieve herd immunity. Herd immunity occurs when vaccination uptake is high enough to stop person to person spread of disease, so as even those who cannot be vaccinated due to their age or underlying health conditions are protected.

Figure 5.1 looks at the percentage of children who were up to date with routine immunisations by 4 years of age in 2012. The vaccinations that are included in this analysis are outlined in the technical guide (see www.publichealthwalesobservatory.wales.nhs.uk/childprofile).

**Governments
'...shall take
appropriate
measures to
combat disease...'**

*The United Nations
Convention on the
Rights of the Child,
Article 24.2(c)*

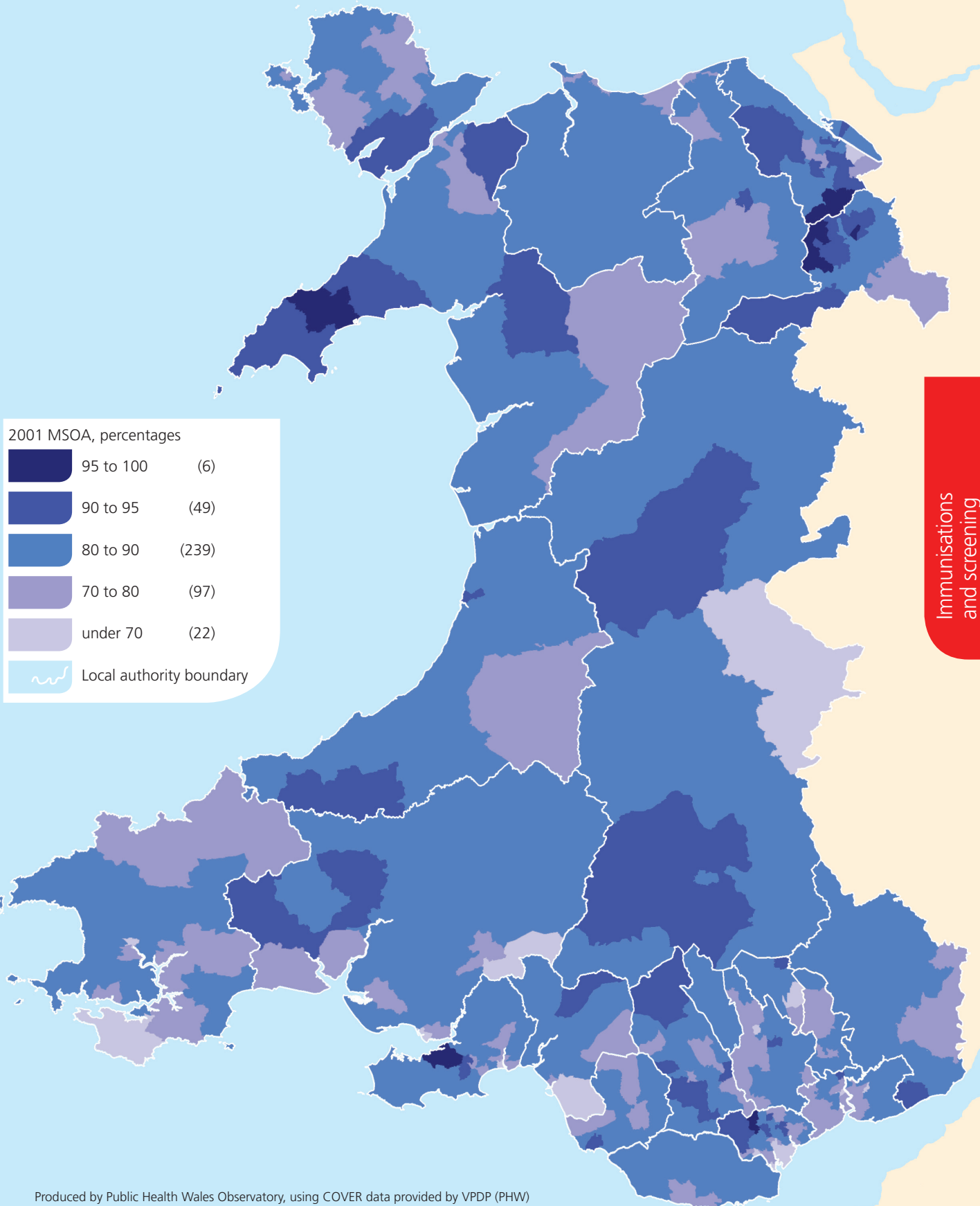
Figure 5.1 % of children up to date with routine immunisations by 4 years of age, 2012



Data source: CDSC & VPDP (PHW)

In Wales, the percentage of children who were up to date with all their routine immunisations by 4 years of age in 2012 was 82%. At the health board level, this ranged from approximately 80% in Cardiff & Vale to just over 85% in Betsi Cadwaladr. At the local authority level, highest percentages were found in Wrexham (88%) and Gwynedd (87%) while lowest percentages were found in Cardiff (78%), Newport (78%) and Pembrokeshire (78%). These figures are considerably lower than the recommended 95% uptake requirement set out by the Welsh Government.⁷

Figure 5.2 % of children up to date with immunisations by 4 years of age, Wales MSOAs, 2012



Immunisations and screening

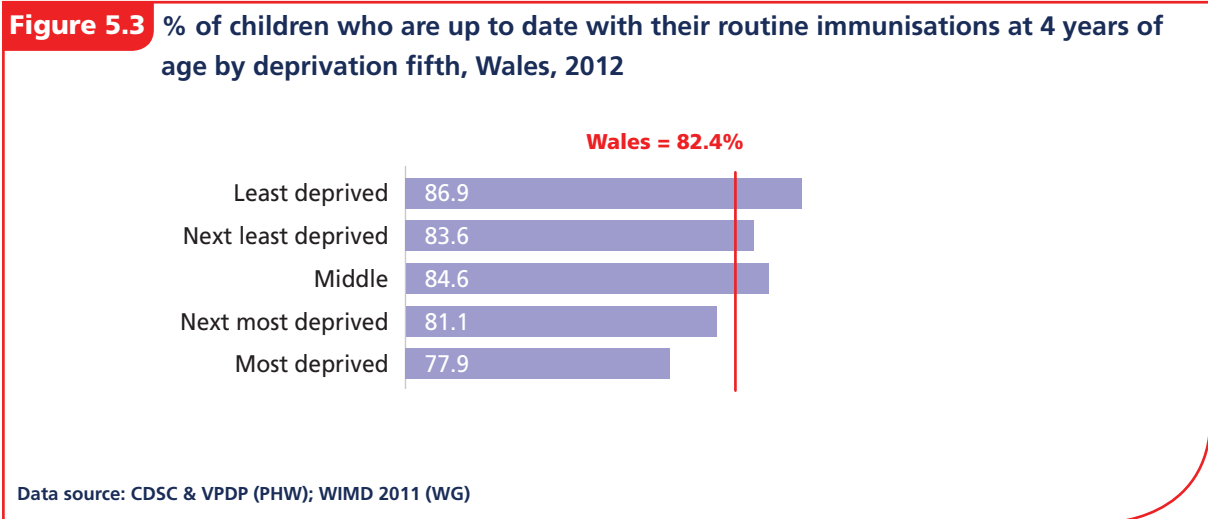
Produced by Public Health Wales Observatory, using COVER data provided by VPDP (PHW)
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There is considerable variation within local authorities at MSOA level. The map shows that there are only 6 MSOAs in Wales where the 95% target has been achieved. These are the Efail-newydd/Buan area of Gwynedd, the Caergwrle area of Flintshire, the Minera and Stansty areas of Wrexham, the Whitchurch/Tongwynlais area of Cardiff and the Penclawdd area of Swansea. In over half (239 out of 413) of all MSOAs in Wales the percentage of children who are up to date with all immunisations by 4 years of age is between 80 and 90%.

In just over 5% of MSOAs, the percentage up to date by 4 years is less than 70%. Lowest uptake rates are found in the Macot area of Flintshire, the MSOA in Powys which includes the townlands of Beguildy, Llangunllo, Knighton and Old Radnor; the Pembroke and Haverfordwest Garth areas of Pembrokeshire; the Glanmman, Ammanford and Glanymor areas of Carmarthenshire; the Castle area in Swansea; Margam and Tai-bach areas in Neath Port Talbot; the Bargoed area of Caerphilly; the Abertillery area of Blaenau Gwent; the Ringland and Stow Hill areas of Newport and MSOAs in the Cathays, Plasnewdd, Adamstown, Splott, Grangetown and Ely areas of Cardiff.

Deprivation

The percentage of children who were up to date with their routine immunisations by 4 years of age is also presented using the national fifth of deprivation of the LSOA in which the children reside.

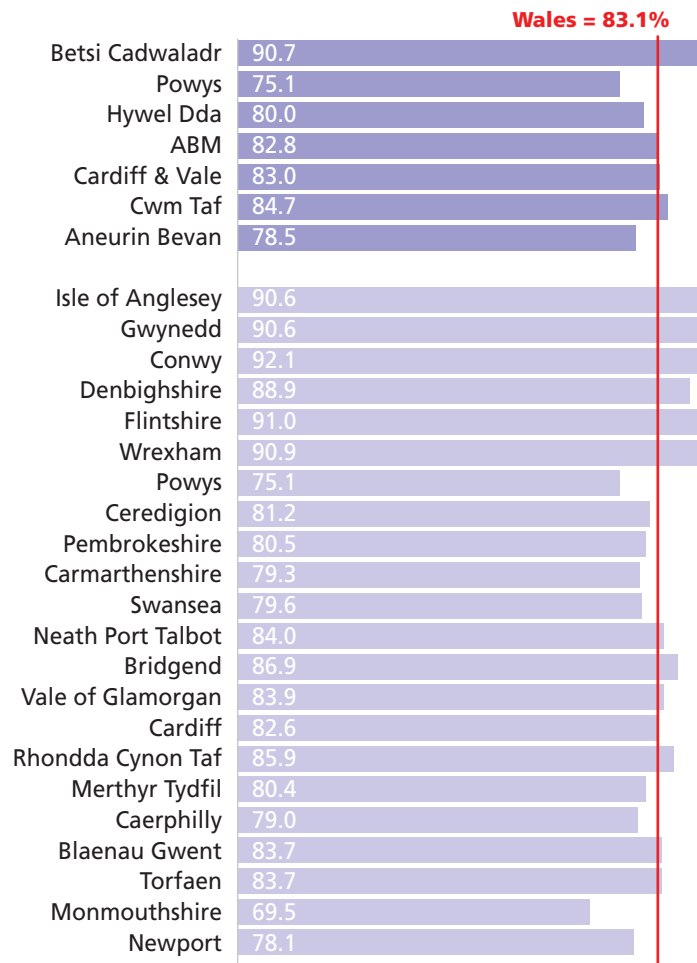


In Wales, the percentage of children up to date with their routine immunisations by 4 years of age ranged from 78% in the most deprived fifth of LSOAs to 87% in the least deprived fifth.

Measles mumps rubella immunisation

Increasing and maintaining high levels of uptake of MMR immunisation uptake are key to preventing outbreaks of measles, mumps and rubella. There has been a recent increase in the number of measles cases in Wales with more than 1,400 cases reported between November 2012 and May 2013. The majority of these cases have been associated with an outbreak affecting Abertawe Bro Morgannwg, Hywel Dda and Powys health board areas. The majority of confirmed cases have been in older children and teenagers, where uptake of MMR vaccine is lower than the levels seen in children currently attending for their routine MMR vaccinations.⁶

Figure 5.4 % of persons aged 16 who have completed a 2 dose course of the MMR vaccine, 2012



Data source: CDSC & VPDP (PHW)

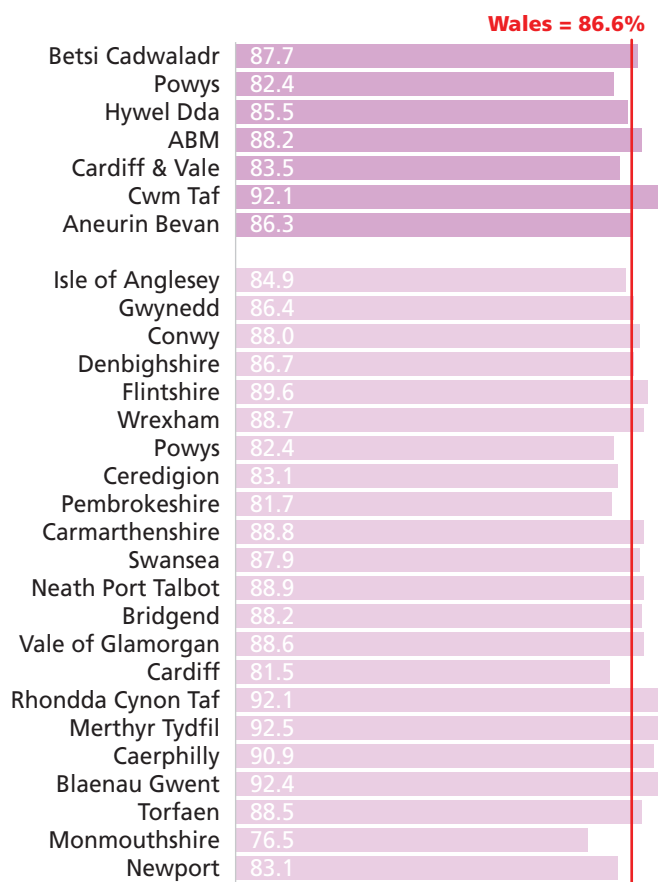
In 2012, only 83% of 16 year olds in Wales had completed a 2 dose course of the MMR vaccine. At the health board level, percentages ranged from just 75% in Powys to 91% in Betsi Cadwaladr. At the local authority level, there is considerable variation between local authorities. Conwy (92%) and Flintshire (91%) had the highest percentages while Monmouthshire (70%) and Powys (75%) had the lowest percentages of 16 year olds who completed a 2 dose course of the MMR vaccine.

The herd immunity target of 95% coverage of 2 doses of MMR was not achieved meaning that measles, mumps and rubella continued to have the potential to be transmitted in this age group in Wales during 2012. In order to reduce the risk and incidence of measles, mumps and rubella, and prevent future outbreaks of these potentially fatal diseases, children and teenagers who have missed out on these vaccinations should be offered the vaccine at every available opportunity.⁶

Human papillomavirus immunisation

In September 2008, a new vaccine called the HPV vaccine was added to the UK Childhood Immunisation schedule. There are many different types of HPV, primarily passed on through sexual contact. High risk types of HPV can lead to cervical cancer later in life; the vaccine protects against the most common cancer-causing types of HPV. The HPV vaccine is given to 12-13 year old girls, in 3 doses over a period of 6 months. In Wales, the vaccine is usually given by nurses in schools.

Figure 5.5 % of girls completing a 3 dose course of HPV vaccine, school year 9, 2012/13



Data source: CDSC and VPDP (PHW)

In 2012/13, uptake of a complete 3 dose course of HPV vaccine in school year 9 girls was 87%. At the health board level, percentages range from 82% in Powys to 92% in Cwm Taf. At the local authority level, the highest percentages are seen in Merthyr Tydfil (93%) and Blaenau Gwent (92%), while the lowest percentages are seen in Monmouthshire (77%) and Cardiff (82%).

In all equivalent reporting systems in all countries in the UK for 2009/10, the percentage of girls receiving a 3 dose course of the HPV vaccine in Wales (77%) has been similar to England (76%) but lower than Scotland (87%) and Northern Ireland (83%).⁸

Improving vaccinations and immunisation uptake

Recommendations on improving vaccination and immunisation uptake from the National Institute for Health and Health Care Excellence (NICE) public health guidelines are available in Chapter 8.

Along with the guidelines set out by NICE, further guidance on improving uptake of immunisation is available from the Public Health Wales Vaccine Preventable Disease Programme (www.wales.nhs.uk/immunisation). Within Wales, specific actions include:

Who should take action	Recommended actions
Health Boards: Directors of Public Health, Immunisation Coordinators, School Nursing Services, Child Health Offices and Primary Care	In order to reduce the risk of children reaching school age without protection against measles, mumps or rubella, health boards and GP practices are obliged to adopt uniform procedures in the routine follow up of immunisation defaulters pre-school age children and upon school entry. ⁹ Detailed guidance on local procedures for follow up of children is set out in the WHC 2005(081). ⁹
Health Boards: Child Health Offices, Immunisation Coordinators. Public Health Wales	Implementation of advice on how the Child Health System in Wales should be used to support improvements in immunisation coverage (and data quality) as set out in the All Wales Child Health Immunisation Process Standards. ¹⁰
Health Boards: all levels	<p>Targets and expectations for delivery of immunisation services are highlighted in the NHS Wales <i>Delivery Framework 2013-14 and Future Plans</i>.⁷ These are the Tier 1 targets relating to immunisation and young people:</p> <ul style="list-style-type: none"> • 75% uptake of influenza vaccination among: <ul style="list-style-type: none"> o Under 65s in at risk groups o Pregnant women • 95% vaccination of all children to age 4 with all scheduled vaccines.

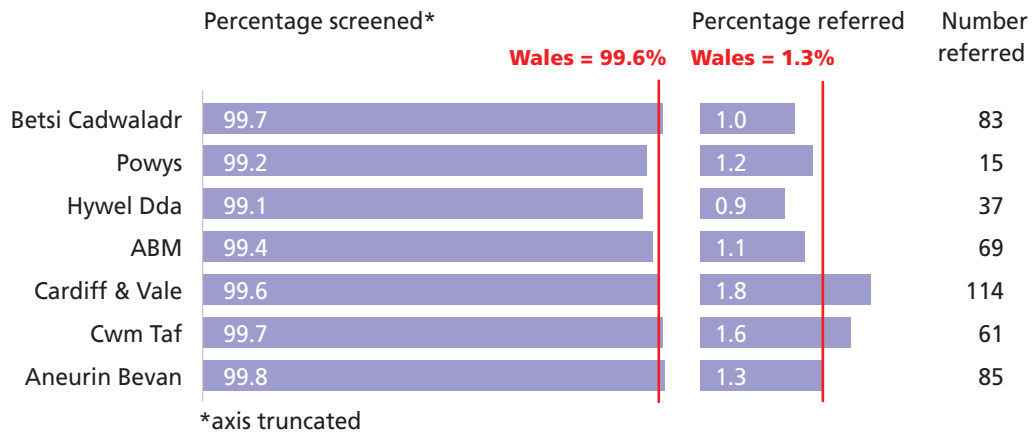
5.2 Newborn screening

The aim of newborn screening is to detect newborn babies with serious, treatable disorders so as to facilitate appropriate interventions to avoid or improve adverse outcomes.³ The Public Health Wales Screening Division manages the Newborn Hearing Screening Wales Programme and is also undertaking a project to establish a safe and sustainable Newborn Bloodspot Screening Wales Programme.

Newborn bloodspot screening involves taking a small sample of blood from the baby's heel at day 5 to 8 of life, ideally on day 5 (counting day of birth as day 0). The blood sample is screened for rare but serious diseases that respond to early intervention to reduce mortality and/or morbidity. The screening test is part of routine post natal care.¹¹ In Wales the conditions currently screened for are congenital hypothyroidism, cystic fibrosis, phenylketonuria, medium chain acyl-CoA dehydrogenase deficiency and sickle cell disorders.¹²

Newborn hearing screening was first started in North Wales in March 2003 and was extended in October 2004 with Newborn Hearing Screening Wales becoming the first fully implemented national newborn hearing screening programme in the UK. The Newborn Hearing Screening Wales programme offered screening to more than 99% of eligible babies in Wales in 2011/12, with very few parents declining the screening.¹³

Figure 5.6 % babies screened by the newborn hearing screening programme and those then referred for a hearing assessment, 2011/12



Data source: NBHSW Annual Report, March 2013

Figure 5.6 shows in Wales, more than 99% of eligible newborn babies have been screened. This figure meets the national minimum standard of 95% or more.¹³ In all health boards, over 99% of eligible newborn babies have been screened for hearing impairment in the financial year 2011/12. Babies who do not meet the newborn hearing test requirements are subsequently referred to their nearest audiology department for an assessment. The chart on the right of figure 5.6 shows that 1.3% of babies in Wales were referred for a hearing assessment in 2011/12, ranging from 0.9% (37 babies) in Hywel Dda to 1.6% (61 babies) in Cwm Taf.

Of those babies referred for a hearing assessment 50% (231/464) were found to have normal hearing.¹³

References

1. World Health Organisation, UNICEF. *Global immunisation vision and strategy, 2006-2015*. Geneva:WHO; 2005. Available at: http://whqlibdoc.who.int/hq/2005/WHO_IVB_05.05.pdf
2. FE Andre et al. Vaccination greatly reduces disease, disability, death and inequity worldwide. *Bull World Health Org* 2008; 86: 81-160. Available at: <http://www.who.int/bulletin/volumes/86/2/07-040089/en/>
3. Wilcken B, Wiley V. Newborn screening. *Pathology* 2008;40:104-15
4. Public Health Wales. *The UK childhood immunisation schedule*. [Online]. 2013. Available at: <http://www.wales.nhs.uk/sites3/page.cfm?orgid=457&pid=54151>
5. Salisbury D, Ramsay M, Noakes, K. *Immunisation against infectious disease*. London: DoH; 2006. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239274/Green_Book_updated_110913.pdf
6. Public Health Wales. *Vaccine uptake in children in Wales*. COVER annual report. [Online]. Available at: [http://www2.nphs.wales.nhs.uk:8080/VaccinationsImmunisationProgsDocs.nsf/\(\\$All\)/5BEB94EE63907A9880257B950037FC4E/\\$File/COVER20122013.pdf?OpenElement](http://www2.nphs.wales.nhs.uk:8080/VaccinationsImmunisationProgsDocs.nsf/($All)/5BEB94EE63907A9880257B950037FC4E/$File/COVER20122013.pdf?OpenElement)
7. Welsh Government. *Delivery framework 2013-14 and future plans*. Cardiff: WG; 2013. Available at: <http://wales.gov.uk/docs/dhss/publications/130524frameworken.pdf>
8. Sheridan A, White J. *Annual HPV vaccine coverage in England 2009/2010*. [Online]. 2010. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/215800/dh_123826.pdf
9. Welsh Assembly Government. *MMR immunisation catch-up programme*. WHC(2005)081. [Online]. 2005. Available at: http://www.wales.nhs.uk/documents/whc_2005_081.pdf
10. Cottrell S, McGowan A, Rees C. *CHIPS- Child health immunisation process standards*. [Online]. 2010. Cardiff: Public Health Wales NHS Trust; 2010. Available at: [http://www2.nphs.wales.nhs.uk:8080/VaccinationsImmunisationProgsDocs.nsf/\(\\$All\)/AECB7E88F70BB8680257863002F377E/\\$File/CHIPS%20-%20Child%20Health%20Immunisation%20Process%20Standards%20v1.pdf?OpenElement](http://www2.nphs.wales.nhs.uk:8080/VaccinationsImmunisationProgsDocs.nsf/($All)/AECB7E88F70BB8680257863002F377E/$File/CHIPS%20-%20Child%20Health%20Immunisation%20Process%20Standards%20v1.pdf?OpenElement)
11. Newborn Bloodspot Screening Wales website. Available at: <http://www.newbornbloodspotscreening.wales.nhs.uk/home>
12. UK Screening portal website. Available at: <http://www.screening.nhs.uk/wales>
13. Newborn Hearing Screening Wales. *Annual report 2012*. Available at: <http://www.wales.nhs.uk/sitesplus/documents/980/Final%20version%20NBHSW%20report%202012withHIBdata%20%284%29.pdf>