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JSNA Chapters:

[Warrington Joint Strategic Needs Assessment Index](#)

[Warrington JSNA Infectious Diseases Chapter](#)

[Warrington JSNA Children and Young People - 0-5 Years Chapter](#)

JSNA Data Baskets:

[Warrington Deprivation \(Index of Multiple Deprivation 2010\)](#)

Contents

- [Warrington Joint Strategic Needs Assessment \(JSNA\) 2011 - Children and Young People - Immunisations Chapter](#)
- [Executive Summary](#)
- [1\) Who's At Risk and Why](#)
- [2\) The Level of Need in the Population](#)
- [3\) Current Services in Relation to Need](#)
- [4\) Projected Service Use and Outcomes in 3-5 Years and 5-10 Years](#)
- [5\) Evidence of What Works](#)
- [6\) \(Target\) Population/Service User Views](#)
- [7\) Unmet Needs and Service Gaps](#)
- [8\) Recommendations for Commissioning](#)
- [9\) Recommendations for Needs Assessment Work](#)
- [Key Contacts](#)
- [References](#)
- [Signed Off By](#)

Warrington Joint Strategic Needs Assessment (JSNA) 2011 - Children and Young People - Immunisations Chapter



The Joint Strategic Needs Assessment (JSNA) considers a wide range of factors that affect the health and wellbeing of the people of Warrington. The objective of the JSNA is to involve partner organisations, such as the local NHS, local authorities, Police, Fire and third sector organisations in order to provide a top level, holistic view of current and future need within the borough. The JSNA is used to agree key priorities to improve the health and wellbeing of all our communities at the same time as reducing health inequalities.

[Return to chapter contents](#)

Executive Summary

Introduction

Vaccination and immunisation programmes are national programmes, the content of which is determined by the Department of Health, on the advice of the National Institute for Health and Clinical Excellence (NICE) and the Joint Committee on Vaccination and Immunisation. The number, scope and complexity of the programmes has increased in recent years. The population is benefitting from protection against an increasing number of virulent micro-organisms.

This chapter will be focussing on the uptake of childhood vaccinations and immunisations in Warrington. The vaccination and immunisation programme delivers protection against the following preventable childhood infections, which are provided between the ages of two months and eighteen years:

- Diphtheria
- Tetanus
- Pertussis (whooping cough)
- Haemophilus influenzae type b (Hib)
- Polio
- Meningococcal serogroup C (MenC)
- Measles
- Mumps
- Rubella
- Human Papillomavirus

Key Issues and Gaps

The MMR uptake in Warrington does not meet the nationally set target of 95% (2010/11). However, during 2009/10 Warrington had a significantly higher immunisation rate when compared to England.

Locally, GP practices categorised as being in Quintile 1 (20% most deprived GPs) had the lowest uptake of MMR (Measles, Mumps and Rubella) during 2010/11.

The DTaP/IPV/Hib (diphtheria / tetanus / acellular pertussis / inactivated polio vaccine / Haemophilus influenzae type b), vaccination target of 95% for children aged 2 was achieved by Warrington during 2010/11, but when examining the uptake rate by deprivation quintile, Quintile 1 (20% most deprived GPs) did not achieve the target set.

The uptake rate for the pre-school booster was low in Warrington during 2010/11. All deprivation quintiles failed to achieve the 95% target. However, Quintile 1 had the lowest uptake rate.

The uptake of the school based vaccination of tetanus, diphtheria and polio is lower than the uptake of human papillomavirus.

The needs of more vulnerable families, who may have multiple or more complex needs and issues, particularly in areas of high deprivation, need to be continually addressed.

Practices often have to organise special sessions to enable those who have been unable to attend for vaccination to do so.

Working with the local council, it should be possible to use the family support model, using Health and Wellbeing mentors and neighbourhood teams, to work with vulnerable families and improve their access to a variety of health care services, including vaccinations.

Recommendations for Commissioning

For the long-term future, it may be helpful to look closely at all the programmes being provided, and consider whether the entire vaccination and immunisation programme should be commissioned on a more closely integrated model. For example, one team providing appropriate vaccinations to all age groups, so that target populations do not have to wait for further provision of vaccination clinic spaces, etc.

The expanded team can focus on providing immunisations and vaccinations in the more deprived populations. This will be enforced by the development of a more integrated model for the delivery of a vaccination and immunisation programme in conjunction with Warrington Borough Council.

The Human Papillomavirus (HPV) vaccination programme has shown how effective a single vaccination programme can be, if it is provided by a team of vaccinators, in one type of venue, namely schools, providing improved access for vaccinators and their recipients. There could be an increased number of programmes provided through schools and other establishments, with specific teams providing the service to the target population.

The Human Papillomavirus model of vaccination delivery could be replicated for the diphtheria, tetanus and polio vaccination.

Mass immunisation programmes required in outbreaks and pandemics have also shown how a well-planned programme provided by a specific team in specific situations, can provide a very effective programme, with a very positive outcome.

Develop a more appropriate scaled programme that delivers vaccination and immunisation in a different method, which aims to increase uptake in more deprived areas.

[Return to chapter contents](#)

1) Who's At Risk and Why

Any child who has not received any or a part of a vaccination course is at risk of contracting a preventable childhood infection. At two, three and four months of age, vaccination against diphtheria, tetanus, pertussis, polio and Haemophilus type b (DTaP/IPV/Hib) is provided. The pneumococcal vaccination is provided at two and four months, whilst meningococcal C vaccination is provided at three and four months of age. The course of vaccinations are provided at this young age as they protect the child from contracting infections such as whooping cough, pneumococcal and meningococcal serogroup C, which are very dangerous to this age group (Department of Health, 2006).

Table 1 illustrates the uptake rate of immunisation and vaccination for England during 2010/11.

Table 1: Uptake Rate of Primary Immunisations, England, 2010/11

	1 year old	2 year old	5 year old
DTaP/IPV/Hib	94.2%	96.0%	-
Meningococcal C	93.4%	94.8%	-
Pneumococcal Disease	93.6%	89.3%	-
MMR (5 year old uptake 1st and 2nd dose)	-	89.1%	84.2%
Pre-school booster (diphtheria, tetanus, pertussis and polio)	-	-	85.9%

Source: The Health and Social Care Information Centre, 2011

However, vaccines are known not to be 100% effective and different vaccines have different levels of effectiveness (Department of Health, 2006). Therefore, there is a need to ensure that uptake of a vaccination is high, so that a large proportion of the population carry the appropriate antibodies, preventing themselves from becoming infected, but also reducing the risk for those without the antibodies (Department of Health, 2006). If the majority of the population is immunised, this creates 'herd immunity' (Department of Health, 2006) and protects against epidemics. Hence, all efforts in recent years have been aimed at ensuring as high an uptake as possible. Historically, Primary Care Trusts (PCTs) were set the target of 95% uptake of childhood vaccinations and immunisations, as this percentage was recommended as best practice by the World Health Organisation (Department of Health, 2010a).

The effectiveness of the immunisation programme is beyond doubt and there are numerous examples of what has been described as the greatest breakthrough in modern medicine. For example, smallpox was declared eradicated in 1980 due to the vaccination programme. Without it, smallpox would currently kill around 2 million people each year (NHS Choices, 2010). Another example is diphtheria. In 1940 there were 60,000 cases of diphtheria in the UK, resulting in over 3,200 deaths, whereas in 2008 there were just 6 cases (all imported). Additionally, prior to the 1950s there were around 120,000 cases of whooping cough per year, but again by 2008 there were only 1,028 cases in the UK (NHS Choices, 2010).

Measles is a notifiable disease¹. In 1940 there were just under 410,000 cases of measles notified, which resulted in 857 deaths in England and Wales. By 2008 (HPA provisional data, 2010), there were 5,088 notifiable cases in England and Wales resulting in just two deaths. As can be seen, in the past, not only did vulnerable young children suffer the obvious effects on their health, but there were also deaths from these infections. Deaths from what were once common childhood infections are now thankfully very rare.

This country has an enviable reputation internationally for the uptake levels that have been achieved. For measles, the UK is one of 126 member states (of a total of 193) which has greater than 90% coverage. For mumps, the UK is one of only 118 member states that uses mumps vaccine in its immunisation schedule and, for rubella, the UK is one of the 131 member states that has a rubella vaccine in its immunisation schedule (WHO, 2011; WHO estimated figures for 2010). The vaccination programmes are voluntary and provided free of charge as part of the overall NHS service. None of the vaccinations are compulsory, and uptake depends on convincing the recipients of the benefits of the vaccinations.

The development of the vaccination programme has been in response to the problems of the past. As the technology has developed, it has been possible to develop vaccines against an increasing number of organisms. The final determination of which age/sex cohorts are to be targeted with each vaccine is made by the Joint Committee on Vaccinations and Immunisations (JCVI), a committee of independent experts that advises the government on the appropriate introduction of new vaccines (JCVI, 2012).

There has been some controversy about the MMR vaccine following a study published in the Lancet (Wakefield et al, 1998, retracted). The report claimed that the initial findings appeared to show a link between the MMR vaccine and autism and bowel disease. However, Wakefield's work has since been discredited and he was later removed from the GMC register (Kmietowicz, 2010). Subsequent studies have found no link between the MMR vaccine and autism or bowel disease (Baird et al, 2008). However, this research led to a drop in the uptake of the MMR vaccine, and the start of outbreaks of both measles and mumps infections amongst children.

The MMR vaccine is said to be 90% effective (Tischer and Gerike, 2000). Hence, the provision of two doses of the vaccine, with the first dose achieving coverage of 90% of the vaccinated population, while a second dose increases the effective coverage by a further 90%, should lead to 99% of those vaccinated being protected by antibodies. The 1% who have not formed antibodies are protected by the prevention of an outbreak of infection.

There are a number of selective childhood immunisation programmes that target children at particular risk of certain diseases, such as hepatitis B, tuberculosis, influenza and pneumococcal.

Footnotes

¹ Diseases that must be reported to Local Authority Proper Officers under the Health Protection (Notification) Regulations 2010.

[Return to chapter contents](#)

2) The Level of Need in the Population

Every year in Warrington there are approximately 2,500 births to Warrington mothers. All of these children will have to receive the full schedule of vaccinations as stipulated in chapter 11 of the Green Book (Department of Health, 2006). Warrington has always achieved high uptakes against all the vaccinations, although there are still some concerns about the booster dose of diphtheria, tetanus, pertussis and polio given at 4 months of age and the second dose of MMR given between age 3 and 5 years. The first dose of MMR shows an uptake of over 90% (NHS Information Centre for Health and Social Care, 2011), which is very reassuring, although this percentage does not reach the national target of 95%. The uptake of the second dose, at the age of 3 to 5 years of age, fluctuates in the low to mid 80% range.

Chart 1 illustrates the trend in the rate of MMR vaccination uptake at 2 years (1 dose) and at 5 years (2 doses) in Warrington, North West and England. The chart illustrates that all areas have failed to reach the 95% target set, however the percentage of children aged 2 who have been vaccinated has increased each year since 2008/09. The percentage uptake of children aged 5 years who have received two doses of the vaccine has been lower in Warrington when compared to England between 2005/06 and 2008/09. Following the introduction of the Service Provider Immunisation team in December 2008 the percentage uptake for MMR has increased year on year. Since 2009/10, the percentage in Warrington has been higher than England. However, the percentage uptake of children who have had two doses of the MMR vaccine is still substantially lower than the target set of 95%.

Chart 1: Trend in the Percentage of Children Vaccinated for MMR by 2 years (1 dose) and 5 years (2 doses)

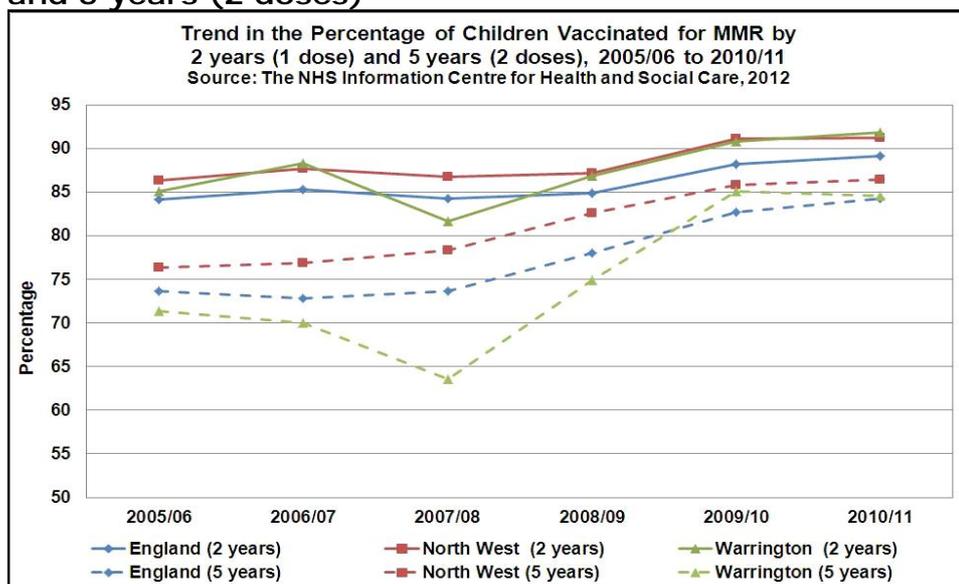


Table 2 illustrates the uptake rate of immunisation and vaccination for Warrington during 2010/11.

Table 2: Uptake Rate of Primary Immunisations, Warrington, 2010/11

	1 year old	2 year old	5 year old
DTaP/IPV/Hib	95.8%	97.4%	-
Meningococcal C	95.5%	96.1%	-
Pneumococcal Disease	95.4%	91.0%	-
MMR (5 year old uptake 1st and 2nd dose)	-	91.8%	84.6%
Pre-school booster (diphtheria, tetanus, pertussis and polio)	-	-	88.1%

Source: The Health and Social Care Information Centre, 2011

In the case of the combined vaccine for measles, mumps and rubella (MMR), reduced immunisation uptake has been associated with socioeconomic disadvantage. The concerns about the safety of MMR in the late 1990's led to an overall reduction in MMR coverage in England, which continued for some years, most notably in children of more affluent households (Wright and Polack 2005).

The following charts display vaccination uptake rates by GP practice deprivation quintiles. Deprivation scores have been assigned to each GP Practice in Warrington based on the deprivation scores (Index of Multiple Deprivation, 2007) for each patient postcode ([IMD 2010 data, charts and maps available here](#)). The overall deprivation score for each practice was ranked and then split into five groups (quintiles) where quintile 1 is the most deprived group and quintile 5 is the least deprived group. Data for 2008/09 was not available by GP practice in chart 3.

Chart 2: MMR Vaccination Uptake at 2 Years, GP Practices Grouped by Deprivation Quintile (IMD 2007)

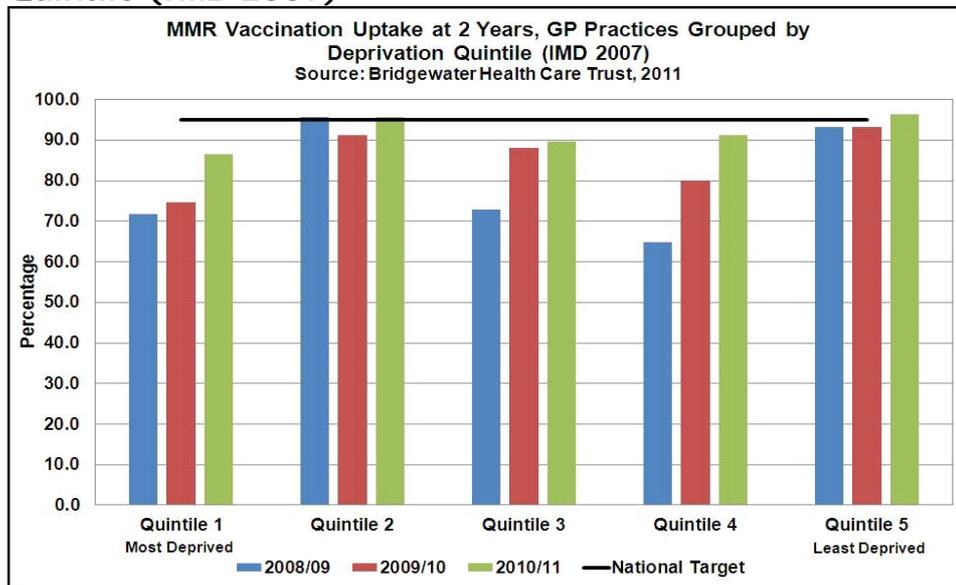


Chart 2 illustrates that in all quintiles (except for quintile 2) the uptake of MMR at age two years has been increasing year on year. In 2010/11 quintiles 2 and 5 achieved the 95% national target. Quintile 1 (the most deprived quintile) had the lowest uptake percentage at 87%.

Chart 3 illustrates that the lowest uptake of MMR at 5 years for both 2009/10 and 2010/11 was in the most deprived quintile (Quintile 1). In 2010/11 the uptake of vaccination increased as deprivation decreased, except for Quintile 5 (the least deprived quintile). None of the quintiles achieved the nationally set immunisation target of 95% in 2010/11, although seven out of 30 GP practices did achieve it. Data for 2008/09 was not provided in the following chart as it was not included on the 2008/09 Primary Care dashboard produced by NHS Warrington.

Chart 3: MMR Vaccination Uptake at 5 Years, GP Practices Grouped by Deprivation Quintile (IMD 2007)

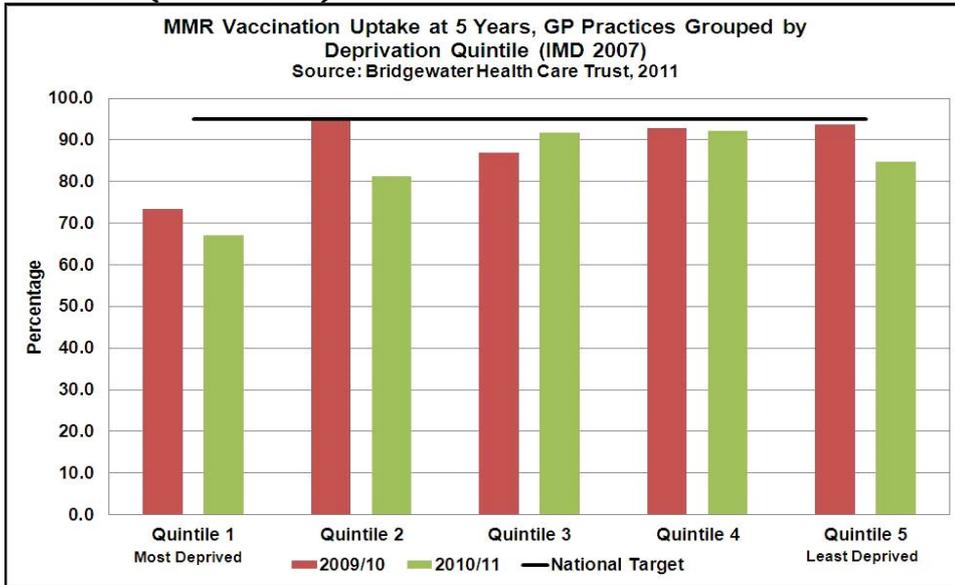


Chart 4: DTaP/IPV/Hib Vaccinations and Immunisations at 2 Years, GP Practices Grouped by Deprivation Quintiles (IMD 2007)

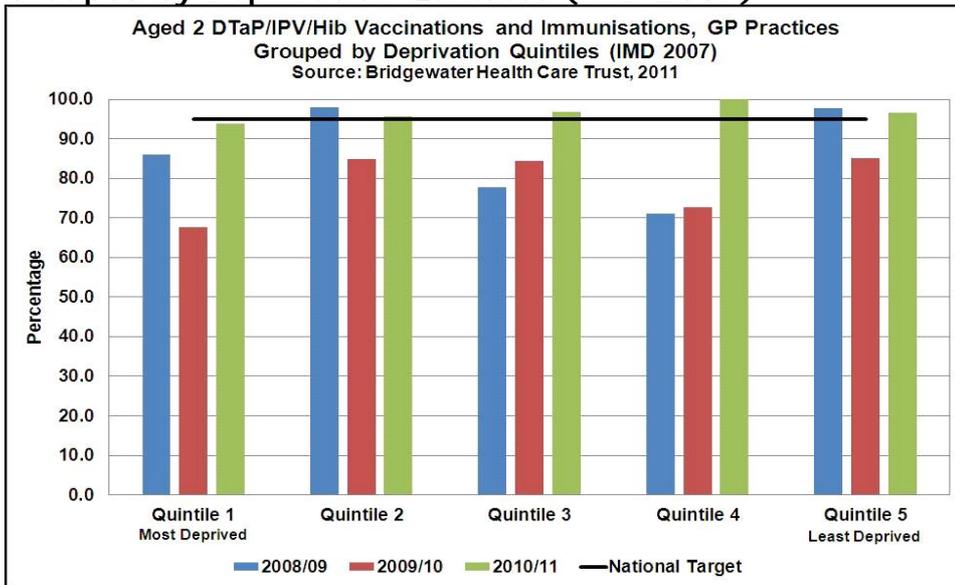


Chart 4 illustrates the uptake rate of primary immunisations, DTaP/IPV/Hib (diphtheria / tetanus / acellular pertussis / inactivated polio vaccine / Haemophilus influenzae type b), at two years. The chart shows that in 2010/11 each deprivation quintile achieved the 95% target set with the exception of Quintile 1 (the most deprived quintile). Quintile 4 achieved 100% uptake by vaccinating all of eligible children.

Chart 5: Pre School Booster Uptake, GP Practices Grouped by Deprivation Quintile (IMD 2007)

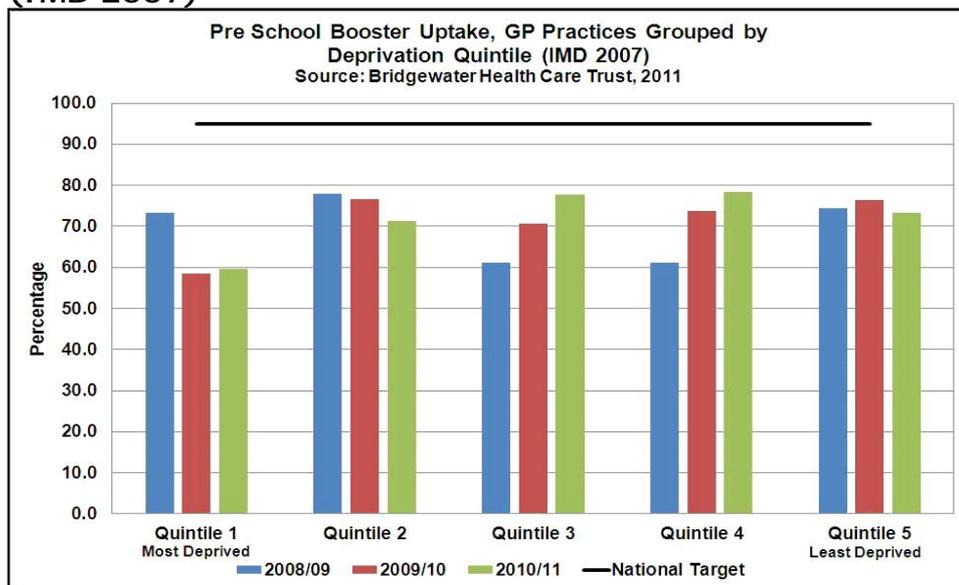


Chart 5 shows that none of the deprivation quintiles achieved the 95% national target for the pre-school booster (diphtheria, tetanus, pertussis and polio), as no single GP Practice achieved the target set. There is a plan to target children as they reach 4 years old and to then target children who remain unimmunised when they commence school.

Not all school based programmes are 100% successful, but changes are being made to ensure that they work more effectively, e.g. by providing them earlier in the child's educational calendar, before the emphasis on GCSE examinations make compliance more difficult.

The teenage booster vaccination programme (diphtheria, tetanus and polio) is a school based programme, but has a low uptake. During 2010/11, 65% of eligible students received the booster vaccination. This is an area that will be targeted for improvement over the next 3 years.

The Human Papillomavirus Vaccination (HPV) programme, on the other hand, has shown how effective school based programmes can be. It is possible to target an entire age/sex cohort, and gain access to the entire population group within a short period of time, compared with the multiplicity of clinics that would need to be provided around Warrington to meet the needs of the large numbers of individuals requiring vaccination. The following table details the percentage of females vaccinated during 2009/10 in Warrington and England.

Table 3: Human Papillomavirus Vaccination: Percentage of Females Aged 12 to 13 Years Vaccinated, 2009/10

	England	Warrington
1 dose	84.3%	82.5%
2 doses	82.3%	81.2%
3 doses	76.4%	80.8%

Source: Department of Health 2010b

The uptake of vaccination during 2010/11 is higher for Warrington when compared to data from 2009/10. The uptake for one dose was 96.3%, two doses was 95.9% and three doses was 95.2%.

There is a need to ensure the maximisation of uptake rates of the vaccines in the target populations, as well as ensuring increasing uptake of the seasonal influenza vaccine by pregnant women (to protect both the mother and the baby, and therefore preferably given as early in the pregnancy as possible), and frontline health and social care staff, whose services are vital to the **care and wellbeing of the vulnerable populations they care for**. During 2011/12, 32.3% pregnant women received the seasonal influenza vaccine in Warrington.

Outbreaks and pandemics require their own appropriate, tailored, specific vaccination programmes, using the vaccines that have been developed to provide protection against the **specific organism involved in the outbreak or pandemic**. Advice is obtained from the Department of Health, the Health Protection Agency, and possibly the World Health Organisation, depending on which populations are affected.

[Return to chapter contents](#)

3) Current Services in Relation to Need

The immunisation team undertakes the planning, organisation, and administration of school health, community and domiciliary vaccination. The team work with others on legal **documentation, and submitting of data needed for immunisation**. The team also provide training and advice to the community and to the lead for immunisations in General Practices in Warrington.

NHS Warrington has contracts with the local community services provider (Bridgewater community services) to cover the contracted vaccination and immunisation activities, as well as the training of the vaccination staff.

Co-ordination of the childhood immunisation programme is carried out by the Vaccination lead **within the local community service provider**. The lead works closely with the Infection Control Specialist Nurses, Public Health Team Leaders, School Health Advisers, Practice Nurses, Health Visitors, general practices, local schools and other educational establishments.

Commissioning of vaccination programmes is carried out by commissioning staff within the PCT, with the support of the Public Health Directorate of NHS Warrington.

When there is an outbreak of infection that requires management, an outbreak control group is set up, consisting of all the staff groups with an interest in controlling the outbreak and bringing it to a **satisfactory close**. In a pandemic, the scale of the event is considerably greater, hence the need for greater numbers of staff to provide appropriate control and/or vaccinations.

3.1) Community Setting: The community hold 12 scheduled community immunisation clinics a year and have recently (February, 2012) set up one after school and evening session a week for families whose children are behind with their vaccinations and to complete any gaps in school vaccinations. The monthly scheduled community clinic sends out invites for 18 to 20 children a month and the new evening session can offer appointments for 6 to 10 children.

3.2) School Immunisations: Currently, Warrington has eleven high schools and five special schools which offer a vaccination of HPV and the teenage booster of diphtheria, tetanus and polio.

The following staff provide the vaccinations:

- 11 school health advisers
- 4 community staff nurses who work with the school health advisers

Immunisation sessions are supported by:

- 8 Registered Health Visitor (RHV) Immunisers
- 5 Community RHV Nurses
- 2 Community immunisation nurses
- Immunisation coordinator

3.3) Domiciliary Immunisations: Since the expansion of the immunisation team in October 2011, the immunisation team have been able to implement the *Working Smarter - Improving Performance* (Heart of Birmingham, 2006) model, the 'tail-gunning approach,' to generate lists of children with outstanding immunisations, validate the data, contact and provide vaccination. **Prior to this, the team only dealt with referrals (Heart of Birmingham, 2008).** Members of the Bridgewater community services vaccination team have been targeting families who have regularly missed vaccinations and have found that the majority are families with more than one child, living in deprived areas, with one or more children at school. Many appear unable or reluctant to bring their children in for vaccination, but some are happy to have their children vaccinated in the home environment. During 2011 there were 180 referrals to the domiciliary service.

[Return to chapter contents](#)

4) Projected Service Use and Outcomes in 3-5 Years and 5-10 Years

In recent years, the number of births in Warrington has been increasing. In 2005 there were 2,215 births and this increased to 2,500 by 2010. If this trend were to continue, it could be estimated that there will be 2,800 births by 2015. All of these children will need to receive the full schedule of vaccinations. The anticipated increase in the number of births may put further pressure on the existing service as more vaccinations will have to be provided.

[Return to chapter contents](#)

5) Evidence of What Works

5.1) Children and Younger People: Evidence shows that the following groups of children and young people are at risk of not being fully immunised (DH, 2005; Hill et al, 2003; Peckham et al, 1989; Samad et al, 2006):

- Children and young people who have missed previous vaccinations (whether as a result of parental intent or otherwise).
- Children in care.
- Children with physical or learning difficulties.
- Children of teenage or lone parents.
- Children not registered with a general practitioner.
- Younger children from large families.
- Children who are hospitalised.
- Minority ethnic groups.
- Vulnerable children, such as those whose families are travellers, asylum seekers or homeless.

The National Institute for Health and Clinical Excellence (NICE) provided guidance in 2009 on *reducing differences in the uptake of immunisations (including targeted vaccines) among children and young people aged under 19 years*. The guidance contains 6 specific and detailed recommendations on the areas of:

- Immunisation programmes
- Information systems
- Training
- The contribution of nurseries, schools, colleges of further education
- Targeting groups at risk of not being fully immunised
- Hepatitis B immunisation for infants

A Cochrane systematic review (Lewin et al, 2010) looked at the effects of Lay Health Worker (a member of the community who has received some training to promote health or to carry out some healthcare services, but is not a healthcare professional) interventions in primary and community health care on maternal and child health and the management of infectious diseases. The review found that the quality of the effectiveness of LHWs in promoting childhood immunisation uptake was moderate.

School based vaccination can be very effective if the model used allows for increased access for the recipients, with the support of the schools. The Human Papillomavirus programme has shown how effective a school vaccination delivery model can be if the resources are available for increased provision and access for children.

[Return to chapter contents](#)

6) (Target) Population/Service User Views

The School Nursing service undertakes a yearly patient survey to understand patient's views on the service they provide. The survey comprised of 20 questions, designed to explore patients experience of the service across the following parameters: cleanliness, dignity and respect, confidentiality, information provided, and overall experience. 496 questionnaires were completed and, of these, 148 provided feedback of the service they received.

6.1) Pupil Feedback on Vaccination Experience: Pupils were asked to make one suggestion for ways that their experience of the vaccination could be improved. Out of 148 returned forms, approximately two thirds contained comments and suggestions for improvements. The majority of the remaining third did not make any suggestions for improvements whilst some provided positive feedback on the experience. The comments and suggestions received are analysed and presented thematically below.

6.1.1) Care and Communication: For many who provided feedback, a main theme for comment was the limited amount of communication or conversation with the nurse carrying out the vaccination. Many comments related to a desire for more interaction either just general conversation or more explanation of the vaccination itself. Many pupils felt that more interaction in the way of general conversation could have distracted them from the vaccination and made them feel more at ease. Some comments related to a desire for more information from the nurse about the vaccination itself and possible side effects rather than a reliance on the leaflet distributed.

6.1.2) Environment: The setting for the vaccinations was commented upon by some pupils with some expressing a preference for the vaccination to take place outside the school setting. Comments were also made about the lack of privacy along with limited space and the number of people in the room whilst vaccinations were taking place. Some expressed a preference for the injecting equipment to be less 'on show' with comments also referring to dislike of waiting whilst others were injected, wanting to just 'get it over with'. A number of pupils felt that the playing of background music would improve the atmosphere whilst one or two pupils suggested that watching television would be a good distraction.

6.1.3) Vaccination: Several comments referred to ways of reducing the pain of the vaccination or making it pain free with some pupils suggesting the use of 'numbing cream'. Some suggestions for making the experience less stressful also related to having a friend alongside whilst being vaccinated. A popular idea was the provision of a drink and a biscuit after the vaccination, with some pupils requesting that a drink of water be available.

[Return to chapter contents](#)

7) Unmet Needs and Service Gaps

The needs of more vulnerable families, who may have multiple or more complex needs and issues, particularly in areas of high deprivation, need to be continually addressed.

Working with the local council, it should be possible to use the family support model, using Health and Wellbeing mentors and neighbourhood teams, to work with vulnerable families and improve their access to a variety of health care services, including vaccinations.

Practices often have to organise special additional sessions to enable those who have been unable to attend for vaccination to do so.

Services are universal at present, with some limited domiciliary services in place for the most vulnerable families. This service is not at the scale required to increase the uptake of vaccination and immunisation to help meet the national targets set.

[Return to chapter contents](#)

8) Recommendations for Commissioning

For the long-term future, it may be helpful to look closely at all the programmes being provided, and consider whether the entire vaccination and immunisation programme should be commissioned on a more closely integrated model. For example, one team providing appropriate vaccinations to all age groups, so that target populations do not have to wait for further provision of vaccination clinic spaces, etc.

The expanded team can focus on providing immunisations and vaccinations in the more deprived populations. This will be enforced by the development of a more integrated model for the delivery of a vaccination and immunisation programme in conjunction with Warrington Borough Council.

The Human Papillomavirus (HPV) vaccination programme has shown how effective a single vaccination programme can be, if it is provided by a team of vaccinators, in one type of venue, namely schools, providing improved access for vaccinators and their recipients. There could be an increased number of programmes provided through schools and other establishments, with specific teams providing the service to the target population.

The Human Papillomavirus model of vaccination delivery could be replicated for the diphtheria, tetanus and polio vaccination.

Mass immunisation programmes required in outbreaks and pandemics have also shown how a well-planned programme provided by a specific team in specific situations, can provide a very effective programme, with a very positive outcome.

Develop a more appropriate scaled programme that delivers vaccination and immunisation in a different method, which aims to increase uptake in more deprived areas.

[Return to chapter contents](#)

9) Recommendations for Needs Assessment Work

Continued monitoring on closing/narrowing the health inequalities gap is needed. The programmes are effective, but they could be improved by increasing access for certain client groups, and using the delivery models that have been shown to be effective and successful in improving uptake and service provision.

[Return to chapter contents](#)

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[Return to chapter contents](#)

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JCVI see Joint Committee on Vaccinations and Immunisations

[Return to chapter contents](#)

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[Return to chapter contents](#)
