



New Hampshire Immunization Data 2011



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Division of Public Health Services
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Immunization Section

New Hampshire Immunization Data

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Introduction

Immunization is among the most successful existing disease prevention interventions available.¹ The introduction of routine immunizations has significantly influenced mortality and morbidity worldwide; due to immunization, a major disease –smallpox– has been globally eradicated. The United States federal government has established programs offering vaccines at low or no cost to uninsured or underinsured children. New Hampshire is committed to universal immunization coverage of all children 18 years of age and younger regardless of insurance status and provides vaccines, funded by health insurers and the federal and state governments, to every child in the State. The New Hampshire Immunization Program (NHIP) has been working consistently towards reduction and/or elimination of vaccine preventable diseases for a number of years by vaccine management and distribution, vaccination coverage assessment, community outreach, and public education. High immunization coverage, as well as accurate immunization coverage assessment, is important for successful control of vaccine preventable diseases. The *New Hampshire Immunization Data 2011* is the second comprehensive compilation of immunization-related data in New Hampshire that presents information used for program planning, targeting, monitoring, and evaluation. It includes the most recent data on goals and targets already achieved.

Methods

The *New Hampshire Immunization Data 2011* is the collection of data from various sources. Survey data are presented with 95% confidence intervals. Because they are collected from a sample of the population, each estimate has a margin of error. The confidence interval reflects the degree of uncertainty for each estimate. For example, in 2008 the United States estimated that vaccination coverage with one or more doses of varicella vaccine among children 19-35 months of age was 90.7% with a 95% confidence interval 90.0-91.4%. This can be interpreted to mean that the best estimate is that 90.7% of children 19-35 months old in the United States had received one or more doses of varicella vaccine, but the range that is likely to capture the true value 95% of the time could be as low as 90.0% or as high as 91.4%. In other words, the estimate from the survey has a margin of error of +/- 0.7%. When comparing two estimates (e.g., between states or between years), an overlap in the confidence intervals indicates that the observed difference might be due to chance, and in fact these estimates are no different.

Data collected during sites visits at the New Hampshire vaccine provider practices are presented without confidence intervals, as either all or a vast majority of records for particular age groups are assessed each time.

Surveillance data related to vaccine preventable diseases, as collected in New Hampshire, are also presented within this data book. Public health surveillance is the systematic collection and interpretation of health-related data that provides information necessary for public health decision making. New Hampshire public health law RSA 141-C authorizes the reporting of select communicable diseases by medical personnel, including vaccine preventable diseases, to the New Hampshire Department of Health and Human Services. Comprehensive reporting contributes to timely disease identification and effective intervention. A surveillance summary of all reportable vaccine preventable diseases is presented. Because the incidence of vaccine preventable diseases in New Hampshire is low, actual case counts rather than rates per population area are included.

Data Sources

National Immunization Survey

The National Immunization Survey (NIS) is the nation's primary tool for assessing immunization coverage among preschool children in the United States. This random digit dialed telephone survey is conducted annually by the Centers for Disease Control and Prevention (CDC) to obtain national, state, and selected urban area estimates of vaccination coverage rates for United States children aged 19–35 months. Vaccination information obtained from the telephone survey is then validated by surveys that are mailed to the children's vaccination providers. The NIS also collects the entire provider reported, influenza vaccination histories. Additionally, the NIS-Teen assesses vaccination coverage for selected adolescents' vaccines. The NIS data can be accessed on line at:

<http://www.cdc.gov/vaccines/stats-surv/imz-coverage.htm#nis> .

School and Childcare Vaccination Surveys

State law requires that children be immunized if they attend a childcare facility and when they enroll in kindergarten and seventh grade in public and private schools. In New Hampshire, immunization records of children entering school are reviewed and reported by the school nurses each fall. Periodic reporting is also conducted in childcare centers. Results from these studies are used to track vaccination levels in the population of children enrolled in schools and childcare. A summary of the coverage results is reported annually to the National Immunization Program (NIP). The most recent survey results, reported to the CDC, can be viewed on the NIP website at:

<http://www.cdc.gov/vaccines/stats-surv/schoolsurv/default.htm>.

Behavioral Risk Factor Surveillance System

The Behavioral Risk Factor Surveillance System (BRFSS) is a population based, random digit dialed telephone survey of civilian, non-institutionalized adults, aged 18 years and older. The survey is coordinated by CDC and is conducted annually by all states. In New Hampshire, the Bureau of Public Health Statistics and Informatics is responsible for the survey. The BRFSS includes questions on health behavior risk factors such as safety belt use, diet, weight control, immunization, oral health, diabetes, alcohol use, physical exercise, and preventive health screenings. The data are weighted to more accurately reflect the population by accounting for age, gender, and probability of selection. In New Hampshire, 5,989 interviews were completed in 2009. In this report, the national estimates are a calculation of the middle value (median) of all the states estimates. Selected New Hampshire and national data can be accessed on line at: <http://www.cdc.gov/brfss/> .

Assessment, Feedback, Incentives, Exchange

The National Center for Immunization and Respiratory Diseases (NCIRD) leads efforts to validate vaccine provider immunization activity and promote quality improvement through the use of a program called AFIX (Assessment, Feedback, Incentives, Exchange), which is now recommended nationwide as a standard of practice. Assessments are conducted in provider settings to identify overall immunization coverage levels and pinpoint areas of improvement that the provider may not have recognized. Feedback of the assessment results is shared with the providers and staff along with recommended strategies to improve immunization coverage levels. Incentives are used to motivate the provider and their staff to improve immunization practices. Health care information and resources are shared with them to facilitate improvement. The AFIX process enables providers and their staff to make data-based decisions on how to improve performance.

The NHIP public health nurses utilize the AFIX strategy to assist public and private immunization providers in diagnosing service delivery problems, identifying useful changes in policy and practice, and monitoring and refining interventions. The CDC Comprehensive Clinic

Assessment Software Application (CoCASA) software tool is used to assess immunization coverage levels in healthcare settings where immunizations are delivered. CoCASA also diagnoses and provides detailed reports on specific service delivery problems such as:

- Did the child start his/her series on time?
- Were vaccines spaced appropriately?
- Could vaccines have been administered simultaneously?
- When did a patient drop out of the system?

The improved outcomes produced by AFIX through implementation of recommendations and best immunization practices can be quantified through AFIX participation over time. The efficacy of AFIX has been documented in various studies. Several publications are available on the AFIX website at <http://www.cdc.gov/vaccines/programs/afix/default.htm> .

AFIX is conducted in medical offices that participate in the federally sponsored Vaccines for Children (VFC) program to improve immunization coverage levels among young children. Since 1994, the VFC program has enabled low income, uninsured, and other eligible children to receive immunizations in a “medical home” (from a consistent provider at a single site) rather than being referred to the local health department or visiting nurse clinic for immunization.

Reported Cases of Vaccine Preventable Diseases

The New Hampshire Department of Health and Human Services (DHHS), Bureau of Infectious Disease Control, Infectious Disease Surveillance Section collects, analyzes, and interprets population-based infectious disease-related data, including data on vaccine preventable diseases. Currently, the incidence of vaccine preventable diseases is low. This is attributable to high vaccination coverage in New Hampshire and the United States in general. CDC publishes the national surveillance data in the Morbidity and Mortality Weekly Report, available online at: <http://www.cdc.gov/mmwr/> .

National Immunization Survey

Figure 1. Estimated vaccination coverage with vaccination series 4:3:1:3:3:1* among children 19-35 months of age, United States and New Hampshire, 2002-2008, NIS

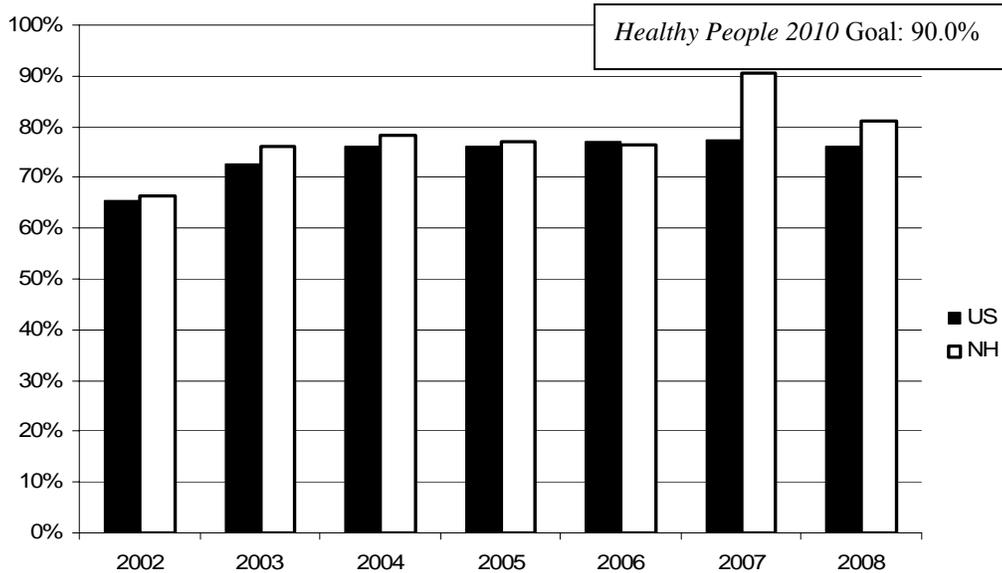


Table 1.

	4:3:1:3:3:1* (% , 95%CI)		4:3:1:3:3:1:4** (% , 95%CI)	
	US	NH	US	NH
2002	65.5 (64.4-66.6)	66.2 (59.7-72.7)	NA	NA
2003	72.5 (71.5-73.5)	76.1 (70.6-81.6)	NA	NA
2004	76.0 (75.0-77.0)	78.4 (72.4-84.4)	NA	NA
2005	76.1 (75.0-77.2)	77.1 (71.0-83.2)	NA	NA
2006	76.9 (75.9-77.9)	76.2 (70.2-82.6)	NA	NA
2007	77.4 (76.3-78.5)	90.6 (86.3-94.7)	66.5 (65.2-67.8)	80.5 (74.3-86.7)
2008	76.1 (75.0-77.2)	81.0 (75.8-86.2)	68.4 (67.2-69.6)	74.6 (68.7-80.5)

*Four or more doses of diphtheria, tetanus, pertussis

(DTaP) vaccine, three or more doses of poliovirus vaccine, one or more doses of any measles-containing vaccine, three or more doses of Haemophilus influenzae serotype b (Hib), three or more doses of hepatitis B (HepB), and one or more doses of varicella

**4:3:1:3:3:1 and four or more doses of pneumococcal conjugate vaccine (PCV)

Figure 2. Estimated vaccination coverage with one or more doses of varicella vaccine among children 19-35 months of age, United States and New Hampshire, 2000-2009, NIS

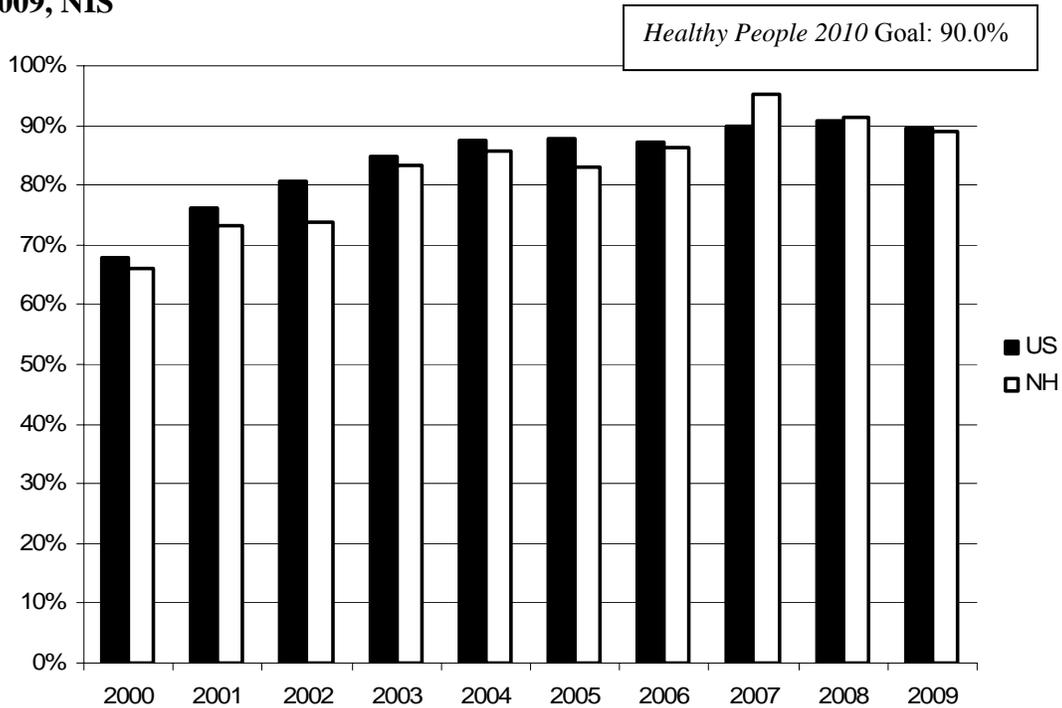


Table 2.

	United States (95%CI)	New Hampshire (% , 95%CI)
2000	67.8 (66.9-68.7)	66.0 (60.5-71.5)
2001	76.3 (77.1-75.5)	73.3 (73.3-78.5)
2002	80.6 (79.7-81.5)	73.9 (67.7-80.1)
2003	84.8 (84.0-85.6)	83.3 (78.4-88.2)
2004	87.5 (86.8-88.2)	85.6 (80.3-90.9)
2005	87.9 (87.1-88.7)	82.9 (77.4-88.4)
2006	89.2 (88.5-89.9)	86.3 (81.5-91.1)
2007	90.0 (89.3-90.7)	95.2 (92.1-98.3)
2008	90.7 (90.1-91.4)	91.3 (87.8-94.8)
2009	89.6 (88.8-90.4)	89.0 (84.2-93.8)

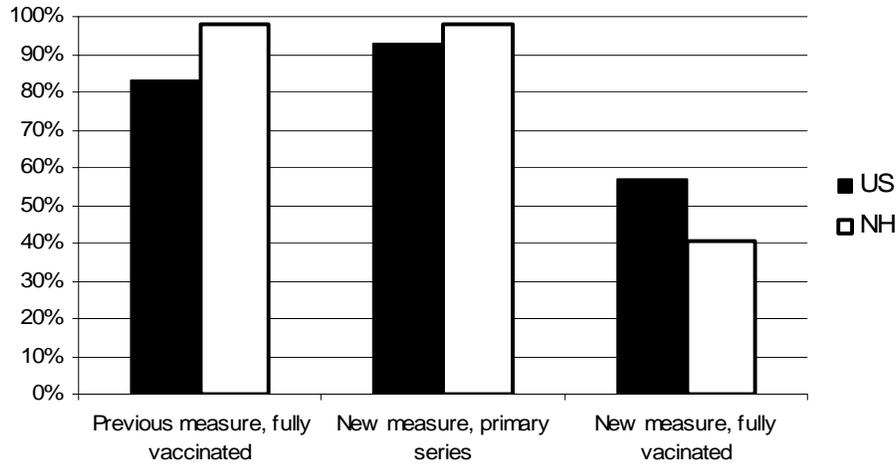
Comment: The NIS provides ongoing national and state estimates of vaccination coverage, including new vaccines as they are licensed and recommended for use among young children in the United States. The NIS also helps to compare the progress to *Healthy People 2010* goals.² The *Healthy People 2010* objective was to increase and maintain vaccination coverage levels for universally recommended vaccines (4:3:1:3:3:1 series) among children 19-35 months of age at 90%. The 4:3:1:3:3:1 series stands for four or more doses of diphtheria, tetanus and pertussis

(DTaP) vaccine, three or more doses of poliovirus vaccine, one or more doses of any measles-containing vaccine, three or more doses of *Haemophilus influenzae* serotype b (Hib) vaccine, three or more doses of hepatitis B (HepB), and one or more doses of varicella. The vaccination coverage for the 4:3:1:3:3:1 series has been gradually increasing in United States as well as in New Hampshire.

Another *Healthy People 2010* goal was to increase varicella vaccination coverage among young children to 90%. One of the more recent recommendations of the Advisory Committee on Immunization Practices (ACIP) is to add a second dose of varicella vaccine for children and adults.³

The vaccination coverage for the 4:3:1:3:3:1 series is not reported for year 2009 because the NIS introduced a new method for measuring *Haemophilus influenzae* serotype b (Hib) vaccination coverage. Some Hib vaccine products require three doses to consider a child fully vaccinated and some require four doses. Under the previous measure, children were considered fully vaccinated if they had three or more doses of Hib vaccine of any type. Since 2009, children are considered to have completed the primary series if they received either three or more doses of any type of Hib vaccine or two doses of Hib vaccine and both were Merck products. Under the new measure, children are considered fully vaccinated if they received either four or more doses of any type of Hib vaccine, or if they received three doses of Hib and the first two of those doses were Merck products. The graph below presents the comparison between Hib coverage as estimated previously and coverage estimates based on additional information about vaccine type.

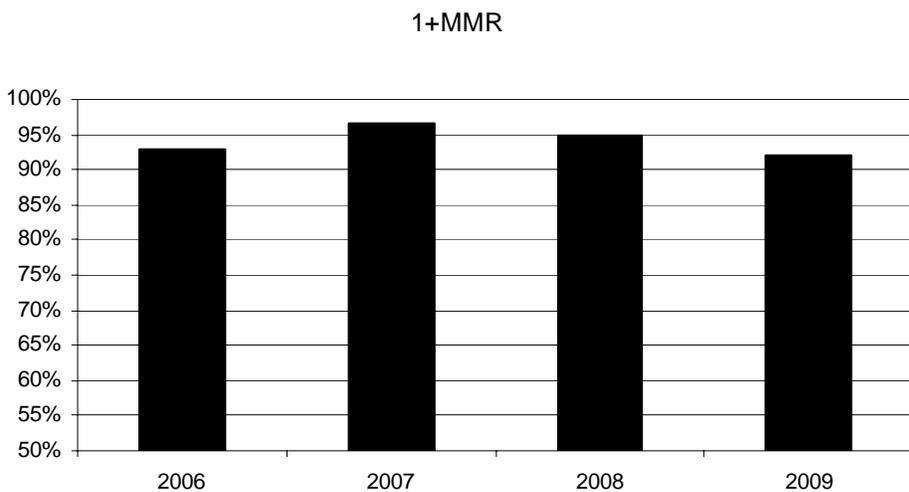
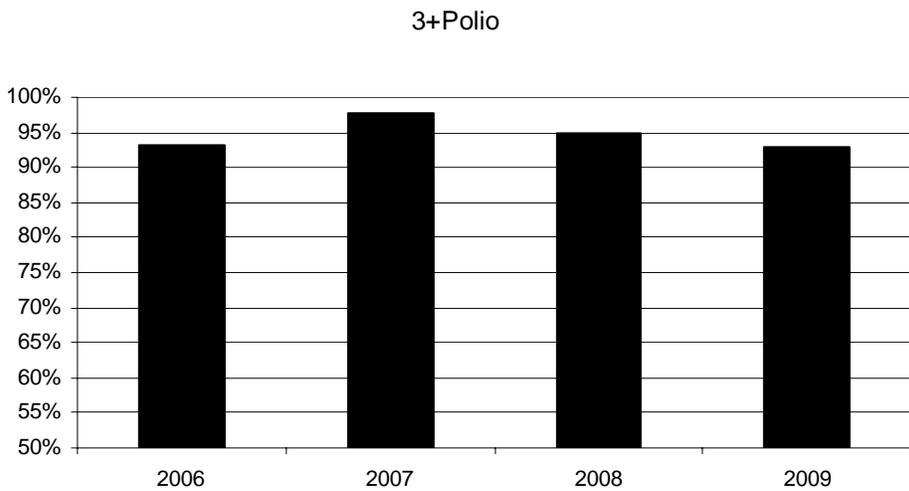
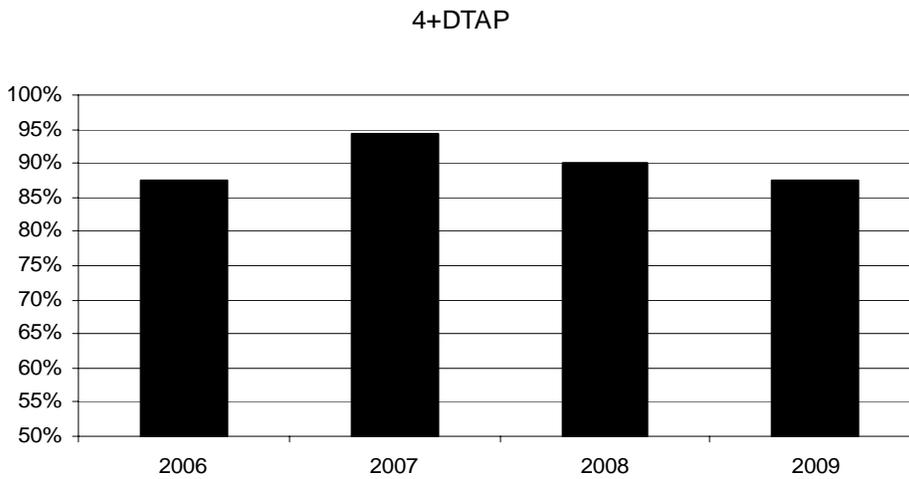
Figure 3. Comparison of estimated vaccination coverage with Hib vaccine among children aged 19-35 months, using previous measure and new measures, United States and New Hampshire, 2009, NIS



Comment: Change in the way Hib vaccination is measured shows a major difference in the estimated coverage. Only 40.6% of New Hampshire children aged 19-35 months were considered fully vaccinated using the new measure, compared with 97.7% according to the previous measure.

Data Source: National Immunization Survey⁴

Figure 4. Estimated vaccination coverage with selected vaccines among children aged 19-35 months, New Hampshire, 2006-2009, NIS



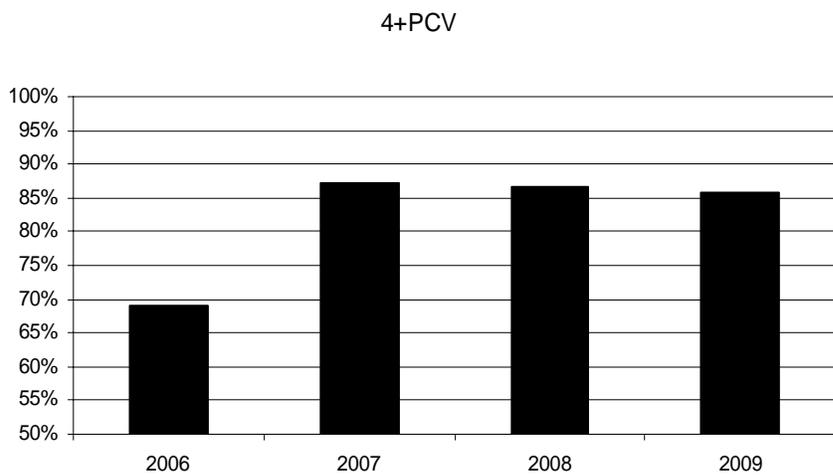
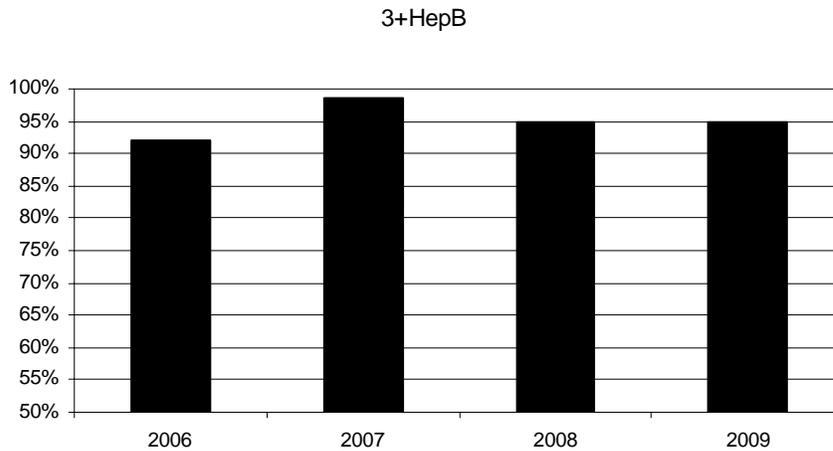


Table 3.

	4+ DTaP % (95%CI)	3+Polio % (95%CI)	1+MMR % (95%CI)	3+HepB % (95%CI)	4+PCV % (95%CI)
2006	87.5 (82.8-92.2)	93.2 (89.3-97.1)	92.9 (89.4-96.4)	92.1 (88.2-96.0)	69.0 (62.3-75.7)
2007	94.4 (90.9-97.9)	97.6 (95.4-99.8)	96.6 (94.0-99.2)	98.6 (97.1-100.0)	87.3 (82.0-92.6)
2008	90.0 (85.9-94.1)	95.0 (92.1-97.9)	94.8 (91.8-97.8)	94.9 (92.1-97.7)	86.6 (82.0-91.2)
2009	87.5 (82.9-92.1)	93.0 (89.6-96.4)	92.0 (88.2-95.8)	94.8 (91.9-97.7)	85.8 (80.6-91.0)

Comment: Change in a way Hib vaccination is measured does not allow further trending for a previously measured 4:3:1:3:3:1:(4) series. As such, the charts above depict the trend for selected vaccines within the series. In addition, approximately 54.8% of children aged 19-35 months received a rotavirus vaccine in 2009.

Data Source: National Immunization Survey⁴

Figure 5. Estimated vaccination coverage with birth dose of hepatitis B vaccine, administered between birth and age three days, among children 19-35 months of age, United States and New Hampshire, 2006-2009, NIS

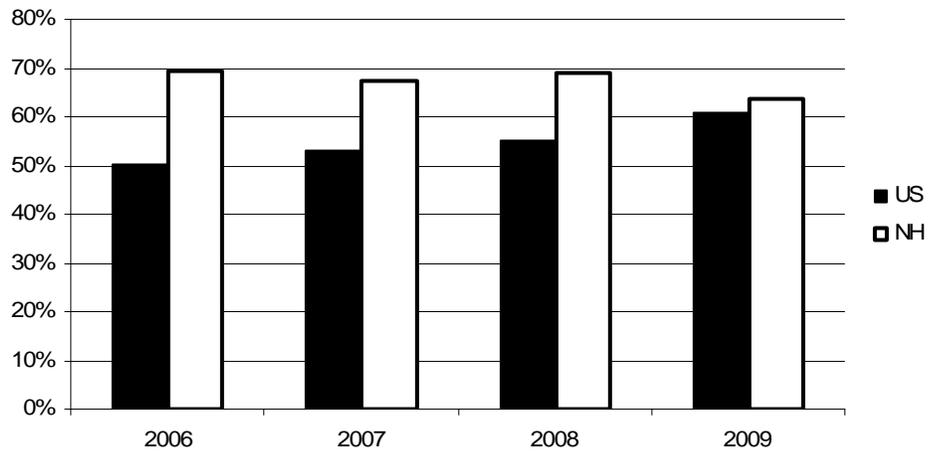


Table 4.

	United States (% , 95%CI)	New Hampshire (% , 95%CI)
2006	50.1 (49.0-51.2)	69.4 (62.7-76.1)
2007	53.2 (51.9-54.5)	67.3 (59.4-75.2)
2008	55.3 (54.0-56.6)	69.0 (63.0-75.0)
2009	60.8 (59.5-62.1)	63.7 (56.6-70.8)

Comment: The NIS provides ongoing national and state estimates of vaccination coverage, including new vaccines as they are licensed and recommended for use among young children in the United States. Hepatitis B vaccination is intended to prevent early childhood hepatitis B virus infection. The estimated vaccination coverage for the birth dose of hepatitis B vaccine in New Hampshire does not show any significant changes. The vaccination coverage in the United States has been increasing. The valid birth dose is represented by one or more doses of hepatitis B vaccine administered between birth and age three days.

Data Source: National Immunization Survey

Figure 6. Estimated vaccination coverage with selected vaccines among adolescents 13-17 years of age, United States and New Hampshire, 2008-2009, NIS-Teen

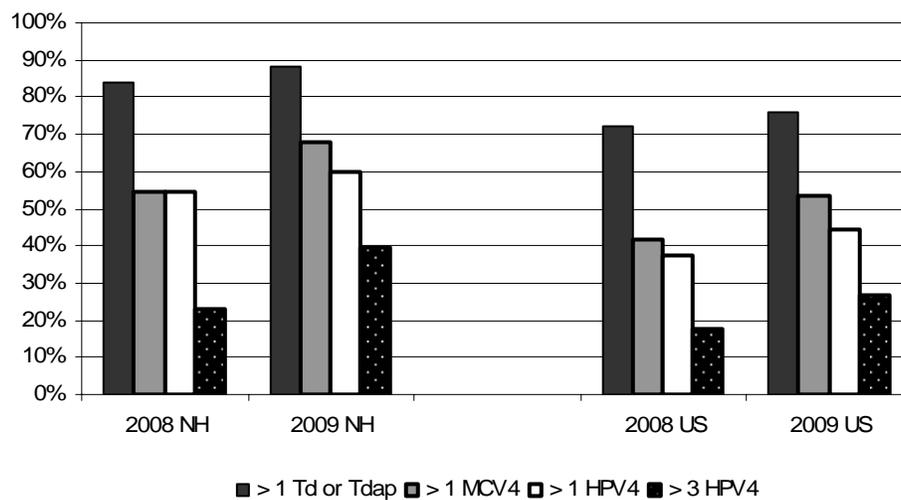


Table 5.

	≥ 1 Td or Tdap (%, 95%CI)	≥ 1 MCV4 (%, 95%CI)	≥ 1 HPV4 (%, 95%CI)	≥ 3 HPV4 (%, 95%CI)
NH 2008	84.2 (77.1-89.4)	54.6 (47.3-61.7)	54.4 (44.3-64.1)	23.2 (15.3-33.5)
NH 2009	88.0 (82.7-91.8)	67.8 (61.6-73.5)	60.0 (51.3-68.2)	39.8 (31.3-48.8)
US 2008	72.2 (70.8-73.4)	41.8 (40.3-43.2)	37.2 (35.1-39.3)	17.9 (16.3-19.6)
US 2009	76.2 (75.1-77.2)	53.6 (52.4-54.9)	44.3 (42.4-46.1)	26.7 (25.2-28.2)

Comment: Since 2006, CDC conducted the NIS-Teen to estimate vaccination coverage among adolescents aged 13-17 years. Since 2008, data are available at the state level. The table above summarizes vaccination coverage for three routinely administered adolescent vaccines; tetanus, diphtheria, acellular pertussis (Tdap), meningococcal conjugate (MCV4), and human papillomavirus (HPV) vaccines. The vaccination coverage determined for New Hampshire is statistically significantly higher than the United State coverage in general. Nationally, the *Healthy People 2010* vaccination objective is to increase the coverage to 90% among adolescents aged 13-15 years old.

Data Source: National Immunization Survey-Teen

Behavioral Risk Factor Surveillance System

Table 6. Adults 18 years old and older who have received a flu shot within the past year, New Hampshire, 2009

	%	95% CI
Total	42.4	40.6-44.2
Male	38.8	36.1-41.5
Female	45.9	43.5-48.3
Age		
18-24	27.3	18.5-36.1
25-34	29.8	24.5-35.1
35-44	30.2	26.5-33.9
45-54	39.3	36.0-42.6
55-64	52.4	49.1-55.7
65+	71.9	69.4-74.4
Income		
<15,000	30.7	24.2-37.2
15,000-24,999	42.3	36.8-47.8
25,000-34,999	41.4	35.3-47.5
35,000-49,999	43.0	38.3-47.7
50,000-74,999	40.6	36.3-44.9
75,000+	44.0	40.7-47.3
Education		
< 12 year	36.5	29.1-43.9
12 years	39.1	35.6-42.6
12-16 years	42.0	37.9-46.1
> 16 years	45.5	42.8-48.2

Comment: Influenza (flu) is a contagious respiratory disease causing mild to severe illness, and at times can lead to death. Complications include bacterial pneumonia, ear or sinus infections, dehydration, as well as worsening of chronic medical conditions. Persons who wish to reduce their chances of getting the flu should get vaccinated. Those who are at risk of having serious flu-related complications or live with or care for high-risk persons should receive a vaccination each year. Two types of influenza vaccine are available: inactivated influenza vaccine (flu shot) and live attenuated influenza vaccine (flu spray). The inactivated vaccine is available in both pediatric and adult formulations. The live attenuated vaccine is recommended for healthy people 2 through 49 years of age, who are not pregnant and do not have certain health conditions.

In 2009, influenza vaccine was recommended for all adults 50 years and older and any younger persons who would like to decrease their risk of getting influenza. Among adults, influenza vaccination was also recommended for persons aged 19-49 years of age with chronic disorders, all health care personnel, pregnant women, and caregivers of children aged less than 5 years.⁵

The 2010-2011 expanded influenza vaccine recommendation includes all people 6 months of age and older and is supported by evidence that annual influenza vaccination is a safe and an effective preventive health action that benefits all age groups.⁶

Based on the BRFSS, in 2009, 42.4% of New Hampshire adults reported receiving a flu shot; additional 0.4% reported receiving a flu spray within the past year.

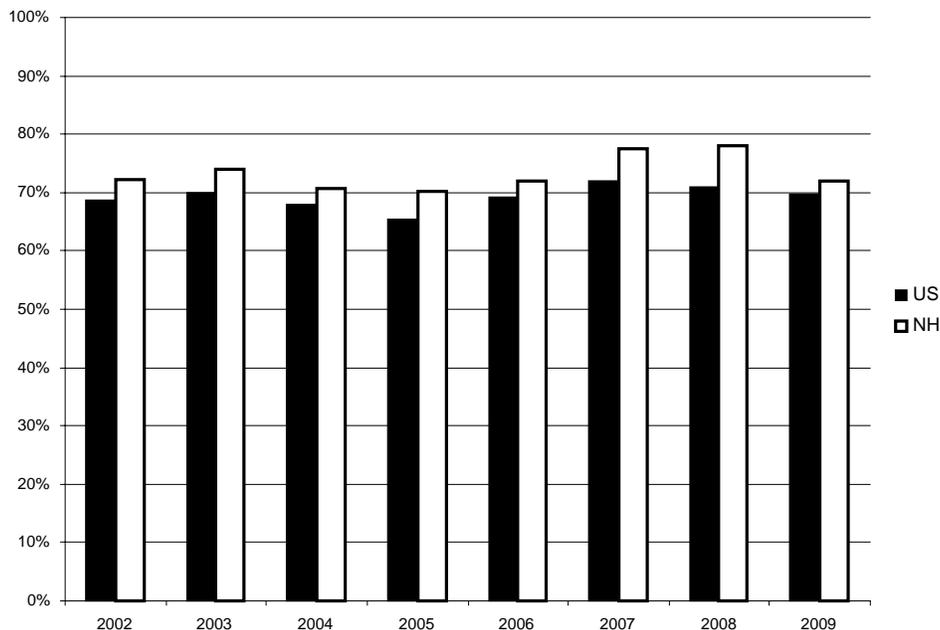
Methods: The numerator included all persons ≥ 18 years of age who reported having a flu vaccination within the past year. The denominator included all persons ≥ 18 years of age who have responded to the question (excluding unknowns and refusals).

Data Source: New Hampshire Behavioral Risk Factor Surveillance Survey

In 2009, high-risk adults who reported receiving an influenza vaccine in the previous 12 months included: 69.7% (95%CI: 64.7-74.6) of those with diabetes, 54.0% (95%CI: 48.2-59.8) of those with current asthma, 71.6% (95%CI: 65.3-77.9) of individuals with the history of coronary heart disease, 66.7% (95%CI: 59.2-74.3) with the history of heart attack, and 63.5% (95%CI: 52.8-74.2) of those with the history of a stroke.

The goal of the *Healthy People 2010* initiative was to increase the percentage of adults age 65 years and older who are vaccinated annually against influenza to 90%. In 2009, 71.9% (95%CI: 69.5-74.4) of adults age 65 years and older reported receiving an annual influenza vaccination. Analyses by county indicate that there are not regional differences in influenza vaccination among adults age 65 years and older.

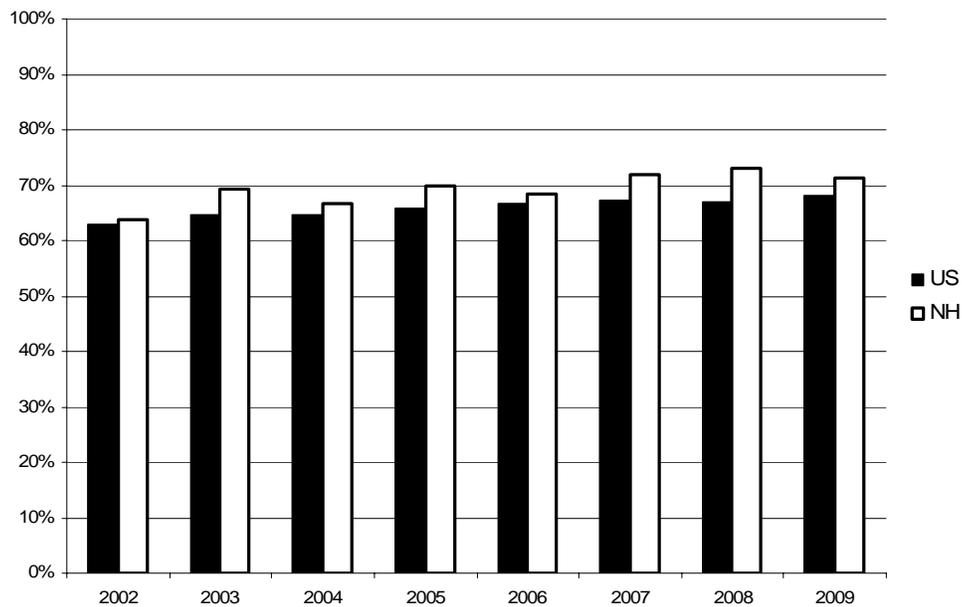
Figure 7. Estimated vaccination coverage for influenza vaccine (those who received a flu shot within the past 12 months) among adults 65 years old and older, United States and New Hampshire, 2002-2009, BRFSS



Methods: The numerator included all persons ≥ 18 years of age who reported having a flu vaccination within the past year. The denominator included all persons ≥ 18 years of age who have responded to the question (excluding unknowns and refusals).

Data Source: New Hampshire Behavioral Risk Factor Surveillance Survey

Figure 8. Estimated vaccination coverage with pneumonia vaccine among adults 65 years old and older, United States and New Hampshire, 2002-2009, BRFSS



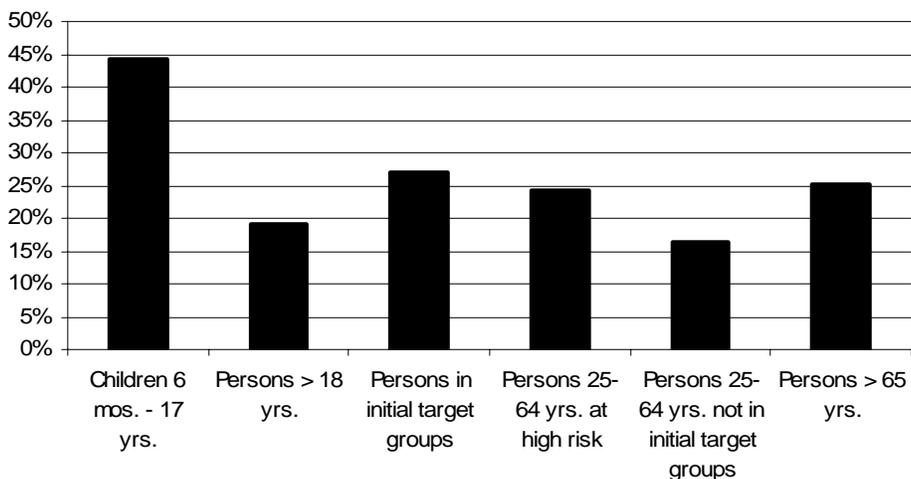
Comment: Disease caused by *Streptococcus pneumoniae* (pneumococcus) is a notable cause of illness and death, especially among the very young, the elderly, and persons with certain high-risk conditions. One dose of the pneumococcal vaccine is recommended for individuals with certain chronic conditions and anyone 65 years old and older.⁷ The goal of the *Healthy People 2010* initiative was to increase the proportion of adults age 65 years and older who were ever vaccinated against pneumococcal disease to 90%.² Among those 65 years of age and older, the rate was 71.4% (95%CI: 68.9-74.0) in 2009. Analyses by county indicate that there are not regional differences in vaccination against pneumococcal disease among those 65 years old and older.

High-risk adults who ever received pneumococcal vaccine include: 63.9% (95%CI: 58.3-69.4) of those with diabetes, 40.1% (95%CI: 34.5-45.7) with current asthma, 69.9% (95%CI: 63.1-76.8) with the history of a coronary heart disease, 67.1% (95%CI: 60.2-74.1) with the history of a heart attack, and 71.4% (95%CI: 62.2-80.7) with the history of a stroke.

Methods: The numerator included all persons ≥ 18 years of age who reported ever receiving a pneumonia vaccination. The denominator included all persons ≥ 18 years of age who have responded to the question (excluding unknowns and refusals).

Data Source: New Hampshire Behavioral Risk Factor Surveillance Survey

Figure 9. Estimated influenza A (H1N1) vaccination coverage among children and adults, New Hampshire, October 2009 through June 2010, BRFSS



Comment: Because of the novel influenza A (H1N1) virus identified in April 2009, two separate influenza vaccines were distributed in the United States during the 2009/2010 influenza season. Initial target groups in New Hampshire included pregnant women, persons who live with or provide care for infants aged <6 months, healthcare and emergency medical services personnel with direct patient contact, and children under 5 years of age.

Second tier target groups included children 6-19 years of age, and young adults aged to 24 years, and persons aged 25-64 years who have medical conditions that put them at higher risk for influenza-related complications. High-risk conditions include asthma, other lung problems, diabetes, heart disease, kidney problems, anemia, and weakened immune system. In addition to selected population groups depicted above, hospital staff (including volunteers) reported 36.7% (95%CI: 31.1-42.4) H1N1 vaccination coverage.

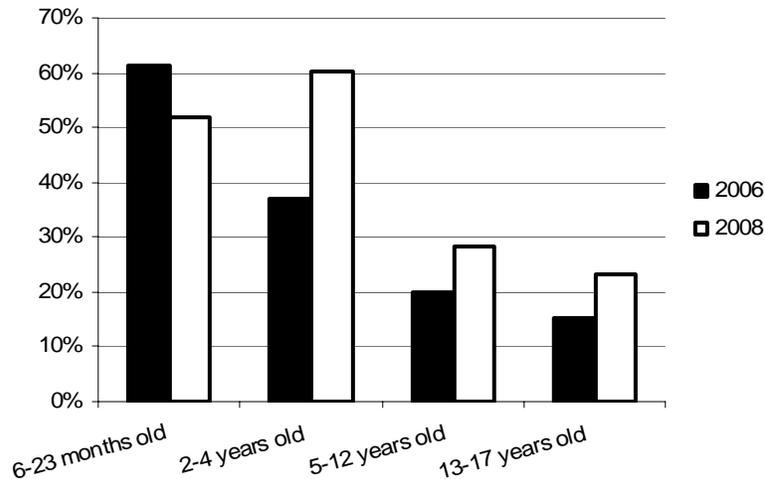
Out of those who were not vaccinated against H1N1, approximately 47.4% reported that they did not need it, 6.0% responded that their doctor did not recommend the vaccination, 5.8% had concerns about the vaccine, 3.8% did not receive vaccine because of vaccine shortage, and 37.0% reported some other reason.

Methods: Coverage estimates are for persons with reported vaccination during October 2009-June 2010. The numerator included all persons ≥ 18 years of age who reported H1N1

vaccination. The denominator included all persons ≥ 18 years of age who have responded to the question (excluding unknowns and refusals).

Data Source: New Hampshire Behavioral Risk Factor Surveillance Survey

Figure 10. Estimated vaccination coverage with influenza vaccine (those who received a flu vaccine within the past 12 months) among children as reported by adults 18 years old and older, New Hampshire, 2006 and 2008, BRFSS



Comment: In 2005, the CDC recommended routine influenza vaccination for all children 6-23 months of age and all children older than 6 months with chronic illness.⁸ During the 2006 and 2008 calendar years, adult respondents reported flu vaccination coverage among children living within their household (the data were not collected in calendar year 2007). The influenza coverage was estimated as a percentage of children receiving influenza vaccine during the previous 12 months.

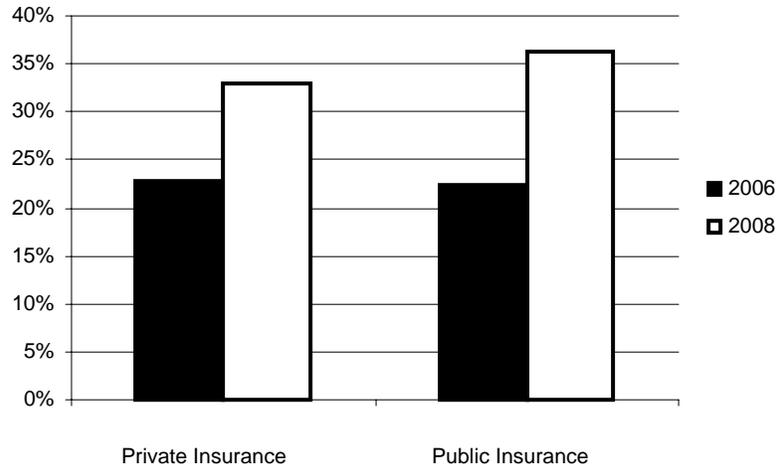
In 2006, approximately 23.4% (20.9-25.9%) of all New Hampshire children age 6 months and older were reported to have received a flu vaccine during the previous 12 months. In 2008, 33.1% (30.3-36.0%) reported receiving the flu vaccine. The increase from 2006 to 2008 was statistically significant. The reason most cited for not receiving the flu vaccine was “not being needed or recommended” (58.3% in 2006 and 53.0% in 2008).

Among children with reported chronic disease conditions (2006 and 2008 years combined), approximately 43.9% (37.1-50.7%) reported influenza vaccination during the previous 12 months.

Methods: The numerator included all children < 18 years of age who were reported receiving flu vaccination during previous 12 months. The denominator included all children < 18 years of age for whom both (receiving either flu shot or flu spray) influenza related questions were answered by the adult respondents (excluding unknowns and refusals).

Data Source: New Hampshire Behavioral Risk Factor Surveillance Survey

Figure 11. Estimated vaccination coverage with influenza vaccine (those who received a flu vaccine within the past 12 months) as reported by adults 18 years old and older, by insurance status, New Hampshire, 2006 and 2008, BRFSS



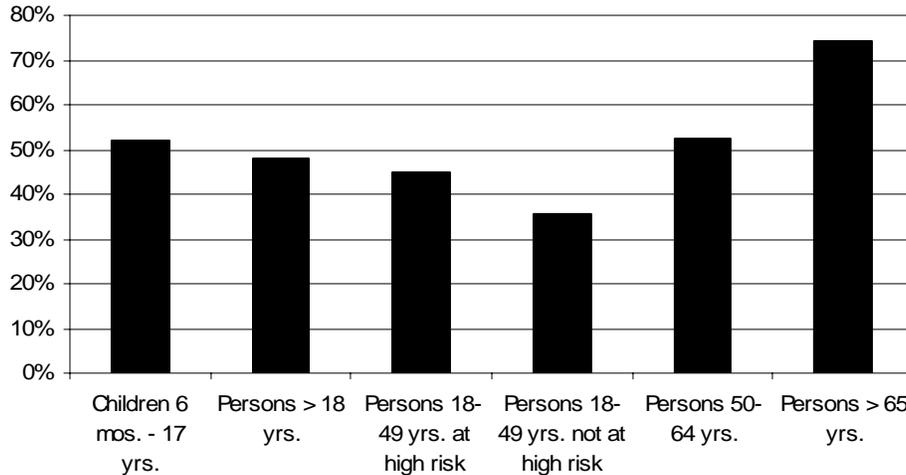
Comment: Comparing vaccination coverage among those having private insurance and those having public insurance shows no significant differences; and a significant increase in vaccination coverage for both groups from 2006 to 2008.

Methods: The numerator included all children < 18 years of age who were reported receiving flu vaccination during previous 12 months. The denominator included all children <18 years of age for whom both (receiving either flu shot or flu vaccine sprayed in the nose) influenza related questions were answered by the adult respondents (excluding unknowns and refusals).

Data Source: New Hampshire Behavioral Risk Factor Surveillance Survey

Behavioral Risk Factor Surveillance System and National 2009 H1N1 Flu Survey

Figure 12. Estimated seasonal influenza vaccination coverage among children and adults, New Hampshire, August 2009 through May 2010, BRFSS and NFS

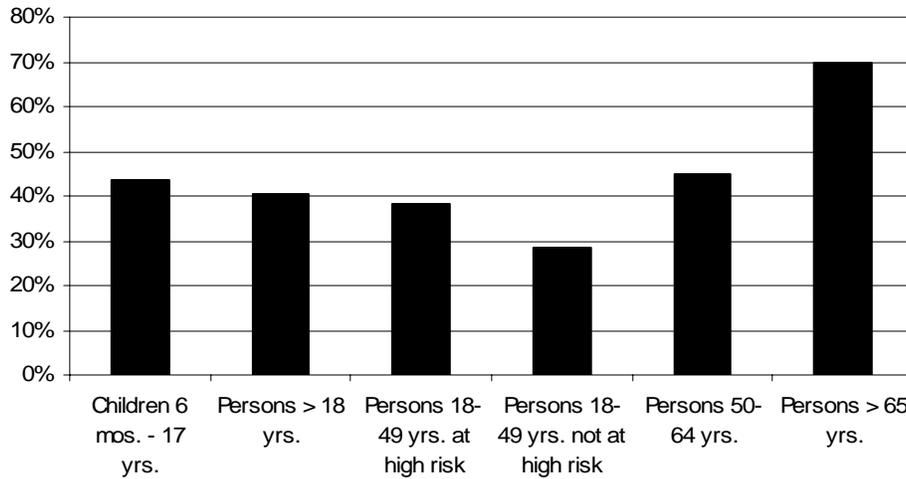


Comment: Because the novel influenza A (H1N1) virus that was identified in April 2009, two separate influenza vaccines were distributed in the United States during the 2009/2010 influenza season. To estimate the vaccination coverage, CDC combined data from the Behavioral Risk Factor Surveillance System and the National 2009 H1N1 Flu Survey. High risk individuals included those with asthma, other lung problems, diabetes, heart disease, kidney problems, anemia, and weakened immune system.

Methods: Coverage estimates are for persons with reported vaccination during August 2009-May 2010 and exclude U.S. territories.

Data Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, National 2009 H1N1 Flu Survey

Figure 13. Estimated seasonal influenza vaccination coverage among children and adults, United States, August 2009 through May 2010, BRFSS and NFS

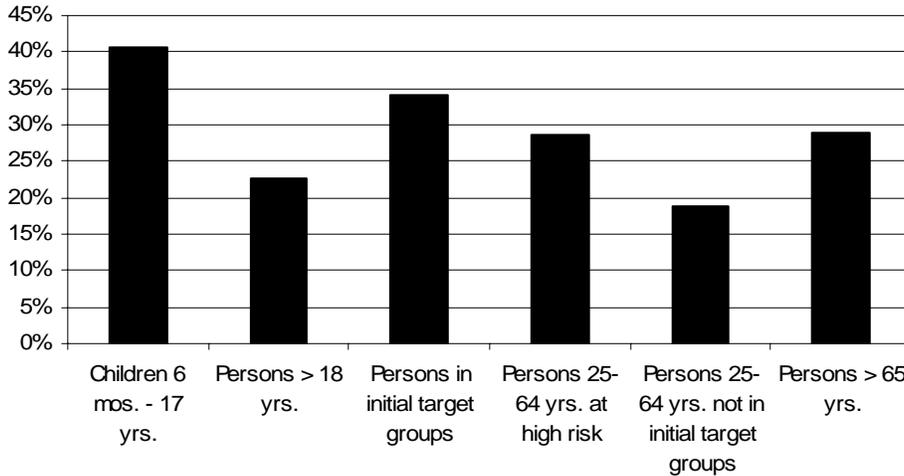


Comment: Because the novel influenza A (H1N1) virus that was identified in April 2009, two separate influenza vaccines were distributed in the United States during the 2009/2010 influenza season. To estimate the national level vaccination coverage, CDC combined data from the Behavioral Risk Factor Surveillance System and the National 2009 H1N1 Flu Survey. High-risk individuals included those with asthma, other lung problems, diabetes, heart disease, kidney problems, anemia, and weakened immune system.

Methods: Coverage estimates are for persons with reported vaccination during August 2009-May 2010 and exclude U.S. territories. Percentages are weighted to the U.S. population.

Data Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, National 2009 H1N1 Flu Survey⁹

Figure 14. Estimated influenza A (H1N1) vaccination coverage among children and adults, United States, October 2009 through May 2010, BRFSS and NFS



Comment: Because of the novel influenza A (H1N1) virus that was identified in April 2009, two separate influenza vaccines were distributed in the United States during the 2009/2010 influenza season. To estimate national level vaccination coverage, CDC combined data from the Behavioral Risk Factor Surveillance System and the National 2009 H1N1 Flu Survey. Initial target groups include pregnant women, persons who live with or provide care for infants aged < 6 months, healthcare and emergency medical services personnel, children and young adults aged 6 months-24 years, and persons aged 25-64 years who have medical conditions that put them at higher risk for influenza-related complications. High-risk individuals include those with asthma, other lung problems, diabetes, heart disease, kidney problems, anemia, and weakened immune system.

Methods: Coverage estimates are for persons with reported vaccination during August 2009-May 2010 and excluded U.S. territories. Percentages are weighted to the U.S. population.

Data Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, National 2009 H1N1 Flu Survey⁹

School Vaccination Survey

Table 7. Estimated vaccination coverage for children attending private kindergarten, New Hampshire, 2008/2009

New Hampshire Estimate	Kindergarten	
	Percent up-to-date	Number up-to-date*
Polio (3+)	97.1	270
Diphtheria (4+)	95.0	264
Tetanus (4+)	95.0	264
Pertussis (4+)	95.0	264
Measles (2+)	94.6	263
Mumps (1+)	97.8	272
Rubella (1+)	97.8	272
Hepatitis B (3+)	98.9	275
Varicella (1)	99.6	277

*Estimates based on 278 surveyed children

At school entry, 7.2% of private kindergarten students were conditionally enrolled and 1.8% were exempt from vaccination based on their religious beliefs.

Table 8. Estimated vaccination coverage for children attending public kindergarten, New Hampshire, 2008/2009

New Hampshire Estimate	Kindergarten	
	Percent up-to-date	Number up-to-date*
Polio (3+)	93.3	416
Diphtheria (4+)	94.2	420
Tetanus (4+)	94.2	420
Pertussis (4+)	94.2	420
Measles (2+)	93.0	415
Mumps (1+)	97.1	433
Rubella (1+)	97.1	433
Hepatitis B (3+)	97.1	433
Varicella (1)	98.0	437

*Estimates based on 446 surveyed children

At school entry, 8.1% of public kindergarten students were conditionally enrolled and 0.2% were exempt from vaccination due to medical reasons. Approximately 1.6% were exempt based on their religious beliefs.

Table 9. Estimated vaccination coverage for children attending private 7th grade, New Hampshire, 2008/2009

New Hampshire Estimate	Kindergarten	
	Percent up-to-date	Number up-to-date*
Tdap/TD (1+)	100.0	260
Hepatitis B (3+)	100.0	260
Measles (2+)	99.6	259
Mumps (1+)	100.0	260
Rubella (1+)	100.0	260
Varicella (1)	99.2	258

*Estimates based on 260 surveyed children

At school entry, 0.4% of private 7th grade students were conditionally enrolled and 1.5% were exempt based on their religious beliefs.

Table 10. Estimated vaccination coverage for children attending public 7th grade, New Hampshire, 2008/2009

New Hampshire Estimate	Kindergarten	
	Percent up-to-date	Number up-to-date*
Tdap/TD (1+)	99.6	504
Hepatitis B (3+)	99.4	503
Measles (2+)	99.6	504
Mumps (1+)	99.8	505
Rubella (1+)	99.8	505
Varicella (1)	99.6	504

*Estimates based on 506 surveyed children

At school entry, 0.8% of public 7th grade students were conditionally enrolled and 0.6% were exempt from vaccination due to medical reasons. Approximately 0.6% were exempt based on their religious beliefs.

Comment: School vaccination surveys are the primary source of information on vaccination coverage of children at school entry and for those attending 7th grade. In the past, immunization coverage was measured directly by a census of the vaccination status for all children. Sample survey methodology was introduced in the 2006/2007 school year. The most recent coverage data for individual vaccines are available for the school year 2008/2009. Since the 2009/2010 school year, the NHIP conducted only limited school assessments. In 2009/2010, 546 schools (85% of all schools) reported on 202,826 students enrolled in kindergarten. It was estimated that

185,797 (92%) students were up-to-date for all required vaccines and 17,133 (8%) were conditionally enrolled; 2,099 students (1%) reported religious exemption and 549 (0.3%) reported medical exemption.

Methods: Each school reviews the immunization status of every selected child, compiles and reports the information to the NHIP.

Data source: New Hampshire Department of Health and Human Services, Bureau of Infectious Disease Control, Immunization Section

Medicaid Administrative Database

Figure 15. Estimated seasonal influenza vaccination coverage among Medicaid enrollees, ages 1-18 years, New Hampshire, 2004/2005 and 2008/2009 influenza seasons

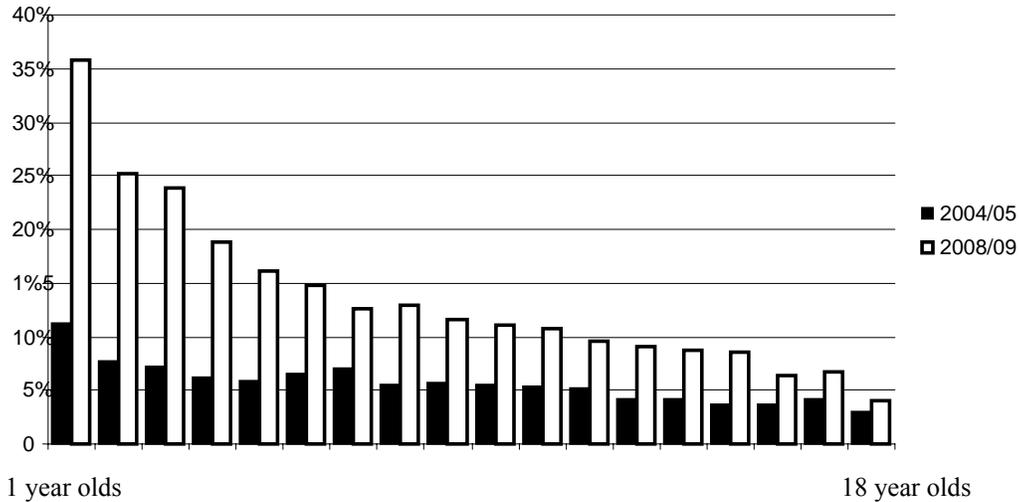
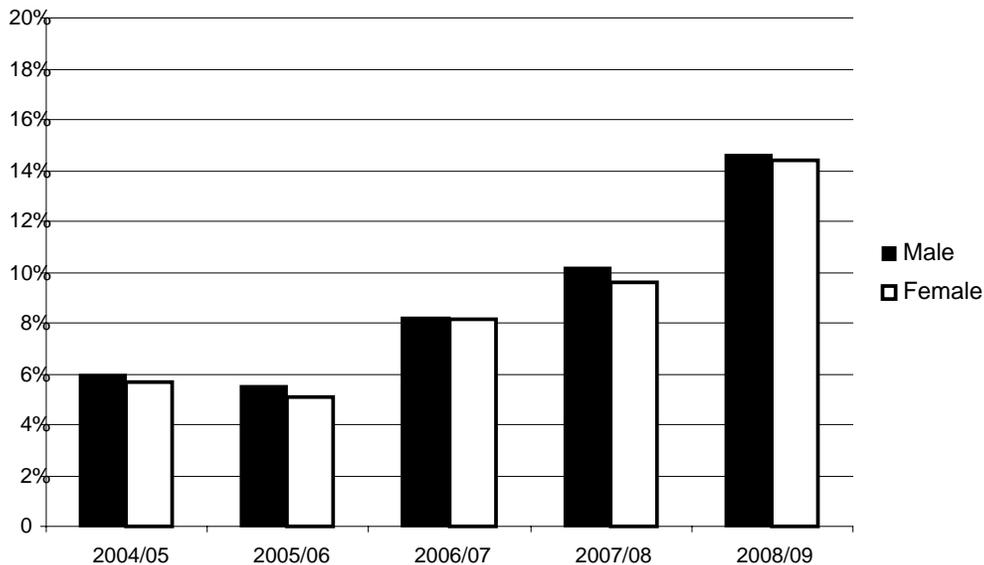


Figure 16. Estimated seasonal influenza vaccination coverage among Medicaid enrollees, ages 1-18 years, by gender, 2004/2005-2008/2009 influenza seasons



Comments: New Hampshire is one of several states that provide vaccines at no cost to all children from birth through age 18 years, regardless of the child’s insurance status or the ability to pay. Childhood vaccines are purchased through a combination

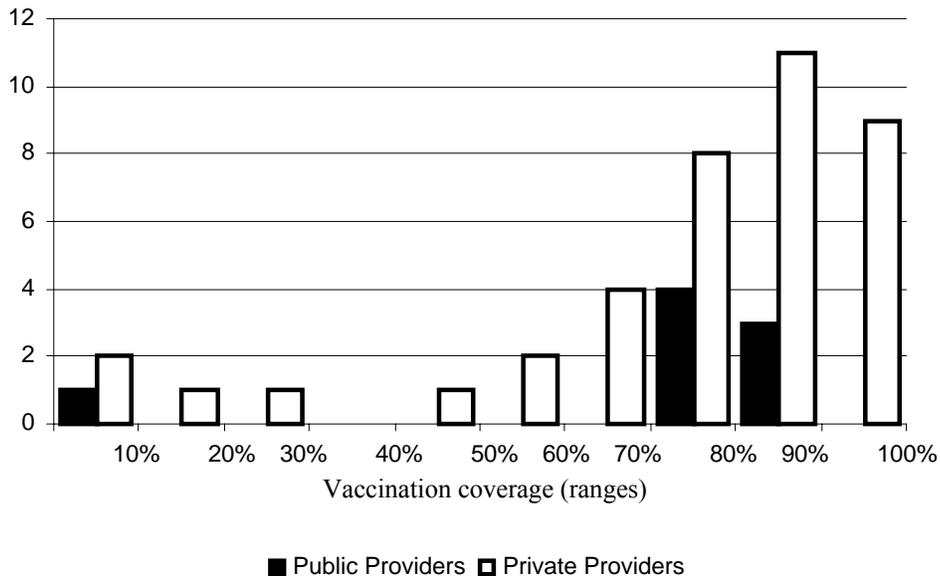
of funding from the federal and state governments and from New Hampshire licensed health insurance companies. Public and private immunization providers therefore receive childhood state purchased vaccines at no cost. Providers can bill third party payers, such as private insurances or Medicaid, for the administration of the vaccine. To assess the influenza vaccination coverage among children from low-income families, the Medicaid administrative database for 2004-2009 was utilized. Over the past several years, influenza vaccination coverage among Medicaid enrollees has increased among all age groups and both genders. The influenza uptake was the highest among the youngest age groups and decreased with increasing age, showing the opportunity for improvements among these subgroups of New Hampshire children.

Methods: Estimated vaccination coverage was based on the Current Procedural Terminology codes for vaccine administration: 90655, 90656, 90657, 90658, 90660, 90662, and code G0008 from the Medicaid administrative database between years 2004-2009. Anyone that received at least one dose of any influenza vaccine during the respective years was counted as a vaccine recipient. Data were gathered for 12 months periods, beginning July 1st and ending June 30th. Denominators consisted of Medicaid enrollments as of July 1st of each year assessed in age and gender groups.

Data source: New Hampshire Medicaid administrative database

AFIX

Figure 17. Number of assessed offices with estimated vaccination coverage (4:3:1:3:3:1:4* vaccination series) among children 19-35 months of age, New Hampshire, 2009



Comment: AFIX (Assessment, Feedback, Incentives and Exchange) is a quality improvement strategy that is used to raise immunization coverage levels and improve standards of practices at the provider level.

Methods: The NHIP has been using the AFIX strategy since 1994. All Vaccine for Children (VFC) providers are participating in the AFIX process, approximately 50% of providers are assessed each year. In 2009, the NHIP assessed vaccination coverage among children 24-35 months of age at 98 provider practices; 79 were private practices and 19 were public providers. An additional five visits were completed in practices that serve mainly adolescent populations and 42 visits were follow up visits to practices where corrective actions needed to occur. Altogether the immunization status of 2,129 children aged 24-35 months was assessed for the 4:3:1:3:3:1:4 series. * Of these children, 1,571 (75%) were up-to-date for this series.

**Four or more doses of diphtheria, tetanus, pertussis vaccine, three or more doses of poliovirus vaccine, one or more doses of any measles-containing vaccine, three or more doses of Haemophilus influenzae serotype b, three or more doses of hepatitis B, one or more doses of varicella, and four or more doses of pneumococcal conjugate vaccine*

Public agencies that were assessed include Federally Qualified Community Health Centers, Rural Health Clinics, and Visiting Nurse Associations. The immunization rates depicted in the graphs were assessed based on 4:3:1:3:3:1:4 criteria and show that the majority of practices keep their vaccination rates high.

Data source: New Hampshire Department of Health and Human Services, Bureau of Infectious Disease Control, Immunization Section

Vaccine Preventable Diseases

Table 11. Incident cases of vaccine preventable diseases, New Hampshire, 2006-2010

	2006	2007	2008	2009	2010†
Hib*	17	17	12	14	12
Hepatitis A	22	12	12	7	2
Hepatitis B	11	5	8	6	7
Measles	1	0	0	0	0
Mumps	5	2	5	0	2
<i>N. meningitidis</i>	4	3	5	5	0
Pertussis	228	79	45	78	20
Rubella	0	0	0	0	0
Tetanus	0	1	0	0	0
Varicella	420	374	274	203	168

*Hib – *Haemophilus influenzae* type b

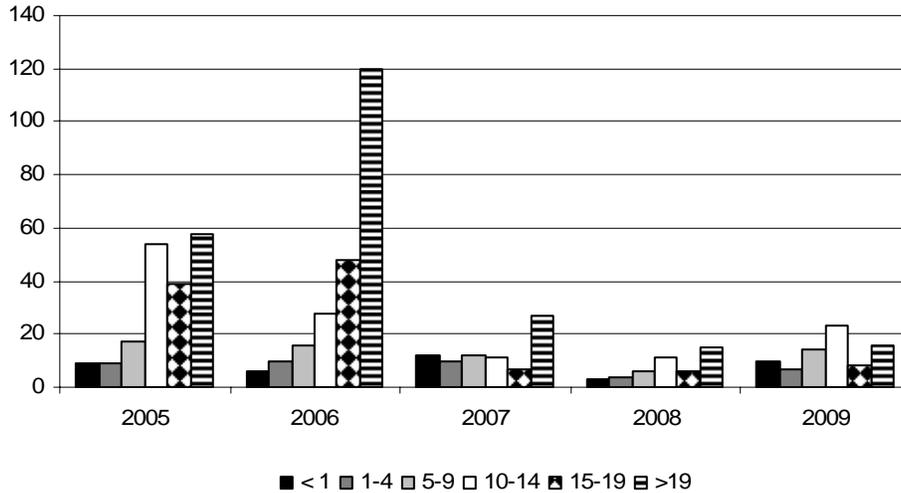
†2010 data are provisional

Comment: Immunization is a foundation of preventive healthcare for children. The wide use of vaccines resulted in a major decline in morbidity and mortality from many infectious diseases. Ongoing disease surveillance detects changes in the incidence of vaccine preventable diseases. Surveillance data are used for the early detection of epidemics, monitoring of changes in occurrence of various infectious agents, and evaluation of prevention and control measures.

Methods: The New Hampshire public health law RSA 141-C authorizes the reporting of selected communicable diseases to the Department of Health and Human Services. The Bureau of Infectious Disease Control, Infectious Disease Surveillance Section is responsible for collection, analysis, and dissemination of surveillance data.

Data source: New Hampshire Department of Health and Human Services, Bureau of Infectious Disease Control, Infectious Disease Surveillance Section

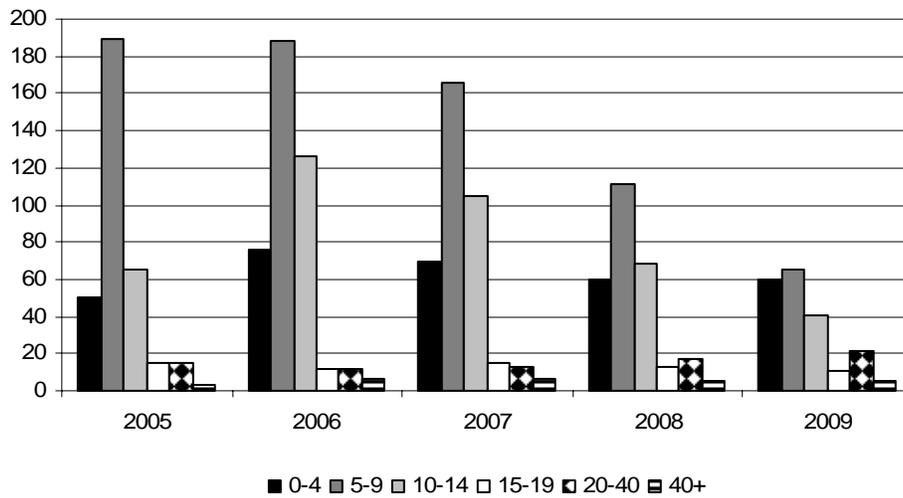
Figure 18. Reported cases of pertussis, by age group, New Hampshire, 2005-2009



Comment: Pertussis (whooping cough) is a highly contagious respiratory infection with periodically occurring outbreaks. With widespread use of the vaccine, incidence of the disease has gradually declined. The graph above depicts the cases reported in each age group during the past five years. Traditionally the highest incidence rates (incident cases per population at risk) of pertussis can be seen in infancy.

Adolescent and adult formulation, Tdap vaccine, was introduced in 2005, and is now given routinely to adolescents and adults to impact pertussis rates in all age groups.¹⁰ As of August 2009, Tdap is required for school entry for students over the age of 11 years.

Figure 19. Reported cases of varicella, by age group, New Hampshire, 2005-2009



Comment: Varicella is an acute infectious disease presenting with generalized and pruritic rash with the highest concentration of lesions on the trunk. The varicella vaccine was licensed for use in healthy children and adults in 1995. In the pre-vaccine era, varicella was endemic in the United States. The surveillance data indicate that the incidence of varicella decreased significantly since the varicella vaccine licensure. Nevertheless, breakthrough disease may occur.¹⁰

Methods: New Hampshire public health law RSA 141-C authorizes the reporting of selected communicable diseases. The list of reportable diseases is periodically assessed and revised based on the perceived needs. Varicella has been reportable in New Hampshire since 2005.

Data source: New Hampshire Department of Health and Human Services, Bureau of Infectious Disease Control, Infectious Disease Surveillance Section

Childhood Immunization

Immunization is a successful public health intervention that is saving hundreds of lives and preventing thousands of cases of disease each year. Some vaccines have been used since the 1940s, others were recommended just recently. At the present time, children are vaccinated against 15 diseases. These diseases used to be a serious threat, now they are at their lowest levels in the history, as documented in the table below.^{11, 12}

Table 12. Impact of vaccines in the 20th century and 2008 reported cases of selected vaccine preventable diseases, United States

	Typical number of annual cases in the 20 th century	2008 cases	% decrease
Smallpox	48,164	0	100%
Diphtheria	175,885	0	100%
Measles	503,282	132	99.9%
Pertussis	147,271	10,007	93.2%
Polio (paralytic)	16,316	0	100%
Rubella	47,745	17	99.9%
Tetanus	1,314	15	98.8%

It is recommended to follow the standard childhood immunization schedule in order to achieve maximum protection. This schedule allows some flexibility, and children who miss a dose can catch up later. Another type of schedule, a delayed or alternative immunization schedule, increases the amount of time a child is vulnerable to a vaccine preventable disease and is not included in this data book. Three advisory bodies collaborate to issue a single schedule of routine childhood immunizations: the Advisory Committee on Immunization Practices (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP). The immunization schedule is continually evaluated to ensure the highest level of effectiveness, efficiency, and safety in childhood immunizations.

Vaccines are believed to be safe, however no vaccine is free of risk, and adverse events are possible. In order to assure post marketing vaccine safety, the Vaccine Adverse Event Reporting System (VAERS) was established. VAERS is a national

vaccine safety surveillance program that is cosponsored by CDC and the Food and Drug Administration (FDA). VAERS collects and analyzes information from reports of adverse events following immunization. Since 1990, VAERS has received over 123,000 reports, most of which describe mild side effects such as fever. Very rarely, people experience serious adverse events following immunization. By monitoring such events, VAERS can help identify important or new safety concerns.¹⁴ Information about VAERS is available at: www.vaers.hhs.gov.

Adolescent Immunization

The recent introduction of new vaccines for adolescents provides a unique opportunity for health promotion and education in this age group. As children enter adolescence, protection from some childhood vaccines begins to wane. Establishing a routine adolescent well visit for 11-12 year olds promotes and protects the health of our adolescent population and translates into healthier adulthood. Routinely recommended vaccines for adolescents include Tdap, meningococcal, and HPV vaccines.

Recommended Vaccines for Adolescents

Human Papillomavirus¹⁵

Genital human papillomavirus (HPV) is the most common sexually transmitted virus in the United States. It is the major cause of cervical cancer in women. The American Cancer Society estimates that in 2010, over 12,200 women in the U.S. will be diagnosed with cervical cancer and 4,210 women will die due to cervical cancer. Every year, about 6.2 million people in the United States are infected with HPV, most commonly young women and men who are in their late teens and early 20s. HPV is associated with several other types of cancer and causes precancerous genital lesions, genital warts, and warts in the upper respiratory tract. There are two vaccines licensed by the FDA; both prevent cervical cancer in females, and one of these vaccines prevents genital warts in both females and males.

Neither of these two vaccines treats existing HPV infections or their complications; however individuals who already have been infected with one or more types of HPV would still get protection from the vaccine types they have not acquired.

Both HPV vaccines are licensed for females aged 9-26 years and recommended for administration in a three dose series beginning at the 11-12 year old adolescent well

visit, with a catch up vaccination recommended for females age 13-26 years who have not been previously vaccinated.

On October 16, 2009, FDA licensed quadrivalent human papillomavirus vaccine (HPV4; Gardasil ®, Merck and Co., Inc.) for use in males aged 9-26 years for prevention of genital warts caused by HPV types 6 and 11. On October 21, 2009, the ACIP provided guidance that HPV4 may be given to males aged 9-26 years to reduce their likelihood of acquiring genital warts. The ACIP recommendation for use of HPV4 in males is a permissive recommendation, not a routine recommendation. This permissive recommendation allows healthcare providers to offer HPV4 vaccine to male patients aged 9 through 26 years. The ACIP statement can be found at:

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5920a5.htm?s_cid=mm5920a5_e

Meningococcal Disease¹²

Meningococcal disease is caused by a bacterium *Neisseria meningitidis*. Throughout the world, five serogroups, A, B, C, Y and W-135, cause most disease, with types B, C, and Y being most frequent in the United States. Over 2,500 people get meningococcal disease in the United States each year. Even with appropriate antibiotic therapy, the case fatality rate of invasive meningococcal disease is 10-14%. The fatality rate of meningococemia is up to 40%. Approximately 11-19% of survivors suffer from conditions such as hearing loss, neurological impairment, or loss of a limb. Three vaccines are currently available in the United States: the older meningococcal polysaccharide vaccine and two meningococcal conjugate vaccines. These vaccines protect against the A, C, Y and W-135 serogroups, but not serogroup B. Additional information related to meningococcal disease can be found at:

<http://www.cdc.gov/vaccines/vpd-vac/mening/vac-mening-fs.htm>.

Pertussis (Whooping Cough)¹²

Following the introduction of routine childhood immunization against pertussis in the 1940s, the number of reported pertussis cases declined dramatically. Since then, the number of reported cases has been steadily increasing, especially among adolescents and adults, because both groups are susceptible to pertussis due to waning immunity. The vaccine Tdap contains tetanus and diphtheria toxoid composition similar to adult tetanus and diphtheria toxoids vaccine with the addition of the pertussis antigen. A single dose of Tdap is routinely recommended for adolescents aged 11-18 years. Currently, there are two licensed Tdap products; one for adolescents aged 10-64 years, and the second for adolescents and adults aged 11-64 years. In October 2010, the ACIP updated Tdap recommendations for certain children between the ages of 7 and 10 years. This document and recommendations can be found at:

<http://www.cdc.gov/vaccines/programs/vfc/downloads/resolutions/1010dtap-508.pdf>.

Hepatitis B, Varicella, Measles-Mumps-Rubella (MMR) and Other Vaccines¹²

The rate of hepatitis B in adolescents hovered around 10 cases per 100,000 in the 1980s. A marked decline in the incidence accompanied the introduction of universal vaccination in the 1990s. A major decrease (72.5%) is documented for adolescents; the rate has fallen to about one case per 100,000. Hepatitis B vaccine is recommended for adolescents in a three dose series if they were not vaccinated during childhood.

MMR vaccine is recommended for adolescents in a two-dose series, if they were not vaccinated during childhood.

Adolescents with specific health risks may need additional vaccines such as hepatitis A, and pneumococcal vaccines.

Two doses of varicella vaccine are recommended for all susceptible adolescents and adults. Adolescents and adults who have previously been vaccinated with a single dose of varicella vaccine should receive a second dose based on the ACIP's varicella recommendations.

All persons aged 6 months and up should receive an annual influenza vaccine because it is the first and most important step in protecting against influenza viruses.

Adult Immunization

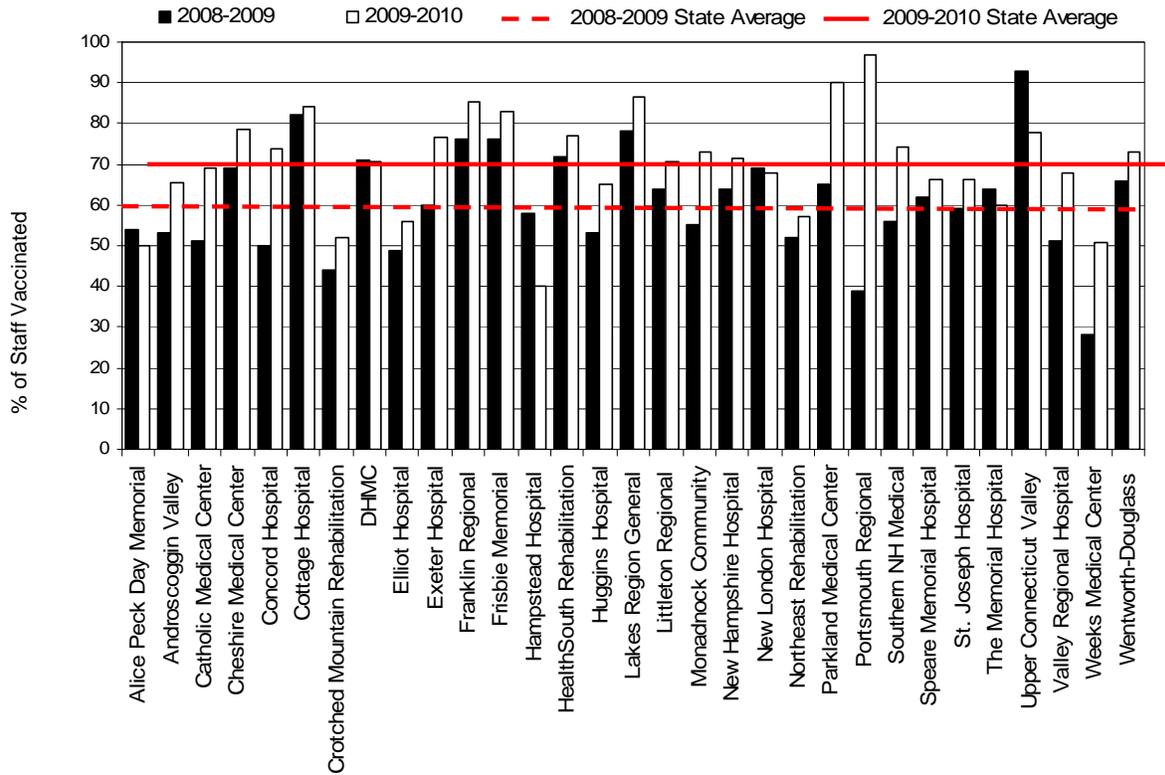
Adults, like children, need immunizations. Billions of dollars are spent annually treating adults with vaccine preventable diseases (VPDs). It is estimated that 47,000 adults die every year from VPDs, primarily from influenza, pneumococcal disease and hepatitis B.⁹ Other VPDs that contribute to the disease burden are measles, mumps, rubella, tetanus, pertussis, hepatitis A, and human papillomavirus. The challenge of public health is to extend the success of childhood immunizations into adulthood. According to the National Health Interview Survey, only 53% of adults 65 years old and older received tetanus vaccination during the past 10 years; and only 10% of those 60 years and over ever received herpes zoster (shingles) vaccination.¹³

Healthy People 2010 has set a goal of increasing adult immunization rates to 90% for influenza and pneumococcal vaccine in people 65 years of age and older.

Annually, the 31 New Hampshire hospitals, assisted living facilities and adult day care facilities report aggregate estimates of residents/patients who have received influenza and pneumococcal vaccines between October 1 and March 31.

The aggregate estimates of employees (clinical and nonclinical) who received influenza vaccine are also reported to the Division of Public Health Services, and favorable tendencies have been documented. In 2008/2009, on average, 61% of hospital employees received influenza vaccine, with coverage ranging between 28% and 93%. In 2009/2010, it was 70% of hospital employees with range between 40% and 97%.

Figure 20. Estimated influenza vaccination coverage among hospital staff, 2008-2010, New Hampshire



Data source: New Hampshire Department of Health and Human Services, Bureau of Infectious Disease Control, Infectious Disease Surveillance Section

In August 2009, NHIP developed an Adult Immunization Program for uninsured and underinsured adults. This was made possible through funding from the American Reinvestment and Recovery Act. The 26 community health centers, two health departments, eight planned parenthood clinics, 20 private practices, and rural health centers are enrolled in the program and are receiving vaccines for their underinsured/uninsured patients. As the approach was successful, the adult vaccine program will continue through 2011 with 317 funding.

Vaccines recommended for adults³

Influenza

Beginning in the 2010/2011 influenza season, CDC recommended influenza vaccine for everyone who is 6 months of age or older. In the previous influenza

season, 2009/2010, CDC recommended influenza for children 6 months through 18 years and adults 50 years and older. Vaccination is especially important for people at higher risk of severe influenza and their close contacts, including healthcare personnel and close contacts of children younger than 6 months.

Pneumococcal

Recommendation includes a single dose for persons 65 years old and older and persons 19 and older who are smokers, have asthma, or have certain medical conditions, such as chronic lung disease, immunosuppression, or metabolic diseases.

Tetanus, Diphtheria, Pertussis (Tdap)

All adults should get a booster dose of Td every 10 years. Adults under 65 who have never gotten Tdap should substitute it for the next booster dose. Adults under 65 who expect to have close contact with an infant younger than 12 months of age (including women who may become pregnant) should get a dose of Tdap. Healthcare workers under 65 who have direct patient contact in hospitals or clinics should get a dose of Tdap. New mothers who have never gotten Tdap should get a dose as soon as possible after delivery. If vaccination is needed *during* pregnancy, Td is usually preferred over Tdap.

Hepatitis A, Hepatitis B

Recommended for foreign travel, certain life styles, certain medical situations, and occupations, i.e., Hepatitis B for health care workers.

Measles, Mumps, Rubella (MMR)

Recommended for anyone who has not been immunized, who does not have natural immunity, and in certain medical situations. Proof of immunity is recommended for health care workers.

Chicken Pox (Varicella)

Recommended for anyone who has not been immunized or who does not have natural immunity. Proof of immunity is recommended for health care workers.

Shingles (Zoster)

Recommended for persons 60 years of age and older.

Human Papilloma Virus (HPV)

Recommended for women 9-26 years of age for prevention of cervical cancer caused by HPV strains 14 and 16 and genital warts caused by HPV strains 6 and 11. HPV may be considered for males 9-26 years of age to reduce the likelihood of acquiring genital warts.

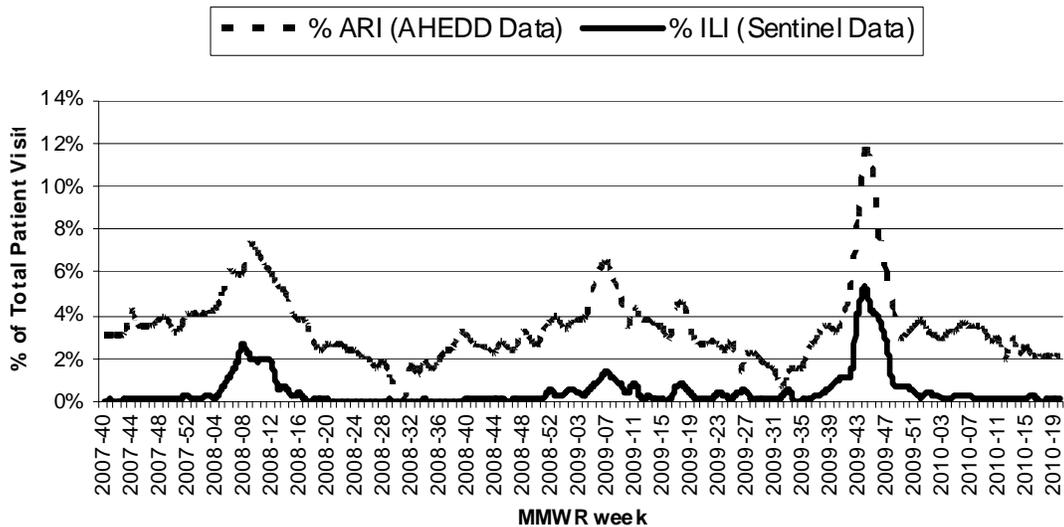
Vaccines for International Travel

Routine vaccines are recommended for travel and vaccines that are specific to certain geographic regions.

It is advised that adults consult with their primary care physician regarding recommendations of vaccines.

Seasonal Influenza

Figure 21. Percentage of visits for influenza-like illness (ILI) reported by New Hampshire ILINet outpatient providers and visits for acute respiratory illness (ARI) reported by New Hampshire acute care hospitals in 2009-10 and previous two flu seasons



Comment: Influenza is an acute viral disease of the respiratory tract characterized by fever, headache, sore throat, and cough. In New Hampshire, influenza is not a reportable disease, but surveillance systems are in place to help determine the extent of illness and current circulating influenza virus types.

Methods: For the 2009/2010 flu season, the two main surveillance components for influenza-like illness (ILI) in New Hampshire were the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) and the Automated Hospital Emergency Department Data (AHEDD) system.

ILINet is a collaborative effort among the Centers for Disease Control and Prevention, state and local health departments, and health care providers. For the 2009/2010 influenza season, 48 New Hampshire health care providers participated. Each provider reported the proportion of patients who present with ILI on a weekly basis. ILI is defined as (1) a fever and (2) cough and/or sore throat, in the absence of a known cause. Due to the arrival of the second wave of the 2009 H1N1 pandemic, influenza activity peaked early both in New Hampshire and the U.S. in 2009. Highest flu activity in the U.S. occurred in

mid to late October, with 48 states reporting widespread activity and 2 states reporting regional activity.

AHEDD is a collaborative effort between New Hampshire acute care hospitals and the NH DHHS. During the 2009/2010 flu season, between 18-25 hospitals electronically transmitted real-time data from emergency department encounters throughout the day to NH DHHS. Chief complaint text within the system was queried for complaints of acute respiratory illness (ARI) in patients seen in emergency departments. ARI peaked in New Hampshire during the first week of November 2009, when 11.7% of emergency room visits were due to ARI.

Figure 22. Influenza-like illness by age group and practice, New Hampshire ILINet providers, October 4, 2009 to May 22, 2010

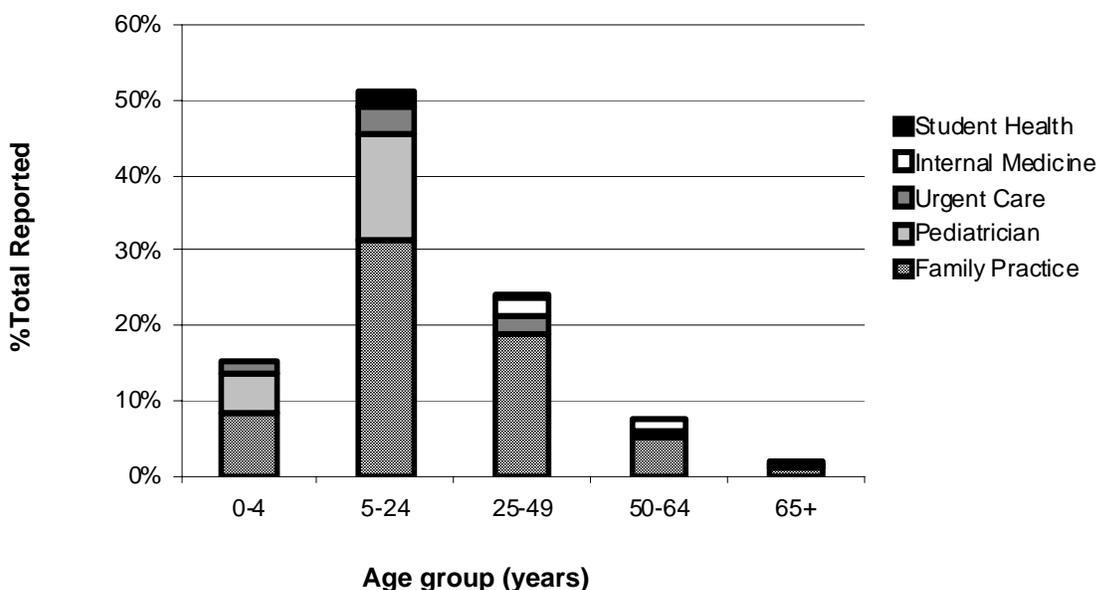


Table 12. Patient visits for influenza-like illness by age group and practice type, New Hampshire ILINet providers, October 4, 2009 to May 22, 2010

Practice type	Age Group (years)					Total ILI	Total Patient Visits
	0-4	5-24	25-49	50-64	65+		
Family Practice	141	543	325	86	20	1,115	121,334
Internal Medicine	0	4	42	24	10	80	15,295
Pediatrics	93	242	0	0	0	335	23,253
Student Health	0	35	5	0	0	40	1,308
Urgent Care	29	63	43	19	4	158	1,260
Total	263	887	415	129	34	1,728	162,450

Comment: In the 2009/2010 influenza season, persons aged 5-24 years of age comprised the highest percentage (51%) of total ILI patients reported by NH ILINet providers. This is different than what has been reported since the 2006/2007 flu season, when the highest percentage of ILI was seen in the 25-64 year age group. For the 2009/2010 season the majority (67%) of ILI occurred in persons < 25 years of age, which is a higher compared with the previous three seasons (range = 47-52%). The elderly (> 65 years) had lowest percent of ILI (2%) for the 2009/2010 season, and this age group was less affected compared with previous seasons.

Methods: For the 2009/2010 influenza season, 48 volunteer healthcare providers in New Hampshire participated in U.S. ILINet flu surveillance. ILINet providers report weekly to the CDC the total number of patients seen for the week, and the number of patients by age group with ILI, defined as: fever \geq 100°F and cough and/or sore throat.

Figure 23. Number and percent of specimens testing positive for influenza viruses, New Hampshire Public Health Laboratories, October 4, 2009 to May 22, 2010 (MMWR weeks 40 – 20)

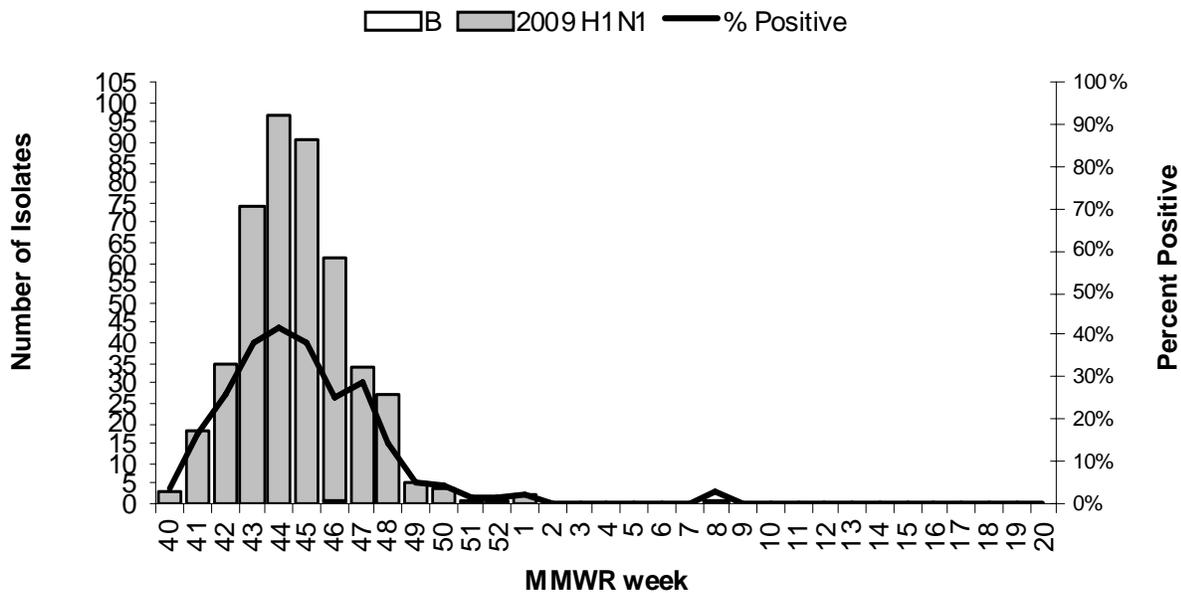


Table 12. Results of specimens received by New Hampshire Public Health Laboratories, 2009-10 influenza season, October 4, 2009 to May 22, 2010

Results	Number of Specimens	Percent of Influenza Isolates Identified
2009 Influenza A (H1N1)	453	99.8%
Influenza A (H3)	0	0%
Influenza B	1	0.2%
Negative for influenza*	1848	
Rejected**	99	
Inconclusive	8	
Total	2409	

* Includes specimens positive for Adenovirus (4), Parainfluenza1 (1), Parainfluenza2 (1)

** Sample inadequate for testing

Comment: Due to the enormous increased demand for flu testing during the 2009 H1N1 pandemic, the New Hampshire Public Health Laboratories limited testing primarily to specimens collected from persons with ILI who were either hospitalized, healthcare workers, patients of ILINet providers, or persons who were part of a respiratory outbreak investigation. With the exception of one specimen testing positive for influenza B, all (99.8%) positive results were for the 2009 H1N1 virus.

Data sources: New Hampshire Department of Health and Human Services, Bureau of Infectious Disease Control, Infectious Disease Surveillance Section; New Hampshire Department of Health and Human Services, Public Health Laboratories; Centers for Disease Control and Prevention, National Center for Immunization and Respiratory Diseases

Diseases Summary¹²

Diphtheria

Diphtheria causes a thick covering in the back of the throat. It can lead to breathing problems, paralysis, heart failure, and even death. There are several combination vaccines used to prevent diphtheria: DTaP, Tdap, DT, and Td.

Hepatitis A

Hepatitis A is a liver disease caused by the hepatitis A virus (HAV). Hepatitis A can affect anyone. Vaccines are available for long-term prevention of HAV infection in persons 1 year of age and older. Good personal hygiene and proper sanitation can also help prevent the spread of hepatitis A.

Hepatitis B

Hepatitis B is a serious disease caused by a virus that attacks the liver. The virus, which is called hepatitis B virus (HBV), can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death.

Hib disease

Haemophilus influenzae type b vaccine prevents meningitis (an infection of the covering of the brain and spinal cord), pneumonia (lung infection), epiglottitis (a severe throat infection), and other serious infections. The Hib vaccine can be combined with other vaccines and is recommended for all children under 5 years old.

Human papillomavirus

Human Papillomavirus (HPV) is a common virus that is spread through sexual contact. Most of the time HPV has no symptoms so people do not know they have it. There are approximately 40 types of genital HPV. Some types can cause cervical cancer in women and can also cause other kinds of cancer in both men and women. Other types can cause genital warts in both males and females. The HPV vaccine works by preventing the most common types of HPV that cause cervical cancer and genital warts.

Influenza

Influenza (the flu) is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness and at times can lead to death. Some people, such as older people, young children, and people with certain health conditions, are at high risk for serious flu complications. The best way to prevent the flu is by getting vaccinated each year.

Measles

Measles is the most deadly of all childhood rash/fever illnesses. The disease spreads very easily, so it is important to protect against infection. To prevent measles, children (and some adults) should be vaccinated with the measles, mumps, and rubella (MMR) vaccine. Two doses of this vaccine are needed for complete protection.

Mumps

Mumps is a contagious disease that is caused by the mumps virus. Mumps typically starts with a few days of fever, headache, muscle aches, tiredness, and loss of appetite, and is followed by swelling of salivary glands. Use of mumps vaccine (usually administered in measles-mumps-rubella [MMR] or measles-mumps-rubella-varicella [MMRV] vaccines) is the best way to prevent mumps. Two doses of this vaccine are needed for complete protection.

Pertussis

Whooping cough—known medically as pertussis—is a highly contagious respiratory tract infection. Although it initially resembles an ordinary cold, whooping cough may eventually turn more serious, particularly in infants. The best way to prevent it is through vaccination. The childhood vaccine is called DTaP. The whooping cough booster vaccine for adolescents and adults is called Tdap. Both protect against whooping cough, tetanus, and diphtheria.

Pneumococcal disease

Pneumococcal disease is an infection caused by a type of bacteria called *Streptococcus pneumoniae* (pneumococcus). There are different types of pneumococcal disease, such as

pneumococcal pneumonia, bacteremia, meningitis, and otitis media. Pneumococcal conjugate vaccine is recommended for all children younger than 59 months of age. In addition, children > 24 months who are at high risk of pneumococcal disease and adults with risk factors may receive the pneumococcal polysaccharide vaccine.

Polio

Polio is an infectious disease caused by a virus that lives in the throat and intestinal tract. Most people infected with the polio virus have no symptoms, however for the < 1% who develop paralysis it may result in permanent disability and even death. There are two types of vaccine that protect against polio: Inactivated Polio Vaccine (IPV) and Oral Polio Vaccine (OPV). OPV has not been used in the United States since 2000 but is still used in many parts of the world.

Rotaviral enteritis

Rotavirus is the leading cause of severe acute gastroenteritis (vomiting and severe diarrhea) among children worldwide. Two different rotavirus vaccines are currently licensed for use in infants in the United States. The vaccines are RotaTeq® (RV5) and Rotarix® (RV1). Rotavirus vaccine was found to prevent almost all rotavirus illness episodes (85-98%) that were severe and to prevent 74-87% of all rotavirus illness episodes.

Rubella

Rubella is an acute viral disease that causes fever and rash. The rubella vaccine is a live attenuated (weakened) virus that is usually given as part of the MMR vaccine (protecting against measles, mumps, and rubella). Rubella vaccination is particularly important for non-immune women who may become pregnant because of the risk for serious birth defects if they acquire the disease during pregnancy.

Tetanus

Tetanus (lockjaw) is a serious disease that causes painful tightening of the muscles, usually all over the body. It can lead to "locking" of the jaw so the victim cannot open his mouth or swallow. Tetanus leads to death in about 1 in 10 cases. Several vaccines are

used to prevent tetanus among children, adolescents, and adults including DTaP, Tdap, DT, and Td.

Varicella

Varicella (chickenpox) is a disease caused by infection with the varicella zoster virus, which causes fever and an itchy rash. Chickenpox vaccine is the best way to prevent chickenpox. The chickenpox vaccine is very effective: about 8 to 9 of every 10 people who are vaccinated are completely protected from chickenpox. In addition, the vaccine almost always prevents against severe disease. If a vaccinated person does get chickenpox, it is usually a very mild case lasting only a few days and involving fewer skin lesions (usually less than 50), mild or no fever, and few other symptoms.

Terms and Definitions

Advisory Committee on Immunization Practices (ACIP)

The ACIP consists of 15 experts in fields associated with immunization who have been selected by the Secretary of the U. S. Department of Health and Human Services to provide advice and guidance to the Secretary, the Assistant Secretary for Health, and the Centers for Disease Control and Prevention on the most effective means to prevent vaccine-preventable diseases.

American Academy of Pediatrics (AAP)

The AAP and its member pediatricians dedicate their efforts and resources to the health, safety and well-being of infants, children, adolescents and young adults. The AAP has approximately 60,000 members in the United States, Canada and Latin America. Members include pediatricians, pediatric medical sub specialists and pediatric surgical specialists.

Confidence Interval (CI)

Confidence intervals are computed intervals with a given probability, e.g., 95%, that the true value of a variable is contained within the interval.

Healthy People 2010

Healthy People 2010 is a set of health objectives for the Nation to achieve over the first decade of the new century.

Vaccines for Children (VFC)

The VFC program provides immunizations for children who are uninsured, Medicaid eligible recipients, Native Americans, and Alaska Natives at their doctors' offices. VFC also helps children whose insurance does not cover vaccinations when they are vaccinated at participating federally-qualified health centers or rural health clinics.

Vaccine Adverse Event Reporting System (VAERS)

The Vaccine Adverse Event Reporting System is a cooperative program for vaccine safety of the Centers for Disease Control and Prevention and the Food and Drug

Administration. VAERS is a post-marketing safety surveillance program, collecting information about adverse events (possible side effects) that occur after the administration of US licensed vaccines.

New Hampshire Childcare Immunization Requirements

IMMUNIZATION MINIMUM DOSE REQUIREMENTS FOR CHILD CARE (2 MO. TO SCHOOL ENTRY) YEAR 2010/2011

*The following requirements are based on the
“Recommended Childhood and Adolescent Immunization Schedule, United States
2010”.*

- **DTaP** (Diphtheria, Tetanus and Pertussis vaccine):
4 or more doses – recommended at 2 months, 4 months, 6 months, 15-18 months
A booster dose is usually given at 4-6 years. Some children do not get DTaP vaccine. These children can get a vaccine called **DT**, which does not contain pertussis.
- **Hep B** (Hepatitis B vaccine):
3 doses – recommended at birth, 1-2 months, 6-18 months
- **IPV** (Polio):
3 or more doses – recommended at 2 months, 4 months, 6-18 months
A fourth dose is usually given at 4-6 years.
- **Hib** (*Haemophilus influenzae type b* vaccine):
4 doses – recommended at 2 months, 4 months, 6 months, 12-15 months
Several Hib vaccine brands are available. With one brand, the 6-month dose is not needed.
Hib is **not** required for children age 5 years and older.
- **MMR** (Measles, Mumps, and Rubella vaccine):
1 or 2 doses – first dose recommended at 12 – 15 months
A second dose is usually administered at 4-6 years.
- **VAR** (Varicella or chickenpox vaccine):
1 dose - recommended at 12 – 15 months
Confirming laboratory test is acceptable.
A second dose is usually administered at 4-6 years.

Vaccines that are recommended but not required for childcare

- **Hep A** (Hepatitis A vaccine):
2 doses – recommended at 12 months, booster 18 months
- **Influenza** (flu):
Recommended at 6 months and older, one dose annually (2 doses when it's the first year the child receives influenza vaccine)
- **PCV** (pneumococcal):
4 doses-routinely recommended at 2 months, 4 months, 6 months, 12-15 months
- **RV** (Rotavirus):

Rotateq- routinely recommended 3 doses: 2 months, 4 months, 6 months

OR

Rotarix-routinely recommended 2 doses - 2 months, 4 months

Brand Names for Vaccines

Diphtheria, Tetanus, acellular Pertussis, (DTaP/DT/DTP)

Infanrix®, Pediarix®, DT, Tetramune®, ActHIB®, Daptacel®, Pentacel®, Hiberix®,
TriHIBit®

Haemophilus influenzae type b (HIB)

ActHIB®, PedvaxHIB®, COMVAX®, HibTITER®, Pentacel®

Polio (IPV/OPV)

IPOL®, Pediarix®, Pentacel®

Measles, Mumps, Rubella, (MMR)

MMRII
ProQuad® (Combination of MMR and Varivax)

Hepatitis B (HepB)

ENGERIX B®, Pediarix®, RECOMBIVAX®, COMVAX®

Varicella (Chicken Pox, VAR)

Varivax®, ProQuad®, (Combination of MMR and Varivax)

PCV (Pneumococcal)

Pevnar®

Hepatitis A

Havrix®, Vaqta®

RV (Rotavirus)

Rotateq®, Rotarix®

New Hampshire School Immunization Requirements

IMMUNIZATION MINIMUM DOSE REQUIREMENTS FOR SCHOOL ENTRY



Nicholas A. Toumpas
Commissioner

José Thier Montero
Director

STATE OF NEW HAMPSHIRE
DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH SERVICES

29 HAZEN DRIVE, CONCORD, NH 03301-6504
603-271-4482 1-800-852-3345 Ext. 4482
Fax: 603-271-3850 TDD Access: 1-800-735-2964

IMMUNIZATION REQUIREMENTS SCHOOL YEAR 2010/2011

DTP/DT/DTaP/Td/Tdap	
< 7 Years of Age	<ul style="list-style-type: none"> • Four or five doses given at acceptable intervals are required for school entry with the fourth or the fifth dose given on or after the 4th birthday. See acceptable intervals below.
Acceptable intervals:	<ul style="list-style-type: none"> • Dose 1 shall have been administered at no less than 6 weeks of age. • Doses 2 and 3 shall be separated from the previous dose by a minimum of 4 weeks. • Dose 4 shall be separated by a minimum of 6 months from dose 3. • Dose 5 is recommended from 4 – 6 years of age and must be separated from dose 4 by 6 months.
≥ 7 Years of Age	<ul style="list-style-type: none"> • Five doses as described above or • Three or four doses with the last dose given on or after the 4th birthday.
Acceptable intervals	<ul style="list-style-type: none"> • As described above with the following exception: When giving the three-dose Td series, the second and third dose must be separated by six months. (Tdap is the preferred vaccine for one of these doses).
11 years of age or older and 5 years since last tetanus-toxoid containing vaccine	<ul style="list-style-type: none"> • One-time dose of a Tetanus, diphtheria, acellular pertussis (Tdap) vaccine, except if the child has a medical contraindication to pertussis vaccine in which case the child shall receive Tetanus diphtheria toxoid (Td) vaccine. * • If a child turns 11 years of age on or after the first day of school, they are required to have Tdap vaccine prior to the first day of the <i>next</i> school year.

* There may be students with documentation of receipt of Tdap at age 10 years. This is acceptable.

POLIO:

K - 12	<ul style="list-style-type: none"> • Three doses of an all IPV or all OPV schedule. The last dose must have been administered after the 4th birthday, or four valid doses of any combination of IPV and/or OPV, regardless of age at administration. • If a combined IPV/OPV schedule was used, 4 doses are always required to complete the primary series, even if the 3rd dose was administered after the 4th birthday.
Acceptable intervals:	<ul style="list-style-type: none"> • Dose 1 shall have been administered on or after age 6 weeks. • All subsequent doses shall be separated by a minimum of 4 weeks.

School Immunization Requirements, School Year 2010-2011
NH DHHS, Division of Public Health Services
NH Immunization Program
January 2010

page 1 of 4

School Year 2010-2011

MEASLES-MUMPS-RUBELLA:

K through 12th grade	<ul style="list-style-type: none"> • Two doses of measles-mumps-rubella containing vaccine given at acceptable intervals.
Acceptable intervals:	<ul style="list-style-type: none"> • Dose 1 on or after 12 months. • Dose 2 a minimum of 4 weeks after the first dose.

HEPATITIS B VACCINE:

Born on or after 1/1/93	<ul style="list-style-type: none"> • Three doses given at acceptable intervals.
Acceptable intervals:	<ul style="list-style-type: none"> • Doses 1 and 2 separated by at least 28 days. • Dose 3 shall be administered on or after age 24 weeks and be separated by a minimum of 16 weeks from the first dose and 8 weeks from the second dose.

VARICELLA (CHICKEN POX) VACCINE:

Kindergarten, 1 st grade, 2 nd grade AND 6 th grade, 7 th grade	<ul style="list-style-type: none"> • Two doses given at acceptable intervals. • Documentation of immunity by confirming laboratory test results is required for incoming Kindergarten and 1st grade students, if student has not received varicella vaccine. • History of disease as reported by parent or health care provider is acceptable for 2nd grade through 12th grade and should be documented in the student's record. *Report new suspected cases of varicella to: DHHS, Communicable Disease @ 271-4496.
3 rd grade through 5 th grade AND 8 th grade through 12 th grade	<ul style="list-style-type: none"> • One dose of varicella vaccine • Two doses, if first dose was administered > 13 years of age.
Acceptable intervals:	<ul style="list-style-type: none"> • Dose 1 administered on or after age 12 months. • For children aged <13 years of age, the recommended minimum interval between the first and second dose is 3 months. • For children aged ≥13 years, the recommended minimum interval between the first and second dose is 4 weeks.

For all minimum intervals and age requirements, a 4-day grace period is acceptable.

The vaccines and doses above are the minimum requirements for school attendance. Additional information can be found in the "Recommended Childhood and Adolescent Immunization Schedule, United States 2010" at the following website:

<http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm>

Questions should be directed to the New Hampshire Immunization Program at 1-800-852-3345 x4482 or 603-271-4482

**Requirements for Children with Special Needs
Immunization Requirements
Preschool Students 3-5 Years Old**

Please refer to the Immunization Requirements School Year 2010-2011
for acceptable intervals and age requirements

DTaP/DTP/DT

3-5 years	<ul style="list-style-type: none"> • Four doses - the third and fourth dose should be separated by at least 6 months.
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POLIO

3-5 years	<ul style="list-style-type: none"> • Three doses

MEASLES, MUMPS, and RUBELLA (MMR)

3-5 years	<ul style="list-style-type: none"> • One dose on or after age 12 months.
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HAEMOPHILUS INFLUENZAE TYPE B (HIB)

3-5 years	<ul style="list-style-type: none"> • One dose after 15 months of age or • Four dose series with the last dose being administered at \geq 12 months of age. • If the products PedVax HIB or Comvax have been used, 3 doses with one after 12 months of age is acceptable. • HIB is not required for children \geq 5 years of age.

HEPATITIS B VACCINE

3-5 years	<ul style="list-style-type: none"> • Three doses given at acceptable intervals.

VARICELLA (CHICKEN POX) VACCINE

3-5 years	<ul style="list-style-type: none"> • One dose administered on or after age 12 months. • Documentation of immunity by confirming laboratory test results is required for incoming kindergarten students if child has not received varicella vaccine. *Report new suspected cases of varicella to: DHHS, Communicable Disease @271-4496.
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The 4-day grace period for minimum intervals and ages applies to the above requirements.

***Brand Names for Vaccines:**

Diphtheria, Tetanus, acellular Pertussis, (DTaP/ DT/DTP):
Infanrix[®], Pediarix[®], DT, Tetramune[®], Daptacel[®], Pentacel[®]

Diphtheria, Tetanus, acellular Pertussis and Polio (DTaP-IPV)
Kinrix

Tetanus diphtheria, acellular pertussis (Tdap)
BOOSTRIX[®] (Manufacturer: GlaxoSmithKline. May 3, 2005: approved for persons 10 through 64 years of age)
ADACEL[®] (Manufacturer: Sanofi Pasteur. June 10, 2005: approved for persons 11 through 64 years of age)

Haemophilus Influenzae Type B, (HIB):
ActHIB[®], PedvaxHIB[®], COMVAX[®], Pentacel[®], Hiberix[®]

Hepatitis B (HepB):
ENGERIX B[®], Pediarix[®], RECOMBIVAX[®], or COMVAX[®]

Measles, Mumps, Rubella, (MMR):
MMRII

Measles, Mumps, Rubella and Varicella
ProQuad[®]

Polio, (IPV/OPV):
IPOL or Pediarix[®], Pentacel[®]

Varicella (Chicken Pox, VAR):
Varivax[®]

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