

**DEPARTMENT OF HEALTH AND HUMAN
SERVICES**

CENTERS FOR DISEASE CONTROL AND PREVENTION

**REPORT TO CONGRESS ON 317 IMMUNIZATION
PROGRAM**



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April 2007

Section 317 Immunization Program Appropriations Report Committee Executive Summary

The FY 2007 House and Senate Appropriations Committee Reports expressed concerns about the rising cost of newly introduced vaccines and recommendations, and questioned the adequacy of the public sector to provide vaccines to individuals who are not eligible for the VFC Program.

This report represents the professional judgment of the Centers for Disease Control and Prevention on the size and scope of the Section 317 Immunization Program, and is provided without the constraints of the competing priorities that the agency, the President, and their advisors must consider as budget submissions to the Congress are developed.

Part I: How much funding would be needed in Fiscal Year 2008 to cover the same relative proportion of children, adolescents and adults under the Section 317 program as was provided in previous years.

The Section 317 program is a discretionary federal grant program that can provide any ACIP recommended vaccine to persons of any age; however, most funding is used to vaccinate children in health department clinics. It was cited in the 2007 Senate Appropriation Committee Report that “In 1999, prior to the introduction of PCV vaccine, funding allowed 747,000 children to receive the full immunization schedule. In 2006, the 317 program was only able to fully vaccinate an estimated 280,000 children” due to the rising cost of vaccination.

In developing the estimates included in this report, CDC defined who should be served through the Section 317 program as individuals who are not covered for vaccines under a public or private vaccine financing program or insurance plan. CDC assumed a policy of restricting Section 317 vaccine to 4 groups: (1) underinsured children served at health department clinics, (2) children with access and enrollment barriers served at health department clinics, (3) uninsured adults with income < 200% of the federal poverty level, and (4) adults served in high risk, public sector settings such as STD clinics for Hepatitis B vaccine. The analyses were restricted to ACIP routinely recommended vaccines. Vaccine costs for the targeted groups are estimated at approximately \$456.4 million annually.

Part II: Information on the cost of including each new vaccine recommended for children and adolescents since 1999, and annual data on state coverage rates.

Since 2000, new routine recommendations for children and adolescents have been made for pneumococcal conjugate vaccine (PCV), influenza, Hepatitis A, a tetanus-diphtheria-acellular pertussis booster (Tdap), meningococcal conjugate vaccine (MCV), rotavirus, and a second dose of varicella vaccine. Additionally, human papillomavirus vaccine (HPV) has been recommended for females. In 2008, it is estimated that it will cost \$936.05 to fully vaccinate a male, and \$1,240.28 to fully vaccinate a female, as HPV vaccine is only currently recommended for females. The cost estimates for 2008 are based off of the CDC pediatric and adolescent vaccine contracts valid from April 2006 to April 2007. 78% of the cost to vaccinate a female and 71% of the cost to vaccinate a male are related to new or expanded recommendations. Vaccination coverage levels are available through the National Immunization Survey (NIS) for recommendations that existed before 2000 and for: PCV, influenza, and Hepatitis A vaccines. Other vaccines are too new to be accurately measured at this time in the NIS. Addendums to the report provide this information.

Part III: The report should additionally address the barriers and time lag related to the implementation of new vaccines, including data on the number of two-tiered states who are unable to offer all recommended vaccines to all children due to insufficient funding.

Key barriers to the implementation of new vaccines are: vaccine financing and supply, as well as public and provider education and outreach. With the rising cost of new vaccines and recommendations, two-tiered financing systems have emerged in many states. These states have made policy decisions to make only selected vaccines available at public health clinics to individuals not covered by either VFC or private insurance. This has a negative impact on immunization coverage levels, creates an inconsistent application of national recommendations, and contributes to increasingly fragmented care for individuals and families.

Part IV: The report should also include 5 year historical data on the section 317 operations infrastructure funding for childhood, adolescent, and adult immunization programs and present information on the ongoing and emerging needs to support provider and public education on new vaccines, investigate disease outbreaks, identify and address barriers to immunization and other activities relative to the current funding level.

It takes more than vaccine to fully vaccinate a population. Immunization infrastructure encompasses the direct labor; administration; supplies; facilities and equipment; surveillance; quality assurance and training; program development and implementation and overhead costs related to each state's immunization program. Grantees combine both section 317 and VFC operations funding streams to effectively run a single immunization program which is supported by program management and surveillance in CDC's immunization prevention budget line. Between 2000 and 2006 total appropriated operations funding ranged from \$245 to \$355 million, and the immunization programs delivered between 48 million and 58 million individual doses from the Section 317 and VFC programs for a ratio of approximately \$6.79 per dose to direct a vaccine to the end user. State immunization infrastructure programs have increased significantly in complexity and scope, especially in regard to adult and adolescent vaccinations, and require increased financial and administrative support to strengthen immunization capacity and reduce disparities in immunization coverage rates. Today's challenges include extending the success of the childhood immunization program to adolescents and adults by developing complementary education, delivery, tracking, and surveillance systems. A comprehensive adult immunization program would require approximately 5.1 million doses annually. Once fully developed it is estimated that the national immunization program will deliver annually nearly 13.5 million doses of adolescent vaccines purchased through both Section 317 and VFC.

Part V: Finally, the report should include 10-year historical data on the percentage of childhood, adolescent, and adult immunizations covered by funding source.

The VFC program has historically purchased approximately 40% of all childhood and adolescent vaccines nationally. The proportion of Section 317 and state purchases has declined. Section 317 purchases have declined from 14% (1995-1999) to 8.8% (2000-2005). Although state purchases have increased in absolute amount, they have declined in relative amount from 8% (1995-1999) to 6% (2000-2005). Section 317 and state purchases of adult vaccines have ranged from 1.41% to 7.79% from 1997 to 2005, and average 3.6%. Detailed tables are included in the full report.

House and Senate Appropriations Committee Report

25 April 2007 DRAFT

The Committee directs CDC to provide a report by February 1, 2007, that provides information on how much funding would be needed in fiscal year 2008 to cover the same relative proportion of eligible children, adolescents, and adults under the Section 317 program, as was provided in previous years. The report should include information on the cost of adding each new vaccine recommended for routine vaccination of children and adolescents by the Advisory Committee on Immunization Practices since 1999, and annual data on state coverage rates for new vaccines. The report should address the barriers and time lag related to implementation of new vaccines, including data on two-tiered states that are unable to offer all recommended vaccines to all children. The report should also include five-year historical data on Section 317 operations infrastructure funding for childhood, adolescent, and adult immunization programs. Include information on the ongoing and emerging needs to support provider and public education on new vaccines, investigate disease outbreaks, identify and address barriers to immunization, and other activities relative to the current funding level. Finally, the report should include ten-year historical data on the percentage of childhood, adolescent and adult immunization covered by funding source.

Introduction:

The mission of the Centers for Disease Control and Prevention's (CDC) immunization program is to prevent disease, disability, and death in children, adolescents, and adults through safe and effective vaccination. Appropriate administration of safe and effective vaccines is one of the most successful and cost-effective public health tools for preventing disease, disability, death, and reducing economic costs resulting from vaccine-preventable diseases. Many life-threatening and debilitating infectious diseases, including diphtheria, measles, *Haemophilus influenzae* type B (Hib), and pertussis were once common in the U.S. Now, widespread use of vaccines, particularly among children, have resulted in continuing low-levels or near elimination of these diseases in the US.

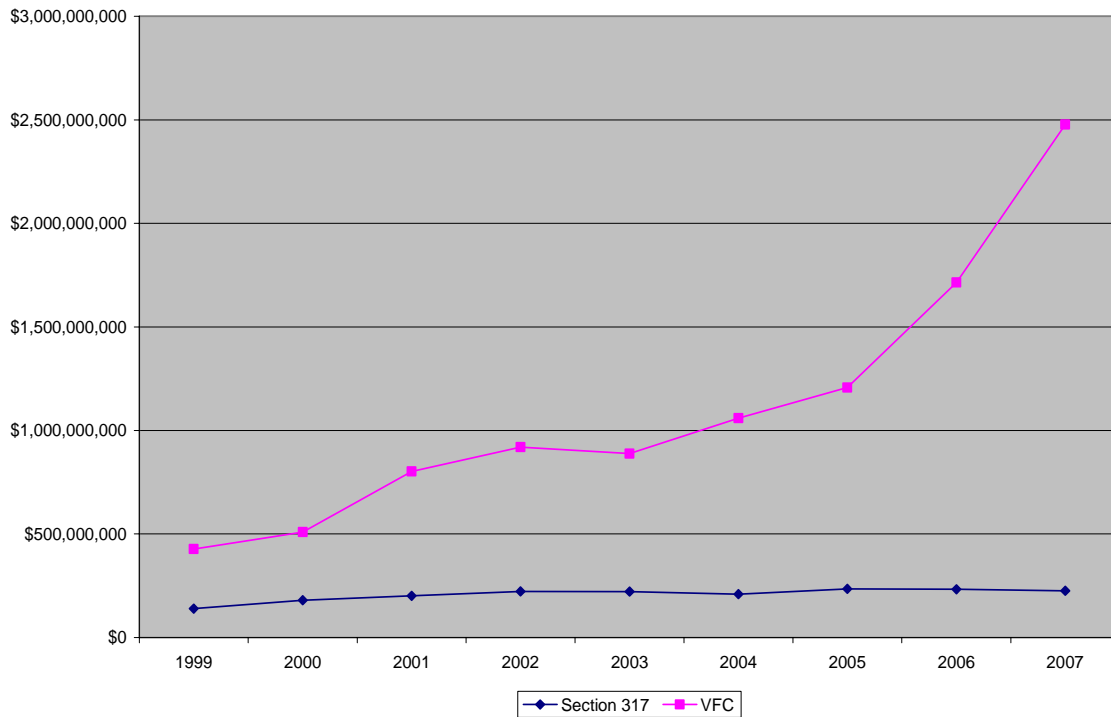
Over the past two decades, the delivery of immunizations has changed significantly; the vast majority of childhood vaccinations are now delivered in the private sector. This shift was supported and strengthened by the creation of the Vaccines For Children (VFC) program in 1994, which allowed the re-integration of immunizations and primary care by allowing both public and private providers to participate in the program and receive vaccines for eligible children at no cost. Other sources of vaccine financing include the State Children's Health Insurance Program (SCHIP), as well as other public programs that operate at the state or local level. Private financing includes employment-based health plans and out of pocket costs paid by families. Vaccination of uninsured and underinsured populations is the gap in immunization financing coverage that is a focus of the Section 317 Immunization (Section 317) program and this report.

CDC administers two distinct and different immunization grant programs: the Vaccines for Children (VFC) program and the Section 317 program. The VFC program serves children and adolescents (0 through 18 years of age) without insurance, those eligible for Medicaid, American Indian/Alaska Native children, and children who are underinsured and receive care through Federally Qualified Health Centers (FQHCs) and Rural Health Clinics (RHCs). Through the VFC program, federally purchased vaccines are distributed to public health clinics and enrolled private providers, enabling vaccination of all eligible children. As a Medicaid entitlement program, the VFC program removes cost as a barrier to vaccinating children in the US, and provides routinely recommended vaccines without cost. When new vaccines are recommended

by the Advisory Committee on Immunization Practices (ACIP) and included in the VFC program, federal funds are provided for the purchase of vaccines for all eligible children.

The Section 317 program is a discretionary federal grant program to 64 state and local grantees, which provides a safety net to provide vaccines to underinsured children and adolescents not served by the VFC program. As funding permits, the program provides vaccines to uninsured and underinsured adults. The 64 grantees are: the 50 States; the cities of New York, Philadelphia, Chicago, Houston, and San Antonio; the District of Columbia; Puerto Rico; the U.S. Virgin Islands; Guam; American Samoa; the Northern Mariana Islands; Palau; Micronesia; and the Marshall Islands. The Section 317 program and state vaccine purchase and delivery programs address residual needs created by some gaps and uncertainties in both public and private insurance needs (IOM 2000, p.72). The Section 317 program provides vaccines for children, adolescents, and adults who primarily present at local health departments for immunization services but are not eligible for the VFC program. Grantees prioritize their Section 317 funds to meet the needs of their priority populations using public or private vaccination settings. These populations are ineligible for VFC and are predominately underinsured (i.e., either their insurance does not cover immunization, or they are insured but cannot afford high deductibles). Funds are provided through the annual federal appropriation and typically neither increase when a new vaccine is introduced nor when the recommended vaccine schedule is changed. Under the Section 317 program, states and grantees have broad decision-making ability as to which ages, life stages, high-risk groups, or diseases will be targeted. However, historically, the vast majority of funds are devoted to vaccinating children. Vaccines are provided to adolescents and adults as funding allows, but to a much lesser extent than children. In 2005, 4.5% of Section 317 funding purchased adult vaccines and 8% purchased adolescent vaccines.

Section 317 and VFC Vaccine Purchase Funding



Vaccine Funding – Section 317 vis-à-vis The Vaccines for Children Program: Vaccine funding from Section 317 appropriation and from the Vaccines for Children Program from 1999 to 2007.

The existing national immunization program has performed well in achieving high levels of immunization for children. But new challenges and stressors to the federal immunization program have emerged, including a growing number of recommended vaccines, expanded recommendations of vaccines, higher prices associated with new vaccines, and persistently low vaccination coverage levels in selected populations, such as low levels of vaccination for adults with chronic illness (IOM 2004).

Since 2000, there have been a number of new vaccines developed, licensed, and recommended for routine use for children, adolescents, and/or adults, including:

- Pneumococcal conjugate vaccine (PCV) was recommended in 2000 for infants to help prevent serious invasive pneumococcal disease such as meningitis and blood infections as well as some cases of pneumonia, deafness, and ear infections.
- Meningococcal conjugate vaccine (MCV) to prevent meningococcal disease was recommended in 2005 for individuals 11-12 years of age, at high school entry, for college freshmen in dormitories, and other populations at high-risk of meningococcal disease.
- Universal recommendation of the Hepatitis A vaccine in 2005 for the prevention of Hepatitis A. Prior recommendations were based on geography and risk groups.
- Replacement of the Tetanus and diphtheria (Td) booster with the more comprehensive Tetanus, diphtheria, and pertussis vaccine (Tdap) to reduce the number of cases of pertussis (whooping cough) in infants, adolescents, and adults. Tdap was recommended for adolescents in 2005.
- In 2006, a vaccine to protect against rotavirus, a viral infection that can cause severe diarrhea, vomiting, fever, and dehydration in infants and young children was recommended for infants.
- Expansion of the routine recommendation for individuals of annual influenza vaccination. In 2004, all children 6 to 23 months of age were recommended for vaccination. This was expanded in 2006 to include children 24 to 59 months of age.
- In 2006, routine recommendation of vaccination of girls 11 to 12 years of age (and an extensive catch-up campaign to include all females 13 to 26 years of age) against human papillomavirus (HPV), the most common sexually transmitted infection in the US, and the cause of most cervical cancers.
- In 2006, recommendation of a second dose of varicella (chickenpox) vaccine to offer more protection to children, adolescents, and adults.
- In 2006, recommendation of herpes zoster vaccine for individuals sixty years of age and above to protect against herpes zoster (Shingles) and its severe complications.

In order to address the increasing cost to vaccinate children, adolescents, and adults, many states are putting into effect policies which result in two-tiered systems of service delivery. Under a two-tiered system, some children who must rely on the public health safety net, specifically those who are underinsured and seek vaccination services from public health clinics may receive inconsistent access to vaccines in these public settings. Whereas these children and adolescents may be denied vaccination, in contrast those who have insurance, are VFC eligible, or can be referred to an FQHC or RHC have better access to vaccines. There is a rising concern that two-tiered systems may become more prevalent as more vaccines are recommended. Two-tiered

vaccine financing decisions are made on a state-by-state basis further placing national immunization coverage recommendations at risk for inconsistent implementation and impact across the nation.

Part I: The Committee directs CDC to provide a report by February 1, 2007, that provides information on how much funding would be needed in fiscal year 2008 to cover the same relative proportion of eligible children, adolescents and adults under the Section 317 program as was provided in previous years.

Background:

It has been cited in the 2007 Senate Committee Report that “in 1999, prior to the introduction of pneumococcal conjugate vaccine (PCV), funding allowed 747,000 children to receive the full immunization schedule. In 2006, the 317 program was only able to fully vaccinate an estimated 280,000 children due to the rising cost of vaccines and the increased number of vaccinations in the routine childhood and adolescent schedule.

Fully vaccinating the 747,000 children served in 1999 with 2008 estimated vaccine prices would cost in excess of \$812 million. This estimate is too high because it does not address the changing and more efficient nature of the national immunization program in the last eight years. These changes include the maturation of the VFC program, increases in state vaccine funding, efforts by states to assure that private insurance plans cover new childhood vaccines, and broader outreach efforts for underinsured children entitled to VFC through Federally Qualified Health Centers (FQHC). Therefore in developing the estimates included in this report, CDC defined who should be served through the Section 317 program as individuals who are not covered for vaccines under a public or private vaccine financing program or insurance plan. The analyses took the approach of extending the current childhood program to include newly recommended vaccines and new populations not reached by immunization programs using VFC or Medicare funding. We assumed a policy that restricts the use of Section 317 vaccine to 4 groups: (1) underinsured children served at health department clinics, (2) children with access and enrollment barriers served at health department clinics, (3) uninsured adults with income < 200% of the federal poverty level, and (4) adults served in high risk, public sector settings such as STD clinics for Hepatitis B vaccine. This estimate is approximately 456.4 million in 2008.

The analyses also assumed a policy that restricts the vaccines to those recommended by the Advisory Committee for Immunization Practices (ACIP). For children, it was assumed additional funding was needed to cover the cost of vaccines recommended since 2000, beginning with pneumococcal conjugate vaccine. For adults, coverage was assumed for: influenza, Tdap, Pneumococcal Polysaccharide Vaccine (PPV), Hepatitis B, and HPV vaccines. These policy restrictions allow for the creation of a comprehensive immunization program to address individuals falling within the gap between public and private financing schemes.

Methods:

Pediatric and Adolescent Vaccine Routine Purchase: Section 317 Program:

<u>Underinsured Children:</u>	<u>\$87.1 million</u>
<u>Access and Enrollment Barriers:</u>	<u>\$130.6 million</u>
<u>HPV Vaccine catch-up</u>	<u>\$42.6 million</u>
<u>Other Vaccines and Catch-up</u>	<u>\$26.0 million</u>

Total Pediatric and Adolescent Vaccine Purchase Estimate: \$286.3 million

Underinsured Children Served in State and Local Health Department Clinics: (\$87.1 million)

The Vaccines for Children (VFC) program allows for the complete vaccination of uninsured, American Indian/Alaska Native children, and Medicaid-eligible children in more than 44,500 sites across the country. These sites include more than 32,500 private provider offices, as well as nearly 12,000 public health clinic sites. Underinsured children, whose insurance does not cover the cost of vaccines, are limited to receiving VFC vaccines through the 4,000 Federally Qualified Health Centers (FQHCs) and Rural Health Clinics (RHCs).

In 2001, the National Immunization Survey (NIS) conducted an additional survey on the insurance status of preschool children served, and in what type of facility individuals received vaccination. Based on this survey, it is estimated that 80,000 children are underinsured and served in state and local health department clinics annually. Data from these surveys represent the most recent national estimate of underinsured children served in state and local health departments. The NIS in 2006-2007 is reintroducing the insurance module in order to provide updated estimates.

As the NIS surveys approximately one cohort of children 19 to 35 months of age, it can be assumed that 80,000 children per cohort are underinsured and served in health department clinics annually. In FY 2008, it is estimated that it will cost \$936.05 per child to fully vaccinate one child through age 18 (not including HPV vaccination). The 2008 cost estimates are based off of the CDC pediatric and adolescent vaccine contract prices valid from April 2006 to April 2007. A portion of this cost falls to each age cohort adding up to the total. Therefore, it could be estimated that approximately 80,000 children and adolescents receive the full series of vaccines annually. In FY 2008, it is estimated that it will cost \$936.05 per child to fully vaccinate these 80,000 children at a total cost of \$74,884,000.

Additionally, approximately half of these individuals are females for whom the human papillomavirus (HPV) vaccine is recommended. This three dose series of HPV vaccine will cost \$304.23 in FY 2008 at a cost of \$12,169,200 for the 40,000 females served in these clinics. The total cost for vaccinating these 80,000 underinsured children served in health department clinics is \$87,053,200 million. Though current estimates for HPV are just for females, there is a potential for new products or the expanded licensing for existing products to include males. This would double the population estimates for the HPV vaccine.

Vaccine Purchase for Access/Enrollment Barriers: (\$130.6 million):

In addition to underinsured children, the Section 317 program also provides vaccines to individuals who present at Section 317 immunization venues who may face access/enrollment barriers to immunization. A public health clinic attempts to not turn away those presenting for vaccination, as turning away individuals presents a missed opportunity for vaccination, a proven barrier to improving and maintaining immunization coverage rates. Examples of individuals being served through the Section 317 program who have these barriers to immunization include, but are not limited to:

- Families with private insurance who lack access to vaccines because of cultural barriers, geographic barriers, or difficulties in scheduling appointments and establishing routine medical care.
- School-aged children who have not received vaccines for school entry and who need swift access to immunization services. (IOM 2000, p.73)

It is estimated that approximately 3% of the national birth cohort of four million individuals is served through the Section 317 program and are presenting at venues with Section 317 vaccines due to access and enrollment barriers. Three percent is estimated to be 120,000 per cohort. In FY 2008, it is estimated that it will cost \$936.05 per child to fully vaccinate one child through age 18 (not including HPV vaccination). The 2008 cost estimates are based off of the CDC pediatric

and adolescent vaccine contract prices valid from April 2006 to April 2007. A portion of this cost falls to each age cohort adding up to the total. Therefore, it could be estimated that approximately 120,000 children and adolescents receive the full series of vaccines annually. In FY 2008, it is estimated that it will cost \$936.05 per child to fully vaccinate these 120,000 children and adolescents at a total cost of \$112,326,000.

Additionally, approximately half of these individuals are females for whom HPV is recommended. This three dose series will cost \$304.23 in FY 2008 at a cost of \$18,253,800 for the 60,000 females served in these clinics. Therefore the total cost to vaccinate these 120,000 children and adolescents presenting in Section 317 venues for vaccination for enrollment/access barriers is \$130,579,800.

Human Papillomavirus Catch-up (\$42.6 million):

The Advisory Committee on Immunization Practices voted to recommend routine vaccination with three doses of quadrivalent HPV vaccine for females 11-12 years of age on 29 June 2006. Additionally, catch-up vaccination is recommended for females 13-26 years of age who have not been vaccinated previously or who have not completed the full vaccine series. For purposes of this report, CDC will focus on vaccinating eligible individuals up to 18 years of age. If individuals are routinely vaccinated at 11 years of age, that leaves 7 remaining cohorts of adolescents to be included in catch-up vaccination (through age 18). For both underinsured individuals and individuals presenting in Section 317 Immunization venues with access/enrollment barriers, that would be 5% of each annual birth cohort or 200,000 individuals. If it is assumed that half of these individuals are females that would be 100,000 individuals per cohort. It is estimated that 20% of each cohort will be vaccinated annually through catch-up campaigns. Although CDC would aim to reach all individuals within five years, many of the individuals in older cohorts would be over 18 before the catch-up campaign was completed and would no longer be eligible for this initiative. Assuming a 20% uptake in the cohorts 12 through 18 in 2008, this would be 140,000 individuals vaccinated in 2008, at a cost of \$304.23 for a three dose series of HPV, for a total cost of \$42,592,200.

Other Pediatric and Adolescent Catch-up and Vaccination (\$26.0 million):

Vaccine Catch-Up:

ACIP changes in the recommended vaccine schedule often include catch-up for some vaccines for individuals not previously vaccinated. In July 2006, the ACIP recommended a second dose of varicella for children to be administered with the second MMR dose at 4-6 years of age. Children, adolescents, and adults who have not received a second dose of varicella would require catch-up vaccination. Changes in the meningococcal conjugate vaccine (MCV) recommendations may also require some children and adolescents to receive a catch-up vaccination.

Other Vaccines:

ACIP also makes recommendations for the vaccination of individuals with certain vaccines that may not be considered routine. States have had the option to use their vaccine funds for the purchase of vaccines for which there is not a federal contract and for which vaccination is not routine. This includes but is not limited to: Rabies, following suspected animal bites; DT for individuals contraindicated for vaccine containing pertussis; and Hepatitis B immune globulin (HBIG) for babies born to Hepatitis B positive mothers.

The Section 317 program has historically provided funding for both of these activities. It is estimated that 10% of the pediatric and adolescent vaccine purchase (\$26,022,250) would be sufficient for the purchase of vaccines for catch-up and the purchase of non-routine, ACIP recommended vaccines.

Adult Vaccine Purchase: Section 317 Program:

<u>Influenza:</u>	<u>\$26.7 million</u>
<u>Tdap:</u>	<u>\$24.1 million</u>
<u>PPV</u>	<u>\$1.4 million</u>
<u>Hepatitis B</u>	<u>\$29.7 million</u>
<u>HPV:</u>	<u>\$88.3 million</u>

Total Adult Vaccine Purchase Estimate: \$170.2 million

The following estimates are provided for adults who are uninsured and falling under 200% of the federal poverty level (an annual income of \$20,320 for one unrelated individual under the age of 65). It is not possible to estimate the adult population that is underinsured with respect to vaccination, and therefore that population is not included in this estimate. Data from the National Health Interview Survey provided information about population by age and insurance status as well as estimates of people considered high-risk for influenza, pneumococcal disease, and hepatitis B. These population estimates were adjusted for poverty according to data from the US Census. The U.S. Census provided additional data to project population by age to 2007, and it is assumed that the population living beneath 200% of poverty level will be maintained at the same ratio in 2007. 2008 vaccine cost estimates for vaccines are based off of the CDC adult vaccine purchase contracts valid from June 2006 to June 2007, unless noted otherwise. Estimates are presented by vaccine, represent the entire vaccine need, and do not take into account pre-existing funds.

Influenza Vaccine (\$26.7 million): There are approximately 2,359,735 individuals in the US who are 19 to 64 years of age, uninsured, living at or under 200% of the poverty line, and are currently recommended by the ACIP for influenza vaccination. An additional 1,179,868 individuals at or under 200% of the poverty line, uninsured, and 19 to 64 are household contacts of high-risk individuals for whom influenza vaccine is annually recommended (50% of target population). This results in a total target population of 3,539,603 individuals. It is estimated that a CDC-purchased dose of adult influenza vaccine in 2008 will cost approximately \$12.57 based upon the cost of influenza vaccine on the CDC contracts for the 2006-2007 influenza season. Of the total targeted population of 3,539,603, an estimated uptake of 60% is assumed consistent with Healthy People 2010 goals of annual influenza vaccination for individuals 19 to 64 years of age who are considered to be high-risk. This results in an annual target of 2,123,762 individuals, vaccinated at a cost of \$12.57 per dose, for a total annual cost of \$26,695,688.

Tdap (tetanus-diphtheria-acellular pertussis) Vaccine (\$24.1 million):

Tdap vaccine was licensed in 2005 and recommended by the ACIP for adults 19 through 64 years of age. Providers should substitute Tdap for one booster dose of Td (tetanus and diphtheria booster). This vaccine provides protection against tetanus, diphtheria, and pertussis (whooping cough). As this vaccine is recommended for all adults, it is not necessary to quantify a population of high risk. It is estimated that approximately 7,462,014 individuals are 19 to 64 years of age, uninsured, and living at or under 200% of the poverty line. It is estimated that a vaccination campaign could reach 10% of individuals per year, or 746,201 people. Estimated federal contract price for Tdap vaccine in FY 2008 is \$32.33. The cost to vaccinate 746,201 individuals at \$32.33 annually is \$24,124,678.

Pneumococcal Polysaccharide Vaccine (PPV) (\$1.4 million):

PPV is routinely recommended by the ACIP for certain high-risk individuals to protect against 23 types of pneumococcal bacteria and their complications. It is estimated that 887,246 individuals 19 to 64 years of age are considered high-risk for pneumococcal vaccination, are uninsured, and

are living at 200% of the poverty level or below. Assuming a 10% uptake in vaccination, this would result in 88,725 individuals being vaccinated annually. It is estimated that the federal contract price for PPV vaccine in FY 2008 will be \$15.36. Vaccinating 88,725 individuals at \$15.36 for the single dose vaccine would total \$1,362,816.

Hepatitis B Vaccine (\$29.7 million):

Hepatitis B can cause short term illnesses as well as long term or chronic illnesses such as cirrhosis and liver cancer. In November 2006, CDC and ACIP recommended universal Hepatitis B vaccination in health care settings and settings where healthcare is provided (e.g., STD/HIV prevention and treatment clinics, drug treatment centers, correctional facilities) where a high proportion of those served are at risk for Hepatitis B virus infection. Approximately 2,763,965 individuals are seen annually in STD clinics, or HIV/AIDS counseling and testing facilities. As some of these individuals may be seen in both venues, this estimate is reduced to 2,487,569 unduplicated individuals. An additional 216,000 individuals are seen in Methadone or other drug treatment facilities. Additionally there are approximately 1.8 million individuals in prisons in the U.S. Excluding the estimated 18% of prison populations with Hepatitis B infection, approximately 1,476,000 individuals in prison are eligible for vaccination (CDC MMWR 5 August 2001 p. 681-683). This is a total high-risk venue based population of 4,179,569 individuals. Assuming a 10% vaccine uptake and a federal estimated vaccine price of \$23.70 per dose in FY 2008 for a three dose series, the total cost will be \$29,716,743 annually for Hepatitis B vaccine.

Human Papillomavirus Vaccine (HPV) (For females 19 to 26 years of age) (\$88.3 million):

Licensed and recommended by the ACIP in 2006, the HPV vaccine is recommended for females at 11-12 years of age with a recommended catch-up of females 13 to 26 years of age. It is estimated that approximately 1,450,512 women in the U.S. are 19 to 26 years of age, uninsured, and living at or under 200% of the poverty line. Due to recent news and media coverage involving this disease and vaccine, vaccine uptake is estimated to be higher than other vaccines at 20% per year, or 290,102 individuals vaccinated annually. The estimated federal contract price for the three dose series of this vaccine in 2008 is \$304.23, for a total cost of \$88,257,731 per year. Though current estimates for HPV are just for females, there is a potential for new products or the expanded licensing for existing products to include males. This would double the population estimates for the HPV vaccine.

Herpes Zoster Vaccine (Shingles):

The herpes zoster (Shingles) vaccine was recommended for routine immunization of adults age 60 and above by the ACIP to prevent shingles and its complications. A federal contract for the purchase of herpes zoster vaccine was negotiated at a price of \$107.93 per dose. CDC is currently developing estimates of population age 60 and up who are uninsured and living under 200% of the federal poverty level. As individuals qualify for Medicare at age 65, only individuals 60-64 years of age would be included in this estimate. Therefore, this estimate will most likely be small and not have a major impact in the overall estimates developed.

Section 317 Vaccine Purchase Estimates			
Estimated Cost in FY 2008			
Adult Purchase Estimates			
	Individuals, uninsured at 200% Poverty	Estimated Uptake	Cost
Influenza High Risk	3,539,603	60% - 2,123,762	\$26,695,688
Tdap	7,462,014	10% - 746,201	\$24,124,678
PPV High Risk	887,246	10% 88,725	\$1,362,816
Hepatitis B Venue Based Program	4,179,569	10% Uptake = 417,957 at 3 Doses = 1,253,871	\$29,716,743
HPV Recommended 20% Uptake	1,450,512	20% Uptake = 290,102 at 3 Doses = 871,307	\$88,257,731
Subtotal Adult			\$170,157,657
Pediatric Purchase Estimates			
<u>80,000 Underinsured Health Department Clinics</u>			
	80,000	\$936.05 Routine Costs	\$74,884,000
	40,000	(40,000 *HPV at \$304.23)	\$12,169,200
Total			\$87,053,200
<u>Non Financial Barriers</u>			
3% Annual Birth Cohort			
	120,000	\$936.05 Routine Costs	\$112,326,000
	60,000	60,000*HPV \$304.23	\$18,253,800
Total			\$130,579,800
HPV Catch-up			\$42,592,200
Other Vaccines and Catch-up			\$26,022,520
Subtotal Pediatric			\$286,247,720
Total Estimate			\$456,405,377

Conclusion:

The amount above represents a final, or steady, state estimate of vaccine funding that addresses the question posed by Congress. Experience with the Section 317 program in the mid-1990s showed that rapid increases in funding led to carryover from one fiscal year to the next. Grantees would struggle to implement increases of this magnitude in one fiscal year. Projections are made based upon estimated vaccine costs for 2008 based upon the price of vaccines on CDC contracts

in March 2007. The cost of vaccination may increase due to price increases, or decrease due to competition for some single source vaccines.

Part II: The report should include information on the cost of adding each new vaccine recommended for routine vaccination of children and adolescents by the Advisory Committee on Immunization Practices since 1999, and annual data on state coverage rates for new vaccines.

In 1999, the cost to fully immunize a child with the recommended routine vaccinations under the federal contract price was \$186.29. In 2008, the cost is estimated to be \$936.05 to vaccinate male children and adolescents and \$1,240.28 to vaccinate female children and adolescents (includes the human papillomavirus vaccine). In 1999, six vaccines were recommended for routine use (DTaP, Hib, Polio, MMR, Hepatitis B, and one dose of Varicella). The cost for these six vaccines was \$186.29 in 1999 and is estimated to be \$269.47 in FY 2008. Therefore, the increase in the cost to vaccinate a child is due mainly to the introduction of new vaccines and the expansion of some vaccine recommendations. For example, hepatitis A was formerly recommended for children in certain states and high risk groups. In 2005, that recommendation was extended to all children. Influenza was initially recommended for children in certain high risk groups. In 2004, all children 6 to 23 months of age were recommended for vaccination. In 2006, this recommendation for annual influenza vaccination was expanded to all children 24 to 59 months of age. In 2006, a second dose of varicella was recommended for routine vaccination to provide additional protection against this disease (costs in the table below represent just the additional changes). The table below outlines vaccines introduced since 1999, the year of introduction, the cost at introduction, and the current cost. It should be noted that of the \$1,240.28 necessary to vaccinate one female, 78% is from the introduction or expansion of immunization recommendations since 1999. For males, approximately 71% of the increase in the cost to vaccinate is from the introduction or expansion of immunization recommendations since 1999.

Combination vaccines merge into a single product separate antigens that prevent different diseases or that protect against multiple strains of infectious agents causing the same disease. Thus, they reduce the number of injections required to prevent some diseases (CDC MMWR 14 May 1999 p.1). The ACIP has recommended the use of combination vaccines in order to minimize the number of injections children receive during a single visit. The estimates below do not include the use of combination vaccines, which would raise the overall cost to vaccinate a child.

Vaccination	Year of Introduction	Cost at Introduction	2008 Estimated Cost
Pneumococcal Conjugate Vaccine (4 Doses)	2000	\$177.00	\$241.40
Influenza (6 Doses)	2004 (6 to 23 months – 3 Doses) 2006 (24 to 59 months – 6 Doses)	\$27.00 (3 Doses)	\$72.54 (6 Doses)
Hepatitis A (2 Doses)	2005	\$24.26	\$25.34
Tdap(Tetanus Toxoid, reduced diphtheria toxoid and acellular pertussis (1 Dose)	2005	\$29.55	\$32.13
Meningococcal Conjugate Vaccine (MCV) (1 Dose)	2005	\$68.00	\$72.07
Rotavirus (3 doses)	2006	\$156.00	\$163.47
Second Dose Varicella	2006	\$56.90	\$59.63
Human Papilloma Virus Vaccine (HPV) (3 doses) {Females Only}	2006	\$288	\$304.23
Total 2008 Cost of Recommendations 2000-2006			\$970.81
2008 Cost of Recommendations made before 2000			\$269.47
Total Cost to Vaccinate One Child/Adolescent (male) (2008)			\$936.05
Total Cost to Vaccinate One Child/Adolescent (female) (2008)			\$1,240.28

State Coverage:

The National Immunization Survey (NIS) provides vaccination coverage estimates among children 19 to 35 months of age for each of the fifty states, the District of Columbia, and selected urban areas. To collect vaccination data for age-eligible children, NIS uses a quarterly random-digit dialed sample of telephone numbers for each survey area. NIS methodology is weighted to represent the entire population of children aged 19 to 35 months. Following parental recall during the household interview, information is verified by provider record-check.

Pneumococcal Conjugate Vaccine (PCV):

The 2005 NIS data indicates the achievement of greater than 53% coverage for the full series of PCV (four or more doses) and more than 82% coverage for three doses. Children measured in the 2005 NIS survey cohort were born between February 2002 and July 2004. During this time there was a shortage of PCV vaccine, and there was a recommendation to defer the fourth dose and at times the third and fourth dose of PCV vaccine.

For State by State Coverage Data for PCV Please See Page 25.

Influenza:

Influenza vaccination was first encouraged annually for children 6 to 23 months of age in 2002. For the 2004-2005 influenza season, ACIP strengthened its encouragement to a full recommendation. In 2006, this recommendation was expanded to include annual vaccination of children 24 to 59 months of age. The 2005 National Immunization Survey (NIS), which includes children born from February 2002 to July 2004, revealed that 33.4% of children 6 to 23 months of

age received at least one dose of influenza vaccination. However, only 17.8% of children in this age group were considered to be fully vaccinated (i.e. received two doses if two doses were required and one dose if one dose was required based upon prior vaccination history). Additionally, the 2004-2005 influenza season was marked by a shortfall of influenza vaccine resulting from one vaccine manufacturer's inability to provide vaccine for distribution in the U.S. For State by State Coverage Data For Influenza Please See Page 27.

Hepatitis A:

In 1996, the ACIP recommended hepatitis A vaccination of children 24 months of age and older in populations with the highest incidence of Hepatitis A (e.g. American Indian/Alaska Natives, Asian/Pacific Islanders, and selected Hispanic and religious communities). In the last few years the guidelines were expanded to include additional populations based upon geography and risk groups until the vaccine was universally recommended in 2005. In 2003, when vaccination with this recommendation was first measured by the NIS, coverage varied in states where it was recommended from 6.4% to 72.7%. Data from the 2005 NIS provide the latest coverage estimates available. Children in states previously recommended for Hepatitis A coverage are included, but children in the newly recommended groups would not yet be measured. Coverage in some Western States (Alaska 67% and Arizona 66%) and in selected Western Metropolitan areas (El Paso 70%) is high. Vaccination in the states in which the vaccine is newly recommended is low at this time, and the universal recommendation is expected to raise coverage nationwide.

For State by State Coverage Data For Hepatitis A Please See Page 29.

Varicella:

Vaccination rates are rising nationally from 43% in 1998 to 88% in 2005. In 2006, the ACIP recommended routine 2 dose varicella vaccination of children, and catch-up vaccination of adolescents and adults who had not received two doses of varicella vaccine.

For State by State Coverage Data for Varicella Please See Page 31.

Other Vaccinations:

Vaccination with rotavirus is not yet measured by the NIS. Though rotavirus will be added to the Immunization History Questionnaire in 2007 and it is anticipated that data on rotavirus uptake are expected to be limited during 2007, since the vaccine was only licensed in February 2006. Historically, the NIS has only surveyed children 19 to 35 months of age. Therefore there is not yet a comprehensive national estimate of vaccine uptake among adolescents for MCV, HPV, and Tdap. The NIS began piloting national adolescent coverage estimates in 2006, and data will be available in the fall of 2007.

Part III: The report should address the barriers and time lag related to implementation of new vaccines, including data on two-tiered states that are unable to offer all recommended vaccines to all children.

Achieving high vaccination coverage rates requires an understanding of the barriers to childhood immunization. Following the measles resurgence in 1991, research was conducted to identify barriers to vaccination. There is strong evidence to associate under immunization with socioeconomic factors such as poverty, costs to families and providers; a late start to vaccination; lack of information among patients and providers; provider practices, such as the failure to use all

opportunities to vaccinate; and some office/clinic factors. There are numerous barriers and time lags related to implementing new vaccine recommendations in addition to vaccine financing, supply, and provider education and outreach (Santoli et al.).

Vaccine Financing and Two-Tiered Policies:

With the introduction of new vaccines, cost and financing are a concern. Many states strive to provide universal access to their population for all recommended vaccines. VFC provides vaccine to all VFC-eligible population, but many states may delay implementation of VFC vaccine in order to attempt to raise state funds and leverage Section 317 funds for the purchase of vaccines for the entire population. States may be able to offer vaccine through 317 and State funds to health departments, or to health departments and private providers, or not at all to non-VFC eligible populations. When this occurs a system known as “two-tiered” develops. In a two-tiered system, government purchased vaccines are not available to underinsured children at health department clinics or other immunization venues. CDC has not prioritized one ACIP-recommended vaccine over another, based on the assumption that if prioritization is necessary for the Section 317 target population, state health officials are in the best position to determine which vaccines and which populations are highest priority for that jurisdiction.

States usually prioritize vaccines across populations. Two expensive vaccines that have been the subject of two-tiered policies in multiple states are pneumococcal conjugate vaccine (PCV) and meningococcal conjugate vaccine (MCV). When first introduced in 2000, many states were unable to provide the vaccine through the Section 317 program. In 2006, although many states had made PCV available to non-VFC eligible individuals, eight immunization grantees were only providing PCV to their VFC eligible population and not purchasing it with either Section 317 or State funds. In 2005, 28 grantees were not purchasing MCV vaccine for their adolescent population with either Section 317 or state funds. In these states, underinsured individuals presenting in health department clinics or private provider offices who were not VFC eligible were denied public purchased vaccine and either had to pay the out of pocket cost, or go unvaccinated. This results in a nationally uneven implementation of vaccines and leaves a portion of the population vulnerable to diseases and outbreaks.

Supply: In addition to financing concerns, supply has also been a barrier in the implementation of some new vaccines. The U.S. has experienced shortages of vaccines in the recommended childhood and adolescent schedules in recent years. Reasons for these shortages include: manufacturers leaving the vaccine market, manufacturing production problems, and insufficient stockpiles. Vaccine supply disruptions affect both private practices and public clinics as both sectors purchase vaccines from the same manufacturers. Between late 2000 and the Spring of 2003, unprecedented and unanticipated shortages of vaccines against 8 of the 11 vaccine preventable diseases in children occurred.

Examples of shortages include:

- There was insufficient MCV supply to meet demand for this newly licensed and recommended vaccine. In May 2006, ACIP issued interim guidance to defer vaccination of 11-12 year olds, as they are at a lower risk than older age groups for meningococcal disease, until supply improves. In November 2006, supply of MCV vaccine improved and the recommendation was restored to include vaccination of children 11 to 12 years of age.
- Despite an increase in overall influenza vaccine supply, there was a limited amount of thimerosal-free influenza vaccine for children three and four years of age during the 2006-2007 influenza season.

- From February to September 2004, providers were asked to defer the fourth or the third and fourth dose of PCV vaccine due to shortages.
- From 2002 to 2003, due to a shortage of DTaP vaccine, the recommendation from four doses of coverage before two years of age was reduced to three doses.

Shortages are disruptive to national vaccination efforts. Individuals are left vulnerable to a disease until they can be properly vaccinated. Additionally, lack of vaccine supply can lead to a missed opportunity for vaccination and individuals may not follow up for proper vaccination.

Provider Education and Outreach:

Several vaccines have been recently recommended and licensed for the adolescent age group, including MCV, Tdap, and HPV. Recent evidence regarding the source of care for adolescents indicates that many obtain care from providers other than, or in addition to, the current panel of primary care pediatricians and family physicians who routinely give vaccinations and conduct routine health care visits. In order to reach recommended populations it may be valuable to expand provider awareness of vaccination and enrollment in programs such as VFC to increase the number of adolescent providers (such as obstetricians, gynecologists, and pharmacists). Additionally, it is necessary to increase outreach to non-traditional immunization settings (such as schools, colleges, STD programs, correctional institutions, and emergency departments) for assessment of vaccine status and delivery of indicated vaccines. Incorporating nontraditional providers will also require the enhancement of immunization information systems to assure the efficient use of vaccines that require multiple doses (e.g. HPV) to assure series completion. In addition to educating providers it is also vital to conduct educational campaigns to reach parents and adolescents. If parents, adolescents, and providers are not aware of vaccine recommendations, a missed opportunity to vaccinate may occur.

Adults:

There is an additional financial barrier to vaccination of adults. Despite several recommendations for the increased vaccination of adults both the public and private health systems are currently inadequate to support these activities.

Part IV: The report should also include five-year historical data on Section 317 operations infrastructure funding for childhood, adolescent and adult immunization programs, and include information on the ongoing and emerging needs to support provider and public education on new vaccines, investigate disease outbreaks, identify and address barriers to immunization, and other activities relative to the current funding level.

Background:

It takes more than vaccine to fully vaccinate a population. Overall, according to the 2000 Institute of Medicine report, “Calling the Shots”, operations funding is vital to the integration of new vaccines into routine medical care for everyone, increasing vaccination coverage rates and decreasing racial and ethnic disparities. Operations funds support front line public health professionals, including nurses who administer vaccines; professionals who work with immunization providers to enroll them in federal or state programs and to improve their immunization practices and handling of vaccines; and managers who coordinate the direct and complex activities necessary to assure the vaccination of a population. Operations funds also pay for the delivery of vaccines, syringes and other equipment needed to vaccinate as well as immunization information systems to track the vaccination status of individuals.

Section 317 Operations funding supports vaccination infrastructure and direct service delivery, and encompasses the direct labor, administration, supplies, facilities and equipment, training and overhead costs related to each state’s immunization program. Although the VFC program has become the primary source of federal vaccine purchase funding, the vast majority of infrastructure support for immunization programs within states comes from the Section 317 immunization operations program (IOM 2000, p.157). In whole or part, Section 317 operations funding supports activities that (1) direct public vaccine provision (2) oversee provider quality by conducting assessments, training programs, and compliance monitoring; (3) develop immunization registries; (4) support school-based and community-based vaccine service delivery programs (5) create and deliver consumer information (6) conduct vaccine-preventable disease surveillance and (7) conduct population needs assessments.

Additionally, funds received by CDC for program management and surveillance in the prevention budget line are used to assist states in the operation of their vaccination programs. Activities supported by these funds include: program operations management, vaccine supply contracting and assurance, health services research, public and provider education, information, and partnerships, vaccine coverage assessment and surveillance, and technical assistance for immunization information systems. Prevention funding also supports vital research and surveillance on vaccine-preventable diseases. The newer vaccines are targeted at complex infectious diseases where surveillance needs are increasingly intricate and difficult (e.g. HPV). Additionally, CDC’s prevention dollars assist the grantees with disease surveillance costs that go beyond the state immunization programs in terms of laboratory infrastructure, research and technical assistance.

Historically, the vast majority of operations funds are devoted to childhood vaccine operations. This precedent has been carried forward and current operations funding can be assumed to be childhood operations funding. Adolescent and adult vaccine operations funding is a very small percentage of overall funding, and cannot be consistently estimated for the last five years.

Year	317 Operations	VFC Operations	Prevention	Total Operations
2000	\$139,460,000	\$49,982,000	\$55,536,000	\$244,978,000
2001	\$182,974,000	\$55,308,000	\$64,415,000	\$302,697,000
2002	\$200,697,000	\$69,901,000	\$69,637,000	\$340,235,000
2003	\$199,392,000	\$78,093,000	\$74,234,000	\$351,719,000
2004	\$195,798,000	\$93,331,000	\$62,993,000	\$352,122,000
2005	\$195,798,000	\$97,112,000	\$62,337,000	\$355,247,000

Note: Funds above represent appropriated levels.

Between 2000 and 2006 operations funding ranged from \$245 to \$355 million, and the immunization programs delivered between 48 million and 58 million individual doses purchased through the Section 317 and VFC program. Dividing total operations funding by the number of doses delivered for Section 317 and VFC, and adjusting to 2006 prices, reveals that the comprehensive national childhood immunization program costs historically are approximately \$6.79 per dose to direct a vaccination to the end user.

Year	Total Operations Funding	Total 317 and VFC Doses	Operations/Dose	In 2006 Dollars
2000	\$244,978,000	50,650,229	\$4.84	\$5.71
2001	\$302,697,000	54,760,335	\$5.53	\$6.36
2002	\$340,235,000	58,032,715	\$5.86	\$6.62
2003	\$351,719,000	57,468,246	\$6.12	\$6.73
2004	\$352,122,000	48,028,565	\$7.33	\$7.84
2005	\$355,247,000	49,424,922	\$7.19	\$7.48
Average			\$6.14	\$6.79

In 2000, the Institute of Medicine found that state immunization infrastructure programs require increased financial and administrative support to strengthen immunization capacity and reduce disparities in immunization coverage rates. Since the Institute of Medicine Report in 2000, the complexities and scope of immunization programs have increased significantly, especially in regard to adult and adolescent vaccinations. The existing immunization operations investment at approximately \$6.79 a dose has achieved great successes with the childhood immunization program. This immunization infrastructure must be expanded in order to address the current challenges of adolescent and adult immunization and the additional doses of vaccines purchased for these populations.

Of particular interest is an adolescent operations platform to keep pace with this new population that is the leading edge of immunizations in the U.S. Prior to 2005, the only routine vaccination for adolescents was a tetanus booster. Now three new vaccines are recommended, Tdap, MCV, and HPV. CDC and the federal government are making a large investment in the purchase of these adolescent vaccines, yet the infrastructure does not exist to deliver vaccines effectively, and measure vaccine uptake and impact. Once fully developed, it is estimated that the national immunization program will deliver annually nearly 13.5 million doses of adolescent vaccines purchased through both Section 317 and VFC. Administration of vaccines in adolescence requires innovative new approaches to the delivery of preventive services in healthcare systems that are capable of improving levels of adolescent health (Rickert et al).

It is necessary to educate providers, parents, and adolescents about these recommendations. Many adolescents no longer seek care from their pediatricians who are familiar with immunization. Adolescents may see gynecologists, adolescent specialty doctors, orthopedists, or only seek medical care in an emergency room setting. Additionally, adolescents may seek medical care in non-traditional medical settings such as school and university health centers as well as family planning or sexually transmitted disease clinics. These nontraditional settings must also be incorporated as immunization providers.

There is also interest in adolescent vaccination assessment. Currently there is no standardized, national mechanism to measure vaccine uptake in this population, nor is there the ability to develop grantee specific estimates of vaccine coverage. Additionally, performing surveillance to assess the impact of immunization for some of the new vaccine preventable diseases will require new surveillance approaches.

The improvement of adult immunization rates will also require more than increased vaccine purchase and a current challenge is to develop a complementary adult immunization infrastructure. Health care providers are often less successful in providing age-appropriate immunizations as their clients grow from infancy through childhood to adolescence and

adulthood. Because many adults see specialists, even for preventive care, immunization has not always received the priority among providers of adult health care as it has received among pediatric providers. (IOM 2000 p.29, 69, and 224). A comprehensive and coordinated adult immunization program should be considered within each state, with leadership at the national, state, and local levels, to encourage participation of private and public health care providers in offering immunizations to adults under the guidelines established in the ACIP schedule (IOM 2000, p.224). A comprehensive adult program such as outlined in this report would require the purchase of approximately 5.1 million doses annually. As with adolescent vaccines it is also necessary to assess the impact of immunization for some of the vaccine preventable diseases in adults with new surveillance approaches.

Part V: Finally, the report should include ten-year historical data on the percentage of childhood, adolescent and adult immunization covered by funding source

Percentage of Vaccines Purchased by Funding Source Childhood and Adolescent Vaccines											
Year	VFC Doses		317 Doses		State Doses		Total CDC Contracts		Other		Total
	%	Doses	%	Doses	%	Doses	%	Doses	%	Doses	Doses
1994	8%	7.2 M	30%	26.1 M	7%	6.3 M	43%	39.7 M	54%	46.1 M	85.8 M
1995	35%	27.7M	13%	10.7 M	10%	7.9 M	58%	46.3 M	42%	32.8 M	79.1M
1996	33%	27.1 M	15%	12.0 M	9%	7.6 M	57%	46.7 M	43%	35.1 M	81.8 M
1997	38%	33.8 M	15%	13.5 M	9%	8.0 M	62%	55.3 M	38%	34.8 M	90.1 M
1998	36%	36.7 M	13%	13.0 M	7%	7.3 M	56%	56.9 M	44%	44.1 M	101.1 M
1999	36%	38.0 M	10%	10.8 M	5%	5.6 M	51%	54.4 M	49%	51.2 M	105.6 M
2000	35%	39.7 M	10%	11.0 M	7%	7.9 M	52%	58.5 M	48%	53.8 M	112.4 M
2001	40%	44.4 M	9%	10.4 M	7%	7.9 M	56%	62.6 M	44%	48.6 M	111.2 M
2002	41%	46.0 M	11%	12.1 M	5%	5.3 M	57%	63.3 M	43%	47.9 M	111.2 M
2003	42%	47.1 M	9%	10.4 M	5%	5.1 M	56%	62.6 M	44%	49.7 M	112.2 M
2004	40%	40.1 M	8%	7.9 M	7%	6.7 M	55%	54.7 M	45%	46.2 M	100.9 M
2005	43%	43.6 M	6%	5.9 M	5%	5.2 M	54%	54.6 M	46%	46.4 M	101.0 M

Note:

Doses are doses distributed in a calendar year. Total numbers are provided by the manufacturers. State doses represent doses purchased off of the CDC Contract with state funds. Other is all doses purchased outside of the CDC Contracts. State purchased vaccines on non-CDC contracts would be in the other total as would other non-CDC Federal government purchases. Data does not include influenza vaccination as formulations can be given to multiple age groups. Total number of vaccine doses purchased declines in 2004 and 2005 due to the increased use of combination vaccines and the end of adolescent Hepatitis B catch-up in 2004.

As evidenced in the table above, once the VFC program reached a stable level, the percentage of VFC and private sector doses purchased has remained relatively the same. However, the percentage of Section 317 and State purchases have declined, due to the increased number and cost of vaccines. The decline in these two areas is evidence that children and adolescents who rely on Section 317 and State purchased vaccines may not be receiving recommended vaccinations.

Percentage of Vaccines Purchased by Funding Source Adult Vaccines					
Year	317 Purchase	State Purchase	Total 317 and State Purchase	Other	Total Doses
1997	1.39%	0.02%	1.41%	98.59%	15.3 M
1998	1.38%	0.37%	1.75%	98.25%	16.6 M
1999	1.72%	1.05%	2.77%	97.23%	14.0M
2000	3.42%	4.37%	7.79%	92.21%	7.9 M
2001	1.83%	2.03%	3.86%	96.14%	8.7 M
2002	1.59%	1.20%	2.79%	97.21%	13.1 M
2003	1.57%	1.61%	3.18%	96.82%	14.3 M
2004	3.43%	1.84%	5.27%	94.73%	14.1 M
2005	1.86%	1.61%	3.47%	96.53%	14.2 M

Note: Doses are doses distributed by calendar year. Total numbers are provided by the manufacturers. Frequently formulations can be given to multiple age groups (e.g. flu). Data presented above is for solely adult formulations of Hepatitis A, Hepatitis B, Hepatitis AB combination vaccine, and pneumococcal polysaccharide vaccines. There was not a CDC contract for the purchase of adult pneumococcal polysaccharide vaccine for most of 2001 and all of 2002 as no manufacturer bids were received. Other is all doses purchased outside of the CDC contracts and may include other government funds such as Medicare and the Veterans Administration.

As evidenced by the table above, Section 317 and State purchases of adult vaccinations are limited, and only a very small purchase is able to occur. Additional purchase and infrastructure funds are necessary to increase vaccine uptake and prevent incidence of vaccine-preventable diseases for adults who are not served by public or private vaccine financing programs.

CONCLUSION:

This report represents the professional judgment of the Centers for Disease Control and Prevention and is provided without the constraints of the competing priorities that the agency, the President and their advisors must consider as budget submissions to the Congress are developed.

The Section 317 program plays a critically important role in the nation's immunization system. It saves lives as well as dollars, and allows the federal government to provide the public a strong level of protection from vaccine preventable diseases. Targeting vaccines appropriately, accounting for proper use of the vaccine, and measuring the impact of vaccination programs with disease and coverage surveillance are important public health activities necessary to protect people from vaccine preventable diseases and maintain public confidence in the system. These public health activities are not conducted by other sectors or agencies and are necessary to support the implementation of effective immunization programs.

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**Estimated Vaccination Coverage* with Pneumococcal Conjugate Vaccine (PCV)
Among Children 19-35 Months of Age by State
US, National Immunization Survey**

	2002	2003	2004	2005	
	3+PCV^{††}	3+PCV^{††}	3+PCV^{††}	3+PCV^{††}	4+PCV^{§§}
US National	40.8±1.1	68.1±1.0	73.2±1.0	82.8±1.0	53.7±1.3
Alabama	32.2±5.7	69.1±5.8	74.0±6.5	86.6±4.8	58.0±7.1
Alaska	29.8±5.8	76.0±6.0	74.6±6.9	79.7±6.2	54.7±7.7
Arizona	28.1±4.2	63.0±4.7	71.9±4.5	81.6±4.7	50.7±6.0
Arkansas	24.9±6.2	50.5±7.9	63.6±7.5	76.3±7.8	40.3±9.1
California	41.9±4.2	72.7±3.8	76.1±3.9	85.6±3.6	52.6±5.3
Colorado	36.8±6.4	56.8±6.8	62.8±7.0	81.8±4.5	47.0±6.1
Connecticut	46.4±6.5	86.4±4.9	90.3±4.9	91.0±4.8	70.9±7.1
Delaware	46.9±6.6	62.1±6.8	74.4±6.6	83.2±6.1	53.7±9.2
District of Columbia	36.2±7.4	67.4±6.9	72.4±6.6	76.8±6.3	45.3±6.7
Florida	36.0±5.3	57.9±5.7	55.0±5.6	65.6±6.8	33.8±6.4
Georgia	42.6±5.5	62.4±5.7	67.9±6.5	80.1±4.9	51.1±6.0
Hawaii	62.7±6.4	77.7±6.0	86.0±4.1	84.5±5.9	62.4±7.7
Idaho	29.2±5.7	71.0±6.5	81.4±5.2	82.6±5.3	48.0±6.9
Illinois	38.4±5.1	67.4±5.2	76.4±4.7	84.1±6.0	53.8±7.6
Indiana	40.7±5.9	72.6±6.2	77.7±5.7	84.5±6.5	57.0±8.9
Iowa	43.3±6.6	60.5±6.6	67.7±7.5	86.8±5.2	54.2±8.1
Kansas	39.7±6.6	66.9±6.6	65.4±7.5	76.6±6.0	48.6±7.3
Kentucky	47.7±7.0	74.9±6.7	76.1±6.8	81.8±6.8	57.4±8.4
Louisiana	26.7±5.1	57.9±6.0	71.9±5.6	84.8±3.5	52.3±4.9
Maine	39.0±6.4	75.1±5.6	84.6±4.8	83.7±6.1	58.3±7.7
Maryland	42.5±6.3	69.9±6.1	76.6±5.7	83.3±5.6	58.2±6.9
Massachusetts	62.0±5.5	90.9±3.7	89.7±3.8	94.9±3.1	80.9±5.8
Michigan	34.0±5.7	53.8±6.0	63.4±6.1	85.0±4.4	50.2±6.5
Minnesota	48.2±6.8	72.9±6.7	77.3±6.5	86.6±5.3	51.2±7.6
Mississippi	24.5±6.7	62.9±7.2	61.4±7.3	73.2±6.4	43.0±7.3
Missouri	49.1±6.8	69.9±6.0	76.2±6.7	76.6±5.3	55.8±5.8
Montana	39.6±6.6	65.6±6.3	69.6±6.3	81.7±6.0	52.1±7.1
Nebraska	44.8±6.6	67.8±6.7	75.5±5.9	81.7±5.9	63.1±7.4
Nevada	13.1±4.4	39.6±6.3	49.6±6.4	69.7±5.9	36.8±5.9
New Hampshire	47.8±6.6	79.4±5.1	82.0±5.8	86.9±4.8	58.1±7.0
New Jersey	55.6±6.2	72.1±6.4	78.9±6.1	82.0±5.6	56.0±7.1
New Mexico	28.0±6.3	63.5±8.2	71.6±6.1	79.4±6.8	43.2±8.0
New York	48.0±5.2	76.8±4.1	83.4±3.9	85.1±3.9	55.1±5.6
North Carolina	42.9±7.2	72.1±6.1	85.7±4.7	88.3±5.1	61.1±7.8
North Dakota	29.5±6.0	60.5±6.6	69.3±6.1	84.9±4.9	52.5±6.9
Ohio	42.6±4.8	65.0±5.5	69.2±5.7	81.0±4.9	55.7±6.0
Oklahoma	31.1±6.5	41.8±7.1	44.1±6.9	54.4±6.8	28.8±6.1
Oregon	37.3±5.9	70.2±6.5	74.6±5.9	78.0±6.3	49.2±7.7
Pennsylvania	54.4±6.1	81.4±4.8	83.1±4.6	88.9±4.9	71.3±6.1
Rhode Island	66.8±6.5	89.7±4.7	90.6±3.8	93.6±3.4	72.6±5.9
South Carolina	42.8±6.7	75.7±6.8	76.4±7.1	86.1±5.9	61.9±7.2

South Dakota	15.7±5.1	37.3±7.0	46.4±7.6	65.8±6.7	42.1±7.0
Tennessee	41.8±4.9	68.3±5.0	74.9±4.7	90.0±3.0	53.7±5.8
Texas	33.9±4.7	59.8±4.4	62.8±4.4	85.2±3.3	53.0±4.8
Utah	29.7±5.8	65.9±6.9	69.6±6.2	80.3±7.7	52.5±9.2
Vermont	41.3±6.2	76.5±5.7	81.1±5.4	88.8±5.0	66.5±7.7
Virginia	54.4±6.6	80.9±5.8	86.6±4.8	86.5±6.1	63.6±7.8
Washington	25.2±4.1	68.2±4.7	81.0±4.2	78.9±5.2	51.8±6.2
West Virginia	35.4±6.9	59.3±7.9	71.1±6.7	75.0±6.8	46.1±7.3
Wisconsin	44.3±5.2	74.3±5.1	79.5±5.0	85.2±4.8	60.3±6.2
Wyoming	27.7±5.8	66.2±6.4	82.8±5.0	80.7±6.2	44.1±7.6

Estimates presented as point estimate (%) ± 95% Confidence Interval.

‡‡ 3 or more doses of pneumococcal conjugate vaccine (PCV).

§§ 4 or more doses of PCV.

Estimated Vaccination Coverage ¹ with Influenza Vaccine Among Age-eligible Children by State US, National Immunization Survey,						
	2003 ²		2004 ³		2005 ⁴	
	1+Flu ⁵	1+Flu ⁶	1+ Flu ⁷	Fully Vaccinated ⁸	1+Flu ⁹	Fully Vaccinated ¹⁰
US National	7.4±0.7	4.4±0.5	17.5±1.1	8.4±0.8	33.4±1.4	17.8±1.1
Alabama	2.5±1.8	1.2±1.2	16.7±5.9	6.1±3.5	31.3±8.7	12.8±6.1
Alaska	4.7±3.3	4.0±3.1	16.0±6.1	8.3±4.8	31.1±8.9	20.1±7.5
Arizona	4.8±1.8	2.7±1.3	16.4±4.8	7.2±3.2	26.7±5.7	12.4±4.0
Arkansas	6.8±6.7	1.7±1.9	9.8±6.0	2.6±2.2	19.8±9.1	7.6±6.4
California	6.9±2.7	4.6±2.4	14.7±4.2	7.5±3.3	30.7±5.6	15.4±4.2
Colorado	13.0±5.4	8.6±4.4	30.9±8.1	14.9±5.6	40.4±7.2	23.8±5.8
Connecticut	11.0±5.3	8.0±4.1	15.2±6.2	6.8±3.9	53.1±8.7	23.5±7.8
Delaware	12.6±5.6	7.4±4.6	27.3±8.0	14.9±6.3	36.3±9.9	21.8±8.0
District of Columbia	8.4±4.3	5.7±3.6	24.2±8.6	10.2±5.4	33.9±7.5	18.7±5.8
Florida	5.9±3.0	3.9±2.7	9.5±3.6	3.9±2.0	20.5±6.7	7.1±3.7
Georgia	4.4±2.5	2.7±1.5	19.5±7.7	7.1±3.7	35.4±6.7	20.6±5.1
Hawaii	5.8±3.5	3.8±2.8	31.1±7.8	16.9±6.5	42.2±9.5	21.2±7.7
Idaho	5.1±3.7	3.6±3.4	8.8±4.6	2.9±2.6	15.7±5.8	6.4±3.9
Illinois	9.3±3.7	3.8±2.1	16.9±5.1	7.3±3.4	29.9±8.0	14.3±5.1
Indiana	5.7±3.1	4.6±2.9	13.8±6.0	8.2±5.4	26.0±9.1	10.3±5.4
Iowa	7.3±4.6	6.3±4.4	23.3±8.2	17.9±7.4	35.8±9.4	21.4±8.0
Kansas	9.6±4.8	7.1±4.3	11.9±5.3	7.2±4.4	27.7±7.8	13.9±5.1
Kentucky	4.6±2.6	3.6±2.3	10.9±5.4	4.1±3.0	25.1±8.2	15.3±6.9
Louisiana	7.5±3.5	1.5±1.2	14.2±5.8	6.4±4.5	26.4±5.2	11.7±3.8
Maine	6.0±3.4	3.8±2.9	16.7±6.5	6.8±4.4	28.7±8.1	15.7±6.7
Maryland	8.4±3.5	4.4±2.5	19.4±6.0	10.5±4.2	48.4±8.5	25.8±7.2
Massachusetts	7.7±4.1	6.4±3.8	22.3±6.3	9.8±4.3	59.3±9.1	35.5±8.9
Michigan	3.9±2.4	2.1±1.7	17.0±5.9	7.6±3.7	30.5±7.3	15.5±5.9
Minnesota	23.7±7.9	16.4±6.3	30.0±9.8	19.0±8.0	50.6±9.5	25.1±8.2
Mississippi	2.5±2.3	0.6±1.1	11.6±5.6	5.5±3.3	22.7±7.0	9.5±4.3
Missouri	7.4±3.5	4.1±2.5	9.3±5.2	5.7±4.3	30.4±5.7	17.1±4.6
Montana	4.4±3.1	2.2±2.0	12.2±6.6	6.0±3.7	31.1±7.8	12.2±5.1
Nebraska	16.8±6.1	10.4±4.8	24.6±7.4	14.4±5.5	53.8±9.1	33.2±8.4
Nevada	4.8±3.5	0.8±1.1	7.6±4.0	2.4±2.2	11.8±4.3	6.2±3.5
New Hampshire	7.7±4.1	6.8±3.9	18.2±6.8	9.6±5.0	42.4±8.4	21.9±6.7
New Jersey	6.1±4.1	3.3±3.0	18.1±7.3	8.6±5.6	36.6±8.2	19.9±6.6
New Mexico	5.0±3.7	2.7±3.0	23.9±7.4	12.9±5.4	34.5±8.8	22.1±7.9
New York	6.0±2.6	3.6±2.0	17.7±4.5	8.8±3.1	37.9±6.2	24.0±5.5
North Carolina	9.8±4.9	5.4±3.2	16.3±6.1	5.6±3.5	38.2±9.1	20.8±7.7
North Dakota	14.3±5.5	9.5±4.3	31.9±8.1	22.5±7.7	34.3±7.5	24.4±6.6
Ohio	6.4±3.5	3.8±2.5	14.9±5.0	8.0±4.0	27.6±6.0	17.7±5.1
Oklahoma	4.1±2.4	2.0±1.7	20.9±6.6	7.4±3.6	29.5±7.7	13.5±5.5
Oregon	6.4±3.9	5.2±3.6	13.3±5.3	6.8±3.9	30.3±8.3	13.1±5.8

Pennsylvania	9.9±3.7	5.8±2.9	27.0±7.1	12.6±5.3	47.9±7.9	27.1±6.6
Rhode Island	26.6±8.0	19.2±7.3	47.6±8.0	29.1±7.5	50.9±7.9	30.5±7.2
South Carolina	4.6±3.4	3.9±3.1	16.2±6.5	6.5±4.3	30.8±7.9	12.8±5.2
South Dakota	14.5±5.9	10.3±5.1	27.4±9.1	15.0±7.5	40.3±8.6	19.1±6.6
Tennessee	7.8±3.1	4.3±2.0	16.3±4.9	7.8±3.6	26.9±5.3	15.8±4.4
Texas	5.6±2.1	2.5±1.1	16.6±4.3	7.3±2.8	28.7±5.1	16.2±3.9
Utah	8.6±4.9	5.7±4.1	19.9±5.9	8.4±3.9	NA	19.1±7.9
Vermont	9.5±4.7	6.1±3.8	28.7±8.1	16.0±6.6	31.0±9.2	15.8±7.3
Virginia	7.5±3.8	5.4±3.5	29.5±9.4	14.7±7.1	49.9±9.7	28.7±8.5
Washington	13.2±4.6	8.9±4.1	21.4±5.2	10.9±4.0	27.9±6.5	13.1±4.7
West Virginia	5.4±4.3	3.6±3.5	8.5±4.5	2.8±2.5	23.2±7.2	9.3±4.6
Wisconsin	13.8±5.2	6.2±3.2	22.1±5.8	13.9±5.0	45.4±8.2	27.1±7.0
Wyoming	3.5±2.5	2.3±2.2	11.7±5.0	8.2±3.9	18.8±7.4	9.0±5.4

¹ The 95% confidence intervals are approximations, particularly in states or immunization action plan areas

with low coverage. In these areas, the 95% CI may include zero or negative values as a result of the

approximation breaking down. Estimate=NA (Not Available) if the unweighted sample size for the numerator

was <30 or (CI half width)/Estimate > 0.5 or (CI half width) >10.

Estimates presented as point estimate (%) ± 95% Confidence Interval.

Influenza vaccination coverage estimates represent a subset of children in the NIS. Only children who were 6 to 23 months of age during the time period of 9/1/2002 to 12/31/2002 were included in the 2003 estimates. (n=13,831, unweighted).

³ For Influenza vaccines, age-eligible children were 6-23 months of age during the 9/1/2003-12/31/2003 time period. Children who were age-eligible for influenza vaccines represented a subset of all children included in the NIS (unweighted n=13,831).

⁴ For Influenza vaccines, age-eligible children were 6-23 months of age during the 9/1/2004-12/31/2004 time period.

Children who were age-eligible for influenza vaccines represented a subset of all children included in the

NIS (unweighted n=12,056).

⁵ One or more doses of influenza vaccine administered between 9/1/2002 - 12/31/2002.

⁶ Influenza coverage estimates among children who received either (1) no doses of influenza vaccine prior to 9/1/2002; then received 2 doses from 9/1/2002 to either the date of interview or 1/31/2002, or (2) received at least one dose of influenza vaccine prior to 9/1/2002; then received at least one dose from 9/1/2002 to 12/31/2002.

⁷ One or more doses of influenza vaccine administered between 9/1/2003 - 12/31/2003.

⁸ Children were considered fully vaccinated if they received either of the following:

(1) No doses of influenza vaccine prior to 9/1/2003; then 2 doses of influenza from 9/1/2003 to either the date of interview or 1/31/2004. (2) At least one dose of influenza vaccine prior to 9/1/2003; then at least one dose of influenza vaccine from 9/1/2003 -

12/31/2003.

⁹ One or more doses of influenza vaccine administered between 9/1/2004 - 12/31/2004.

¹⁰ Children were considered fully vaccinated if they received either of the following:

(1) No doses of influenza vaccine prior to 9/1/2003; then 2 doses of influenza from 9/1/2004 to either the

date of interview or 1/31/2005.

(2) At least one dose of influenza vaccine prior to 9/1/2004; then at least one dose of influenza

vaccine from 9/1/2004 -

12/31/2004.

Estimated Vaccination Coverage¹ with Hepatitis A		
US, National Immunization Survey,		
	2003²	2005³
	1+HepA⁴	1+HepA⁵
US National	16.0±1.0	21.3±1.2
Alabama	0.0±0.0	0.3±0.3
Alaska	72.7±7.4	66.8±9.1
Arizona	63.8±5.5	66.1±7.0
Arkansas	0.6±1.0	1.9±2.7
California	54.5±5.5	60.3±6.1
Colorado	13.8±5.9	22.3±5.9
Connecticut	0.0±0.0	2.0±2.8
Delaware	1.0±1.5	0.7±1.3
District of Columbia	2.3±2.1	3.7±2.3
Florida	0.4±0.5	2.0±2.5
Georgia	4.1±3.2	8.0±2.9
Hawaii	1.3±1.8	0.0±0.0
Idaho	42.5±8.7	43.9±8.3
Illinois	3.9±2.1	8.4±4.8
Indiana	0.2±0.3	0.3±0.7
Iowa	0.0±0.0	0.0±0.0
Kansas	1.5±1.7	5.3±3.7
Kentucky	0.0±0.0	2.5±3.0
Louisiana	0.3±0.6	3.4±1.8

Maine	0.0±0.0	0.5±1.1
Maryland	1.0±1.1	3.0±2.0
Massachusetts	0.6±0.6	0.2±0.4
Michigan	0.1±0.1	0.0±0.0
Minnesota	0.0±0.0	3.0±3.7
Mississippi	0.4±0.8	0.8±1.6
Missouri	14.4±6.7	19.7±5.7
Montana	8.1±5.2	8.4±4.7
Nebraska	0.2±0.5	1.4±2.1
Nevada	49.3±8.2	55.9±7.5
New Hampshire	0.3±0.5	0.6±1.3
New Jersey	3.1±3.8	4.0±2.8
New Mexico	42.6±9.8	48.4±9.9
New York	3.4±2.6	5.1±3.0
North Carolina	0.0±0.0	0.5±0.9
North Dakota	4.3±3.7	4.5±3.4
Ohio	0.1±0.2	0.4±0.3
Oklahoma	55.1±9.3	59.6±8.3
Oregon	33.1±7.9	31.8±8.4
Pennsylvania	0.1±0.2	0.5±0.8
Rhode Island	0.7±1.4	1.3±1.5
South Carolina	0.0±0.0	1.0±1.2
South Dakota	6.4±5.7	12.9±6.0
Tennessee	3.2±1.6	4.7±2.0
Texas	32.3±4.6	57.5±5.6
Utah	47.3±8.9	71.0±9.8
Vermont	0.0±0.0	0.0±0.0
Virginia	0.0±0.0	1.2±1.2
Washington	27.0±5.3	34.7±6.5
West Virginia	0.0±0.0	0.7±1.4
Wisconsin	6.9±2.2	6.2±2.4
Wyoming	14.8±6.1	8.2±4.9

¹ The 95% confidence intervals are approximations, particularly in states or immunization action plan areas with low
In these areas, the 95% CI may include zero or negative values as a result of the approximation breaking down.

² For Hepatitis A vaccine, children were between 24 and 35 months of age.

Children in the Q1/2003-Q4/2003 National Immunization Survey were born between February 2000 and May 2002.

³ For Hepatitis A vaccine, age-eligible children were between 24 and 35 months.

Children in the Q1/2005-Q4/2005 National Immunization Survey were born between February 2002 and July 2004.

⁴ One or more doses of Hepatitis A vaccine

⁵ 1 or more doses of Hepatitis A vaccine administered between 24 and 35 months of age.

Estimated Vaccination Coverage for Varicella Among Children 19-35 Months of Age by State US, National Immunization Survey							
	1999	2000	2001	2002	2003	2004	2005
	1+Var^{††}	1+Var^{††}	1+Var^{††}	1+Var^{††}	1+Var^{††}	1+Var^{††}	1+Var^{††}
US National	57.5±1.0	67.8±0.9	76.3±0.8	80.6±0.9	84.8±0.8	87.5±0.7	87.9±0.8
Alabama	71.3±5.0	75.7±4.7	88.1±3.3	89.3±3.8	91.3±3.7	89.9±4.7	93.5±3.4
Alaska	29.9±5.3	47.3±6.4	61.1±6.1	63.6±6.5	81.1±5.1	76.5±6.5	81.2±6.0
Arizona	59.3±4.7	65.3±4.5	74.5±3.9	78.6±3.9	81.5±3.7	85.8±3.5	83.6±4.5
Arkansas	58.0±6.4	77.6±5.1	83.1±4.1	88.7±4.1	88.3±5.0	94.0±3.0	85.9±6.6
California	69.7±3.8	76.0±3.4	83.0±3.2	85.1±3.2	89.7±2.8	90.2±2.4	89.5±3.1
Colorado	52.9±6.0	60.5±5.7	79.0±4.5	79.8±5.5	78.9±5.6	86.1±4.6	87.2±4.3
Connecticut	62.7±6.0	76.3±5.3	84.3±5.0	86.5±4.6	93.2±3.2	92.7±4.1	91.0±4.4
Delaware	61.4±6.0	69.2±5.7	80.6±4.9	86.0±4.2	81.5±6.1	87.6±5.6	89.5±5.5
Dist. Columbia	77.9±5.3	84.5±4.9	86.6±4.5	91.1±4.8	88.8±4.9	92.3±3.5	90.6±4.2
Florida	50.7±5.1	60.9±4.9	72.0±4.5	80.8±4.4	87.6±4.0	91.3±2.9	91.1±4.2
Georgia	61.7±5.4	75.1±4.6	87.1±3.5	89.2±3.4	90.5±3.5	91.6±4.1	91.9±3.3
Hawaii	63.1±6.1	77.5±5.6	80.7±5.0	81.6±5.2	89.6±4.2	91.7±3.4	89.4±4.7
Idaho	16.1±4.3	38.0±5.6	55.8±5.7	65.9±6.0	72.8±6.1	77.1±5.7	77.4±5.8
Illinois	43.6±4.9	47.9±4.9	57.0±4.9	69.9±5.1	77.8±4.7	85.9±3.7	86.3±4.9
Indiana	42.8±5.6	57.9±5.4	58.9±5.3	70.0±5.3	73.1±6.3	80.3±5.4	82.8±7.1
Iowa	46.0±5.9	50.9±6.5	62.4±6.0	66.5±6.2	71.6±6.5	85.9±5.4	83.4±6.5
Kansas	53.5±5.9	57.8±6.3	64.1±7.0	76.2±5.5	74.7±6.1	77.8±6.6	81.5±6.0
Kentucky	61.7±6.2	63.0±6.0	77.5±5.0	78.3±6.0	91.6±4.2	89.6±5.8	83.3±6.7
Louisiana	61.0±5.4	65.1±5.6	73.0±5.3	83.4±4.0	83.3±4.5	82.2±5.2	89.0±3.0
Maine	43.1±6.1	55.0±6.0	62.1±5.8	73.0±6.0	81.0±4.8	83.8±5.2	84.2±5.7
Maryland	71.7±4.9	82.5±4.5	87.8±3.3	87.7±4.8	90.4±4.3	90.2±4.1	90.7±4.8
Massachusetts	66.0±5.6	79.5±4.6	82.8±4.0	87.0±3.9	89.1±4.3	90.6±3.8	95.4±2.6
Michigan	43.5±5.4	69.6±5.2	76.6±4.8	83.0±5.0	88.8±3.8	88.0±4.3	93.4±2.7
Minnesota	61.6±6.5	61.4±6.3	73.7±5.3	73.6±6.2	78.2±6.4	83.3±6.3	86.7±5.1
Mississippi	39.4±6.4	53.0±6.3	61.5±6.3	77.5±5.9	88.5±4.5	90.6±4.4	88.4±4.5
Missouri	51.4±5.9	59.9±6.2	68.7±6.2	77.1±5.8	83.9±4.8	85.1±5.0	87.9±3.7
Montana	44.6±6.1	54.3±6.3	67.2±5.7	59.2±6.9	74.6±5.6	74.9±5.8	75.5±6.5
Nebraska	58.4±6.2	63.5±6.0	69.1±5.7	74.8±5.8	75.3±6.8	82.2±5.0	89.9±4.1
Nevada	48.3±6.2	61.4±5.6	67.0±6.0	74.7±6.1	78.1±5.6	80.7±4.9	84.4±4.5
New Hampshire	54.0±6.5	66.0±5.5	73.3±5.2	73.9±6.2	83.3±4.9	85.6±5.3	82.9±5.5
New Jersey	59.7±5.8	67.8±5.5	75.5±5.3	80.2±5.4	76.8±6.0	86.8±4.8	83.8±5.5
New Mexico	53.5±6.6	68.0±5.9	72.3±5.4	80.5±5.9	84.7±5.4	87.5±4.7	86.3±5.6
New York	59.2±4.5	70.6±4.1	79.0±3.7	81.0±4.1	87.3±3.2	89.1±3.6	87.6±3.6
North Carolina	59.4±6.2	76.4±5.2	83.1±4.4	81.8±5.9	86.0±4.8	89.9±4.6	91.3±4.1
North Dakota	45.9±6.0	58.8±5.9	69.2±5.5	67.4±6.7	71.8±6.0	79.6±5.2	87.2±4.5
Ohio	53.0±4.9	60.2±5.2	72.1±4.2	75.4±4.4	81.5±4.4	84.2±4.2	86.3±4.2
Oklahoma	66.4±6.1	72.4±5.7	82.5±4.5	81.0±5.8	83.9±6.2	89.6±4.6	85.8±4.7
Oregon	57.9±6.4	76.7±5.5	74.2±5.6	73.7±5.6	87.0±4.4	84.8±5.0	76.2±6.5
Pennsylvania	67.0±5.3	74.4±4.9	80.1±4.3	84.7±4.9	85.9±4.5	91.9±3.4	89.2±4.9
Rhode Island	76.5±5.7	81.6±4.3	89.9±3.2	88.9±4.9	90.7±4.6	91.7±3.6	96.2±2.6
South Carolina	65.1±5.6	70.3±5.6	80.2±4.9	86.0±5.4	86.0±5.0	90.2±4.7	87.4±5.7

South Dakota	17.5±4.7	39.7±6.0	52.8±6.5	71.2±6.5	68.4±6.7	79.4±5.9	85.7±5.0
Tennessee	56.9±4.5	69.9±4.3	80.1±3.6	81.1±4.1	87.8±3.5	89.0±3.5	89.8±3.5
Texas	58.9±4.0	73.6±3.7	83.5±3.0	82.9±4.1	87.6±2.8	84.8±3.2	88.9±3.0
Utah	41.6±6.4	52.7±6.3	68.1±5.7	78.1±5.5	79.0±6.1	84.7±4.6	81.2±7.5
Vermont	46.8±6.0	57.3±5.9	61.9±5.5	66.5±6.0	71.2±5.9	72.8±6.2	68.5±7.8
Virginia	64.6±6.3	77.6±5.6	83.1±5.9	83.0±5.4	87.0±5.1	88.4±5.0	89.9±4.8
Washington	32.1±4.3	48.7±4.7	57.0±4.8	65.1±5.1	66.6±4.9	77.6±4.4	76.6±5.1
West Virginia	51.3±6.1	59.9±6.4	73.0±5.6	81.8±4.8	76.5±7.0	81.7±6.2	81.1±6.5
Wisconsin	49.1±4.8	56.7±5.0	67.2±4.8	79.8±4.0	84.4±4.2	88.6±3.3	87.0±4.5
Wyoming	46.1±6.1	57.6±5.7	60.9±6.2	65.2±6.5	68.6±6.1	70.4±6.4	77.2±6.6

Estimates presented as point estimate (%) ± 95% Confidence Interval.

†† One or more doses of varicella at or after child's first birthday, unadjusted for history of varicella illness.