

Adult Vaccination Update

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Immunization Services Division



Overview of Presentation

- ❑ **Adult vaccination recommendations**
- ❑ **Non – influenza adult vaccination coverage**
 - Data source
 - Coverage by age group, race/ethnicity, target group status
 - Limitations
 - Conclusions
- ❑ **Information Sources**

2014 ADULT IMMUNIZATION SCHEDULE

Background

- ❑ **Each year, ACIP updates the adult immunization schedule**
 - Summarizes current ACIP recommendations
 - 2014 -- No new or change in policy
 - Prepared by the ACIP Adult Immunization Work Group in consultation with vaccine subject matter experts
- ❑ **2014 adult schedule also approved by:**
 - American College of Physicians
 - American Academy of Family Physicians
 - American College of Obstetricians and Gynecologists
 - American College of Nurse Midwives

ACIP Adult Immunization Work Group

❑ ACIP Members

- Tamera Coyne-Beasley (Chair)
- Kathleen Harriman (ACIP)
- Jonathan Temte (ACIP)

❑ Ex Officio Members:

- Terri Murphy (FDA)

❑ CDC Lead

- Carolyn Bridges (CDC)

❑ Liaison Representatives

- Sandra Fryhofer (ACP,AMA)
- Laura Pinkston Koenigs (SAHM)
- Marie-Michele Leger (AAPA)
- Gregory Poland (ACP)
- Laura Riley (ACOG)
- Joni Reynolds (AIM)
- William Schaffner (NFID)
- Kenneth Schmader (AGS)
- Richard Zimmerman (AAFP)

❑ Consultants

- Diane Peterson (IAC)
- Litjen Tan (IAC)

Changes to 2014 Adult Schedule

Figures

- ❑ Moved PPSV23 bar below the bar for PCV13
- ❑ Added bar for Hib vaccine

Footnotes – updated to reflect current recommendations

- ❑ Influenza
- ❑ HPV
- ❑ MCV4
- ❑ Td/Tdap

Recommended Adult Immunization Schedule—United States - 2014

Note: These recommendations must be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

Figure 1. Recommended adult immunization schedule, by vaccine and age group¹

| VACCINE ▼ | AGE GROUP ▶ | 19-21 years | 22-26 years | 27-49 years | 50-59 years | 60-64 years | ≥ 65 years |
|-----------------------------------------------------------|-------------|--------------------------------------------------------------------------------|-------------|-------------|-------------|-------------|------------|
| Influenza ^{2*} | | 1 dose annually | | | | | |
| Tetanus, diphtheria, pertussis (Td/Tdap) ^{3*} | | Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs | | | | | |
| Varicella ^{4*} | | 2 doses | | | | | |
| Human papillomavirus (HPV) Female ^{5*} | | 3 doses | | | | | |
| Human papillomavirus (HPV) Male ^{5*} | | 3 doses | | | | | |
| Zoster ⁶ | | | | | | 1 dose | |
| Measles, mumps, rubella (MMR) ^{7*} | | 1 or 2 doses | | | | | |
| Pneumococcal 13-valent conjugate (PCV13) ^{8*} | | 1 dose | | | | | |
| Pneumococcal polysaccharide (PPSV23) ^{8,9} | | 1 or 2 doses | | | | | 1 dose |
| Meningococcal ^{10*} | | 1 or more doses | | | | | |
| Hepatitis A ^{11*} | | 2 doses | | | | | |
| Hepatitis B ^{11*} | | 3 doses | | | | | |
| <i>Haemophilus influenzae</i> type b (Hib) ^{14*} | | 1 or 3 doses | | | | | |

*Covered by the Vaccine Injury Compensation Program

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indication)

No recommendation

Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at www.vaers.hhs.gov or by telephone, 800-822-7967.

Information on how to file a Vaccine Injury Compensation Program claim is available at www.hrsa.gov/vaccinecompensation or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400.

Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at www.cdc.gov/vaccines or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 8:00 a.m. - 8:00 p.m. Eastern Time, Monday - Friday, excluding holidays.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), the American Academy of Family Physicians (AAFP), the American College of Physicians (ACP), American College of Obstetricians and Gynecologists (ACOG) and American College of Nurse-Midwives (ACNM).

NON-INFLUENZA ADULT VACCINATION COVERAGE

Data Source: National Health Interview Survey, 2012

- ❑ Annual in-home survey of U.S. non-institutionalized civilian population
- ❑ Detailed health survey of one sample adult in the household
- ❑ Provides national coverage estimates
- ❑ Final sample adult component:
 - Response rate: 61.2%
 - N = 34,218

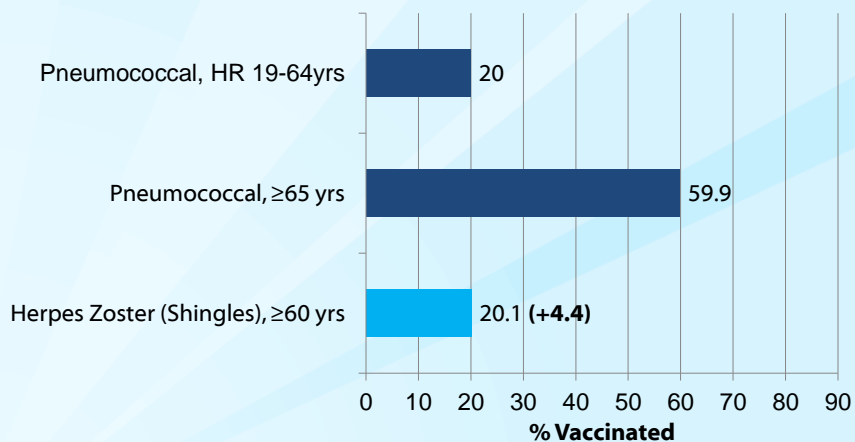
National Health Interview Survey, 2012 Vaccination Questions

- ❑ Influenza (not reported here)
- ❑ PPSV (or PCV13), Td/Tdap, HepA, HepB, Zoster, HPV
 - Proportion of pneumococcal vaccination by type not measured
 - Tdap vaccination of adults aged ≥ 65 years collected for the first time
- ❑ High-risk status
 - Limited information collected for Hep A, Hep B
 - Hep A (travel status & chronic liver disease)
 - Hep B (diabetes)
 - PPSV or PCV13
- ❑ Health Care Personnel (HCP)

Definition of High-Risk for Pneumococcal Disease

- ❑ **Adults were considered at high risk for pneumococcal disease if they had been told by a doctor or other health professional that they:**
 - Ever had:
 - Diabetes
 - Emphysema
 - Coronary Heart Disease, Angina, Heart Attack, or other Heart Condition
 - Lymphoma, Leukemia, or Blood Cancer
 - Had during the preceding 12 months:
 - Cancer Diagnosis (excluding nonmelanoma skin cancer)
 - Asthma Episode or Attack,
 - Chronic Bronchitis
 - Weak or Failing Kidneys
- ❑ **Or were Current Smokers**

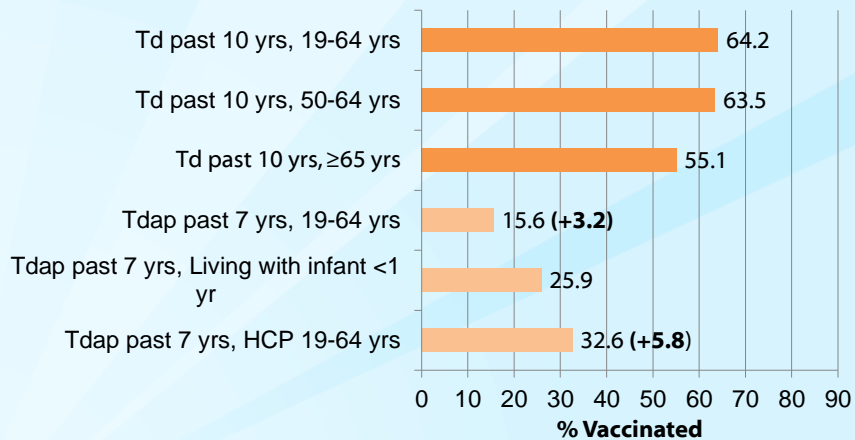
Adult Vaccination Coverage, Selected Vaccines by Age and High-risk Status, United States



HP2020 Targets: 90% PPV ≥65 yrs, 60% PPV HR 19-64 yrs, 30% Shingles

Data Source: 2012 NHIS

Adult Vaccination Coverage, Tetanus-containing Vaccines by Age and High-risk Status, United States



Data Source: 2012 NHIS

Tdap Estimates – NHIS, 2012: Potential for Bias

- ❑ **Many were excluded (33.8% of respondents):**
 - All those without a “yes” or “no” response for tetanus vaccination, past 10 years (5.4%)
 - All those without response to tetanus vaccination during 2005-2012 (3.7%)
 - Those who reported tetanus vaccination but not told what type (20.4%)
 - Those who reported tetanus vaccination but did not know the vaccine type (4.3%)
- ❑ **Sensitivity analysis to assess magnitude of bias -- Tdap coverage could range from: 11.2% -39.4% (adults 19-64 years); 6.0%-31.0% (adults ≥65 years)**

Tetanus Vaccination: Proportion Tdap, ≥ 19 years, NHIS 2012 – United States

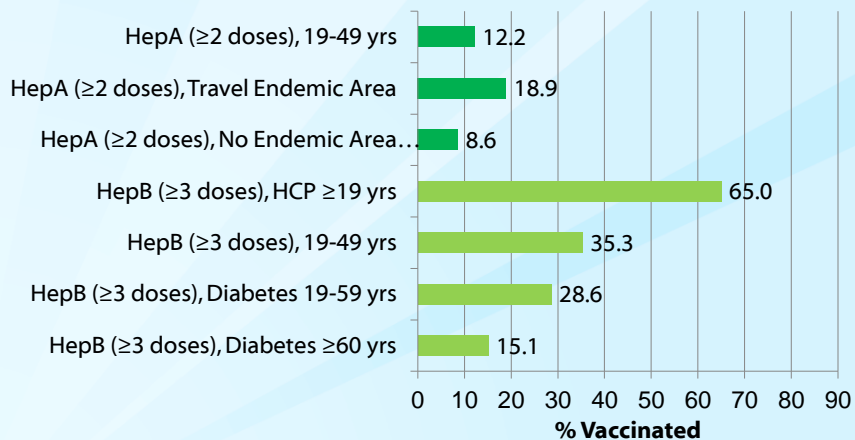
| Group | Not Told (%) | Not Recall (%) | Tdap/Td+Tdap* |
|----------------------------------------|--------------|----------------|-------------------------|
| Adults, ≥ 19 years, Overall | 52.6 | 11.1 | 65.4 |
| HCP [†] , ≥ 19 years | 33.1 | 9.3 | 76.3[§] |
| Non-HCP [†] , ≥ 19 years | 55.1 | 11.3 | 63.1 |

*Respondents who reported that the doctor did not inform them of the vaccine type they received and those who could not recall the vaccine type were excluded.

† Adults were classified as HCP if they reported they currently work in a hospital, medical clinic, doctor's office, dentist's office, nursing home or some other healthcare facility, including part-time and unpaid work as well as professional nursing care provided in the home.

§p<0.05 by T test for comparisons between HCP and non-HCP ≥ 19 years.

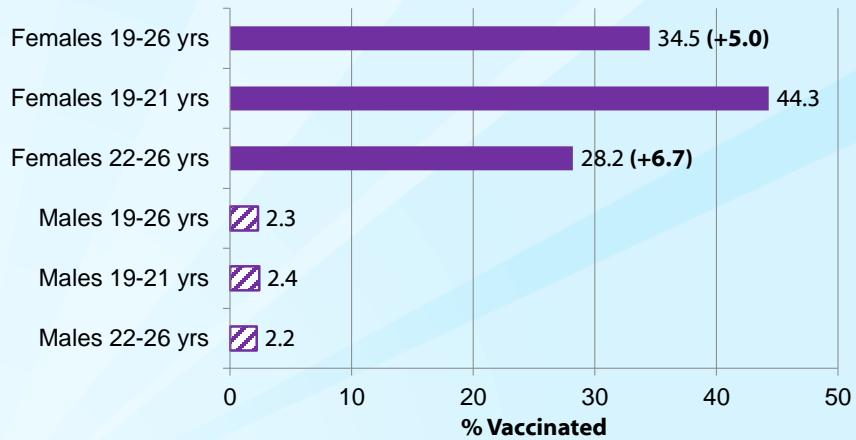
Adult Vaccination Coverage, Hepatitis A and B Vaccines by Age and High-risk Status, United States



HP2020 Target 90% HepB Healthcare Personnel (HCP)

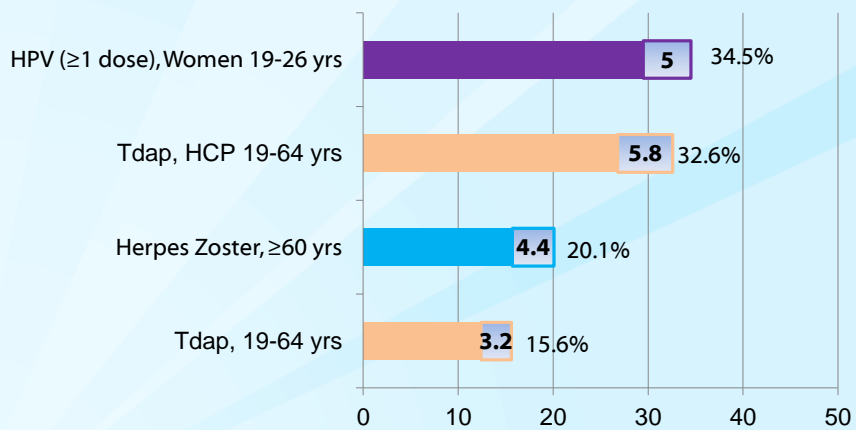
Data Source: 2012 NHIS

HPV Vaccination Coverage (≥ 1 dose ever), Adults 19-26 years by Sex, United States



Data Source: 2012 NHIS

Non-Influenza Adult Vaccination Coverage Vaccines with Increases from 2011 to 2012



Data Source: NHIS 2011-2012

Racial/Ethnic Vaccination Disparities -- NHIS 2012

| Vaccination Group | % Vaccinated Whites | Disparity, Blacks | Disparity, Hispanics | Disparity, Asians |
|-------------------------------|---------------------|-------------------|----------------------|-------------------|
| Pneumo., HR 19-64 yrs | 21 | -2 | -8 | -8 |
| Pneumo., ≥65 yrs | 64 | -18 | -21 | -23 |
| Tetanus, 19-49 yrs | 70 | -14 | -16 | -15 |
| Tetanus, 50-64 yrs | 68 | -15 | -15 | -19 |
| Tetanus, ≥65 yrs | 58 | -13 | -13 | -12 |
| Tdap, ≥19 yrs | 16 | -6 | -7 | -1 |
| Tdap, 19-64 yrs | 18 | -8 | -9 | -2 |
| Tdap, ≥65 yrs | 9 | -3 | -6 | -5 |
| HepA, 19-49 yrs | 12 | -1 | -2 | +7 |
| HepB, 19-49 yrs | 38 | -3 | -10 | +2 |
| Herpes Zoster, ≥60 yrs | 23 | -14 | -14 | -6 |
| HPV, Females 19-26 yrs | 42 | -13 | -24 | -27 |
| Tdap, HCP ≥19 yrs | 33 | -11 | -8 | +6 |
| HepB, HCP ≥19 yrs | 66 | -4 | -5 | +7 |

Racial/Ethnic Vaccination Disparities -- NHIS 2012

Compared with 2011, racial/ethnic differences persisted for all six and widened for Tdap, herpes zoster, and HPV:

- ❑ **Non-Hispanic blacks, Hispanics, and Non-Hispanic Asians had lower vaccination coverage than that of non-Hispanic whites for all of the vaccines routinely recommended for adults, except for:**
 - PPSV/PCV13 19-64-HR -- Blacks had coverage similar to whites
 - Tdap 19+ – Asians had coverage similar to whites
 - Tdap 65+ -- Blacks had coverage similar to whites
 - Hep A – Blacks had coverage similar to and Asians had coverage higher than whites
 - Hep B – Asians had coverage similar to whites
- ❑ **Health Care Personnel (HCP) – Non-Hispanic black and Hispanic HCP had lower coverage for Tdap, but coverage similar to whites for HepB**

Limitations of Findings

- ❑ **NHIS excludes persons in the military and those residing in institutions – results apply to the civilian, non-institutionalized population**
- ❑ **Response rate 61.2% -- low response rate can result in sampling bias if the nonresponse is unequal among participants regarding vaccination**
- ❑ **Self-report of vaccination subject to recall bias**
- ❑ **Tdap estimates: potential bias due to exclusions**
- ❑ **Age of vaccination not known for vaccines reported as “ever” received – unclear if vaccination occurred as an adult or as part of child or adolescent programs**

Conclusions

- ❑ **Overall coverage remains low**
 - Far below HP2020 targets of
 - 90% for 65+ years for pneumococcal vaccine
 - 60% for high risk 19-64 years for pneumococcal vaccine
 - 30% for 60+ years for Zoster vaccine
 - 90% for hepatitis B vaccine for healthcare personnel
- ❑ **Some improvement from 2011**
 - Modest increases for HPV (women, 19-26), Tdap (19-64 year olds), and herpes zoster (≥ 60 year olds) vaccines
 - No improvements for other vaccines
- ❑ **Racial and ethnic disparities remain**
- ❑ **Much remains to be done to increase vaccine utilization among adults and to eliminate disparities**

Collaborators

- ❑ Peng-Jun Lu, MD, PhD
- ❑ Alissa O'Halloran, MSPH
- ❑ Carolyn B. Bridges, MD
- ❑ Jennifer L. Liang, DVM
- ❑ Tamara Pilishvili, MPH
- ❑ Craig Hales, MD
- ❑ Walter W. Williams, MD

For Additional Information:

2014 Adult Schedule

- ❑ http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a7.htm?s_cid=mm6305a7_w
- ❑ <http://www.cdc.gov/vaccines/schedules/>

ACIP Recommendations for Specific Vaccines

- ❑ <http://www.cdc.gov/vaccines/hcp/acip-recs/index.html>

Noninfluenza Adult Vaccination Coverage

- ❑ http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a4.htm?s_cid=mm6305a4_w



<http://www.cdc.gov/>

Extra Slides

Highlights: Non-Influenza Adult Vaccination Coverage – NHIS 2012

Compared with 2011 NHIS, modest increases only for :

- ❑ Tdap vaccination (15.6%) – 19-64 years (+3.2 percentage points)
- ❑ Tdap vaccination, HCP (32.6%) – 19-64 years (+5.8 percentage points)
- ❑ Herpes zoster vaccination (20.1%) – ≥ 60 years (+4.4 percentage points)
- ❑ HPV vaccination (≥ 1 dose) (34.5%) – women, 19-26 years (+5.0 percentage points)
- ❑ No overall improvement in coverage for other vaccines

Tetanus Vaccination Including Pertussis Vaccine, Past 7 Years, 19-64 years, NHIS 2012 -- United States

| Group and Race/ethnicity | 2011 (%) | 2012 (%) | Difference* |
|----------------------------------------|----------|----------|-------------|
| 19-64 years, Overall | 12.5 | 15.6 | +3.2 |
| White, non-Hispanic | 13.8 | 18.2 | +4.4 |
| Black, non-Hispanic | 11.0† | 10.5† | |
| Hispanic | 7.7† | 9.2† | |
| Asian, non-Hispanic | 11.7 | 16.2 | +4.5 |
| Others | 19.7 | 22.7 | |
| Living with an infant aged <1 year | 21.5 | 25.9 | |
| Not living with an infant aged <1 year | 12.1 | 15.1 | +3.1 |

*p<0.05 by T test for comparisons between 2012 and 2011 within each level of each characteristic.
 † p<0.05 by T test for comparisons with non-Hispanic white as the reference.

Herpes Zoster (shingles) Vaccination, 60 years and older, NHIS 2012 – United States

| Group and Race/ethnicity | 2011 (%) | 2012 (%) | Difference* |
|-----------------------------------|----------|----------|-------------|
| 60 years and over, Overall | 15.8 | 20.1 | +4.4 |
| White, non-Hispanic | 17.6 | 22.8 | +5.2 |
| Black, non-Hispanic | 7.9† | 8.8† | |
| Hispanic | 8.0† | 8.7† | |
| Asian, non-Hispanic | 14.0† | 16.9† | |
| Others | 12.0 | 19.7 | |

*p<0.05 by T test for comparisons between 2012 and 2011 within each level of each characteristic.
†p<0.05 by T test for comparison with non-Hispanic white as the reference.

Human Papillomavirus Vaccination Among Females (at least 1 dose), NHIS 2012 – United States

| Age Group and Race/ethnicity | 2011 (%) | 2012 (%) | Difference* |
|------------------------------|----------|----------|-------------|
| 19-26 years, Overall | 29.5 | 34.5 | +5.0 |
| White, non-Hispanic | 32.5 | 42.2 | +9.7 |
| Black, non-Hispanic | 28.3 | 29.1† | |
| Hispanic | 20.2† | 18.7† | |
| Asian, non-Hispanic | 22.3 | 15.6† | |
| Others | 39.0 | 41.2 | |
| 19-21 years, Overall | 43.1 | 44.3 | |
| 22-26 years, Overall | 21.5 | 28.2 | +6.7 |

*p<0.05 by T test for comparisons between 2012 and 2011 within each level of each characteristic.
†p<0.05 by T test for comparison with non-Hispanic white as the reference.

Adult Vaccination Coverage, Selected Vaccines, by Age & High-risk Status, NHIS 2012 -- United States

| Group | 2011 (%) | 2012 (%) | Difference* |
|---------------------------------------------|----------|----------|-------------|
| Pneumococcal | | | |
| 19-64 years, HR, overall | 20.1 | 20.0 | |
| ≥65 years, overall | 62.3 | 59.9 | |
| Tetanus, Past 10 Years | | | |
| 19-49 years, overall | 64.5 | 64.2 | |
| 50-64 years, overall | 63.9 | 63.5 | |
| ≥65 years, overall | 54.4 | 55.1 | |
| Tetanus with Pertussis, Past 7 Years | | | |
| 19-64 years, overall | 12.5 | 15.6 | +3.2 |
| Living w/ infant aged <1 year | 21.5 | 25.9 | |

*p<0.05 by T-test for comparisons between 2012 and 2011.

Adult Vaccination Coverage, Selected Vaccines, by Age & High-risk Status, NHIS 2012 -- United States

| Group | 2011 (%) | 2012 (%) |
|---------------------------------------|----------|----------|
| Hepatitis A (at least 2 doses) | | |
| 19-49 years, overall | 12.5 | 12.2 |
| 19-49 yrs, Chronic Liver Disease | 17.1 | --- |
| Traveled to endemic area | 20.1 | 18.9 |
| No travel to endemic area | 8.4* | 8.6* |
| Hepatitis B (at least 3 doses) | | |
| 19-49 years, overall | 35.9 | 35.3 |
| 19-59 yrs, with diabetes, overall | 26.9 | 28.6 |
| ≥60 years, w/ diabetes, overall | 12.4 | 15.1 |

*p<0.05 by T-test for comparisons with had not traveled to endemic area as the reference.

Adult Vaccination Coverage, Selected Vaccines, by Age & High-risk Status, NHIS 2012 -- United States

| Group | 2011 (%) | 2012 (%) | Difference* |
|--------------------------------------|----------|----------|-------------|
| Herpes Zoster (Shingles) | | | |
| ≥60 years, overall | 15.8 | 20.1 | +4.4 |
| Human Papillomavirus, Females | | | |
| 19-26 years, overall | 29.5 | 34.5 | +5.0 |
| 19-21 years, overall | 43.1 | 44.3 | |
| 22-26 years, overall | 21.5 | 28.2 | +6.7 |
| Human Papillomavirus, Males | | | |
| 19-26 years, overall | 2.1 | 2.3 | |
| 19-21 years, overall | 2.8 | 2.4 | |
| 22-26 years, overall | 1.7 | 2.2 | |

*p<0.05 by T-test for comparisons between 2012 and 2011.

Health Care Personnel (HCP) Tetanus Vaccination Including Pertussis Vaccine, past 7 years, and Hepatitis B Vaccination, by Age, NHIS 2012 – United States

| Race/ethnicity | 2011 (%) | 2012 (%) | Difference* |
|-------------------------------------|----------|----------|-------------|
| HCP†, Tetanus with pertussis | | | |
| 19-64 years, overall | 26.8 | 32.6 | +5.8 |
| HCP†, Hepatitis B | | | |
| ≥19 years, overall | 63.8 | 65.0 | |

*p<0.05 by T test for comparisons between 2012 and 2011.

†Adults were classified as HCP if they reported they currently work in a hospital, medical clinic, doctor's office, dentist's office, nursing home or some other healthcare facility, including part-time and unpaid work as well as professional nursing care provided in the home.