Your Workforce and the Importance of Vaccination for Adults
Resource Disclaimer

This resource is being provided as an educational service by Merck. Compilation and publication of this information constitutes neither approval of nor endorsement by Merck of the organizations or the opinions, inferences, findings, or conclusions stated or implied by the authors of the information contained on the Web sites.
As health care costs continue to rise, many businesses are opting to implement Worksite Health Integrated Promotion Programs in order to reduce medical expenditures and increase the productivity of employees.¹,²,³

Studies demonstrate that effort and investment put toward the prevention of disease are linked to an overall increase in employee productivity¹ and strong return on investment.⁴

- Decrease in absenteeism (employee’s time away from work due to illness or disability)¹,⁵
- Decrease in presenteeism (being present at work, but limited in some aspects of job performance by a health problem)¹,⁵

Levels of Prevention

- **Primary Prevention** focuses on enhancing health promotion.\(^2\)
- **Secondary Prevention** involves the detection or diagnosis of disease in the early stages before it becomes symptomatic or debilitating.\(^2\)
- **Tertiary Prevention** attempts to avoid or delay the complications of disease after it has developed.\(^2\)
  - Current focus of medical care in the United States

---

Worksite Health Integrated Promotion Programs Support Prevention Efforts

- Worksite Health Integrated Promotion Programs aim to prevent the occurrence of disease or the progression of disease from its early stages to one that is more severe.\(^1\)
- Integrated worksite health programs are associated with:\(^2\)
  
  - Health risks
  - Total health-related costs
  - Employee productivity

- Improvements in prevention, detection, and treatment of common chronic conditions could reduce annual treatment costs in the United States by $217 billion and reduce health-related productivity losses by $905 billion by 2023.\(^2\)

Adult Vaccines Are Underutilized in the United States

- Regarding the release of a national survey showing low adult vaccination rates in the United States, a Dr. Anne Schuchat of the Centers for Disease Control and Prevention (CDC) stated:

  “We really need to get beyond the mentality that vaccines are for kids….We obviously have a lot more work to do.”

---

Low Adult Vaccination Rates Are in Stark Contrast to the High Rates Among US Children

- Childhood vaccination rates remain at or near highest levels in the United States, but many adults are not vaccinated as recommended.\(^1,2\)
- In a 2007 publication of policy principles about adult vaccination, the Infectious Diseases Society of America described the situation as follows:

> "Although >90% of young children have received the individual vaccines recommended for them, coverage for adult vaccines can range from 26% to 65%, depending on the vaccine and the target population."\(^1\)

- Regarding the lack of substantial increase in the 2010 adult vaccination rates, Dr. Carolyn Bridges from the Centers for Disease Control and Prevention stated:

> "There is not enough information about which vaccines are needed for adults and unlike children, who have regularly scheduled doctors' visits for vaccines, this is not the case for adults."\(^3\)

Healthy People 2020: Vaccination and Infectious Diseases

Problem

Adult vaccination rates are far lower than childhood rates and lower than other preventive services such as blood pressure and breast cancer screening.1–4

Goal

Increase vaccination rates and reduce preventable infectious diseases5

Important Information About PNEUMOVAX 23

About PNEUMOVAX 23

PNEUMOVAX 23 is a vaccine indicated for active immunization for the prevention of pneumococcal disease caused by the 23 serotypes contained in the vaccine (1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19F, 19A, 20, 22F, 23F, and 33F).

PNEUMOVAX 23 is approved for use in persons 50 years of age or older and persons aged ≥2 years who are at increased risk for pneumococcal disease.

PNEUMOVAX 23 will not prevent disease caused by capsular types of pneumococcus other than those contained in the vaccine.

Select Safety Information

Do not administer PNEUMOVAX 23 to individuals with a history of a hypersensitivity reaction to any component of the vaccine.

Use caution and appropriate care in administering PNEUMOVAX 23 to individuals with severely compromised cardiovascular and/or pulmonary function in whom a systemic reaction would pose a significant risk.
Important Information About PNEUMOVAX 23

Select Safety Information (continued)

The most common adverse reactions, reported in >10% of subjects vaccinated with PNEUMOVAX 23 in clinical trials, were: injection-site pain/soreness/tenderness, injection-site swelling/induration, headache, injection-site erythema, asthenia and fatigue, and myalgia.

Vaccination with PNEUMOVAX 23 may not offer 100% protection from pneumococcal infection.

Before administering PNEUMOVAX 23, please read the Prescribing Information available at this presentation.
Important Information About RECOMBIVAX HB

About RECOMBIVAX HB

RECOMBIVAX HB is indicated for vaccination against infection caused by all known subtypes of hepatitis B virus.

RECOMBIVAX HB will not prevent hepatitis caused by other agents, such as hepatitis A virus, hepatitis C virus, hepatitis E virus or other viruses known to infect the liver.

RECOMBIVAX HB Dialysis Formulation is indicated for vaccination of adult predialysis and dialysis patients against infection caused by all known subtypes of hepatitis B virus.

Select Safety Information

RECOMBIVAX HB is contraindicated in the presence of hypersensitivity to yeast or any component of the vaccine.

Use caution when vaccinating latex-sensitive individuals since the vial stopper and the syringe plunger stopper and tip cap contain dry natural latex rubber that may cause allergic reactions.

Any serious active infection including febrile illness is reason for delaying use of the vaccine except when in the opinion of the physician, withholding the vaccine entails a greater risk.
Important Information About RECOMBIVAX HB

Select Safety Information (continued)

Predialysis and dialysis adult patients respond less well to hepatitis B vaccines than do healthy individuals; however, vaccination of adult patients early in the course of their renal disease produces higher seroconversion rates than vaccination after dialysis has been initiated.

In a group of studies involving healthy adults, the most frequent complaints (≥1% of injections) in individuals receiving RECOMBIVAX HB included injection-site reactions, fatigue/weakness, headache, fever (≥100 F), malaise, nausea, diarrhea, pharyngitis, and upper respiratory infection.

In a study that compared the 3-dose regimen (5 mcg) with the 2-dose regimen (10 mcg) of RECOMBIVAX HB in adolescents, the overall frequency of adverse reactions was generally similar. For a list of adverse reactions, please read the Prescribing Information.

The duration of the protective effect of RECOMBIVAX HB in healthy vaccinees is unknown at present, and the need for booster doses is not yet defined.

As with any vaccine, vaccination with RECOMBIVAX HB may not result in seroprotection of all vaccinees.

Before administering RECOMBIVAX HB, please read the Prescribing Information available at this presentation.
Important Information About ZOSTAVAX

About ZOSTAVAX

ZOSTAVAX is a live attenuated virus vaccine indicated for prevention of herpes zoster (shingles) in individuals 50 years of age and older. ZOSTAVAX is not indicated for the treatment of zoster or postherpetic neuralgia. ZOSTAVAX should not be used for prevention of primary varicella infection (Chickenpox).

Select Safety Information

Vaccination with ZOSTAVAX does not result in protection of all vaccine recipients.

ZOSTAVAX is contraindicated in: persons with a history of anaphylactic or anaphylactoid reaction to gelatin, neomycin, or any other component of the vaccine; persons with a history of primary or acquired immunodeficiencies; persons on immunosuppressive therapy; pregnant women or women of childbearing age.

A reduced immune response to ZOSTAVAX was observed in individuals who received concurrent administration of PNEUMOVAX®23 (Pneumococcal Vaccine Polyvalent) and ZOSTAVAX compared with individuals who received these vaccines 4 weeks apart. Consider administration of the two vaccines separated by at least 4 weeks.
Important Information About ZOSTAVAX

Select Safety Information (continued)

Serious vaccine-related adverse reactions that have occurred following vaccination with ZOSTAVAX include asthma exacerbation and polymyalgia rheumatica. Other serious adverse events reported following vaccination with ZOSTAVAX include cardiovascular events (congestive heart failure, pulmonary edema). The rate of serious adverse reactions from Days 0 to 42 postvaccination may be increased. Common adverse reactions occurring in ≥1% of vaccinated individuals during clinical trials include injection-site reactions (erythema, pain/tenderness, swelling, hematoma, pruritus, warmth) and headache.

Transmission of vaccine virus may occur between vaccinees and susceptible contacts. Deferral should be considered in acute illness (for example, in the presence of fever) or in patients with active untreated tuberculosis.

Before administering ZOSTAVAX, please read the Prescribing Information available at this presentation.
Healthy People 2020: Objectives Related to Vaccination Rates


- Achieve and maintain effective vaccination rates for universally recommended vaccines among young children
- Maintain vaccination rates for children in kindergarten
- Increase routine vaccination rates for adolescents
- Increase the percentage of appropriate adults who are vaccinated against:
  - Pneumococcal disease
  - Herpes zoster (shingles)
  - Hepatitis B (high-risk individuals)
Selected Adult Vaccination Rates

![Bar chart showing vaccination rates for Zoster/shingles, ever (≥60 y) and 2020 Goal (30%)<sup>a</sup>, Pneumococcal, ever (19–64 y high risk) and 2020 Goal (60%)<sup>4</sup>, Pneumococcal, ever (≥65 y) and 2020 Goal (90%)<sup>a</sup>, and Hepatitis B, ≥3 doses, ever (19–49 y) and 2020 Goal (60%)<sup>4</sup>.]

<sup>a</sup>The National Health Immunization Survey–Adult used in-person interviews. Vaccinations were self-reported and not validated by comparing to the respondent’s medical chart. Note: figures in the bar graph are rounded.

ACIP Recommendations

- The Advisory Committee on Immunization Practices (ACIP) was created by the Surgeon General to provide comprehensive guidelines for pediatric, adolescent, and adult vaccination.¹

- The recommended vaccination schedules include information regarding:¹
  - Age for vaccine administration
  - Number of doses
  - Dosing intervals
  - Contraindications and precautions

- These schedules are reviewed and revised every 3 to 5 years by the ACIP in collaboration with health care professionals and public health officials.²

## Selected Recommended Adult Vaccination Schedule<sup>a</sup>

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age Group (years)</th>
<th>19–21</th>
<th>22–26</th>
<th>27–49</th>
<th>50–59</th>
<th>60–64</th>
<th>≥65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis A&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-risk adults: 2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-risk adults: 3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All adults: 1 dose annually</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All adults: 1 or 2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-risk adults: 1 or more doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal (polysaccharide)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-risk adults: 1 or 2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Td/Tdap&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All adults: substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All adults: 2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoster</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All adults: 1 dose&lt;sup&gt;d&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For all persons in this category who meet the age requirement and who lack documentation of vaccination or have no evidence of previous infection. Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications).

---

<sup>a</sup>The schedule seen on this slide has been adapted from the full and complete ACIP schedule. See Appendix on Slides 37 through 40 for important details regarding the vaccines listed above.

<sup>b</sup>Covered by the Vaccine Injury Compensation Program.

<sup>c</sup>Tdap recommended for ≥65 years if contact with <12-month-old child. Either Td or Tdap can be used if no infant contact.

<sup>d</sup>A single dose of zoster vaccine is recommended for adults 60 years of age or older regardless of whether they report a prior episode of herpes zoster. Although the vaccine is licensed by the FDA for use among and can be administered to persons 50 years and older, ACIP recommends that vaccination begins at 60 years of age.

MMR=measles, mumps, and rubella; Td=tetanus and diphtheria; Tdap=tetanus, diphtheria, pertussis.

Important Information About VAQTA

About VAQTA

VAQTA is indicated for the prevention of disease caused by hepatitis A virus (HAV) in persons 12 months of age and older. The primary dose should be given at least 2 weeks prior to expected exposure to HAV.

Select Safety Information

Do not administer VAQTA to individuals with a history of immediate allergic or hypersensitivity reactions (eg, anaphylaxis) after a previous dose of any hepatitis A vaccine or with an anaphylactic reaction to neomycin.

Use caution when administering VAQTA to individuals with latex allergies.

The most common local adverse reactions and systemic adverse events reported in different clinical trials across different age groups were:

Children – 12 through 23 months of age: injection-site pain/tenderness (6.8%–42.1%) and fever (12.3%–18.5%).

Children/Adolescents – 2 through 18 years of age: injection-site pain (18.7%) and headache (2.3%).

Adults – 19 years of age and older: injection-site pain, tenderness, or soreness (67.0%) and headache (16.1%).
Important Information About VAQTA

Dosage and Administration

Children/Adolescents (12 months through 18 years of age): Vaccination consists of a 0.5 mL primary dose administered intramuscularly and a 0.5 mL booster dose administered intramuscularly 6 to 18 months later.

Interchangeability of the Booster Dose: A booster dose of VAQTA may be given at 6 to 12 months following the primary dose of another inactivated hepatitis A vaccine (ie, HAVRIX).

Adults (≥19 years of age): Vaccination consists of a 1.0 mL primary dose administered intramuscularly and a 1.0 mL booster dose administered intramuscularly 6 to 18 months later.

Vaccination with VAQTA may not result in a protective response in all susceptible vaccinees.

Before administering VAQTA, please read the Prescribing Information available at this presentation.
Important Information About AFLURIA

About AFLURIA

AFLURIA is an inactivated influenza virus vaccine indicated for active immunization against influenza disease caused by influenza virus subtypes A and type B present in the vaccine. AFLURIA is approved for use in persons 5 years of age and older.

Select Safety Information

AFLURIA is contraindicated in individuals with known severe allergic reactions (eg, anaphylaxis) to any component of the vaccine including egg protein, or to a previous dose of any influenza vaccine.

Administration of CSL's 2010 Southern Hemisphere influenza vaccine was associated with postmarketing reports of increased rates of fever and febrile seizures in children predominantly below the age of 5 years as compared to previous years; these increased rates were confirmed by postmarketing studies. Febrile events were also observed in children 5 to less than 9 years of age.

Guillain-Barré Syndrome (GBS) has occurred following vaccination with AFLURIA. If GBS has occurred within 6 weeks of previous influenza vaccination, the decision to give AFLURIA should be based on careful consideration of the potential benefits and risks.

If AFLURIA is administered to immunocompromised persons, including those receiving immunosuppressive therapy, the immune response may be diminished.

AFLURIA should be given to a pregnant woman only if clearly needed.
Important Information About AFLURIA

Select Safety Information (continued)

AFLURIA has not been evaluated in nursing mothers. It is not known whether AFLURIA is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when AFLURIA is administered to a nursing woman.

Antibody responses in persons 65 years of age and older were lower after administration of AFLURIA as compared to younger adult subjects.

In children 5 through 17 years of age, the most common injection-site reactions observed in clinical studies with AFLURIA were pain, redness, and swelling. The most common systemic adverse events were headache, myalgia, malaise, and fever.

In adults 18 through 64 years of age, the most common injection-site adverse reactions observed in clinical studies with AFLURIA were tenderness and pain. The most common systemic adverse reactions observed were headache, malaise, and muscle aches.

In adults 65 years of age and older, the most common injection-site adverse reactions observed in clinical studies with AFLURIA were tenderness and pain.

There are no data to assess the concomitant administration of AFLURIA with other vaccines. If AFLURIA is to be given at the same time as another injectable vaccine(s), the vaccine(s) should be administered at different injection sites.

AFLURIA should not be mixed with any other vaccine in the same syringe or vial.
Important Information About AFLURIA

Select Safety Information (continued)

Vaccination with AFLURIA may not protect all individuals.

Before administering AFLURIA, please read the Prescribing Information available at this presentation.

AFLURIA is a registered trademark of CSL Limited.
Important Information About M-M-R®II

About M-M-R®II

M-M-R®II is indicated for simultaneous vaccination against measles, mumps, and rubella in individuals 12 months of age or older. M-M-R®II should be given 1 month before or after administration of other live viral vaccines.

Select Safety Information

M-M-R®II is contraindicated in certain individuals, including those with: a history of hypersensitivity to any component of the vaccine, including gelatin; a history of anaphylactic or anaphylactoid reaction to neomycin; blood dyscrasias, leukemia, lymphomas of any type, or other malignant neoplasms affecting the bone marrow or lymphatic systems; an immunodeficient condition or receiving immunosuppressive therapy; an active febrile illness; or those who are pregnant.

Due caution should be employed in administration of M-M-R®II to persons with a history of cerebral injury, individual or family histories of convulsions, or any other condition in which stress due to fever should be avoided.

The following adverse reactions have been reported with M-M-R®II without regard to causality: fever, headache, dizziness, rash, injection-site reactions, febrile convulsions, anaphylaxis and anaphylactoid reactions, arthritis, and thrombocytopenia.

As for any vaccine, vaccination with M-M-R®II may not result in protection in 100% of vaccinees.
Important Information About M-M-R®II

Dosage and Administration

*FOR SUBCUTANEOUS ADMINISTRATION. Do not inject intravascularly.*

Immune Globulin (IG) is not to be given concurrently with M-M-R®II.

*Before administering M-M-R®II, please read the Prescribing Information available at this presentation.*
Important Information About Tetanus and Diphtheria Toxoids Adsorbed

About Tetanus and Diphtheria Toxoids Adsorbed

Tetanus and Diphtheria Toxoids Adsorbed (Td) is a vaccine indicated for active immunization for the prevention of tetanus and diphtheria. This vaccine is approved for use in persons 7 years of age and older.

Select Safety Information

The tetanus diphtheria vaccine is contraindicated in patients with hypersensitivity to any component of the vaccine or who have had a severe allergic reaction after a previous dose of this vaccine or any other Td vaccine.

Persons who experienced an Arthus-type hypersensitivity reaction following a prior dose of a tetanus toxoid-containing vaccine usually have high serum tetanus antitoxin levels and should not receive the Td vaccine more frequently than every 10 years, even for tetanus prophylaxis as part of wound management.

If Guillain-Barré Syndrome occurred within 6 weeks after receipt of a previous dose of tetanus toxoid-containing vaccine, the decision to give subsequent doses of the Td vaccine or any vaccine containing tetanus toxoid should be based on careful consideration of the potential benefits and possible risks.
Important Information About Tetanus and Diphtheria Toxoids Adsorbed

Select Safety Information (continued)

The most common local adverse reactions associated with Td vaccine may include erythema (redness), tenderness, and swelling at the injection site. Common systemic reactions may include headache, malaise, and temperature elevations.

Vaccination with Td vaccine may not protect all individuals.

Before administering Tetanus and Diphtheria Toxoids Adsorbed, please read the Prescribing Information available at this presentation.
Important Information About VARIVAX

About VARIVAX

VARIVAX is indicated for vaccination against varicella in individuals 12 months of age and older.

Children 12 months to 12 years of age should receive a 0.5-mL dose administered subcutaneously; if a second 0.5-mL dose is administered, it should be given a minimum of 3 months later. Adolescents and adults 13 years of age and older should receive a 0.5-mL dose administered subcutaneously at elected date and a second 0.5-mL dose 4 to 8 weeks later.

The duration of protection of VARIVAX is unknown; however, long-term efficacy studies have demonstrated continued protection up to 10 years after vaccination.

Select Safety Information

VARIVAX is contraindicated in certain individuals, including those with: a history of hypersensitivity to any component of the vaccine, including gelatin; a history of anaphylactoid reaction to neomycin; blood dyscrasias, leukemia, lymphomas of any type, or other malignant neoplasms affecting the bone marrow or lymphatic systems; an immunodeficient condition or receiving immunosuppressive therapy; active, untreated tuberculosis; active febrile illness; or those who are pregnant.

In children, adolescents, and adults monitored for up to 42 days, the adverse effects most frequently reported were as follows: fever, injection-site complaints, varicella-like rash (injection site), and varicella-like rash (generalized).
In a clinical trial involving children who received 2 doses of VARIVAX 3 months apart, the incidence of injection-site clinical complaints (primarily erythema and swelling) observed in the first 4 days following vaccination was slightly higher post-dose 2 (overall incidence 25.4%) than post-dose 1 (overall incidence 21.7%), whereas the incidence of systemic clinical complaints in the 42-day follow-up period was lower post-dose 2 (66.3%) than post-dose 1 (85.8%).

The duration of protection from varicella infection after vaccination with VARIVAX is unknown. Vaccination with VARIVAX may not result in protection of all healthy, susceptible children, adolescents, and adults.

Dosage and Administration

Children 12 months to 12 years of age should receive a 0.5-mL dose administered subcutaneously; if a second 0.5-mL dose is administered, it should be given a minimum of 3 months later.

Adolescents and adults 13 years of age and older should receive a 0.5-mL dose administered subcutaneously at elected date and a second 0.5-mL dose 4 to 8 weeks later.
Important Information About VARIVAX

Dosage and Administration (continued)

VARIVAX is for subcutaneous administration. Do not inject intravascularly. Do not give immune globulin, including Varicella Zoster Immune Globulin, concurrently with VARIVAX.

Before administering VARIVAX, please read the Prescribing Information available at this presentation.
Vaccination as Part of the Patient Protection and Affordable Care Act

**Routine Vaccinations**¹,²
Increases consumer coverage and access to all ACIP-recommended vaccines at first dollar coverage, including:
- Influenza, meningitis, tetanus, hepatitis A, hepatitis B, measles, mumps, rubella, and varicella

**Evidence-Based Screenings & Counseling**²,a
Screening for depression, diabetes, cholesterol, obesity, various cancers, HIV and sexually transmitted infections, as well as counseling for drug and tobacco use, healthy eating, and other common health concerns²

**Preventive Services for Children & Youth**²
Vaccinations, screening services, behavioral and developmental assessments, iron and fluoride supplements, and screening for autism, vision impairment, lipid disorders, tuberculosis, and certain genetic diseases

**Preventive Services for Women**²
Vaccinations, screening and counseling services, annual well-woman visits, testing for STIs and HIV, support for breast feeding and screening and counseling for domestic violence, and contraceptionb

a Insurers will provide coverage for evidence-based items or services that have a rating of “A” or “B” in the current recommendations of the United States Preventive Services Task Force. An “A” or “B” letter grade indicates that the panel finds there is high certainty that the services have a substantial or moderate net benefit.

b As prescribed by clinician along with patient education and counseling on contraception.

Adults Have Low Awareness of Vaccine-Preventable Diseases\textsuperscript{1,a}

Percent of adults who say they are “extremely or very familiar” with vaccine-preventable diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>70</td>
<td>78</td>
</tr>
<tr>
<td>Shingles</td>
<td>43</td>
<td>49</td>
</tr>
<tr>
<td>Pertussis</td>
<td>32</td>
<td>49</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Meningitis</td>
<td>36</td>
<td>41</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

\textsuperscript{a}This National Foundation for Infectious Diseases Survey used telephone interviews conducted October 15–18, 2010, with a sample of 1013 adults aged ≥18 years (513 men and 500 women). Interviews were weighted by age, gender, geographic region, and race to ensure reliable and accurate representation of the total US adult population. The margin of error is ±3% for the entire sample.

Health Literacy Affects Health Outcomes

- Health literacy is the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.

- It can influence a patient’s:
  - Knowledge about medical conditions and treatment
  - Use of preventive services
  - Rates of hospitalization
  - Health status
  - Medical costs
  - Safety

Possible Solutions to Increase Adult Vaccination Rates
Progressive Employer Business Model: Savannah Business Group (SBG)

**Program Details**

- **12-Month Patient Education Program:**
  - Oct 2010-Sept 2011
- **Distribute Monthly Patient Education Topics:**
  - Posters, tear sheets, Web links, etc.
- **Action by Merck:**
  - Deliver resources one week prior to rotation
- **Community Action:**
  - Distribute education
- **Goal:**
  - Increase the awareness of Savannah residents around ways to stay healthier

**1Q: October–December**

- **October:** Disease Awareness for Adults
- **November:** Influenza Disease
- **December:** Keeping Accurate Health Records/Hand Washing

**2Q: January–March**

- **January:** Disease Awareness for Adolescents and Teens
- **February:** Rotavirus Disease
- **March:** Worksite Illnesses (Tetanus, Lyme Disease, Whooping Cough)

**3Q: April–June**

- **April:** Disease Awareness for Children
- **November:** Hepatitis Awareness
- **June:** Back to School

**4Q: July–September**

- **July:** Zoster (Shingles) Disease
- **August:** Disease Awareness
- **September:** Pneumococcal Disease
Potential Delivery Mechanisms

- There are several ways an employer can encourage its employees to become vaccinated.
  - Primary care physician
  - Health fairs
    - Provide an opportunity to educate and vaccinate employee
  - On-site clinics at the workplace
    - Can reduce the many barriers that prevent workers from getting vaccinated\(^1\)
  - Pharmacies
    - 49 states allow pharmacists to administer vaccines\(^2\)

---
Appendix to Adult Vaccination Schedule

Additional Information

- Advisory Committee on Immunization Practices (ACIP) vaccine recommendations and additional information are available at: [http://www.cdc.gov/vaccines/pubs/acip-list.htm](http://www.cdc.gov/vaccines/pubs/acip-list.htm).
- Information on travel vaccine requirements and recommendations (e.g., for hepatitis A and B, meningococcal, and other vaccines) available at [http://wwwnc.cdc.gov/travel/page/vaccinations.htm](http://wwwnc.cdc.gov/travel/page/vaccinations.htm).

Influenza vaccination

- Annual vaccination against influenza is recommended for all persons 6 months of age and older.
- Persons 6 months of age and older, including pregnant women, can receive the trivalent inactivated vaccine (TIV).
- Healthy, nonpregnant adults younger than age 50 years without high-risk medical conditions can receive either intranasally administered live, attenuated influenza vaccine (LAIV) (FluMist), or TIV. Health-care personnel who care for severely immunocompromised persons (i.e., those who require care in a protected environment) should receive TIV rather than LAIV. Other persons should receive TIV.
- The intramuscular or intradermal administered TIV are options for adults aged 18–64 years.
- Adults aged 65 years and older can receive the standard dose TIV or the high-dose TIV (Fluzone High-Dose).

Tetanus, diphtheria, and acellular pertussis (Td/Tdap) vaccination

- Administer a one-time dose of Tdap to adults younger than age 65 years who have not received Tdap previously or for whom vaccine status is unknown to replace one of the 10-year Td boosters.
- Tdap is specifically recommended for the following persons:
  - pregnant women more than 20 weeks’ gestation,
  - adults, regardless of age, who are close contacts of infants younger than age 12 months (e.g., parents, grandparents, or child care providers), and
  - health-care personnel.
- Tdap can be administered regardless of interval since the most recent tetanus or diphtheria-containing vaccine.
- Pregnant women not vaccinated during pregnancy should receive Tdap immediately postpartum.
- Adults 65 years and older may receive Tdap.
- Adults with unknown or incomplete history of completing a 3-dose primary vaccination series with Td-containing vaccines should begin or complete a primary vaccination series. Tdap should be substituted for a single dose of Td in the vaccination series with Tdap preferred as the first dose.
- For unvaccinated adults, administer the first 2 doses at least 4 weeks apart and the third dose 6–12 months after the second.
- If incompletely vaccinated (i.e., less than 3 doses), administer remaining doses.

Refer to the ACIP statement for recommendations for administering Td/Tdap as prophylaxis in wound management (See footnote 1).

Varicella vaccination

- All adults without evidence of immunity to varicella (as defined below) should receive 2 doses of single-antigen varicella vaccine or a second dose if they have received only 1 dose.
- Special consideration for vaccination should be given to those who
  - have close contact with persons at high risk for severe disease (e.g., health-care personnel and family contacts of persons with immunocompromising conditions) or
  - are at high risk for exposure or transmission (e.g., teachers; child care employees; residents and staff members of institutional settings, including correctional institutions; college students; military personnel; adolescents and adults living in households with children; nonpregnant women of childbearing age; and international travelers).
- Pregnant women should be assessed for evidence of varicella immunity. Women who do not have evidence of immunity should receive the first dose of varicella vaccine upon completion or termination of pregnancy and before discharge from the health-care facility. The second dose should be administered 4–8 weeks after the first dose.
- Evidence of immunity to varicella in adults includes any of the following:
  - documentation of 2 doses of varicella vaccine at least 4 weeks apart;
  - U.S.-born before 1980 (although for health-care personnel and pregnant women, birth before 1980 should not be considered evidence of immunity);
  - history of varicella based on diagnosis or verification of varicella by a health-care provider (for a patient reporting a history of or having an atypical case, a mild case, or both, health-care providers should seek either an epidemiologic link to a typical varicella case or to a laboratory-confirmed case or evidence of laboratory confirmation, if it was performed at the time of acute disease);
  - history of herpes zoster based on diagnosis or verification of herpes zoster by a health-care provider; or
  - laboratory evidence of immunity or laboratory confirmation of disease.

Appendix to Adult Vaccination Schedule (cont’d)

Zoster vaccination
• A single dose of zoster vaccine is recommended for adults 60 years of age and older regardless of whether they report a prior episode of herpes zoster. Although the vaccine is licensed by the Food and Drug Administration (FDA) for use among and can be administered to persons 50 years and older, ACIP recommends that vaccination begins at 60 years of age.
• Persons with chronic medical conditions may be vaccinated unless their condition constitutes a contraindication, such as pregnancy or severe immunodeficiency.
• Although zoster vaccination is not specifically recommended for health-care personnel (HCP), HCP should receive the vaccine if they are in the recommended age group.

Measles, mumps, rubella (MMR) vaccination
• Adults born before 1957 generally are considered immune to measles and mumps. All adults born in 1957 or later should have documentation of 1 or more doses of MMR vaccine unless they have a medical contraindication to the vaccine, laboratory evidence of immunity to each of the three diseases, or documentation of provider-diagnosed measles or mumps disease.
• For rubella, documentation of provider-diagnosed disease is not considered acceptable evidence of immunity.

Measles component:
• A routine second dose of MMR vaccine, administered a minimum of 28 days after the first dose, is recommended for adults who
  — are students in postsecondary educational institutions;
  — work in a health-care facility; or
  — plan to travel internationally.
• Persons who received inactivated (killed) measles vaccine or measles vaccine of unknown type from 1963 to 1967 should be revaccinated with 2 doses of MMR vaccine.

Mumps component:
• A routine second dose of MMR vaccine, administered a minimum of 28 days after the first dose, is recommended for adults who
  — are students in postsecondary educational institutions;
  — work in a health-care facility; or
  — plan to travel internationally.
• Persons vaccinated before 1979 with either killed mumps vaccine or mumps vaccine of unknown type who are at high risk for mumps infection (e.g., persons who are working in a health-care facility) should be considered for revaccination with 2 doses of MMR vaccine.

Rubella component:
• For women of childbearing age, regardless of birth year, rubella immunity should be determined. If there is no evidence of immunity, women who are not pregnant should be vaccinated. Pregnant women who do not have evidence of immunity should receive MMR vaccine upon completion or termination of pregnancy and before discharge from the health-care facility.

Health-care personnel born before 1957:
• For unvaccinated health-care personnel born before 1957 who lack laboratory evidence of measles, mumps, and/or rubella immunity or laboratory confirmation of disease, health-care facilities should consider routinely vaccinating personnel with 2 doses of MMR vaccine at the appropriate interval for measles and mumps or 1 dose of MMR vaccine for rubella.

Pneumococcal polysaccharide (PPSV) vaccination
• Vaccinate all persons with the following indications:
  — age 65 years and older without a history of PPSV vaccination;
  — adults younger than 65 years with chronic lung disease (including chronic obstructive pulmonary disease, emphysema, and asthma); chronic cardiovascular diseases; diabetes mellitus; chronic liver disease (including cirrhosis); alcoholism; cochlear implants; cerebrospinal fluid leaks; immunocompromising conditions; and functional or anatomic asplenia (e.g., sickle cell disease and other hemoglobinopathies, congenital or acquired asplenia, splenic dysfunction, or splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]);
  — residents of nursing homes or long-term care facilities; and
  — adults who smoke cigarettes.
• Persons with asymptomatic or symptomatic HIV infection should be vaccinated as soon as possible after their diagnosis.
• When cancer chemotherapy or other immunosuppressive therapy is being considered, the interval between vaccination and initiation of immunosuppressive therapy should be at least 2 weeks. Vaccination during chemotherapy or radiation therapy should be avoided.
• Routine use of PPSV is not recommended for American Indians/Alaska Natives or other persons younger than 65 years of age unless they have underlying medical conditions that are PPSV indications. However, public health authorities may consider recommending PPSV for American Indians/Alaska Natives who are living in areas where the risk for invasive pneumococcal disease is increased.

Appendix to Adult Vaccination Schedule\(^1\) (cont’d)

**Revaccination with PPSV**
- One-time revaccination 5 years after the first dose is recommended for persons 19 through 64 years of age with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); and for persons with immunocompromising conditions.
- Persons who received PPSV before age 65 years for any indication should receive another dose of the vaccine at age 65 years or later if at least 5 years have passed since their previous dose.
- No further doses are needed for persons vaccinated with PPSV at or after age 65 years.

**Meningococcal vaccination**
- Administer 2 doses of meningococcal conjugate vaccine quadrivalent (MCV4) at least 2 months apart to adults with functional asplenia or persistent complement component deficiencies.
- HIV-infected persons who are vaccinated should also receive 2 doses.
- Administer a single dose of meningococcal vaccine to microbiologists routinely exposed to isolates of *Neisseria meningitidis*, military recruits, and persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic.
- First-year college students up through age 21 years who are living in residence halls should be vaccinated if they have not received a dose on or after their 16th birthday.
- MCV4 is preferred for adults with any of the preceding indications who are 55 years old and younger; meningococcal polysaccharide vaccine (MPSV4) is preferred for adults 56 years and older.
- Revaccination with MCV4 every 5 years is recommended for adults previously vaccinated with MCV4 or MPSV4 who remain at increased risk for infection (e.g., adults with anatomic or functional asplenia or persistent complement component deficiencies).

**Hepatitis A vaccination**
- Vaccinate any person seeking protection from hepatitis A virus (HAV) infection and persons with any of the following indications:
  - Men who have sex with men and persons who use injection drugs;
  - Persons working with HAV-infected primates or with HAV in a research laboratory setting;
  - Persons with chronic liver disease and persons who receive clotting factor concentrates;
  - Persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A; and
  - Unvaccinated persons who anticipate close personal contact (e.g., household or regular babysitting) with an international adoptee during the first 60 days after arrival in the United States from a country with high or intermediate endemicity. (See footnote 1 for more information on travel recommendations). The first dose of the 2-dose hepatitis A vaccine series should be administered as soon as adoption is planned, ideally 2 or more weeks before the arrival of the adoptee.
- Single-antigen vaccine formulations should be administered in a 2-dose schedule at either 0 and 6–12 months (Havrix), or 0 and 6–18 months (Vaqta). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose schedule may be used, administered on days 0, 7, and 21–30 followed by a booster dose at month 12.

---

Appendix to Adult Vaccination Schedule\(^1\) (cont’d)

**Hepatitis B vaccination**
- Vaccinate persons with any of the following indications and any person seeking protection from hepatitis B virus (HBV) infection:
  - Sexually active persons who are not in a long-term, mutually monogamous relationship (e.g., persons with more than one sex partner during the previous 6 months);
  - Persons seeking evaluation or treatment for a sexually transmitted disease (STD); current or recent injection-drug users; and men who have sex with men;
  - Health-care personnel and public-safety workers who are exposed to blood or other potentially infectious body fluids;
  - Persons with diabetes younger than 60 years as soon as feasible after diagnosis; persons with diabetes who are 60 years or older at the discretion of the treating clinician based on increased need for assisted blood glucose monitoring in long-term care facilities, likelihood of acquiring hepatitis B infection, its complications or chronic sequelae, and likelihood of immune response to vaccination;
  - Persons with end-stage renal disease, including patients receiving hemodialysis; persons with HIV infection; and persons with chronic liver disease;
  - Household contacts and sex partners of persons with chronic HBV infection; clients and staff members of institutions for persons with developmental disabilities; and international travelers to countries with high or intermediate prevalence of chronic HBV infection; and
  - All adults in the following settings: STD treatment facilities; HIV testing and treatment facilities; facilities providing drug-abuse treatment and prevention services; healthcare settings targeting services to injection-drug users or men who have sex with men; correctional facilities; end-stage renal disease programs and facilities for chronic hemodialysis patients; and institutions and nonresidential daycare facilities for persons with developmental disabilities.
- Administer missing doses to complete a 3-dose series of hepatitis B vaccine to those persons not vaccinated or not completely vaccinated. The second dose should be administered 1 month after the first dose; the third dose should be given at least 2 months after the second dose (and at least 4 months after the first dose). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, give 3 doses at 0, 1, and 6 months; alternatively, a 4-dose Twinrix schedule, administered on days 0, 7, and 21–30 followed by a booster dose at month 12 may be used.
- Adult patients receiving hemodialysis or with other immunocompromising conditions should receive 1 dose of 40 μg/mL (Recombivax HB) administered on a 3-dose schedule or 2 doses of 20 μg/mL (Engerix-B) administered simultaneously on a 4-dose schedule at 0, 1, 2, and 6 months.

**Selected conditions for which Haemophilus influenzae type b (Hib) vaccine may be used**
- 1 dose of Hib vaccine should be considered for persons who have sickle cell disease, leukemia, or HIV infection, or who have anatomic or functional asplenia if they have not previously received Hib vaccine.

**Immunocompromising conditions**
- Inactivated vaccines generally are acceptable (e.g., pneumococcal, meningococcal, and influenza [inactivated influenza vaccine]), and live vaccines generally are avoided in persons with immune deficiencies or immunocompromising conditions. Information on specific conditions is available at http://www.cdc.gov/vaccines/pubs/acip-list.htm.

---
