August is...National Immunization Awareness Month

HOW DO VACCINES WORK?
Vaccinations help people develop immunity to certain diseases. "Immunization is defined as rendering a person protected from an infectious agent."¹ So how exactly do vaccinations work to protect us from these diseases?

There are two types of immunity²:

- **Active Immunity**: the result of exposing the body to the infection. This process can be achieved either by way of natural immunity, exposing the body to the actual disease, or by vaccine-induced immunity. Vaccine-induced immunity is when the body is exposed to either a killed or weakened form of the infection. When our bodies are introduced to these antigens it triggers an immune response; antibodies are produced which protect us from the infection. Sometimes after vaccinations, patients experience slight side effects and in some cases symptoms of the infection. These symptoms are your body’s normal reactions to being exposed to the imitation infection “and should be expected as the body builds immunity” to the infection.³ The body is able to remember the steps it took to initially protect the body and is able to replicate this process in the event of future exposure to the same infection. The T-lymphocytes react to being exposed to the same infections, and B-lymphocytes help attack these infections. Occasionally people will develop a disease soon after receiving a vaccination and unfortunately claim that the vaccine caused it. In actuality the body just did not have enough time to build up immunity against
the infection. Active immunity has the capability to protect people from the infection for an extended period of time and potentially a lifetime.

- **Passive Immunity:** the result of the body being given the actual antibodies instead of the body producing its own in reaction to exposure to the infection. Examples of this type of immunity are a newborn acquiring antigens from its mother and giving a patient immunoglobulins. Protection is immediate with this type of immunity, but its effects are short-lived, only lasting a few weeks to months.


**VACCINE CONTROVERSY: FACT OR FICTION**

Vaccines prevent many transmittable diseases and have decreased the incidence of diseases such as measles, mumps, and polio by more than 99%. Diseases such as pertussis (whooping cough), tetanus, hepatitis, and chicken pox have decreased more than 85% since the development of their vaccinations. Complications from measles can include pneumonia, encephalitis, seizures, and even death. Complications from chicken pox include high fever, pneumonia, and superinfections that can cause necrotizing fasciitis (flesh eating disease). So why do people decide against vaccinations? Below are some common myths and truths about vaccinations.

**Fiction: Vaccines cause autism.**
- **Fact:** They do not! A British physician performed a study suggesting that the MMR vaccine is responsible for the increasing incidence of autism. The study was found to have had procedural errors, conflicts of interest, and ethical violations, which caused him to lose his medical license. Several studies have been performed since, and none have found a link between vaccines and autism.²

**Fiction: Vaccines contain harmful toxins such as formaldehyde and mercury.**
- **Fact:** These chemicals are considered toxic but in large amounts. If vaccines contain any of these substances at all, it is in trace amounts and not harmful to humans. No scientific study has found that the amount or type of any of these toxins causes adverse effects.

**Fiction: Vaccines are not worth the risk.**
- **Fact:** The incidence rate of a severe allergic reaction to a vaccine is approximately one case for every one to two million injections.²

**Fiction: Vaccines can give us the disease they are trying to prevent.**
- **Fact:** Most vaccines contain a killed or inactivated strand of the disease itself and cannot make you sick. The live vaccines contain a strain of pathogen that is weakened and cannot cause the disease. Most reactions to the injections are the body’s immune response following the vaccination.²

**SCHOOL VACCINES**

<table>
<thead>
<tr>
<th>What Vaccination Should I get?</th>
<th>When should I get it?</th>
<th>How many doses?</th>
<th>What Else Do I Need to Know About the Vaccine?</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTaP (diphtheria, tetanus, pertussis)</td>
<td>4-6 years old</td>
<td>1 dose</td>
<td>This should be the fourth dose your child receives.</td>
</tr>
<tr>
<td>Tdap (tetanus, diphtheria, pertussis)</td>
<td>11-12 years old</td>
<td>1 dose</td>
<td>Adolescents should receive a Tdap vaccination regardless of when last dose of diphtheria, tetanus, and pertussis vaccine was given</td>
</tr>
<tr>
<td>MMR (measles, mumps, rubella)</td>
<td>4-6 years old</td>
<td>1 dose (booster)</td>
<td>All school aged children and adolescents need 2 doses of MMR vaccine with a minimum of 4 weeks in between each dose</td>
</tr>
<tr>
<td>Varicella (chicken pox)</td>
<td>4-6 years old</td>
<td>1 dose (booster)</td>
<td>Varicella is a live vaccine. Children need 2 doses at least 3 months apart from 12-15 months and 4-6 years</td>
</tr>
<tr>
<td>IPV (inactivated polio vaccine)</td>
<td>4-6 years old</td>
<td>1 dose</td>
<td>This should be the fourth dose your child receives.</td>
</tr>
<tr>
<td>Influenza vaccine</td>
<td>Yearly</td>
<td>1 dose</td>
<td>Children 6 months to 2 years should receive the inactivated vaccine. Children older than 2 can receive the live vaccine if available</td>
</tr>
<tr>
<td>HPV (human papillomavirus)</td>
<td>11-12 years old</td>
<td>3 doses</td>
<td>Administer HPV 2 or 4 to females and only HPV 4 to males.</td>
</tr>
</tbody>
</table>


**COLLEGE VACCINES**

Do you know someone going off to college this year? Here are some questions they need to ask so they’ll be prepared for that first day of class:

<table>
<thead>
<tr>
<th>What Vaccines Do I Need?</th>
<th>When Should I Get Vaccinated?</th>
<th>How Many Doses Should I Receive?</th>
<th>What Else Do I Need to Know About the Vaccine?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Td booster</td>
<td>Every 10 years</td>
<td>1 dose</td>
<td>This vaccine prevents tetanus, also called lockjaw, from occurring. This disease causes your muscles to tighten all over your body, and it results in death in 10% of cases.</td>
</tr>
<tr>
<td>Meningococcal</td>
<td>First-year college students through the age of 21 who live in residency halls</td>
<td>1 dose if you’ve previously received the vaccine before your 16th birthday. If you’ve received the vaccine since your 16th birthday, there is no need to receive an additional dose.</td>
<td>The bacteria that causes meningococcal disease is transmitted by saliva, such as from kissing or coughing. So it’s important for young adults living in close contact, for example in a dorm, to receive the vaccine. Alabama does not, but 36 states do require students receive this vaccine before beginning college. See this website for state by state recommendations: <a href="http://www.immunize.org/laws/menin.asp">http://www.immunize.org/laws/menin.asp</a></td>
</tr>
<tr>
<td>HPV (Human Papillomavirus)</td>
<td>Females: 11-26 years old; Males: 11-21 years old; 22-26 years old if immunocompromised or have sex with men</td>
<td>This vaccine is a 3-dose series. You should get the 2nd dose 1-2 months after receiving the initial dose. You should receive the 3rd dose 3-4 months after the 2nd dose.</td>
<td>HPV is transmitted during skin-to-skin sexual contact. There’s a new HPV case every 20 minutes. This virus causes genital warts and certain types of cancers, but most of them can be prevented with this series of vaccinations.</td>
</tr>
</tbody>
</table>

VACCINES ALL ADULTS SHOULD RECEIVE

Even after the age of 18 years, it is important to maintain the recommended vaccination schedule for many important reasons such as decreasing your risk of becoming sick, spreading disease to others, and developing cancer. The following are the general vaccine recommendations and frequency for a healthy adult. Some medical conditions may require additional or different vaccinations, so check with your pharmacist if you are unsure.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Recommendation</th>
<th>What Else Do I Need to Know About the Vaccine?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flu Vaccine</td>
<td>Every Year</td>
<td>Different types of vaccines are available for differing needs of the patient.</td>
</tr>
<tr>
<td>Tetanus vaccine</td>
<td>Every 10 years</td>
<td>If not received during childhood, Tdap is given once as a supplement to the Td shot. Resume Td shots every 10 years.</td>
</tr>
<tr>
<td>Pneumococcal Vaccine</td>
<td>65 years or older</td>
<td>You may have to receive two different vaccinations separated by one year if no record of receiving PCV13 variation.</td>
</tr>
<tr>
<td>Shingles Vaccine</td>
<td>60 years or older</td>
<td>This vaccine is a one-time dose.</td>
</tr>
</tbody>
</table>


TRAVEL VACCINES

Traveling to a foreign country, preparing for an upcoming cruise on the seas, or helping with a mission trip to a country in need? The CDC and World Health Organization recommend all people traveling to foreign countries receive immunizations appropriate to the destination of travel. For example, typhoid fever, yellow fever, and Japanese encephalitis are infectious diseases not typically encountered in the US, but they may require vaccination if you are traveling to an area with increased risk of acquiring these diseases. The CDC offers a simple tool to recommend vaccinations for travelers and clinicians here: http://wwwnc.cdc.gov/travel/destinations/list. For example, students planning a summer trip to study in Italy would want to consider Hepatitis A, Hepatitis B, and rabies vaccinations in addition to the recommended vaccinations for their age.


The Last Dose

“Vaccines save lives; fear endangers them. It’s a simple message parents need to keep hearing.”

– Jeffrey Kluger, writer and journalist [1954 - ]

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