Objectives

- Get updates on the Safe Deliveries Roadmap
- Hear from Dr. Linda Eckert, from the University of Washington, the what, why and how of Tdap in pregnancy
- Take away strategies and tools to implement in your practice and hospital

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Dear OB Leader,

I hope this e-mail finds you well and that your new year is off to a great start!

On behalf of the Washington State Hospital Association (WSHA) Safe Deliveries Roadmap leadership team, between now and the March 1st Obstetric Safe Table I will be meeting (via phone) with maternity program medical and nursing/administrative leadership to discuss the obstetric quality improvement work they are implementing. I do not have a contact for your OB medical staff lead so hoping you will loop them into this communication.

As you probably know, WSHA was awarded the Partnership for Patients 2.0 contract this year, which includes making improvements in obstetric care. Your CEO signed your hospital up to participate and so we will be working together to improve care for moms and babies across the region. In addition to continuing our efforts with early elective deliveries, episiotomy, labor management, preeclampsia and hemorrhage, this year we will have a special focus on:

**Severe maternal morbidity** - we will be implementing the early warning signs tool to identify women who may be developing critical illness.

**Second stage labor** - we are developing an evidenced based toolkit.

**Unit culture and quality improvement uptake** - although hospitals have made great strides in past years toward improved obstetric outcomes by working on the technical aspects of the care, we still see quite a bit of unexplained variation in outcomes which many attribute to “unit culture”. We will be evaluating and working on features of the culture that influence patient outcomes and quality improvement uptake such as leadership, communication, and teamwork.

We will be discussing these topics at the March 1st Safe Table and sharing what hospitals are working on. Before then, on the call I set up with you and your OB medical staff leader, I will be asking you specifically about the items on the attached form. The call will take 20-25 minutes. For ease of scheduling, I am reserving time slots for 7:00 am and 7:30 am every weekday of February except February 8, 10 and 24. Please let me know whether you are able to attend.
For All Maternity and Women’s Health Providers and Staff

Save the Date!
WSHA Partnership for
Patients Safe Table

Safe Deliveries Roadmap
Tuesday March 1st, 2016
9:00 a.m. - 2:30 p.m.
Hilton Seattle Airport
17620 International Blvd.
SeaTac, 98188

Beyond the Low Hanging Fruit:
Getting to the Root Causes of Perinatal Outcomes

To register for this event: click here

Speaker and Session Topics to Follow

Please Forward on to Your Maternity and Women’s Health Colleagues

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Sneak Peek

- Healthy Weight Management
- Detection of Maternal Early Warning Signs
- Mission Possible
- Culture: Leadership, Teamwork and Communication
Be Prepared to Answer the Following Questions:

1: For your hospital’s NTSV C-sections, how do your Spontaneous Labor, Induced Labor and No Labor sub-groups compare?

2: What proportion of your NTSV Spontaneous Labor and Induced Labor sub-groups had C-sections for a) Failure to Progress? b) Fetal Distress?

3: At what Stage are the majority of your Primary TSV C-sections occurring: a) prior to 6cm-Induced; b) prior to 6cm-Spontaneous Labor; c) Active phase; d) Second stage?

4: Do you understand your Unexpected Newborn Complications (UNC) scores and know your Moderate and Severe UNC trends?

5: Based on your analysis, what do you think are the top 2 or 3 areas where you would focus for improvement efforts?
2016 Meetings

• Roadmap Monthly Webcast: 7:00am – 8:00 am

<table>
<thead>
<tr>
<th>February 8</th>
<th>July 8</th>
</tr>
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<tr>
<td>April 8</td>
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<td>May 10</td>
<td>October 7</td>
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<tr>
<td>June 8</td>
<td>November 8</td>
</tr>
</tbody>
</table>

• Safe Tables
  – March 1\textsuperscript{st}
  – September 1\textsuperscript{st}
All Things Tdap

Monday, February 8, 2016
7:00-8:00 a.m. PST
Linda Eckert, MD
Professor, Department of Obstetrics and Gynecology
and Global Health
University of Washington

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Course Faculty

Linda O. Eckert, MD, has been on faculty at University of Washington for 23 years, based primarily at Harborview. She did a fellowship in Infectious Diseases after completing her Ob/Gyn residency. Dr. Eckert is a member of the ACOG Expert Immunization Committee, is on ACIP HPV vaccine workgroup, a member of Washington State Department of Health Vaccine Advisory Council, and serves as a consultant to the World Health Organization, Global Alliance for Vaccine Initiative (GAVI) and to the Bill & Melinda Gates Foundation on Maternal Immunization.

No conflicts of interest
Learning Objectives

By the end of the webinar participants will be able to:

• Indicate the appropriate Tdap recommendations for general adult population

• Communicate the burden of disease of pertussis, tetanus and diphtheria in both adults and newborns

• Indicate the appropriate recommendations and optimum timing for Tdap vaccination during pregnancy

• Communicate the safety of Tdap vaccination for non-pregnant adults and pregnant women.

Presented at Washington State Hospital Association Safe Table – February 8, 2016
What is Tdap?

**Tetanus, Diphtheria, and Pertussis**

There are four combination vaccines used:

- **DTaP, Tdap, DT, Td**

- DTaP and DT are given to children younger than 7 years of age
- **Tdap** and Td are given to older children and adults

- Upper-case letters in abbreviations = pediatric strength doses of Diphtheria (D), Tetanus (T) toxoids and Pertussis (P) vaccine
- Lower-case letters in abbreviations = adult strength doses of Diphtheria (d) and Pertussis (p) used in the adolescent/adult-formulations

**For Maternal Immunization use Tdap**
Tetanus, Diphtheria, and Pertussis

Diphtheria, Tetanus, and Pertussis --> caused by bacteria

**Diphtheria:** person to person transmission

**Pertussis:** person to person transmission, Highly infectious (secondary attack rate exceeds 80%)

**Tetanus:** enters via cuts or wounds
Pertussis (aka whooping cough)

- **Causative organism:**
  - *Bordetella pertussis*, a gram-negative bacterium
  - Uniquely human pathogen

- Incubation 7-10 days, catarrhal stage followed by paroxysm of coughing that can continue for 4-6 weeks

- **Clinical case definition:**
  Cough illness lasting at least 2 weeks with one of the following: paroxysms of coughing, inspiratory "whoop," or post-tussive vomiting, apnea, without other apparent cause (as reported by a health professional)

- **Can lead to:** rib fractures, weight loss, pneumonia, seizures, brain damage, incontinence and death

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Burden of Disease: Pertussis

• One of the leading causes of vaccine preventable deaths world-wide

• Up to 2 in 100 adolescents and 5 in 100 adults are hospitalized or have complications such as pneumonia or death

• Pertussis remains a serious infection in young infants. Most deaths occur in the first 3 months of life, before the infant can be protected by their own vaccine series\(^1\).
Testing for Pertussis: when and how

Optimal Timing for Diagnostic Testing
(weeks)

Cough Onset

0  2  4  6  8  10  12

Culture
PCR
Serology

http://www.cdc.gov/pertussis/clinical/diagnostic-testing/diagnosis-confirmation.html

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Reported pertussis incidence by age group: 1990-2014

Incidence rate (per 100,000)

Year


<1 yr
1-6 yrs
7-10 yrs
11-19
20+ yrs

SOURCE: CDC, National Notifiable Diseases Surveillance System and Supplemental Pertussis Surveillance System

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Reported NNDSS pertussis cases: 1922-2014

The chart illustrates the number of reported pertussis cases from 1922 to 2014. The number of cases has fluctuated significantly over the years, with notable decreases following the introduction of vaccines like DTP and DTaP. The inset graph provides a closer look at the data from 1990 to 2014.
Pertussis deaths by age group, 2000-2012*

*2012 data are provisional and reflect deaths reported to NNDSS as of October 19, 2012.
2014 Washington: 601 cases, incidence of 8.6/100,000
Washington: 1402 cases 2015 (601 cases in 2014)
Pertussis in the Youngest in Washington, 2015

For <1 year of age:

• 104 cases of whooping cough
• 21 hospitalizations
• 16 (76%) <3 months of age

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Vaccines are not just for children...

Maternal vaccination saves lives!

Routine adult vaccine recommendations are based on recommendations from the Advisory Committee on Immunization Practices (ACIP)

Visit ACOG’s www.immunizationforwomen.org for Adult, Maternal and Childhood/Adolescent Immunization Schedules

Presented at Washington State Hospital Association Safe Table – February 8, 2016
CONCEPT OF MATERNAL IMMUNIZATION

Boosts maternal levels of pathogen-specific antibodies

Provides newborn and infant with sufficient concentration of antibodies to protect against infections until able to adequately respond to active immunization or infectious challenge

Presented at Washington State Hospital Association Safe Table – February 8, 2016
MATERNAL-INFANT ANTIBODIES

Closing the window of vulnerability

<table>
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<tr>
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<th>Antibody Level</th>
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<tr>
<td>22</td>
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<tr>
<td>28</td>
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</tr>
<tr>
<td>32</td>
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<table>
<thead>
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<th>Age (Months)</th>
<th>Antibody Level</th>
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<td>2</td>
<td>Infant Ab</td>
</tr>
<tr>
<td>4</td>
<td></td>
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<tr>
<td>6</td>
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<tr>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

NARROWED window of vulnerability

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Historical Perspective of Pertussis Vaccines

Whole Cell Pertussis Vaccines

- Prepared from suspensions of inactivated *Bordetella pertussis* bacterial cells
- Licensed for routine vaccination since the mid-1940s.
- Efficacy:
  - Original studies: 70%–90% effective in preventing serious pertussis disease
  - 1990s efficacy studies: 48% in Sweden and 36% in Italy
- Were commonly associated with adverse events:
  - Local: erythema, swelling, and pain at the injection site
  - Systemic: fever, drowsiness, fretfulness, and anorexia
  - Severe AEs: hypotonic hypo-responsive episodes (1 in 1,750 doses administered) and also acute encephalopathy (0–10.5 cases to one million doses administered)
Acellular Pertussis Vaccines

• Safety concerns prompted the development of more purified (acellular) pertussis vaccines
  • Associated with a lower frequency of adverse events and
  • Are effective in preventing pertussis disease
• Efficacy:
  • Recent study 90% effective in England
• Contain inactivated pertussis toxin (PT) as well as other bacterial components
• Contain substantially less endotoxin than whole-cell pertussis
Persistence of pertussis antibodies 3 years after Tdap vaccination of adults

![Graph showing persistence of pertussis antibodies over 3 years following Tdap vaccination.](image)

Anti-PT antibody GMCs (EU.L/mL)
- Years 0: 62.7, 32.7, 14.1
- Years 1: 32.7, 15.8, 10.0
- Years 2: 15.8, 7.1, 4.0

Anti-FHA antibody GMCs (EU.L/mL)
- Years 0: 597.6, 365.8, 115.0
- Years 1: 365.8, 183.7, 81.5
- Years 2: 183.7, 119.4, 31.0

GMC = geometric mean concentration

Acellular Pertussis Vaccine for Pregnant Women

2008: • Postpartum women and close contacts of infants
     • Breastfeeding **NOT** a contraindication

2011: • Pregnant women 2\textsuperscript{nd}–3\textsuperscript{rd} trimester if no previous Tdap
     • Use Tdap without concern for interval since last TT
     • People >65 yrs in contact with infants

2012: • Pregnant women 2\textsuperscript{nd}–3\textsuperscript{rd} trimester **EVERY** pregnancy
A dose of Tdap vaccine should be given to all pregnant women preferably between 27-36 weeks gestation during every pregnancy.
Mother-Fetus antibody response, every pregnancy, every infant

- Transplacental transfer of antibodies from mother to infant provides some protection against pertussis in early life
- Immune response to vaccine peaks about 2 weeks after administration, hence:
  **Tdap vaccine is recommended preferably between 27 and 36 weeks gestation, to optimize antibody transfer and protection at birth.**

- The level of pertussis antibodies decreases over time, hence:
  **Tdap vaccine should be administered during every pregnancy so that each infant receives high levels of protective antibodies.**
Immunizing Pregnant Women DOES protect infants

• Pertussis outbreak in England in 2011-2012, with deaths in newborns <3 months
• Program initiated to immunize all pregnant women at 28-37 weeks of gestation
• 92% effective in preventing infant pertussis if mother received the vaccine at least 7 days before birth
• No safety concerns for the 23,000 infants whose mothers received Tdap in the 3rd trimester

Armirthalingam et al. www.thelancet.com Published online July 16, 2014 http://dx.doi.org/10.1016/S0140-6736(14)60686-3

Donegan et al. BMJ 2014;349:g4219 doi: 10.1136/bmj.g4219 (Published 11 July 2014)
Figure 2: Annual incidence of laboratory-confirmed cases of pertussis by age group
Figure shows incidence from 2001 to 2013 in England only.
Tdap Vaccine Safety data

New Study Finds Tdap Vaccine During Pregnancy Not Associated With Increased Risk of Preterm Delivery or Small Birth Size

• Safety of Tdap vaccine during pregnancy

• Analyzed administrative and electronic health record data from two California Vaccine Safety Datalink sites to assess risk of maternal Tdap vaccination during pregnancy for mother or baby

• The study found that Tdap vaccination during pregnancy was not associated with increased risk for hypertensive disorders of pregnancy, preterm birth, or having a baby who is small for his or her gestational age.


Presented at Washington State Hospital Association Safe Table – February 8, 2016
Tdap Vaccine Safety Monitoring

- **Vaccine Adverse Event Report System (VAERS)**
  - national program,
  - jointly managed by CDC and FDA
  - monitors the safety of all vaccines licensed in the United States.

- **Vaccine Safety Datalink (VSD)**:
  - vaccine safety system
  - monitors and assesses adverse events following vaccination
The Ob-Gyn’s Role

• Studies show the provider recommendation is the MOST influential factor in a patient’s decision to receive an immunization.¹

• **Ob-Gyns:**
  • long-standing role of providing primary and preventive care to women
  • major source of ambulatory care for women,
  • account for 44% of preventive care visits for women over age 18 years.²

• Pregnant women see their ob-gyn regularly throughout the course of their prenatal and postpartum care allowing for multiple opportunities to vaccinate.

1. [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6337a3.htm?s_cid=mm6337a3_e#fig](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6337a3.htm?s_cid=mm6337a3_e#fig)
Business Practice: Office Vaccine Delivery “How To’s?”

Information about business practice can be found at Immunizationforwomen.org

Including:

• Tdap Toolkit including: Coding Information on Tdap Immunization

• On-Demand webinar: ACOG Immunization & Clinical Strategies for Ob-Gyn Practices

http://goo.gl/OX1gFu

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Provider Responsibilities

• Patient vaccine records are kept up to date
• Consider Standing Orders
• Provide VIS (Vaccine Information Statement) forms for each vaccine administered
• Set up a “Vaccine Champion” in the office
• Educate nursing/MA/front desk staff
• Consider placing signs at front desk in flu season; and sign stating Tdap will be offered in all pregnancies
• Use Electronic prompts/sticky notes in chart to help remember

VIS: Vaccine Information Statement

Tdap Vaccine (Tetanus, Diphtheria, and Pertussis)

What You Need to Know

1. Why get vaccinated?
   Tetanus, diphtheria and pertussis can be very serious diseases, even for adolescents and adults. Tdap vaccine can protect us from these diseases.
   • Tetanus (Lockjaw) causes painful muscle tightening and stiffness, usually all over the body.
     • It can lead to tightening of muscles in the head and neck so you can’t open your mouth, swallow, or sometimes even breathe. Tetanus kills about 1 out of 5 people who are infected.
   • Diphtheria can cause a thick coating to form in the back of the throat.
     • It can lead to breathing problems, paralysis, heart failure, and death.
   • Pertussis (Whooping Cough) causes severe coughing spells, which can cause difficulty breathing, vomiting and disturbed sleep.
     • It can also lead to weight loss, incontinence, and rib fractures. Up to 2 in 100 adolescents and 5 in 100 adults with pertussis are hospitalized or have complications, which could include pneumonia or death.

   These diseases are caused by bacteria. Diphtheria and pertussis spread from person to person through coughing or sneezing. Tetanus enters the body through cuts, scratches, or wounds.

   Before vaccines, the United States saw as many as 200,000 cases a year of diphtheria and pertussis, and hundreds of cases of tetanus. Since vaccination began, tetanus and diphtheria have dropped by about 99% and pertussis by about 80%.

2. Tdap vaccine
   Tdap vaccine can protect adolescents and adults from tetanus, diphtheria, and pertussis. One dose of Tdap is routinely given at age 11 or 12. People who did not get Tdap at that age should get it as soon as possible.
   Tdap is especially important for health care professionals and anyone having close contact with a baby younger than 12 months.
   Pregnant women should get a dose of Tdap during every pregnancy, to protect the newborn from pertussis. Infants are most at risk for severe, life-threatening complications from pertussis.
   A similar vaccine, called Td, protects from tetanus and diphtheria, but not pertussis. A Td booster should be given every 10 years. Tdap may be given as one of these boosters if you have not already gotten a dose. Tdap may also be given after a severe cut or burn to prevent tetanus infection.
   Your doctor can give you more information. Tdap may be given at the same time as other vaccines.

3. Some people should not get this vaccine
   • If you’ve ever had a life-threatening allergic reaction after a dose of any tetanus, diphtheria, or pertussis containing vaccine, OR if you have a severe allergy to any part of this vaccine, you should not get Tdap. Tell your doctor if you have any severe allergies.
   • If you had a cold, or long or multiple illnesses within 7 days after a childhood dose of DTP or DTP, you should not get Tdap, unless a cause other than the vaccine was found. You can still get Td.
   • Talk to your doctor if you:
     - have epilepsy or another nervous system problem,
     - had severe pain or swelling after any vaccine containing diphtheria, tetanus or pertussis,
     - over had Guillain-Barre Syndrome (GBS),
     - aren’t feeling well on the day the shot is scheduled.

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Provider Recommendation Scripts

Physician Script Concerning Tdap Vaccination:

• How to incorporate into routine practice
• How to respond to common myths
• Pre and Post Op visits in non-pregnant adults
• Cocooning, caregivers should get vaccine too, 2 weeks before contact with infant

Can be found at Immunizationforwomen.org
Cocooning (protecting infants from pertussis by vaccinating those in close contact with them)

• 2005 ACIP recommendation: cocooning with Tdap vaccine for all those with expected close contact with infants younger than 1 year of age.

• Cocooning + maternal Tdap vaccination + childhood DTaP series on schedule, best protection to the infant.

• Providers should educate pregnant women about encouraging others (dads, grandparents and other caregivers) to be up-to-date with pertussis vaccination.

• Family members & caregivers who aren't current with Tdap vaccine: get vaccinated at least 2 weeks before coming into contact with the infant.

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Tdap Vaccination: Adults

• Since 2005, the Advisory Committee on Immunization Practices (ACIP) has recommended a Tdap vaccine booster dose for all adolescents aged 11 through 18 years (preferred at 11 through 12 years) and for those adults aged 19 through 64 years who have not yet received a dose.

• In February 2012, ACIP recommended Tdap for all adults aged 65 years and older.

• Tdap needs to be given only once:
  • Td every 10 years.
  • Substitute Tdap for Td if Tdap never given

• In wound management care, if a tetanus booster is indicated, Tdap is preferred over Td in adults aged 19 years and older who have not received Tdap previously.
Do Not give Tdap Vaccine if:

- Prior life-threatening allergic reaction after a dose of any tetanus, diphtheria, or pertussis containing vaccine, OR, a severe allergy to any part of this vaccine,
- Prior coma, or long or multiple seizures within 7 days after a childhood dose of DTP or DTaP. You can still get Td.
- Potential contraindications
  - epilepsy or another nervous system problem,
  - severe pain or swelling after any vaccine containing diphtheria, tetanus or pertussis,
  - Prior Guillain Barré Syndrome (GBS),

http://www.cdc.gov/vaccines/vpd-vac/should-not-vacc.htm

Presented at Washington State Hospital Association Safe Table – February 8, 2016
# Tdap Vaccine Administration Guidance:

## Immunization Action Coalition:
- [www.immunize.org/handouts](http://www.immunize.org/handouts)
  - Administering Vaccines
  - Administering Vaccines: Dose, Route, Site, and Needle size

---

## Administering Vaccines: Dose, Route, Site, and Needle Size

<table>
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<tr>
<th>Vaccine</th>
<th>Dose</th>
<th>Route</th>
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<tbody>
<tr>
<td>Diphtheria, Tetanus, Pertussis (DTPv, DT, Tdap, Tda)</td>
<td>0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Hemophilus influenzae type b (Hib)</td>
<td>0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Hepatitis A (HepA)</td>
<td>≤18 yrs: 0.5 mL, ≥19 yrs: 1.0 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Hepatitis B (TeqT)</td>
<td>≤12 yrs: 0.5 mL, ≥13 yrs: 1.0 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Human papillomavirus (HPV)</td>
<td>0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Influenza (IIV), live attenuated (LAVN)</td>
<td>0.2 mL</td>
<td>Intranasal spray</td>
</tr>
<tr>
<td>Influenza, inactivated (IV)</td>
<td>≤36 mos: 0.25 mL, ≥3 yrs: 0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>IPV, inactivated (IPV)</td>
<td>≤36 mos: 0.25 mL, ≥3 yrs: 0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Meningococcal conjugate (MCV)</td>
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</tr>
<tr>
<td>Meningococcal polysaccharide (MPSV)</td>
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<td>Pneumococcal conjugate (PCV)</td>
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<tr>
<td>Zoster (Zost)</td>
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<td>SC</td>
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</table>

### Combination Vaccines

- DTPa-IPV-Hib-PRP-OM (Pediarix)
- DTPa-IPV-Hib-PRP-OM (ProQuad)
- DTPa-IPV-Hib (Pentacel)
- Hib-HepB (Combivax)
- MMNv (ProQuad)
- HepA-HepB (Lymerix)

### Injection Site and Needle Size

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<th>Needle Length</th>
<th>Injection Site</th>
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<tr>
<td>½&quot;</td>
<td>Anterolateral thigh muscle</td>
</tr>
<tr>
<td>¾&quot;</td>
<td>Deltoit muscle of arm</td>
</tr>
<tr>
<td>1½&quot;</td>
<td>Deltoit muscle of arm</td>
</tr>
<tr>
<td>2&quot;</td>
<td>Deltoit muscle of arm</td>
</tr>
</tbody>
</table>

**Subcutaneous (SC) injection**

Use a 25-25 gauge needle. Choose the injection site that is appropriate to the person’s age and body mass.

**Intradermal (ID) administration of FluMist (LAIV) vaccine**

Administer the vaccine over the deltoid muscle of arm at a 90° angle.

---

*Please note: Always refer to the package insert included with each biologic for complete vaccine administration information. CDC’s Advisory Committee on Immunization Practices (ACIP) recommendations for the particular vaccine should be reviewed as well.*

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*Subcutaneous flow may be used for patients weighing less than 140 lbs (<65 kg) for injection of the deltoid muscle only if the site is identified right. The subcutaneous flow is not intended, and the injection is made at a 90-degree angle.*

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Presented at Washington State Hospital Association Safe Table – February 8, 2016

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Immunization Action Coalition
Saint Paul, Minnesota • 651-647-9000 • [www.immunize.org](http://www.immunize.org) • [www.vaccineinfo.org](http://www.vaccineinfo.org)

www.immunize.org/catg.d/p3085.pdf • Item: AP0164 (OS/14)
Possible Side Effects

Most side effects from Tdap vaccination are mild or moderate, and self-limited.

- **Mild problems** following Tdap (*Did not interfere with activities*)
  - Pain at injection site (about 3 in 4 adolescents or 2 in 3 adults)
  - Redness or swelling at injection site (about 1 person in 5)
  - Mild fever of at least 100.4°F (up to about 1 in 25 adolescents or 1 in 100 adults)
  - Headache (about 3 or 4 people in 10)
  - Tiredness (about 1 person in 3 or 4)
  - Nausea, vomiting, diarrhea, stomach ache (up to 1 in 4 adolescents or 1 in 10 adults)
  - Chills, body aches, sore joints, rash, swollen glands (uncommon)
Possible Side Effects

- **Moderate problems** following Tdap (*Interfered with activities, but did not require medical attention*)
  - Pain at injection site (about 1 in 5 adolescents or 1 in 100 adults)
  - Redness or swelling at injection site (up to about 1 in 16 adolescents or 1 in 25 adults)
  - Fever over 102°F (about 1 in 100 adolescents or 1 in 250 adults)
  - Headache (about 3 in 20 adolescents or 1 in 10 adults)
  - Nausea, vomiting, diarrhea, stomach ache (up to 1 or 3 people in 100)
  - Swelling of the entire arm where the shot was given (up to about 3 in 100).
Possible Side Effects

- **Severe problems** following Tdap *(Unable to perform usual activities; required medical attention)*
  - Swelling, severe pain, bleeding and redness in the arm where the shot was given (rare).

A **severe allergic reaction** could occur after any vaccine (estimated less than 1 in a million doses), extremely rare, especially in adults.
FAQs

Is breastfeeding Safe after Tdap Vaccination?
• YES! Breastfeeding is not a contraindication for receiving Tdap vaccine and is, in fact, fully compatible with Tdap vaccination. Tdap vaccine can and should be given to women who plan to breastfeed.

Can Pertussis and Flu Vaccines be co-administered?
• YES! Pregnant women
  • should receive the flu vaccine as early as possible in the flu season, during any trimester,
  • pertussis vaccine is recommended later in pregnancy (between 27 and 36 weeks gestation).

Do Pertussis vaccines contain Thimerosal?
• None of the pertussis vaccines (Tdap and DTaP) currently used in the United States contain thimerosal.
I had Tdap with my last pregnancy, why do I need it again with my current pregnancy?

- The vaccine is recommended during *each* pregnancy between 27-36 weeks to increase the antibodies produced in-utero and passed to the baby.

How serious is pertussis and is the vaccine really necessary?

- Pertussis in infants can be extremely dangerous especially for infants and young children. The vast majority of pertussis deaths occur in infants younger than 3 months of age. By getting vaccinated while pregnant you are giving your baby protection they normally would not receive until 2 months of age.
Provider Responsibilities Cont’d

• Patient or provider may report adverse event to VAERS (Vaccine Adverse Event Reporting System)

• Record vaccines in State Immunization Information System — requirements vary by state

• Registry may be useful for verifying immunization history where vaccines may have been administered in other settings and avoiding unnecessary duplication of vaccines. Contact state/local health department

• State Registry Contacts: [http://www.cdc.gov/vaccines/programs/iis/contacts-registry-staff.html](http://www.cdc.gov/vaccines/programs/iis/contacts-registry-staff.html)
Conclusions

• Tdap vaccination is recommended for all pregnant women during each pregnancy between 27-36 weeks.

• Adults who have not received a dose of Tdap vaccine should receive one dose, regardless of the interval since their last Tetanus booster.

• Pertussis is a serious disease that is particularly dangerous for infants and young children.

• Tdap vaccine is proven to be safe for use in pregnant women and the general adult population.
Additional Vaccination Opportunities for Obstetricians and Gynecologists

- Influenza vaccine for all women including those who are pregnant
- Tdap vaccine for all adults who have not been vaccinated and all women during each pregnancy
- Pneumococcal vaccine for high risk women including those who are pregnant
- Hepatitis B vaccine for all at risk women including those who are pregnant
- MMR vaccine for women who were not previously vaccinated. Should give before or after pregnancy
- Varicella vaccine for women who were not previously vaccinated or have not had chickenpox. Should give before or after pregnancy
- HPV vaccine for girls and women ages 9-26. Not recommended during pregnancy

Graphic courtesy of the National Foundation for Infectious Diseases.

Presented at Washington State Hospital Association Safe Table – February 8, 2016
### 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 group

<table>
<thead>
<tr>
<th>VACCINE</th>
<th>AGE GROUP</th>
<th>19-21 years</th>
<th>22-26 years</th>
<th>27-49 years</th>
<th>50-59 years</th>
<th>60-64 years</th>
<th>≥ 65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza ²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, pertussis (Td/Tdap) ³</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella ⁴</td>
<td></td>
<td></td>
<td></td>
<td>2 doses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV) Female ⁵</td>
<td></td>
<td></td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV) Male ⁵</td>
<td></td>
<td></td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoster ⁶</td>
<td></td>
<td></td>
<td>1 or 2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella (MMR) ¹</td>
<td></td>
<td></td>
<td>1 dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal 13-valent conjugate (PCV13) ⁶</td>
<td></td>
<td></td>
<td>1 dose</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Pneumococcal polysaccharide (PPSV23) ⁹</td>
<td></td>
<td></td>
<td>1 or 2 doses</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Meningococcal ¹²</td>
<td></td>
<td></td>
<td>1 or more doses</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Hepatitis A ¹⁵</td>
<td></td>
<td></td>
<td>2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B ¹⁵</td>
<td></td>
<td></td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenza type b (Hib) ¹⁴</td>
<td></td>
<td></td>
<td>1 or 3 doses</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Covered by the Vaccine Injury Compensation Program*

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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

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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](http://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](http://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](http://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).
## Figure 2. Vaccines that might be indicated for adults based on medical and other indications

<table>
<thead>
<tr>
<th>VACCINE ▼</th>
<th>INDICATION ▲</th>
<th>Pregnancy</th>
<th>Immuno-compromising conditions (excluding human immunodeficiency virus [HIV])</th>
<th>HIV infection CD4+ T lymphocyte count</th>
<th>Men who have sex with men (MSM)</th>
<th>Kidney failure, end-stage renal disease, receipt of hemodialysis</th>
<th>Heart disease, chronic lung disease, chronic alcoholism</th>
<th>Asplenia (including elective splenectomy and persistent complement component deficiencies)</th>
<th>Chronic liver disease</th>
<th>Diabetes</th>
<th>Healthcare personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Influenza</strong>&lt;sup&gt;3,7&lt;/sup&gt;</td>
<td>Pregnancy</td>
<td><strong>1 dose IIV annually</strong></td>
<td><strong>1 dose IIV or IAW annually</strong></td>
<td><strong>1 dose IIV annually</strong></td>
<td></td>
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<tr>
<td><strong>Tetanus, diphtheria, pertussis (Td/Tdap)</strong>&lt;sup&gt;3,7&lt;/sup&gt;</td>
<td>Pregnancy</td>
<td><strong>1 dose Tdap each pregnancy</strong></td>
<td></td>
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<tr>
<td><strong>Varicella</strong>&lt;sup&gt;4&lt;/sup&gt;</td>
<td></td>
<td><strong>Contraindicated</strong></td>
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<tr>
<td><strong>Human papillomavirus (HPV) Female</strong>&lt;sup&gt;5,7&lt;/sup&gt;</td>
<td></td>
<td><strong>3 doses through age 26 yrs</strong></td>
<td></td>
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<tr>
<td><strong>Human papillomavirus (HPV) Male</strong>&lt;sup&gt;5,7&lt;/sup&gt;</td>
<td></td>
<td><strong>3 doses through age 26 yrs</strong></td>
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<tr>
<td><strong>Zoster</strong>&lt;sup&gt;6&lt;/sup&gt;</td>
<td></td>
<td><strong>Contraindicated</strong></td>
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<tr>
<td><strong>Measles, mumps, rubella (MMR)</strong>&lt;sup&gt;7,12&lt;/sup&gt;</td>
<td></td>
<td><strong>Contraindicated</strong></td>
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<td><strong>Pneumococcal 13-valent conjugate (PCV13)</strong>&lt;sup&gt;8,15&lt;/sup&gt;</td>
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<tr>
<td><strong>Pneumococcal polysaccharide (PPSV23)</strong>&lt;sup&gt;9,10&lt;/sup&gt;</td>
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<td><strong>Meningococcal</strong>&lt;sup&gt;11,12&lt;/sup&gt;</td>
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<tr>
<td><strong>Hepatitis A</strong>&lt;sup&gt;12,13&lt;/sup&gt;</td>
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<tr>
<td><strong>Hepatitis B</strong>&lt;sup&gt;13&lt;/sup&gt;</td>
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<tr>
<td><strong>Haemophilus influenzae type b (Hib)</strong>&lt;sup&gt;14,15&lt;/sup&gt;</td>
<td>post-HSCT recipients only</td>
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</tr>
</tbody>
</table>

*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 none 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 indications)

No recommendation

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These schedules indicate the recommended age groups and medical indications for which administration of currently licensed vaccines is commonly indicated for adults ages 10 years and older, as of February 1, 2014. For all vaccines being recommended on the Adult Immunization Schedule: a vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Licensed combination vaccines may be used whenever any component of the combination is indicated and when the vaccine’s other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or that are issued during the year, consult the manufacturers’ package inserts and the complete statements from the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/hcp/acip-recs/index.html). 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.
Resources

ACOG Immunization for Women:
http://www.immunizationforwomen.org/immunization_facts/vaccine-preventable_diseases/pertussis


CDC: http://www.cdc.gov/vaccines/vpd-vac/pertussis/tdap-pregnancy-hcp.htm
Born With Protection Against Whooping Cough  
(Coming Soon)

After extensive research, CDC, ACOG, and additional partners will soon launch a new campaign to help increase the number of women who receive Tdap vaccine during each pregnancy.

**Healthcare Professionals**

Need to provide a strong recommendation and referral (when vaccine is not available in their office) for Tdap

**Pregnant Women**

Need to know vaccine is safe, important, and recommended by their ob-gyns or midwives

[www.cdc.gov/pertussis/pregnant/hcp](http://www.cdc.gov/pertussis/pregnant/hcp)

Presented at Washington State Hospital Association Safe Table – February 8, 2016
Thank You!

Safe Deliveries Roadmap Website
http://www.wsha.org/0513.cfm%20
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