



Wyoming
Department
of Health

Commit to your health.

A Clinical Perspective on Immunizations

Wyoming Immunization Program
2012 Regional Training

Presented by:
Clinical Quality & Compliance Specialists

Overview

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- **Immunization rates**
- **Principles of vaccination**
- **General recommendation highlights**
- **Vaccine-preventable disease (VPD) review**
- **Recent ACIP recommendations**
- **Setting/population specific information**
- **Vaccine safety**
- **Additional resources**
- **Contact information**

Immunization Rates

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- **National Immunization Survey (NIS) for 4:3:1:3:3:1:4 (4DTaP-3Polio-1MMR-3Hib-3HepB-1Var-4PCV)**

Wyoming	National
64.4% \pm 8.2% (lower than Natl)	71.2 \pm 2%

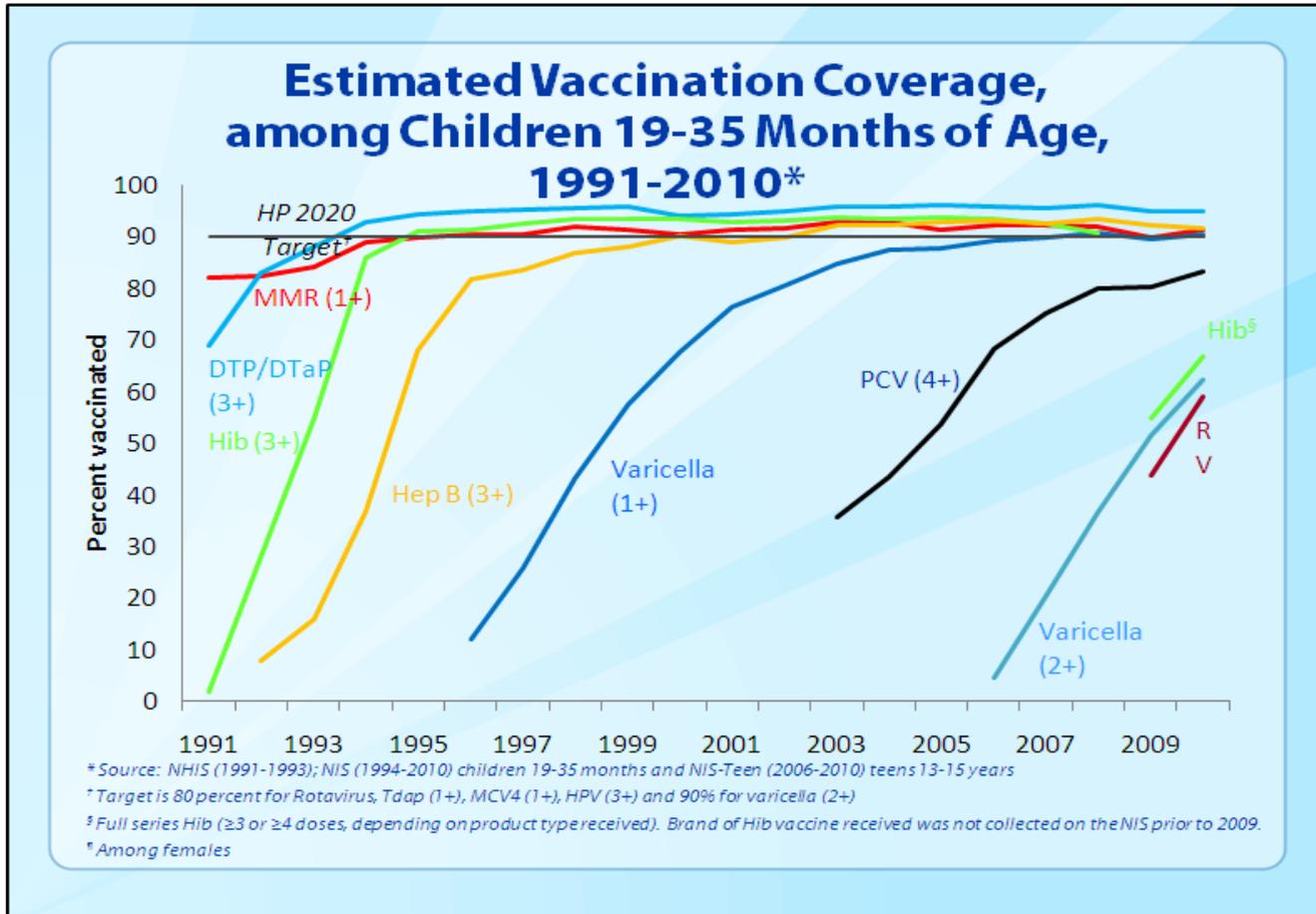
- **National Immunization Survey – Teen (NIS-T) for Tdap, MCV4 & HPV**

Vaccine	Wyoming	National
Tdap (lower than Natl)	65.0 (58.5 – 71.0)	68.7 (67.5 – 69.8)
MCV4 (lower than Natl)	51.5 (45.0 – 57.9)	62.7 (61.5 – 63.9)
HPV (3 doses) (higher than Natl)	40.3 (31.9 – 49.3)	32.0 (30.3 – 33.6)

Source: <http://www.cdc.gov/nchs/nis.htm>

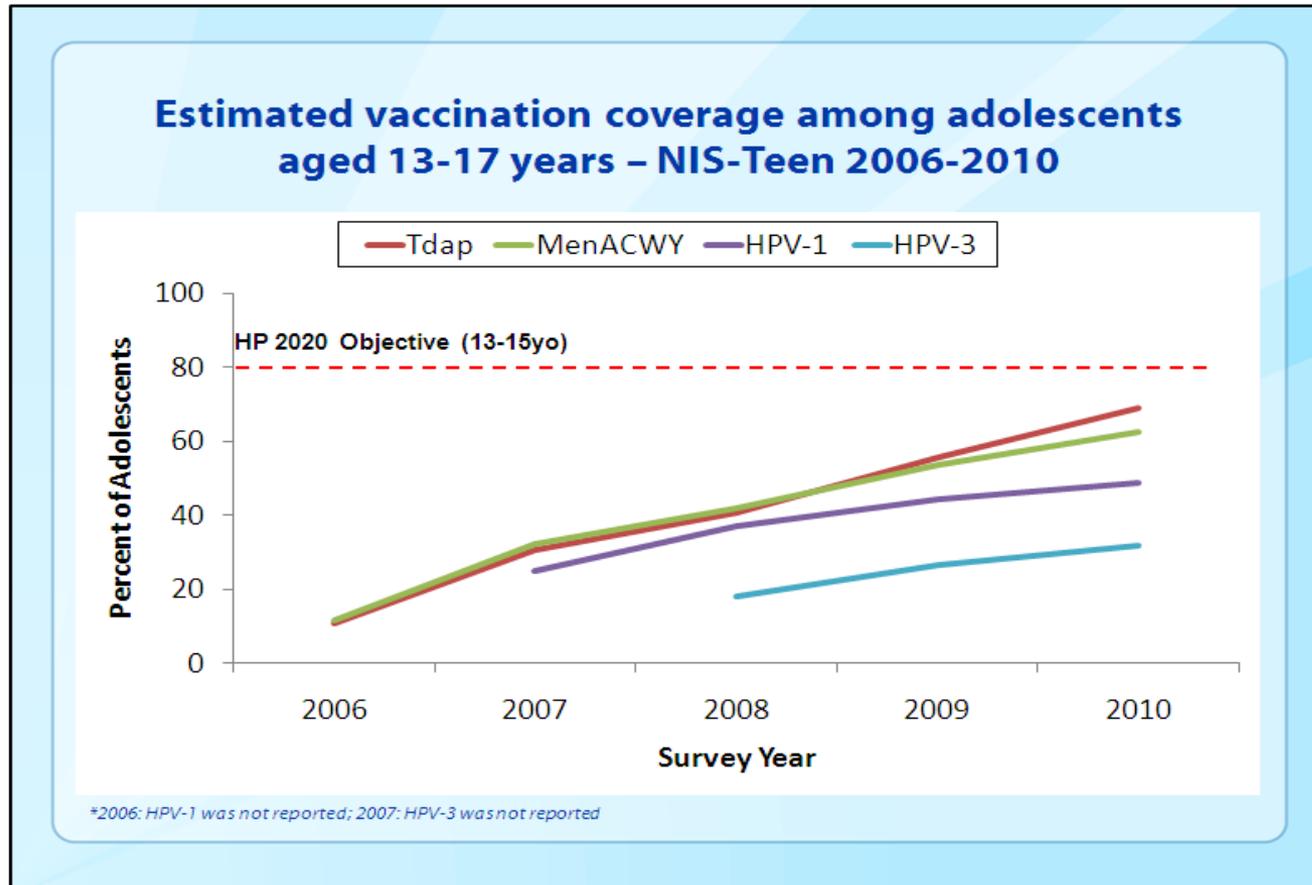


Immunization Rates, cont'd



Immunization Rates, cont'd

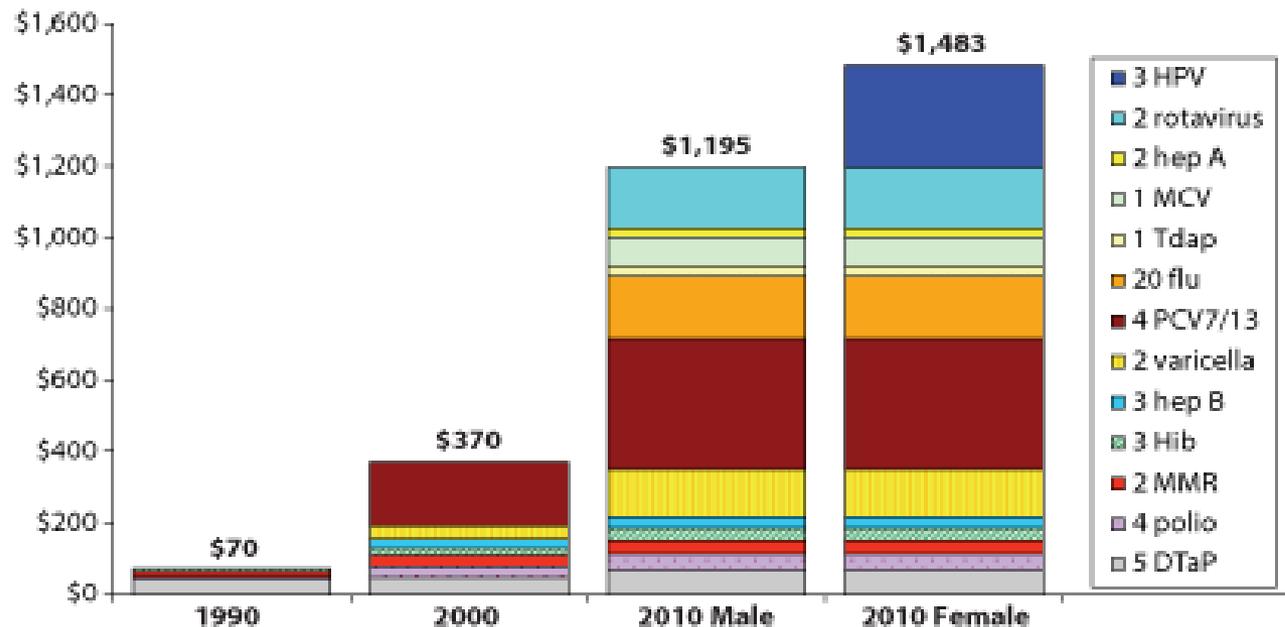
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Immunization Rates, cont'd

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Cost to vaccinate from birth to 18 years of age with vaccines recommended universally, 1990, 2000, and 2010



2010 represents minimum cost to vaccinate a child (birth through 18); exception is no preservative influenza vaccine, which is included for children 6–47 months of age.

HPV excluded for boys because it is not routinely recommended by the ACIP.

Federal contract prices as of February 1, 1990, September 27, 2000, and April 6, 2010.

Source: Centers for Disease Control and Prevention

Immunization Rates, cont'd

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Impact of Vaccines in the 20th & 21st Centuries

Comparison of 20th Century Annual Morbidity & Current Morbidity Disease

	20th Century Annual Morbidity*	2010 Reported Cases†	% Decrease
Smallpox	29,005	0	100%
Diphtheria	21,053	0	100%
Pertussis	200,752	21,291	89%
Tetanus	580	8	99%
Polio (paralytic)	16,316	0	100%
Measles	530,217	61	>99%
Mumps	162,344	2,528	98%
Rubella	47,745	6	>99%
CRS	152	0	100%
<i>Hib (<5 yrs)</i>	<i>20,000 (est.)</i>	270	99%



Principles of Vaccination

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- **The Advisory Committee on Immunization Practices (ACIP)** is considered the standard setting body for immunizations. They also have authority to designate administration for the off-label use of vaccines.
- **ACIP recommendations are effective** as soon as the Department of Health & Human Services (DHHS) Secretary has approved them, and they are published in a Morbidity and Mortality Weekly Report (MMWR).
- **Two Immunity Classifications:**
 - Active Immunity: Protection produced by the person's own immune system and usually permanent. (Person is exposed to a live pathogen, develops the disease and becomes immune.) **Vaccines are artificially acquired active immunity.**
 - Passive Immunity: Protection transferred from another human or animal (e.g. pregnant mother to baby); temporary protection that wanes with time



Principles of Vaccination, cont'd

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- **Vaccine Components:**
 - **Antigen:** All vaccines contain disease antigen (i.e. a killed or weakened form of the disease)
 - **Adjuvants:** Some vaccines contain adjuvants. These are substances that help vaccines produce a stronger immune response.
 - **Preservative:** Some vaccines come in vials containing multiple doses. The preservative helps prevent contamination once the vial has been opened.
 - **Other substances** (i.e. formaldehyde, can be used during the production of vaccines, but the all of these substances are removed from the final product, but tiny traces of them, too small to have a clinical effect, can remain



Principles of Vaccination, cont'd

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- **Classification of Vaccines:**
 - Live attenuated vaccines (viral-based):
 - MMR
 - varicella
 - Zoster
 - LAIV
 - Inactivated
- **Diluents are not interchangeable between vaccines that require diluents!**
 - Ensure that the correct diluent is used with the correct vaccine. (What is special about Pentacel®?)



Principles of Vaccination, cont'd

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- **Some doses of vaccine may be given over a *range* of ages.** For example, the 6-month dose of Polio vaccine can actually be given anywhere between 6 and 18 months without making it less effective.
- **For every vaccine there are “contraindications” and “precautions”.** These are conditions that make a child ineligible to get certain vaccines, or cause vaccine doses to be postponed.
- **Combination Vaccines:**
 - DTaP-Polio-Hepatitis B = Pediarix®
 - DTaP-Polio-Hib = Pentacel®
 - DTaP-Polio = Kinrix®
 - Hib-Hepatitis B = Comvax® (Not on WyVIP Formulary)
 - MMR-Varicella (or MMRV) = Proquad® (Not on WyVIP Formulary)
 - DTaP-Hib (TriHIBit®) (Not on WyVIP Formulary)

General Recommendation Highlights

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- **The timing and spacing of vaccine doses are two of the most important issues for appropriately administering vaccines.**
 - All vaccines recommended during the first 12 months of life are inactivated, except rotavirus (rotavirus replicates in the gut and not in the tissues).
- **All vaccinations are a judgment of RISK vs. BENEFIT.**
- **All** vaccines can be administered at the same visit as all other vaccines.
- **ACIP four-day grace period:**
 - ACIP recommends that any vaccine doses given up to 4 CALENDAR days before the minimum interval or age be counted as valid.

General Recommendation Highlights, cont'd

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- **Vaccine Adverse Reactions**
 - Live Attenuated Vaccines: Must replicate to produce immunity; symptoms usually mild and occur after an incubation period (usually 7-21 days).
 - Anaphylaxis: Need a crash kit, CPR trained individuals, and epinephrine (Anaphylaxis is rare: may occur once for every 1.5M doses administered).
- **Minimum intervals and ages:** Vaccine doses should not be administered at intervals less than the minimum intervals or earlier than the minimum age.
 - ✓ Minimum intervals and ages are included in **package inserts** as well as the MMWR detailing ACIP recommendations for vaccines.
- **How many immunizations can be given at one visit?**
 - No limit to get them caught up

General Recommendation Highlights, cont'd

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- **Increasing the interval between doses of a multi-dose vaccine** does not diminish the effectiveness of the vaccine (i.e. Hepatitis b).
- **Decreasing the interval between doses of a multidose vaccine** may interfere with antibody response and protection (i.e. may “clip” the vaccine).
- **If a child is four months of age or older**, use calendar months -- not days -- to calculate intervals.
- **When a child is more than 30 days behind**, or more than 1 dose behind for a certain vaccine, use the catch up schedule.

General Recommendation Highlights, cont'd

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- **Two live vaccines not** administered on the same day must be separated by 4 weeks.
- **Vaccines are generally not given to infants under 6 weeks of age**
 - Little safety or efficacy data exist on doses given before 6 weeks of age and they aren't licensed for this use
- **Multi-dose vials that are opened must be discarded in 30 days?**
 - No, they may be used up to the expiration date
- **When the expiration date of a vaccine indicates a month and year, does the vaccine expire on the first or last day of the month?**
 - Last day of the month

Vaccine-Preventable Disease Review

Diphtheria	Pertussis
Hib	Pneumococcal Disease
Hepatitis A	Poliomyelitis
Hepatitis B	Rotavirus
HPV	Rubella
Influenza	Tetanus
Measles	Varicella/Herpes Zoster
Mumps	

Disease Review: Diphtheria

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Disease Features

- Spread from person to person through sneezing, coughing, breathing
- Acquired in the nasopharynx & involves a mucus membrane (pharyngeal & tonsillar)
- Incubates in 2-5 days (range: 1-10 days)
- Complications: neuritis, myocarditis (heart failure) & paralysis



Who Can be Vaccinated?

- Individuals age 6 weeks and older

Vaccines that Prevent the Disease

- Age: 6 weeks – 6 years: DTaP (i.e. DT, Daptacel®, Infanrix®, *Kinrix®, Pediarix®, Pentacel®)
- Age: *7 years – 10 years: Td (Decavac®)
- Ages 11 – Adult: Tdap (Boosterix®, Adacel®) (one per lifetime) then booster with Td every 10 years after

Disease Review: Hib

Disease Features

- Severe bacterial infection particularly among infants
- Colonizes in the nasopharynx
- Hib bacteria are spread through the air
- If Hib enters the bloodstream, it can cause meningitis, pneumonia, inflammation of the throat, arthritis & other problems

Who Can be Vaccinated?

- Children between ages 2 months and 5 years
- All children between 15 and 59 months of age need at least 1 dose of this vaccine



Vaccines that Prevent the Disease

- PRP-T: ActHIB®; (*Hiberix®)
- PRP-OMP: PedvaxHIB®

Disease Review: Hepatitis A

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Disease Features

- Acquired by mouth (fecal-oral transmission)
- Children younger than 6 years old might not show any symptoms
- Causes liver disease and cannot be distinguished from other types of viral hepatitis on the basis of clinical or epidemiologic features. Serology testing is required
- Humans are the only natural reservoir of the virus



Who Can be Vaccinated?

- Individuals 1 year and older

Vaccines that Prevent the Disease

- Ages 1 year – 18 years: Havrix®, Vaqta®
- Adults: Twinrix® (Hepatitis A/B combination vaccine)

Disease Review: Hepatitis B

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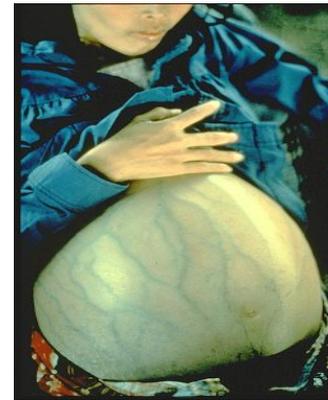
Disease Features

- Spread by blood & body fluids
- Causes liver disease
- Cause of up to 80% of hepatocellular carcinomas
- Incubation period: 60-150 Days (Avg. 90 days)
- Asymptomatic 50% of the time
- Transmitted by parenteral or mucosal exposure

Who Can be Vaccinated?

- Newborns (first dose should be given within 12 hours of birth)
- Individuals aged 6 weeks and older

Routine booster doses are NOT recommended for any age group



Vaccines that Prevent the Disease

- Single Antigen: Recombivax HB®, Engerix-B®
- Combination Vaccines: Comvax®, Pediarix®, Twinrix®

Disease Review: HPV

Disease Features

- Most common sexually-transmitted infection in the U.S.
- High risk types: 16, 18
- Most HPV infections are asymptomatic and result in no clinical disease



Who Can be Vaccinated?

- Adolescents (can be given as young as age 9 years), preferably before sexual contact has occurred
- Adults

Vaccines that Prevent the Disease

- Ages 11 – 25: HPV2 (Cervarix®) – approved for females only (Can be started at age 9)
- Ages 11 – 26: HPV4 (Gardasil®) – approved for females and males (Can be started at age 9)

Disease Review: Influenza

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Disease Features

- 3 Types of Strains: A, B, C
- Airborne transmission
- Abrupt onset of fever, myalgia, sore throat, nonproductive cough, headache
- Highest rates of complications and hospitalizations among young children and person ≥ 65 years
- February 2012: Latest start to the flu season in the last 29 years



Who Can be Vaccinated?

- Individuals aged 6 months and older
- **Do not quit vaccinating during the flu season until the vaccine expires (6/30/12)**

Vaccines that Prevent the Disease

- Two types of Vaccines: live, attenuated (LAIV) and inactivated (TIV)

Disease Review: Measles

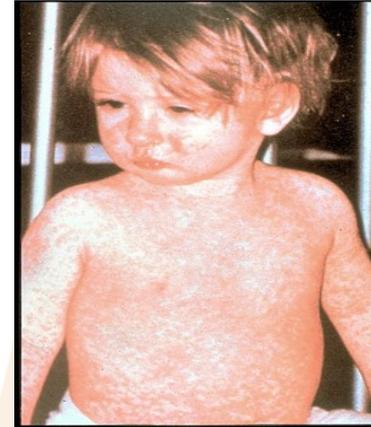
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Disease Features

- Highly contagious: can stay in the environment for hours (airborne transmission)
- Viral infection
- Rash begins on face and head
- Communicable 4 days before to 4 days after rash onset

Who Can be Vaccinated?

- Individuals aged 12 months and older
- Susceptible adolescents and adults without documented evidence of immunity
- Tuberculin skin testing can occur on the same day as MMR vaccination. If not, wait 4 weeks for MMR vaccination.



Vaccines that Prevent the Disease

- MMR II® (live vaccine)
- There is no individual antigen vaccine for measles in the U.S.

Disease Review: Meningococcal

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Disease Features

- Almost all invasive disease is caused by one of five serogroups: A, B, C, Y and W-135
- Short incubation period: 3-4 days
- Clinical Findings: fever, headache, stiff neck
- Disease peaks at ages 16 to 21 years



Who Can be Vaccinated?

- MCV4: Individuals between ages 2 and 55 years
- MPSV4: Adults aged 56 years and older
- Licensed by the Food & Drug Administration (FDA) for 1 dose
- Booster dose recommendation is off-label

Vaccines that Prevent the Disease

- Meningococcal Conjugate Vaccine (MCV4): Menactra®, Menveo®
- Meningococcal Polysaccharide Vaccine (MPSV4): Menomune®



Disease Review: Mumps

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Disease Features

- Incubation Period: 14-18 days
- Causes swelling of the cheeks & jaw due to inflammation of the salivary glands, fever & headache
- Parotitis in 30-40% of the cases
- Acquired by respiratory droplets
- June 2009 saw the largest US outbreak since 2006 (3,502 cases)

Who Can be Vaccinated?

- Individuals aged 12 months and older



Vaccines that Prevent the Disease

- MMR II® (live vaccine)
- There is no individual antigen vaccine for mumps in the U.S.



Disease Review: Pertussis

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Disease Features

- Highly contagious
- Outbreaks first described in 16th Century
- Incubation period: 7-10 days (range: 4-21 days)
- 30% of the time if a cough is present for ≥ 3 months, it is pertussis



Who Can be Vaccinated?

- Individuals aged 6 weeks and older

Vaccines that Prevent the Disease

- Age: 6 weeks – 6 years: DTaP (i.e. DT, Daptacel®, Infanrix®, *Kinrix®, Pediarix®, Pentacel®)
- Age: *7 years – 10 years: Td (Decavac®)
- Ages 11 – Adult: Tdap (Boosterix®, Adacel®) (one per lifetime) then booster with Td® every 10 years after

Disease Review: Pneumococcal

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Disease Features

- Common bacterial complication of influenza and measles
- Transmission is direct person-to-person contact
- Serotype strain 19A accounts for 43% of cases (19A is in PCV13; it was not in PCV7)



Who Can be Vaccinated?

- PCV-13: Children between ages 2 months and 5 years and certain immunocompromised children
- PPV23: Adults over age 65 years and certain immunocompromised children

Vaccines that Prevent the Disease

- May be administered simultaneously with influenza vaccine
- Prevnar 13™ (*Age 2-5)
- Pneumovax® (Age 65+)

Disease Review: Poliomyelitis

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Disease Features

- Complications include paralysis, unable to walk or even breath
- Spread via the fecal-oral route
- Virus spread along nerve fibers
- Destroys motor neurons
- Incubation is 6-20 days (range: 3-35 days)

Who Can be Vaccinated?

- Individuals aged 2 months and older



Vaccines that Prevent the Disease

- IPOL®
- Oral Polio no longer used in the US (FYI: Mexico's immunization schedule calls for 8-9 dose of OPV)

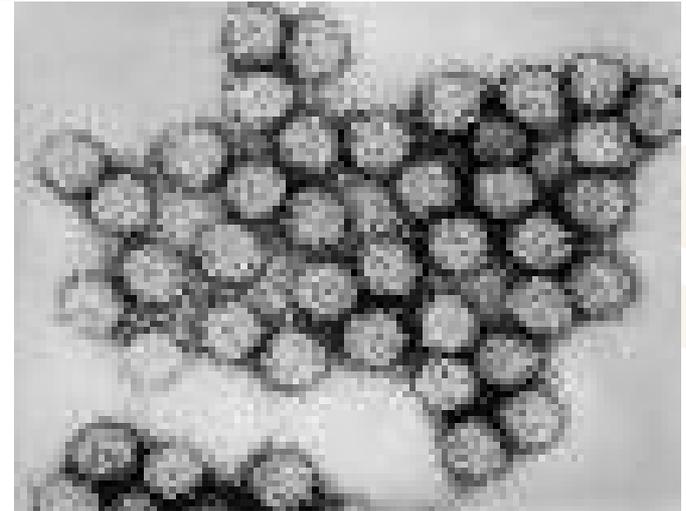


Disease Review: Rotavirus

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Disease Features

- Five predominant strains in the US (G1-G4, G9 accounts for 90% of the isolates)
- Rotavirus is very stable and may remain viable for weeks or months if not disinfected
- Infection leads to isotonic diarrhea (gastroenteritis)
- Short incubation period (usually < 48 hours)
- The first exposure of the disease does not lead to active immunity



Who Can be Vaccinated?

- Maximum Age for First Dose: age 14 weeks, 6 days
- Minimum interval between doses: 4 weeks
- *Maximum age for any dose: age 8 months, 0 days (32 weeks). *PI vs. ACIP

Vaccines that Prevent the Disease (live vaccines)

- Rotarix® (RV1)
- RotaTeq® (RV5)



Disease Review: Rubella

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Disease Features

- Causes swollen glands in the back of the neck, slight fever, rash on the face & neck
- Respiratory transmission
- Incubation period 14 days (range: 12-23 days)
- Prevention of congenital rubella syndrome (CRS) is the main objective of the vaccine (80% of infants born with CRS may be blind, deaf, have heart damage or mental impairment)



Who Should be Vaccinated?

- Individuals 12 months of age and older

Vaccines that Prevent the Disease

- MMR II® (Live Vaccine)
- There is no individual antigen vaccine for rubella in the U.S.



Disease Review: Tetanus

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Disease Features

- Incubation period: 8 days (range: 2-21d)
- Toxin binds in CNS, interferes with neurotransmitter release, leads to unopposed muscle contraction & spasm (contractions can break a child's bone)
- About 2 in 10 who develop tetanus will die, it is the only vaccine-preventable disease that is infectious but not contagious



Who Should be Vaccinated?

- Individuals 6 weeks of age and older

Vaccines that Prevent the Disease

- Age: 6 weeks – 6 years: DTaP® (i.e. DT, Daptacel®, Infanrix®, *Kinrix®, Pediarix®, Pentacel®)
- Age: *7 years – 10 years: Td (Decavac®)
- Ages 11 – Adult: Tdap (Boosterix®, Adacel®) (one per lifetime) then booster with Td every 10 years after

Disease Review: Varicella

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Disease Features

- Primary infection results in Chicken Pox
- Incubation Period: 14-16 days (range 10-21d)
- Recurrent infection results in herpes zoster (shingles)
- Reactivation of zoster: aging, immunosuppression, intrauterine exposure, varicella at younger than 18 months of age
- Adults: Only 5% of reported cases of Varicella but approximately 35% of mortality



Who Can be Vaccinated?

- Individuals aged 12 months and older

Vaccines that Prevent the Disease (live vaccines)

- Varivax®
- Zostavax® (>60 years of age)



Age of Vaccinations Review

When Do Children and Teens Need Vaccinations?

Age	HepB Hepatitis B	DTaP/Tdap Diphtheria, tetanus, pertussis (whooping cough)	Hib Haemophilus influenzae type b	IPV Polio	PCV Pneumococcal conjugate	RV Rotavirus	MMR Measles, mumps, rubella	Varicella Chickenpox	HepA Hepatitis A	HPV Human papillo- mavirus	MCV4 Meningococcal conjugate	Influenza Flu
Birth	✓											
2 months	✓ (1-2 mos)	✓	✓	✓	✓	✓						
4 months	✓	✓	✓	✓	✓	✓						
6 months		✓	✓		✓	✓						
12 months	✓ (6-18 mos)	✓ (15-18 mos)	✓ (12-15 mos)	✓ (6-18 mos)	✓ (12-15 mos)		✓ (12-15 mos)	✓ (12-15 mos)	✓✓ (2 doses given 6 mos apart at age 12-23 mos)			
15 months												
18 months												
19-23 months		Catch-up	Catch-up	Catch-up	Catch-up		Catch-up	Catch-up				✓ (One dose each fall or winter to all people ages 6 mos and older)
4-6 years		✓		✓			✓	✓				
7-10 years	Catch-up	Catch-up										
11-12 years		✓ Tdap		Catch-up			Catch-up	Catch-up	Catch-up	✓✓✓	✓	
13-15 years		Catch-up (Tdap)								Catch-up	Catch-up	
16-18 years										Catch-up	✓	

Please note: Cases of pertussis (whooping cough) have increased in children, teens, and adults in the last few years. Tragically, some infants too young to be fully protected by vaccination have died. Ask your doctor or nurse if your children have received all the pertussis shots needed for his or her age. Also, if you haven't had your pertussis shot, you need to get one.

What is "Catch-up?" If your child's vaccinations are overdue or missing, get your child vaccinated as soon as possible. If your child has not completed a series of vaccinations on time, he or she will need only the remainder of the vaccinations in the series. There's no need to start over.

Vaccine Review (VFC/WyVIP Formulary)

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Combination Vaccines	DTaP	Polio	Hepatitis A	Hepatitis B	Hib	HPV
<ul style="list-style-type: none"> •Kinrix® •Pediarix® •Pentacel® 	<ul style="list-style-type: none"> •Daptacel® •Infanrix® 	<ul style="list-style-type: none"> •IPOL® 	<ul style="list-style-type: none"> •Havrix® •Vaqta® 	<ul style="list-style-type: none"> •Engerix B® •Recombivax HB® 	<ul style="list-style-type: none"> •PedvaxHIB® •ActHIB® 	<ul style="list-style-type: none"> •Gardasil® •Cervarix®

Influenza	Meningococcal Conjugate	Measles, Mumps & Rubella	Pneumococcal 13 Valent	Rotavirus	Tetanus & Diphtheria	Tetanus Toxoid, Reduced Diphtheria Toxoid & Acellular Pertussis	Varicella
Several	<ul style="list-style-type: none"> •Menactra® •Menveo® 	<ul style="list-style-type: none"> •MMRII® 	<ul style="list-style-type: none"> •Prevnar 13™ 	<ul style="list-style-type: none"> •RotaTeq® •Rotarix® 	<ul style="list-style-type: none"> •Decavac® 	<ul style="list-style-type: none"> •Boosterix® •Adacel® 	<ul style="list-style-type: none"> •Varivax®

Due to WyVIP budget constraints, vaccines identified in red are considered VFC-only vaccines as of April 2012.

ACIP Recommendations

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ACIP Vaccination Recommendations (Listed by date published)

<http://www.cdc.gov/vaccines/pubs/ACIP-list.htm>

<p>Hepatitis B Vaccine in Adults with Diabetes Policy Note: Use of Hepatitis B Vaccine in Adults with Diabetes Mellitus Source: <i>MMWR</i>; December 23, 2011 / 60(50);1709-11</p>	<p>General Recommendations General Recommendations on Immunization: Recommendations of the ACIP Source: <i>MMWR</i>; January 28, 2011 / 60(RR02);1-60</p>
<p>Use of HPV4 in Males Policy Note: Recommendations on Use of Quadrivalent HPV in Males - ACIP, 2011 Source: <i>MMWR</i>; December 23, 2011 / 60(50);1705-8</p>	<p>Influenza (Antiviral) Antiviral Agents for the Treatment and Chemoprophylaxis of Influenza: Recommendations of ACIP Source: <i>MMWR</i>; January 21, 2011 / 60(RR01);1-24</p>
<p>Health care personnel immunization Immunization of Health-Care Personnel: Recommendations of ACIP Source: <i>MMWR</i>; November 25, 2011 / 60(RR07);1-45</p>	<p>Tdap vaccine Updated Recommendations for the Use of Tetanus Toxoid, Reduced Diphtheria Toxoid and Accellular Pertussis (Tdap) Vaccine from the ACIP, 2010 Source: <i>MMWR</i>; January 14, 2011 / 60(01);13-15</p>
<p>Herpes Zoster (Shingles) Update on Herpes Zoster Vaccine: Licensure for Persons Aged 50 Through 59 Years Source: <i>MMWR</i>; November 11, 2011 / 60(44);1528-1528</p>	<p>Meningococcal Conjugate vaccine Updated Recommendations for Use of Meningococcal Conjugate Vaccines -- ACIP, 2010 Source: <i>MMWR</i>; January 28, 2011 / 60(03);72-76</p>
<p>Tdap and Td Vaccines and Pregnancy Updated Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid and Accellular Pertussis Vaccine (Tdap) in Pregnant Women and Persons Who Have or Anticipate Having Close Contact with an Infant Aged <12 Months -- Advisory Committee on Immunization Practices (ACIP), 2011 Source: <i>MMWR</i>; October 21, 2011 / 60(41);1424-1426</p>	<p>Pneumococcal (PCV13 and PPSV23) vaccine (infants & children) Prevention of Pneumococcal Disease Among Infants and Children -- Use of 13-Valent Pneumococcal Conjugate Vaccine and 23-Valent Pneumococcal Polysaccharide Vaccine Source: <i>MMWR</i>; December 10, 2010 / 59(RR11);1-18</p>
<p>Supplemental Meningococcal Recommendation of the ACIP for Use of Quadrivalent Meningococcal Conjugate Vaccine (MenACWY-D) Among Children Aged 9 Through 23 Months at Increased Risk for Invasive Meningococcal Disease Source: <i>MMWR</i>; October 14, 2011 / 60(40);1391-1392</p>	<p>Pneumococcal (PPSV23) vaccine (adults) Updated Recommendations for Prevention of Invasive Pneumococcal Disease Among Adults Using PPSV23 Source: <i>MMWR</i>; September 3, 2010 / 59(34);1102-1106</p>
<p>Influenza vaccines (2011-12 season) Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2011 Source: <i>MMWR</i>; August 26, 2011 / 60(33);1128-1132</p>	

Setting/Population Specific Information

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- **Hospitals**
 - Who screens pregnant women for the Hepatitis B surface antigen (HBsAg)? and Where does that information go?
 - Are there standing orders in place for the birth dose of the hepatitis b vaccine?
 - Who is screening babies for VFC/WyVIP eligibility? When? Where is eligibility documented? Who is giving VIS's? When?
 - Is documentation for the birth dose of the hepatitis B vaccine sent to the newborn's primary care practitioner?
- **Pregnant Women:**
 - Live vaccines should not be administered to women known to be pregnant
 - HPV vaccine should be deferred during pregnancy
 - Tdap can be administered after 20 weeks gestation (2nd or 3rd trimester)
 - Passive maternal immunity for infants last approximately one year
 - Antibodies are present and passed along to the fetus during the last 6-8 weeks of pregnancy.

Setting/Population Specific Information, cont'd

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- **Pharmacies**
 - Pharmacists can apply through the Board of Pharmacy to administer vaccines to adults (over age 19 years)
 - The Wyoming State Board of Pharmacy monitors the certification and licensure for pharmacists to administer immunizations. Currently 150 Wyoming pharmacists are licensed to administer immunizations.
- **Adult-Only Settings**
 - Hepatitis vaccines for high-risk adults
 - Mirrors VFC/WyVIP program with added requirement of WylR entry for vaccinations
- **School Rule Changes (2010)**
 - 2 doses of varicella prior to K
 - Tdap prior to 7th grade
 - ACIP 4-day grace period

Wyoming Rules and Regulations for School Immunizations may be amended in the future to address areas not covered in the previous amendment, such as immunization requirements for homeschooled students who participate in school-based activities.



Wyoming
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Vaccine Safety

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- **Vaccine development takes ~10 years and costs ~\$1M to produce (\$5M by the end of post-licensure studies).**
- **Methods of monitoring vaccine safety:**
 - Pre- and post-licensure studies
 - VAERS: Passive and active System, jointly administered by CDC and FDA, receives ~28K reports per year, system alerts for “signals”
 - Vaccine Safety Data Link: Involves partnerships with 10 large managed care organizations, links vaccination and health records, allows for planned immunization safety studies
 - Clinical Immunization Safety Assessment (CISA) Network: Evaluates single events vs. population data
 - Vaccine Analytic Unit: Military surveillance with the Department of Defense to evaluate longer term safety of vaccines administered to young adults of military age



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Additional Resources

www.immunizewyoming.com

- **CDC Website showing CPT Codes:** This table cross-references Current Procedural Terminology (CPT™) codes that are related to vaccines, toxoids and immune globulins with their corresponding CVX codes
- **VAERS (Vaccination Adverse Event Reporting System)**
- **Centers for Disease Control and Prevention (CDC)**
- **Web site link to WylR Login screen**
- **Immunization Action Coalition**
- **Link to WDH Infectious Disease Epidemiology Program web site**

Contact Information

- **For clinical questions please contact your appropriate Clinical Quality & Compliance Specialist:**
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