## Vaccine Summary

**Haemophilus influenzae Type B (HIB)**
~often resembles the common cold often infection in the upper respiratory tract.
~not common after 5 years of age as natural immunity is often acquired through asymptomatic infection of Hib bacteria.
~Not recommended in children over 59 months of age as majority of children are immune to Hib

~Risk factors
- -lack of breastfeeding
- -Age-highest risk between ages 6-12 months
- -can enter brain and cause meningitis but peak infections seen ages 3-18 months
- -chronic desease - serious ill children are at greater risk
- -smoke exposure
- -low income
- -greater then 4 in a household
- -daycare

**Pneumococcal Disease**
~caused by Strep pneumonia and some strains cause ear infection, upper respiratory infections, meningitis or pneumonia
~Vaccine does not immunize against most virulent strain.

~Risk Factors
- -smoke exposure
- -recent influenza infections
- -daycare crowding
- -poor nutrition, Vitamin A deficiency
- -genetic susceptibility
- -alcohol, congestive heart failure, COPD, diabetes, renal failure

~Can be treated with antibiotics

**Diphtheria, pertussis, tetanus DPT/DTAP**
~Diphtheria
- -can cause extensive organ and membrane damage to peripheral nerve and respiratory tract. Appears as membranous pharyngitis with pharyngeal exudate.
- -1 annual case notified in the USA in 1999
- -death occurs in 5%-10% of cases

~Pertussis
- -whooping cough caused by *Bordatella pertussis*
- -immunity to pertussis is NOT PERMANENT not matter how you get the immunity
- -highly communicable. 80% of the household will become infected
- -three stages of disease
  1. catarrhal stage: runny nose, sneezing low grade fever. mild cough
  2. paroxysmal stage: burst of numerous rapid coughs apparently which can lead to vomiting. Can last up to 10 weeks.
  3. convalescent stage: cough spasm lessons and disappears in 2-3 weeks. but often causes secondary bacterial pneumonia

-Diagnosis: nasal swab
-incidence: 30-50 million pertussis cases worldwide each year. in 2009 8,383 cases in CA with 10 fatalities
-If a child has had documented pertussis they do not need the vaccine. Vaccine recommended fo all children under 7 years who have contact with pertussis or haven't completed the 4 doses of vaccine.

~Tetanus
-Causes by Clostridium tetani: causes an acute fatal disease by generalized rigidity and spasm of skeletal muscle. characterized by lock jaw followed by neck paralysis. Found in soil, especially manure treated. Other symptoms include: fever, sweating, elevated blood pressure and heart rate changes.
-enters blood through contaminated wound. non contagious. incubation period is 8 days but can take up to months. The further the puncture wound is form the central nervous system, the longer the incubation.
-Cases are rare. 2005: 27 cases in the US and 2 deaths. associated with severe disease and complications particularly among unvaccinated children. Median length of hospitalization is 24 days and up to 60 days. People who are fully vaccinated experience milder tetanus illness and median hospital stay is 2 days.
-Treatment: TIG (tetanus immunoglobulin) can sop up unbound tetanus toxin and neutralize it. Usually given as a single dose as soon as possible after exposure (deep puncture wound etc) and at the same time as a tetanus vaccine. TIG offers 3 weeks of protection from tetanus. Antibiotic are ineffective and disease does not result in immunity from future infections.

~DTap Vaccine
-none of the three common brands has thimerasol. but all brands have aluminum. Preferred brand: Infanrix (not traces of thimerasol whatsoever)

~Tdap vaccine
-This is the adult version of the vaccine and recommended as a booster for adults age 11-65. this does have thimerasol.
-preferred brand: boostrix (no traces of thimerasol: no 2-phenoxyethanol)

~Td vaccine: has thimerasol, aluminum and formaldehyde

**Polio Virus and Vaccine**

~Three different types and immunity to one type does not offer immunity to any of the other types. transmitted fecal oral route as it can survive the harsh conditions of the digestive tract. Enters the body and infects the central nervous systmen and spinal cord.

~clinical manifestations
-95% of cases are asymptomatic because the digestive tract isolates it and keeps it from getting into the blood stream.
-1% of cases have symptoms lasting 2-10 days and permanent immunity is formed
-< 1%: paralytic polio.

~Vaccine: Since 1979 there have been no infections of wild-type polio in the USA.
~A heathy child with good gut flora and a healthy digestive tract need not be vaccinated. If child is traveling to a country where polio is endemic then vaccinating may be a consideration.

**MMR Vaccine: Measles Mumps Rubella**

~Measles virus
-about 85% of exposures lead to infection.

-starts like a cold, high fever, runny nose, cough up to 4 days and then white spots appear in the mouth. throat becomes red swollen and very sore. Within a couple of days the body rash starts starts up and grows down the body.

-outbreaks: 2009: 130 cases

~Mumps virus

-highly contagious in schools. spread by sneezing or coughing. causes swollen parotid glands within 14-24 days of exposure.

-approcimately 92% of all children have been exposed to mumps by age 15

~Rubella

-caused by rubifvirus

-mild "kids" disease. Rash starts on face and moves down. Lasts about 3 days.

- 9 cases of rubella in 2004. Announced eradicated in the US in 2005.

Risk factors:

-A non-immune pregnant women can pass the infection onto unborn child and cause severe congenital abnormalities causing miscarriages or stillborn.

~ do not immunize prior to 12 months of age.

**Chicken Pox**

~Vericella-Zoster viurs can cause chicken pox (usually in kids) or shingles (in adults)

~start with mild fever, highly contagious, blisters form and can be in side eyes, mouth,ears, vagina or rectum as many as 500. Reactivation can occur in adulthood, immunosuppression (HIV, stress, etc.) or intrauterine (pregnancy)

~in prevaccination era, majority of cases (~85%) occurred in kids less then 15 years of age. 39% of cases age 1-4. 38% age 5-9. Adults over age 20 accounted for 7% of cases.

~avoid using salicylates 6 weeks after vaccination.

~vaccine immunity lasts over 7 years.

~Risk of complications from infection are infrequent in healthy children and occur frequently in person older then 15 years of age and infants younger then 1 year.

-fatality rate

age 1-14: 1 per 100,000 cases

age 15-19: 2.7 per 100,000 cases

age 30-49 25.2 per 100,000 cases

adults account for only 5% of reported cases but approximately 35% of mortality

~efficacy: vaccine found to prevent disease in 70-85% of vaccinated population. and can reduce severity of attack.

~Risk of breakthrough infection 2.5 X higher if given less then 30 days following an MMR vaccine. No increased risk if given at the same time or > 30 days.

~outbreak can last about 2 months.

~conflicting evidence that the vaccine may make adult shingles risk more likely.

~some doctors recommend giving the vaccine to any child who hasn't had the chicken pox by age 11.

~infection results in 5000-9000 hospitlizations each year. and 100 deaths.

~risks are much greater in adults who contract the infection

~not a major illness in healthy children.