

Comparison of effects of diseases and vaccines

Disease		Effects of Disease	Side Effects of Vaccine
Incidence Before Vaccination	Incidence After Vaccination		
Polio Spread by faeces and saliva. Incubation: 1-2 weeks. Infection may lead to fever, headache, nausea and vomiting, muscle weakness and paralysis. Range 2.5-28.3 /100,000 Epidemic years had up to 20,000 cases of paralytic disease.		1% of infections have clinical symptoms, but about 1 in 20 hospitalized patients dies and 50% of survivors remain paralysed.	IPV used in Canada so vaccine associated polio, though very rare, is no longer a risk. Local discomfort or inflammation in 5% of recipients. - see side effects of DtaP vaccine below for combination use.
Diphtheria Spread by nasal droplets. Incubation: 2-5 days. Infection leads to severe pharyngitis and cervical adenopathy. Patient is infectious for up to 2 weeks. Highest in 1924 with 9,000 cases that year.		Case fatality rate 5-10%. Toxin may lead to myocardial and neurological complications.	DTaP vaccine - about 20% have local discomfort or inflammation, 5% have fever. A transient nodule may develop at the injection site, lasting a few weeks. Up to 70% at the 4-6yr booster develop redness and swelling.
Tetanus Bacteria present in soil and animal faeces. Incubation: 3-21 days. Causes painful muscular contractions and convulsions. Average 40-50 deaths per year.		Case fatality about 10%. Risk is greatest for the very young or old.	See above - side effects of DTaP vaccine. Local erythema and swelling not uncommon with adult boosters, and increasing with age. Peripheral neuropathies have been rarely reported.
Pertussis Spread by cough and nasal droplets. Incubation: 7-10 days. Symptoms include runny nose and irritating cough, which may develop into whooping cough. Average 153 /100,000		About 1% case fatality in patients under 6 months, from pneumonia or fatal encephalopathy (usually hypoxic). Several deaths still occur every year, particularly in unimmunized infants.	See above - side effects of DTaP vaccine. Rate of reactions to acellular pertussis vaccine is less than with whole cell.
Hib Spread by nasal droplets. Incubation: 2-4 days. Presents as an acute illness with fever, vomiting, and lethargy (symptoms of meningitis) in 55-65%. In the remainder, it can also cause epiglottitis, pneumonia, bacteremia and other complications. Leading cause of bacterial meningitis in infancy. About 2,000 cases per year		Case fatality of meningitis is 5% (10-15% of survivors have permanent neurologic sequelae and 15-20% have deafness).	5% have discomfort or local inflammation, 2% have fever. Usually given in combination with DT (see above - side effects of DTaP vaccine).
Measles Spread by cough and nasal droplets. Incubation: 1-2 weeks. Symptoms include fever, sore throat, cough, runny nose, itchy eyes and a red rash that starts on the face and spreads to the rest of the body. Cyclic with increasing incidence every 2-3 years. About 300,000 to 400,000 cases per year estimated.		Complications such as bronchopneumonia and otitis media in about 10%. 1/1,000 encephalitis (case fatality 10%, permanent sequelae 25%). 1/25,000 develops SSPE.	5-10% have discomfort, local inflammation or fever with or without a non-infectious rash. 1/1 million recipients develop encephalitis. About 1/24,000 develop transient thrombocytopenia.
Mumps Spread by saliva. Incubation: 2-3 weeks. Symptoms include fever and parotitis. Highest in 1942 with 52,344 cases Average incidence 136 /100,000		1/ 200 children develops encephalitis. 20-30% of post-pubertal males develop orchitis, 5% of females develop oophoritis. Occasionally, mumps causes infertility or deafness.	Fever and a mild skin rash occasionally occurs. 1% of recipients may develop parotitis. 1 in 3 million recipients may develop aseptic meningitis.
Rubella Spread by nasal droplets. Incubation: 2-3 weeks. Symptoms include fever, headache, itchy eyes, cervical adenopathy and rash. Highest in 1936 with 69,401 cases Average 149 /100,000		50% develop a rash and adenopathy; 50% of adolescents and adults have acute arthralgias or arthritis; 1/6,000 develops an encephalopathy. Infections in the first 10 weeks of pregnancy have	About 10% have discomfort, local inflammation or fever. About 5% have swollen glands, stiff neck or joint pains. About 1% develop a noninfectious rash. Transient arthralgias or arthritis may occur,
		Indigenous disease eradicated from the Americas. Still endemic in other parts of the world. Now 2-5 reported cases per year, none reported in 1996. 3-5 cases per year reported, only 5 deaths in the last 18 years and none since 1991. Average 10 /100,000 Recent outbreaks with 11,000 cases (1989) and 2,300 (1995). With 2 dose schedule, now fewer than 400 cases per year. Average incidence 2.35 /100,000, or about 500 cases annually.	