A Photo Collection of Vaccine-Preventable Diseases

Created by the
Immunization Action Coalition

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Diseases for which vaccination is routinely recommended

- Diphtheria
- *Haemophilus influenzae* type b (Hib)
- Hepatitis A
- Hepatitis B
- Herpes zoster (shingles)
- Human papillomavirus (HPV)
- Influenza
- Measles
- Meningococcal disease
- Mumps
- Pertussis
- Pneumococcal disease
- Polio
- Rotavirus
- Rubella
- Tetanus
- Varicella (chickenpox)

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Diphtheria

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This photo shows the throat of a child with diphtheria. There is a thick gray coating over the back of the throat.
- If not treated, this child could die from suffocation.

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Diphtheria

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This child has a swollen neck (sometimes referred to as *bull neck*) due to diphtheria infection.

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Haemophilus influenzae type b (Hib)

Photo courtesy of the Children's Immunization Project, Saint Paul, MN

- This girl is hospitalized with Hib infection, shown here involving the deep tissue of her face.
- Hib disease can also lead to brain damage, seizures, paralysis, hearing loss, and death.

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Hepatitis A

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- Hepatitis A virus infection has caused this man's skin and the whites of his eyes to turn yellow (*jaundice*). This yellow coloration is the result of excess bilirubin, which builds up as a result of bile duct obstruction.
- Other symptoms of hepatitis A can include:
  - loss of appetite
  - abdominal pain
  - nausea or vomiting
  - fever
  - headaches
  - pale, clay-colored stool
  - dark urine

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Hepatitis B

Photo courtesy of Patricia Walker, MD, Regions Hospital, MN

- This woman died from liver cancer four months after arriving at a refugee resettlement camp. The liver cancer was caused by chronic infection with hepatitis B virus.
- The likelihood of carrying the virus for life (chronic infection) depends on a person's age when infected:
  - 2 of 100 adults
  - 30 of 100 children age 3–5 years
  - 90 of 100 infants
- About 1 out of 4 persons who become chronically infected during childhood die prematurely from cirrhosis (scarring) of the liver or liver cancer.

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Herpes zoster (shingles)

Photo courtesy of www.webmd.com

- Shingles infection of the eye can lead to a loss of vision.
- Without vaccination, about 1 in 3 people who have been infected with chickenpox will later develop shingles.

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Human Papillomavirus (HPV)

Cervical cancer

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- HPV is the most common sexually transmitted infection in the U.S. Approximately 79 million Americans are infected.
- Most sexually active men and women will get at least 1 type of HPV at some point in their lives.
- Persistent infection with high-risk types of HPV is associated with almost all cervical cancers.
- An estimated 44,000 HPV-associated cancers occur annually in the U.S.

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Human Papillomavirus (HPV)

HPV Virus-like particles assembled from the L1 Protein of HPV 16

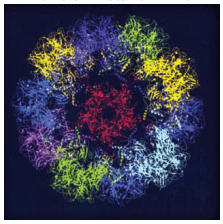

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- Human photos of persons with HPV usually include genitalia and are quite graphic, so we have chosen not to include them here.
- To view some of these photos:
  - Go to the Public Health Image Library (http://phil.cdc.gov) and type HPV in the search box.
  - You also can use the Google image search feature.

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Influenza

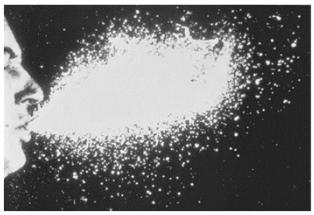

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This photo shows how the influenza virus can spread through the air when someone coughs.

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Influenza

Emergency hospital at Camp Funston, Kansas, during the 1918 influenza pandemic

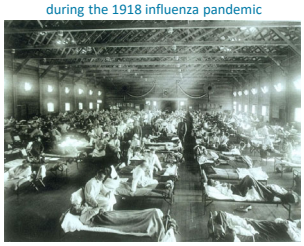

Photo courtesy of the National Museum of Health and Medicine, Armed Forces Institute of Pathology

- The 1918 influenza pandemic killed at least 50 million people worldwide.

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Influenza

*The top range of these burden estimates are from the 2017-2018 flu season. These are preliminary and may change as data are finalized.

Image courtesy of the Centers for Disease Control and Prevention (CDC)
www.cdc.gov/flu/about/burden/index.html

- The burden of influenza disease in the United States can vary widely and depends upon a number of factors, including the characteristics of circulating viruses, the timing of the season, how well the vaccine is working to protect against illness, and how many people got vaccinated.
- While the impact of influenza varies, it places a substantial burden on the health of people in the U.S. each year.

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Measles

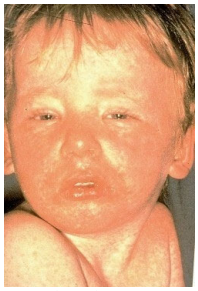

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This child has a severe measles rash, as well as red eyes, a runny nose, and a fever.
- Measles can cause pneumonia, seizures, brain damage, and even death.
- Death from measles occurs in 2–3 per 1,000 reported cases in the U.S.

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Measles

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- Young boy with characteristic measles rash

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Measles

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- Young boy with measles
- Blotchy macular rash on face, arms, and neck

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Meningococcal Disease

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- Meningococcal disease is a sudden, life-threatening illness caused by bacteria that infect the blood (septicemia) or the brain and spinal cord (a type of meningitis).
- Meningococcal disease can cause shock, coma, and death within hours of the first symptom. Even with proper treatment, 10–15% of people with meningococcal disease die.
- Of people who survive, as many as 20% suffer from some serious complication such as loss of an arm or leg, brain damage, or permanent hearing loss.

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Meningococcal Disease

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This 4-month-old infant has gangrene of her hands and lower extremities as a result of meningococcemia.

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Mumps

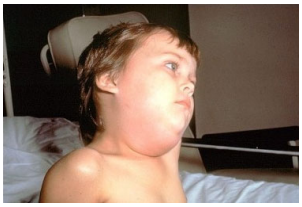

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This child's jaw and cheek are swollen from mumps.
- Mumps often leads to painful swelling of the salivary glands.
- Mumps can lead to painful swelling of the testicles in males, deafness, and brain damage.

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Mumps

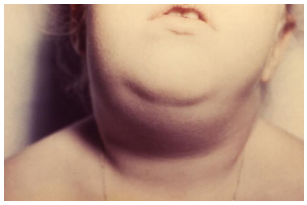

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- A young child with characteristic swelling of the front of the neck due to enlargement of the submaxillary salivary glands brought on by a mumps infection.

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Pertussis (whooping cough)

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This child has pertussis, a highly contagious respiratory disease caused by the bacterium *Bordetella pertussis*.
- Pertussis is known for uncontrollable, violent coughing which often makes it hard to breathe. After coughing fits, someone with pertussis often needs to take deep breaths, which result in a "whooping" sound.
- Pertussis can affect people of all ages, but can be very serious, even deadly, for babies less than a year old.

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Pertussis (whooping cough)

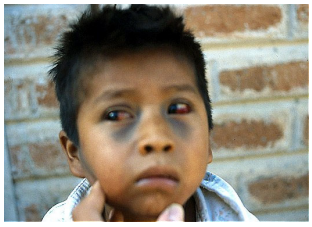

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This child has broken blood vessels in his eyes and bruising on his face as a result of coughing from pertussis.

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Pneumococcal Disease

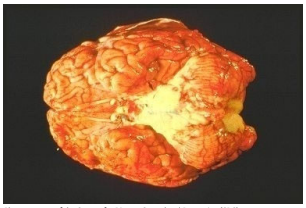

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This is a photo of the brain of a person who died from pneumococcal meningitis. Note the purulence (pus) that covers the brain surface.
- Pneumococcal disease is caused by bacteria that can lead to serious infections in the lungs (pneumonia), blood (sepsis), or brain (meningitis).

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Polio

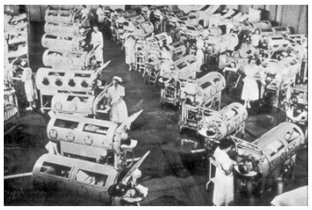

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This photo of a Los Angeles hospital respiratory ward in 1952 shows polio patients in iron lungs – machines that were necessary to help them breathe.

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Polio

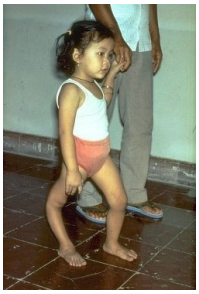

Photo courtesy of the World Health Organization (WHO)

- This child has a severely deformed leg caused by polio.
- Although polio has been eliminated from most of the world, until poliovirus transmission is interrupted in every county, all countries remain at risk of importation of polio.

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Rotavirus

Photo courtesy of World Health Organization, photo credit Dr. D. Mahalanabis

- Doctor examining child dehydrated from rotavirus infection.
- In developing countries, rotavirus causes about half a million deaths each year in children younger than 5 years of age.
- Almost all unvaccinated children get infected with rotavirus before reaching age 5.

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Rubella

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This teen has a rash from rubella.
- The rash is not as prominent as the measles rash and is often missed in diagnosis.
- Rubella in pregnant women can lead to miscarriage, as well as severe medical problems in their newborns.

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Rubella

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This infant was born with rubella.
- Babies whose mothers were infected with rubella during pregnancy can be born with deafness, blindness, heart damage, and intellectual disability.

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Tetanus

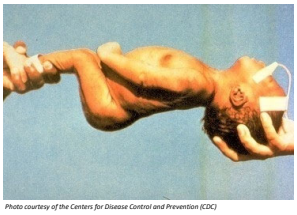

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This baby has neonatal tetanus. His body is rigid.
- Most newborns who get tetanus die.
- Infection can occur if a mother is unimmunized against tetanus and the baby's newly-cut umbilical cord is exposed to dirt.
- Neonatal tetanus can be prevented by hygienic delivery practices and/or immunizing mothers against tetanus.

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Tetanus

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This person has tetanus. The muscles in his body are in spasm, making it nearly impossible for him to move.
- Tetanus bacilli live in the soil, and many types of injuries can allow the bacteria to enter the body.

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Varicella (Chickenpox)

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This photo shows the typical itchy chickenpox rash. There can be 500 or more sores.
- Many cases of chickenpox are mild, but deaths from this disease can occur.
- Before vaccine became available, about 100 previously healthy people died from chickenpox every year in the U.S.

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Varicella (Chickenpox)

Source: Unknown

- This newborn has a secondary bacterial infection, which is a complication following infection with varicella (chickenpox) virus.
- He contracted chickenpox from his infected mother.

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Other diseases for which vaccines are used in special situations

- Adenovirus
- Anthrax
- Cholera
- Japanese encephalitis
- Rabies
- Smallpox
- Typhoid fever
- Yellow fever

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Adenovirus

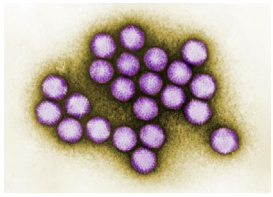

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- Adenoviruses are common causes of respiratory illness, but most infections are not severe.
- They can cause:
  - Cold-like symptoms
  - Sore throat
  - Bronchitis
  - Pneumonia
  - Diarrhea
  - Pink eye (conjunctivitis)
- A vaccine against adenovirus types 4 and 7 is approved by FDA for U.S. military personnel only.

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Anthrax

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- Anthrax is a serious disease caused by *Bacillus anthracis*, a bacterium that forms spores. Three types of anthrax exist:
  - Skin (cutaneous)
    (This is the type shown in the photo.)
  - Lungs (inhalation)
  - Digestive (gastrointestinal)
- Humans can become infected with anthrax by handling products from infected animals, breathing in anthrax spores, or eating infected meat.

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Cholera

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- Cholera is an acute diarrheal illness caused by infection of the intestine with the bacterium *Vibrio cholerae*.
- An estimated 3–5 million cases and over 100,000 deaths occur each year around the world.
- This infection is often mild or without symptoms, but it can cause life-threatening dehydration.
- In 2015, FDA approved the first cholera vaccine available in the U.S. The vaccine was approved for use in adults age 18 through 64 years traveling to areas where cholera is occurring.

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Japanese Encephalitis

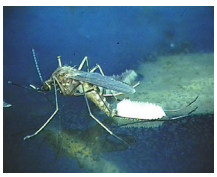

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- The Japanese Encephalitis virus is transmitted by the bites of infected mosquitoes. This is an image of a *Culex* mosquito laying eggs.
- Japanese encephalitis is the most common vaccine-preventable cause of encephalitis (inflammation of the brain) in Asia.
- Most infections are mild (e.g., fever and headache) without apparent symptoms. However, about 1 in 200 infections results in severe disease characterized by rapid onset of high fever, headache, neck stiffness, disorientation, coma, seizures, spastic paralysis, and death.
- A vaccine is available to prevent Japanese encephalitis.

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Rabies

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- Bites from wild animals such as raccoons, bats, and skunks account for the majority of rabies cases in the U.S.
- Rabies is caused by a virus that invades the central nervous system and disrupts its functioning. The virus is transmitted in the saliva of infected animals.
- Prompt postexposure treatment is generally effective. Once symptoms appear, the disease is almost always fatal.

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Rabies

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This dog was suspected of being rabid. It exhibited signs of restlessness and overall uncharacteristic aggressive behavior, which are two symptoms of rabies.
- Other symptoms of rabies in pets may include impaired walking, eating, and drinking.

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Smallpox (Variola)

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This man's body is covered with lesions from smallpox.
- A worldwide smallpox vaccination program led to the eradication of smallpox in 1979. The smallpox virus no longer exists in nature.
- The eradication of smallpox ranks as one of the greatest achievements in the history of medicine.

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Typhoid Fever

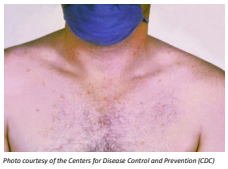

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This serious disease is caused by the bacteria *Salmonella typhi*. It is transmitted through the ingestion of food or drink which has been contaminated by the feces of an infected person.
- Typhoid can cause a high fever, weakness, headache, loss of appetite, stomach pains, and a rash of flat, rose-colored spots.
- If the disease is not treated, it can kill up to 20% of people who get infected. It can be treated with antibiotics, but antibiotic-resistant strains are a growing problem.
- Typhoid fever is still common in low-income countries. Vaccines are available to prevent typhoid fever.

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Yellow Fever

Photo courtesy of the Centers for Disease Control and Prevention (CDC)

- This female *Aedes aegypti* mosquito can transmit the viruses that cause Dengue fever, Zika, and yellow fever. These viruses are transferred to the host when bitten by a female mosquito.
- The word "yellow" in the name refers to the jaundice that affects some patients. The virus is endemic in tropical areas of Africa and Latin America.
- There is an effective yellow fever vaccine, but there is no cure for the disease. Most infected patients improve after 3 to 4 days. However, 15% of patients enter a second, more toxic phase of the disease, about half of whom die within 10–14 days.

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Useful handouts on vaccine-preventable diseases (VPDs) for parents and patients

- Detailed Q&A handouts on all routine VPDs and the vaccines that prevent them
  www.immunize.org/handouts/vaccine-questions.asp
- Easy-to-read Q&As/summaries of routine VPDs and the vaccines that prevent them
  www.immunize.org/handouts/vaccine-summaries.asp
- Immunization schedules for patients and parents
  www.immunize.org/handouts/vaccine-schedules.asp

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For more information on any of these diseases and the vaccines that can prevent them, go to:

- www.immunize.org
- www.vaccineinformation.org

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