The most frequent infectious diseases in childhood

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Types of infections

Bacterial:

- May require antibiotics
- Cause some illnesses like strep throat, some ear infections, sinus infections and many gastrointestinal illnesses

Viral:

- Cause most common respiratory illnesses (e.g., colds, flu, acute bronchitis)
- Must run their course- **antibiotics will not help**

Parasitic

- Commonly cause gastrointestinal illnesses like Giardia

High risk groups of patients

New-borns are at risk because their protective systems are not yet tested and are not always mature.

Infants are at risk because they tend to put everything into their mouths and rarely clean their hands.

Older children are less at risk because their hygiene is better and they have become immune through prior infection or carriage of bacteria.

The use of medical devices such as catheters and other tubes.

Immunosupression- medicines such as corticosteroids (used in asthma and many other conditions) and cancer chemotherapy can interfere with a child's ability to fight infection.

Maculopapular rash

Viral	HHV6 or 7 (Roseola infantum) – <2 years old
	Enteroviral rash
	Parvovirus ('slapped cheek') – usually school-age
	Measles – uncommon if immunised
	Rubella – uncommon if immunised
Bacterial	Scarlet fever (group A streptococcus)
	Erythema marginatum – rheumatic fever
	Salmonella typhi (typhoid fever) – classically rose spots
	Lyme disease – erythema migrans
Other	Kawasaki disease
	Juvenile idiopathic arthritis

Vesicular, bullous, pustular

Viral	Varicella-zoster virus – chickenpox, shingles
	Herpes simplex virus
	Coxsackie – hand, foot and mouth
Bacterial	Impetigo – characteristic crusting
	Boils – infection of hair follicles/sweat glands
	Staphylococcal bullous impetigo
	Staphylococcal scalded skin
	Toxic epidermal necrolysis
Other	Erythema multiforme; Stevens–Johnson syndrome

Petechial, purpuric

Bacterial	Meningococcal, other bacterial sepsis
	Infective endocarditis
Viral	Enterovirus and other viral infections
Other	Henoch–Schönlein purpura (HSP)
	Thrombocytopenia
	Vasculitis
	Malaria

Fifth Disease (Erythema Infectiosum - Parvovirus B19)

Occurs primarily among school-aged children

Symptoms: Raised, red, warm rash, first appearing on cheeks (slapped cheek appearance).

After 1 - 4 days, a lace-like rash spreads to the rest of the body.

Rash fades but may recur for 1 – 3 weeks on exposure to sunlight.

Flu-like symptoms (e.g., runny nose, sore throat, mild body weakness and joint pain, fever) may be present about 7 days before onset of rash.

Fifth Disease (Erythema Infectiosum - Parvovirus B19)

- **How is it spread?** Direct & indirect contact, air
- **Incubation period:** Usually 4 – 20 days from contact with infected person
- **When is the person contagious?** Usually for 7 – 10 days before onset of rash. Once the rash appears, the child can no longer pass it on to anyone else.

Roseola (Exanthema Subitum)

It is caused by two human herpesviruses, human herpesvirus 6 (HHV-6) and human herpesvirus 7 (HHV-7), which are sometimes referred to collectively as Roseolovirus.

Most common acute rash illness of children 6 months to 2 years of age

Symptoms

- Irritability, runny nose, malaise, high fever
- Most kids will be alert and playful

Rash appearance

- Pale rose-pink flat spots with a white halo over neck and trunk, extremities spared
- lasts for 1-2 days

Roseola

Thought to be transmitted through a contact with a parent's or caregiver's saliva
- Children also thought to be a reservoir

Incubation period: 5-15 days

Communicable period: unknown

Hand / Foot / Mouth Disease (Coxsackie virus)

Common among young children

Symptoms: Sudden onset. Fever, sore throat, small greyish blisters in mouth lasting 4 - 6 days.

Rash appearance

- Oral ulcers first
- 2 days later, vesicles appear on hands and feet

Transmitted by direct contact with respiratory secretions or feces from an infected individual

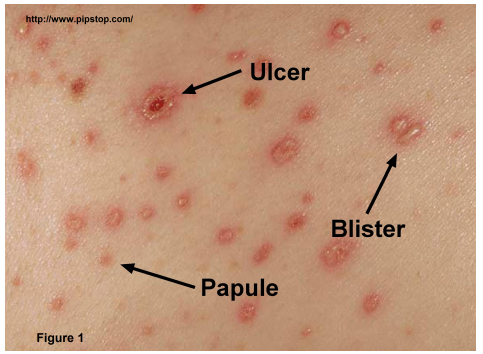
Incubation period: 4 – 6 days

Communicable period

- from the onset of oral ulcers to weeks following resolution of the illness

Chickenpox- varicella- zoster virus

- The infectious disease caused by the varicella-zoster virus which results in a blister-like rash, itching, tiredness and fever
- Rash appearance- Begins with red flat lesions (maculopapular) that rapidly progress to vesicles, pustules and crusts
- Incubation period: 10-21 days
- highly infectious and spreads from person to person by direct contact or through the air



Chickenpox- varicella- zoster virus

- Communicable period - 2 days before and until all lesions have crusted over (usually 5-7 days)
- Preventable through vaccination
- Treatment: Control fever with acetaminophen. Ibuprofen contraindicated. Baths in a solution of gentian violet, potassium permanganate, antihistamines may also reduce itching.

Rubella (German Measles)

Mild febrile viral illness. Children usually present few or no clinical symptoms

Rash appearance

- Pink maculopapular rash
- Starts on face then spreads downward and peripherally
- lasts 2-5 days (3-day measles)

Transmitted via contact with infected nasopharyngeal secretions

Incubation period: 16-18 days

Rubella (German Measles)

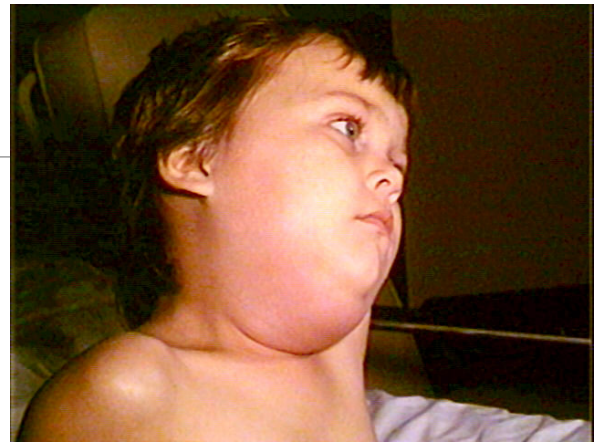
Communicable period: 5 days before to 5-7 days after rash onset

Infection can be detrimental to a developing fetus. Rubella infection during pregnancy can cause severe birth defects, miscarriage, or stillbirth.

85% of foetuses who are infected with rubella in the first 10 weeks of pregnancy will develop Congenital Rubella Syndrome(CRS).

CRS may include deafness, eye problems, heart defects, liver, spleen, and brain damage.

Mumps



Caused by the mumps virus.

Signs and symptoms:

- Fever
- Headache
- Swollen and painful salivary glands (found in front of and below the ear or under the jaw)

Complications of mumps disease include:

- Meningitis in 20% of people infected
- Orchitis in 20-30% of post-pubertal males
- Oophoritis in 5% of post-pubertal females
- Deafness and infertility occur occasionally

Incubation period: Usually 16 – 18 days from contact with an infected person but can range from 14 – 25 days

Mumps

Method of spread:

Through direct or indirect contact with nose and throat secretions of an infected person

- Breathing air contaminated with the virus when an infected person has coughed or sneezed
- Touching the nose and throat secretions of an infected person
- Kissing
- Sharing anything that is put in the mouth (e.g., cups, toys)

Communicable Period: From 7 days before to 9 days after the onset of swelling

- Child is most contagious 2 days before to 4 days after the onset of illness.

Measles “red measles” (Rubeola virus)

Symptoms: Fever, inflamed eyes, dry cough, runny nose, dusky red blotchy rash 3 - 7 days later spreading downwards from face, white spots in mouth.

Koplik's spots: Little spots inside the mouth that are highly characteristic of the early phase of measles (Rubeola). The spots look like a tiny grains of white sand, each surrounded by a red ring. They are found especially on the inside of the cheek (the buccal mucosa) opposite the 1st and 2nd upper molars.

Method of Spread: Spread by sneezing or coughing, or by direct contact with nose and throat secretions. Highly contagious.

Measles

Incubation: 7 - 18 days from exposure to onset of fever, usually 14 days until rash appears.

Communicable Period: From just before the symptoms start to 4 days after the rash appears.

Prevention: 2 doses of measles vaccine

Herpes simplex

Symptoms: Superficial clear vesicles (blisters) with red base, usually on face or lips, which crust and heal within days.

Method of Spread: Direct contact with secretions from throat and mouth of infected people.

Incubation period: 2 - 12 days from date of contact.

Communicable period: Up to 7 weeks after onset.

Control Avoid direct contact with secretions or infectious materials.

Prevention Education to minimize transmission of infectious material, avoiding contact with children with eczema or burns and the immunocompromised.

HSV - figures

- Most are asymptomatic
- Gingivostomatitis – may need intravenous fluids and aciclovir
- Skin manifestations – mucocutaneous junctions,e.g. lips and damaged skin
- Eczema herpeticum – may result in secondary bacterial infection and septicaemia
- Herpetic whitlows – painful pustules on the fingers
- Eye disease – blepharitis, conjunctivitis, corneal ulceration and scarring
- CNS – aseptic meningitis, encephalitis
- Pneumonia and disseminated infection in the immunocompromised.

Impetigo

Symptoms: A skin infection with moist, purulent, yellow crusted sores surrounded by redness. Spreads forming new sores. Usually found on the face.

Method of Spread: Direct contact with secretions from open sores and nose. Can also be spread person-to-person via hands.

Incubation: Staphylococcal: 4 - 10 days from date of contact. Streptococcal: 1 - 3 days from date of contact.

Communicable Period: If untreated, as long as sores are present, or 24 hours after antibiotic therapy has been started.

Rotaviral infection

Rotavirus is the most common cause of severe diarrhoea among young children. It usually affects children between the ages of 6 months and 2 years.

Signs and symptoms:

- Fever (may be as high as 40°C), Vomiting
- About 12 – 24 hours later, child starts to pass large amounts of watery diarrhoea
- Abdominal pain

The illness usually lasts 3 – 7 days.

Most children recover completely without treatment. Some children need to be hospitalized for re-hydration (replacement of fluids lost) due to diarrhoea.

Rotaviral infection

Mode of Spread: Through direct contact:

- changing an infected child's diaper or assisting a child with toileting

Through indirect contact:

- touching an object that was contaminated with rotavirus. The virus is able to survive for long periods on hard surfaces, in contaminated water, and on hands.

Incubation period: Usually 1 – 3 days

Contamination period: During the acute stage of illness and until diarrhoea stops

Prevention- vaccination (Human rotavirus RIX4414)

Hepatitis A

Hepatitis A is an infection of the liver caused by the Hepatitis A virus. It is usually mild and rarely causes permanent liver damage. Hepatitis A is usually more serious in adults than children.

Signs and symptoms:

- Fever
- Fatigue
- Loss of appetite, nausea, and vomiting
- Abdominal pain
- Jaundice (yellowing of the skin and eyes)

Incubation period: Usually 25 – 30 days (range is 15 – 50 days)

Hepatitis A

Method of spread:

- Direct contact with the stool, hands of an infected person
- Direct contact with an object contaminated with the virus
- Drinking contaminated water

Communicable period: From about 14 days before onset of symptoms until about 7 days after onset of jaundice. Infants and children may continue to shed virus in their stool for up to 6 months.

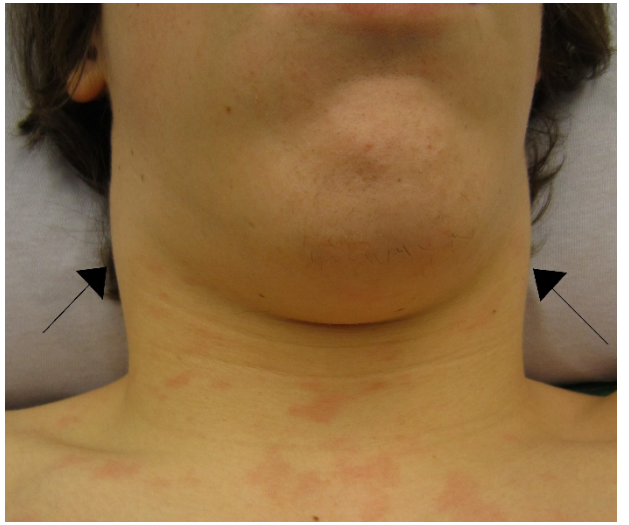
Prevention:vaccination 2 doses

Mononucleosis

Mononucleosis is caused by the Epstein-Barr virus (EBV). It is most common in older children and adolescents.

Signs and symptoms:

- Fever
- Sore throat
- Swollen lymph glands
- Lethargy (exhaustion)
- Enlarged liver and spleen
- Jaundice (yellowing of the skin and eyes) occurs occasionally



Incubation period: 4 – 6 weeks

Mononucleosis

Method of spread:

Through direct and indirect contact with the nose and throat secretions of an infected child:

- Kissing
- Sharing anything that children put in their mouths (e.g., toys, Sippy cups, food, drinks, soothers)
- Touching something contaminated with an infected person's saliva

Diagnosis is supported by:

• atypical lymphocytes (numerous large T cells seen on blood film)

• a positive Monospot test (the presence of heterophile antibodies – this test is often negative in young children with the disease)

• seroconversion with production of IgM and IgG to Epstein–Barr virus antigens.

Pertussis (Whooping cough)

Caused by the bacteria *Bordetella pertussis.*

Infants under one year of age are at highest risk.

If a pregnant woman has pertussis 2-3 weeks before labour, the infant is at high risk of pertussis disease.

Signs and symptoms:

- Runny nose, low grade fever, and mild cough
- After 1 – 2 weeks, the cough worsens
- Child will cough violently and rapidly, over and over, until no air is left in their lungs. Child will then inhale with characteristic “whooping” sound
- Child will sometimes vomit after coughing
- Coughing will last for several weeks

Pertussis

Method of spread:

Through direct contact with the respiratory secretions of an infected person

- Breathing in air contaminated with pertussis when an infected person has coughed or sneezed
- Sharing anything that is put in the mouth (e.g., cup, toys)
- Infected adults or adolescents with mild illness or no symptoms may infect infants.

Incubation period : Usually 7 – 10 days (range is 5 – 21 days)

Communicable period: Usually from the time when first symptoms develop (1 – 2 weeks before severe coughing starts) until about 3 weeks after cough starts

- A child who is started on antibiotics is not infectious after 5 days of antibiotic therapy.

Scabies

Signs and symptoms of scabies may include:

- Intense itching, especially at night
- A pimple – like rash may be present
- Itching and rash may be all over the body but the most common sites are between the fingers, wrists, elbows, armpits, groin area, nipples, waist, buttocks, and shoulder blades.
- Tiny burrows that look like greyish-white or skin-coloured lines on the skin may be seen.

Mode of transmission: Both direct & indirect

Incubation period: Usually 2 – 6 weeks in people who have not had scabies before

Contamination Period: Until mites and eggs are destroyed by treatment

Streptococcal Infections: Scarlet Fever and Strep Throat

Signs and symptoms of scarlet fever:

- Red rash that looks like sunburn and feels like rough sandpaper
- Rash most often begins on chest and stomach and then spreads to rest of body
- Rash usually lasts 2 – 7 days
- When rash fades, skin on hands and feet may start to peel
- Fever
- Nausea and vomiting
- Sore throat
- Red, swollen lips, strawberry – like tongue
- Flushed cheeks and pale area around mouth (Filatow triangle)

Signs and symptoms of strep throat:

- Fever
- Very sore throat
- Swollen lymph glands
- Swollen tonsils
- Loss of appetite

Scarlet Fever

Mode of spread: both direct & indirect

Incubation period: Usually 1 – 3 days from contact with an infected person

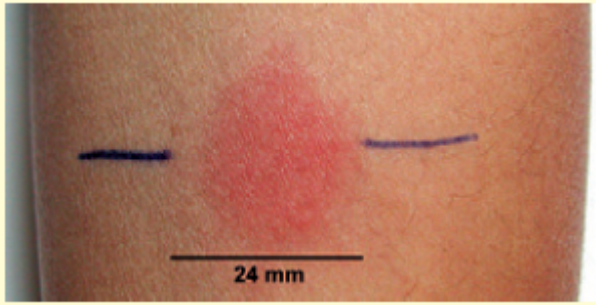
Contamination period: In untreated cases, 10 – 21 days. Untreated cases of strep throat may carry the organism for weeks or months

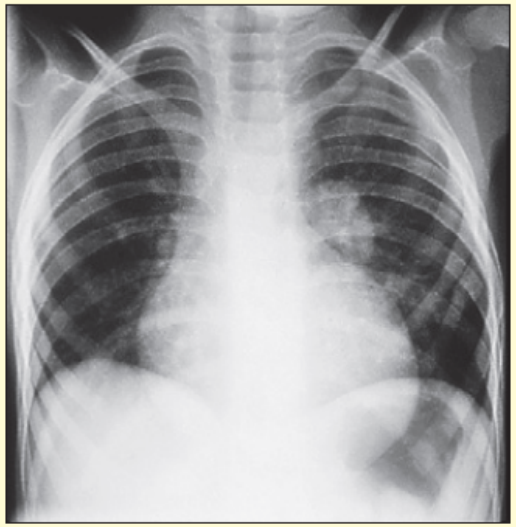
Tuberculosis

• TB affects millions of children worldwide; low but increasing incidence in many developed countries

• Clinical features follow a sequence – primary infection, then dormancy, which may be followed by reactivation to post-primary TB

• Diagnosis is often difficult, so decision to treat is usually based on contact history, Mantoux test, interferon-gamma release assays (IGRA), chest X-ray and clinical features. Young children swallow their sputum, so gastric washings are required





Tuberculosis

• Triple therapy (rifampicin, isoniazid, pyrazinamide) is the recommended initial combination- 2 months. This is decreased to the two drugs rifampicin and isoniazid – 4 months

• Contact tracing is important

• TB is more difficult to diagnose and more likely to disseminate in the immunosuppressed.

Chemoprevention- Asymptomatic children who are Mantoux-positive and therefore latently infected should be treated (e.g. with isoniazid for 3 months)

HIV infection

Affects >2 million children worldwide

The major route of HIV infection in children is mother-to-child transmission (MTCT):

- during pregnancy (intrauterine)
- at delivery (intrapartum)
- through breast-feeding (postpartum)

Treatment includes combination antiretroviral therapy and prophylaxis against *Pneumocystis jiroveci* pneumonia (PCP)

The majority of perinatally infected children are surviving into adulthood if ART treatment is available

HIV infection

In children over 18 months old, HIV infection is diagnosed by detecting antibodies to the virus.

Children less than 18 months of age who are born to infected mothers will have transplacental maternal IgG HIV antibodies, and at this age, a positive test confirms HIV exposure but not HIV infection.

Before 18 months of age - HIV DNA PCR.

All infants born to HIV-infected mothers should be tested for HIV infection, whether or not they are symptomatic.

Two negative HIV DNA PCRs within the first 3 months of life (at least 2 weeks after completion of postnatal antiretroviral therapy) -> the infant is not infected

Confirmation is the loss of transplacental maternal HIV antibodies from the infant's circulation after 18 months of age.

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