

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Short notes (summary) in lecture : Measles, mumps, rubella, rubeola, Parvovirus, and EBV.

DR.ABDALLAH ALJETHAILY

Each infectious disease is described according to:

- **What is it?**

Basic facts about the infectious disease.

signs and symptoms (not every child will have every symptom of the illness).

- **Incubation Period**

Length of time from when the child is first exposed to the illness to when the first symptoms appear in that child.

- **When is the person contagious?**

Description of the time period when an infected child is able to spread the illness or infestation to others.

- **How is it spread?**

Description of how the illness or infestation is passed from child to child.

- **How to prevent spread of the illness / infestation to other children?**

Information regarding whether or not the child needs to be excluded from the school or child care facility.

Strategies to decrease the spread of the illness within the group setting.

- **Treatment**

Drugs to be given & duration

Handwashing is the best way to stop the spread of infections.

Measles

What is it?

Measles is one of the **most contagious** communicable diseases. It is caused by the measles virus and is a leading cause of vaccine preventable deaths in children worldwide.

Signs and symptoms of measles may include:

- Fever, cough, runny nose, and watery inflamed eyes
- Small red spots with white or bluish white centers in the mouth
- Dusky red, blotchy rash that begins on the face and spreads all over the body
- Rash begins on 3rd to 7th day of illness and lasts 4 to 7 days

A diagnosed measles based on a child's symptoms but a blood test is recommended to confirm the diagnosis.

The classical signs and symptoms of measles include four-day fevers and the three **Cs** — cough, coryza (head cold), conjunctivitis (red eyes), **fever**.

The fever may reach up to 40 °C (104 °F). **Koplik's spots** seen inside the mouth are pathognomonic (diagnostic) for measles, but are not often seen, even in real cases of measles, because they are transient and may disappear within a day of arising.

The characteristic measles rash is classically described as a generalized, maculopapular, erythematous rash that begins several days **after** the fever starts. It **starts on the back of ears** and, after a few hours, spreads to the head and neck before spreading to cover most of the body, often causing itching. The rash is said to "stain", changing color from red to dark brown, before disappearing.[citation needed] The measles rash appears two to four days after the initial symptoms and lasts for up to eight days.

How is it spread?

Through the air by droplets that have been coughed, sneezed, or breathed by an infected person.

The measles virus can survive in small droplets in the air for several hours.

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

Incubation period:

Usually about 10 days. Fever usually develops 7 - 18 days after exposure to infected person. Rash usually develops 14 days after exposure.

When is the person contagious?

From about 5 days **before** to 4 days **after** rash appears.

How to prevent spread of the illness to other children?

Exclude child from school, child care, and non-family contacts until 4 days after the rash appears.

It is recommended that all contacts of a measles case who have not had measles disease or 2 doses of measles vaccine receive measles vaccine within 72 hours of last exposure to the infected child.

- All susceptible contacts should stay away from the child care facility or school until they have received one dose of measles vaccine.
- Immune globulin is available to prevent measles disease in people who are exposed to a case of measles but who are unable to be immunized for any reason.

Complications:

Complications with measles are relatively common, ranging from the relatively mild and less serious ones like diarrhea to more serious ones such as **pneumonia**, **otitis media**, **acute encephalitis** (rarely SSPE -- subacute sclerosing panencephalitis), and corneal ulceration (leading to corneal scarring). Complications are usually more severe in adults who catch the virus

In immunocompromised patients (e.g. people with AIDS) the fatality rate is approximately 30%.

Risk factors for severe measles and its complications include the following:

Malnutrition

Underlying immunodeficiency

Pregnancy

Vitamin A deficiency

Diagnosis:

Clinical diagnosis of measles requires a history of fever of at least three days, with at least one of the three **C's** (cough, coryza, conjunctivitis). Observation of **Koplik's spots** is also diagnostic of measles.

Alternatively, laboratory diagnosis of measles can be done with confirmation of positive measles IgM antibodies or isolation of measles virus RNA from respiratory specimens.

In patients where phlebotomy is not possible, saliva can be collected for salivary measles-specific IgA testing.

Positive contact with other patients known to have measles adds strong epidemiological evidence to the diagnosis.

The contact with any infected person in any way, including semen through sex, saliva, or mucus, can cause infection.

Treatment:

There is **no specific treatment** for measles. Most patients with uncomplicated measles will recover with rest and supportive Rx.

Some patients will develop pneumonia as a sequelae to the measles. Other complications include ear infections, bronchitis, and encephalitis. Acute measles encephalitis has a mortality rate of 15%.

While there is no specific treatment for measles encephalitis, antibiotics are required for bacterial pneumonia, sinusitis, and bronchitis that can follow measles.

All other treatment addresses symptoms, with ibuprofen, or acetaminophen (paracetamol) to reduce fever and pain and, if required, a fast-acting bronchodilator for cough.

As for **aspirin**, some research has suggested a correlation between children who take aspirin and the development of **Reye's syndrome**.

The use of **vitamin A** in treatment has been investigated.

A systematic review of trials into its use found no significant reduction in overall mortality, but it did reduce mortality in children aged under two years.

Mumps

What is it?

Mumps disease is caused by the mumps virus. Many children have mild or no symptoms but they are still contagious to others. Adults are more likely to experience complications than children.

Signs and symptoms of mumps may include:

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

The disease is generally **self-limiting**, running its course before receding, with **no specific treatment** apart from controlling the symptoms with pain medication.

Complications of mumps disease include:

- Meningitis (inflammation of the lining of the brain) in 20% of people infected.
- Orchitis (inflammation of the testicle) in 20-30% of post-pubertal males.
- Oophoritis (inflammation of the ovary) in 5% of post-pubertal females.
- Deafness and infertility occur occasionally.

Spontaneous abortion in about 27% of cases during the first trimester of pregnancy.

How is it 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).

Incubation period:

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

When is the person contagious?

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.

How to prevent spread of the illness to other children?

Exclude child from school or child care facility for 9 days after the onset of swelling if there are any unimmunized children.

Carefully dispose of (or clean, if applicable) articles soiled with nose and throat secretions of an infected child.

Diagnosis:

A physical examination confirms the presence of the swollen glands.

Usually, the disease is diagnosed on **clinical grounds**, and **no confirmatory** laboratory testing is needed.

If there is uncertainty about the diagnosis, a test of saliva or blood may be carried out; a newer diagnostic confirmation, using real-time nested polymerase chain reaction (**PCR**) technology, has also been developed.

An estimated 20%-30% of cases are asymptomatic.

As with any inflammation of the salivary glands, serum **amylase** is often elevated.

Treatment:

There is **no specific treatment** for mumps.

Symptoms may be relieved by the application of intermittent ice or heat to the affected neck/testicular area and by acetaminophen/paracetamol (Tylenol) for pain relief.

Aspirin is not used due to a hypothetical link with **Reye's syndrome**.

Warm salt water gargles, soft foods, and extra fluids may also help relieve symptoms.

Prognosis:

Death is very unusual. The disease is self-limiting, and general outcome is good, even if other organs are involved. Known complications of mumps include:

Infection of other organ systems

Mumps viral infections in adolescent and adult males carry an up to 30% risk that the testes may become infected (orchitis or epididymitis), which can be quite painful; about half of these infections result in testicular atrophy, and in rare cases sterility can follow.

Mild forms of meningitis in up to 10% of cases (40% of cases occur without parotid swelling).

Oophoritis (inflammation of ovaries) in about 5% of adolescent and adult females but fertility is rarely affected.

Pancreatitis in about 4% of cases, manifesting as abdominal pain and vomiting

Encephalitis (very rare, and fatal in about 1% of the cases when it occurs) Profound (91 dB or more) but rare sensorineural hearing loss, uni- or bilateral. Acute unilateral deafness occurs in about 0.005% of cases.

After the illness, **lifelong immunity** to mumps generally occurs; reinfection is possible but tends to be mild and atypical.

Rubella (German Measles)

What is it?

An acute disease caused by the **rubella virus**. An infection with the rubella virus gives **lifelong immunity**.

Rubella is usually a mild disease in children and adults. Rubella can be confused with other rashes.

Signs and symptoms of rubella may include:

- Low-grade fever
- Malaise, tiredness
- Raised, red, pinpoint rash that starts on the face and spreads downwards
- Rash lasts 3 – 5 days.

How is it spread?

Through contact with the nose and throat and secretions of an infected person:

- Breathing in air contaminated with the rubella virus when an infected person has coughed or sneezed.
- Touching articles contaminated with secretions from the nose and throat of an infected person.
- Kissing or sharing anything that is put in the mouth

Infants with CRS (congenital rubella syndrome) can shed rubella virus in their nose and throat secretions and urine for up to one year.

Incubation period:

Usually 14 – 21 days from contact with an infected person.

When is the person contagious?

From **7 days before** until **7 days after** the onset of **the rash**.

A child with rubella is most infectious when the rash is erupting.

How to prevent spread of the illness to other children?

Exclude child from school or the child care facility for 7 days after the onset of the rash.

Fifth Disease (Erythema Infectiosum)

What is it?

Fifth disease is caused by a virus, human parvovirus B19.

It is sometimes called “slapped cheek” disease because of the appearance of the rash.

Signs and symptoms of fifth disease may include:

☐ 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.

Raised, red rash that first appears on child’s cheeks.

☐ The lace-like rash spreads to the rest of the body after 1 – 4 days, first on torso and arms, and then on to the rest of the child’s body.

☐ After the rash fades, it may continue to re-appear for 1 – 3 weeks when child is exposed to sunlight or heat (e.g., bathing).

At least 50% of adults had fifth disease as a child and won’t get it again.

The disease is usually mild, but in certain risk groups it can have serious consequences:

In pregnant women, infection in the first trimester has been linked to **hydrops fetalis**, causing spontaneous miscarriage.

In people with sickle-cell disease or other forms of chronic hemolytic anemia such as hereditary spherocytosis, infection can precipitate an **aplastic crisis**.

How is it spread?

Through direct and indirect contact with the virus:

☐ Touching the hands of someone who is infected with the virus and is in the contagious period.

☐ Touching something that has been touched by someone who is infected with the virus and is in the contagious period.

☐ Breathing in air contaminated with the virus after an infected person has coughed or sneezed.

Fifth disease can be transmitted from a pregnant woman to her unborn baby.

The baby can get **severe anemia** that leads to **congestive heart failure**.

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 Infantum (“Sixth Disease”)

What is it?

An acute rash disease caused by a virus.

There are many viruses that can cause roseola ,the most common virus is **human herpesvirus-6 virus**.

Signs and symptoms of roseola may include:

- Fever (usually $\geq 39.5^{\circ}\text{C}$) appears suddenly and lasts 3 – 5 days
- Febrile seizures may occur
- Swelling of eyelids may occur
- Rash usually develops as fever is resolving

Rosy – pink rash develops first on neck and chest, and then spreads to rest of the body.

- The spots (rash) turn white if you gently press on them and they may have a lighter color ring around them.
- Rash usually lasts 1 – 2 days.

Roseola occurs most commonly between the ages of **6 months and 2 years**. It is rarely seen after 4 years of age.

How is it spread?

Through direct contact with the nose and throat secretions of an infected person.

- Breathing in air contaminated with the roseola virus when an infected person has talked, laughed, coughed or sneezed.

Older siblings, caregivers, and parents may spread the disease to infants.

Incubation period:

Usually 10 days from contact with an infected person (range is 5 – 15 days)

When is the person contagious?

An infected child is probably most contagious during the period of high fever, before a rash develops.

The exact duration of infectiousness is unknown. Many adults have the virus present in their saliva (even if they were infected as children) and may spread the disease to infants.

How to prevent spread of the illness to other children?

Exclude child from school or child care facility until fever and rash are gone.

Mononucleosis

What is it?

Mono is caused by the Epstein-Barr virus (EBV) 85% , also can be caused by cytomegalovirus (CMV), a herpes virus most commonly found in body fluids.

It is most common in older children and adolescents.
(also called "Mono", glandular fever, and, colloquially, the "kissing disease"),
About half of the people infected with EBV will develop symptoms.

Mononucleosis is associated with fatigue that can last up to several months. Symptoms are not usually felt until 4–7 weeks after exposure to EBV.

The main symptoms of mononucleosis include:

Sore throat and tonsils.

Swollen lymph glands (nodes) in the neck and, less commonly, the armpits and groin area.

Jaundice (yellow skin and eyes).

Enlarged spleen and liver, causing abdominal pain.

Stomach pain Headaches.

Chest pain Skin rashes.

Flu Like symptoms, which include:

Fever and chills (most contagious point)

Nausea ,Coughing.

Malaise - A general feeling of unwellness

Loss of appetite and energy

Muscle soreness/aching

Diagnosis:

Symptoms such as swollen glands in the neck, sore tonsils, exhaustion, and extended lack of energy are easily recognizable as symptoms of mononucleosis

Monospot test

An increased number of white blood cells or lymphocytes in the smear of blood can indicate the presence of Mononucleosis.

How is it 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.

Incubation period :

Usually 4 – 6 weeks from contact with an infected person.

When is the person contagious?

Unclear, but prolonged. The infected child is most infectious when symptoms are at their peak but may remain infectious for up to a year after illness.

How to prevent spread of the illness to other children?

Child may go to school or child care when they feel well enough to take part in activities. This may take 1 – 2 weeks or longer after symptoms develop.

Carefully dispose of (or clean, if applicable) articles soiled with the nose and throat secretions of an infected child.

Treatment:

There is **no specific** treatment or therapy for mononucleosis.

They are also strongly advised to avoid contact sports to reduce the risk of **rupturing the enlarged spleen** .

A blow to the abdomen could rupture the spleen, causing severe bleeding and can be life threatening.

To relieve the sore throat, patients should drink water, non-citrus fruit juices, and eat bland foods.

Paracetamol has also been shown to help along with high fluid intake.

Gargling salt water or mouthwash may also relieve pain. Often mononucleosis is accompanied by a streptococcal infection (known as strep throat), which can be treated with antibiotics.

Normal function should return after 4–6 weeks; however, it may take up to 2–3 months to fully recover pre-disease activity levels.