

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the name of **ALLAH**  
the most Beneficent and the most merciful

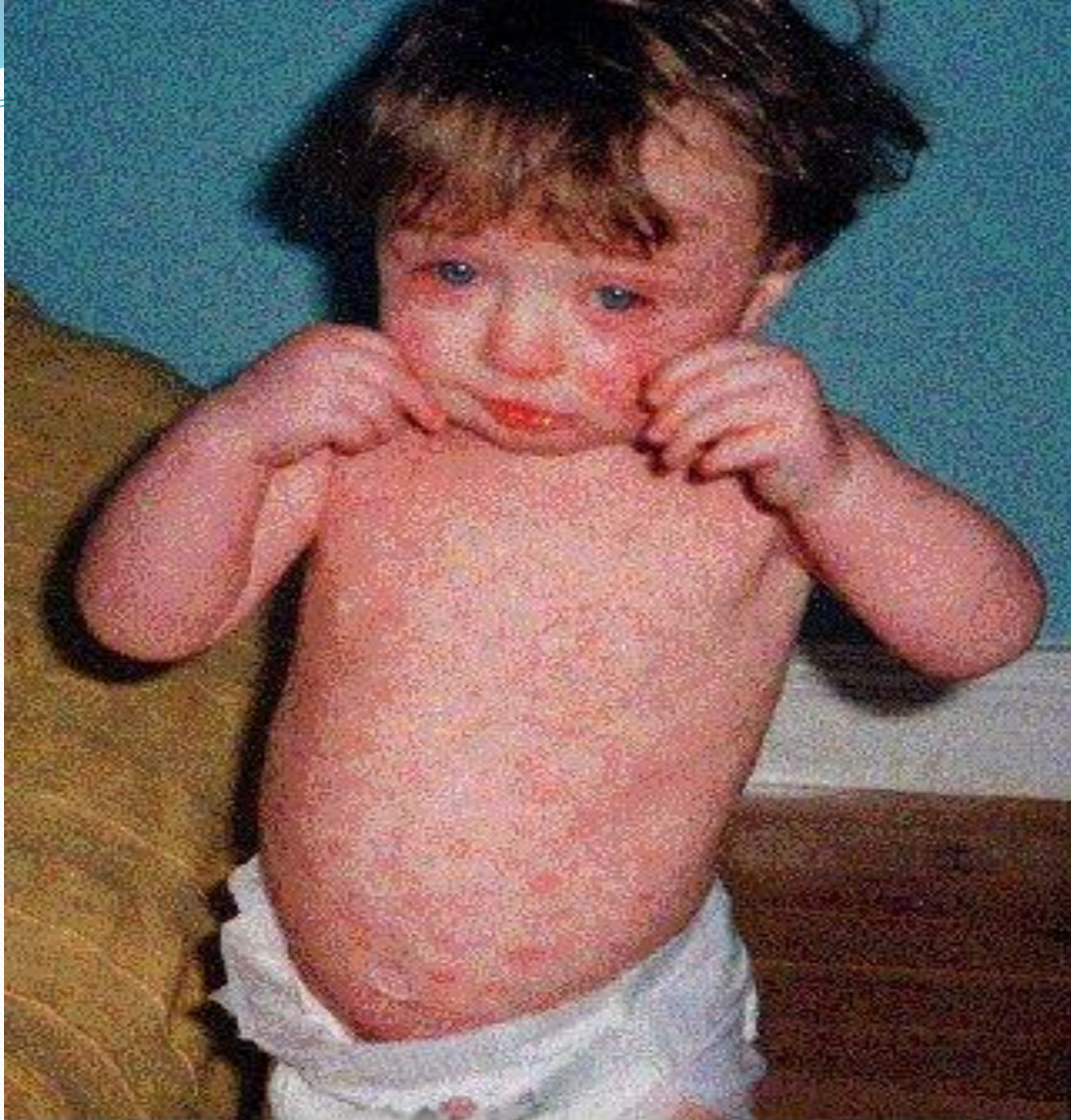


# COMMUNICABLE DISEASES

MEASLES







# MEASLES (RUBEOLA)

# MEASLES (RUBEOLA)

- It is an acute highly infectious disease of childhood caused by a specific virus of the group myxoviruses
- It is characterized by fever and catarrhal symptoms of upper respiratory tract (coryza, cough) followed by a typical rash

# MEASLES (RUBEOLA)

- Measles is associated with high morbidity and mortality in developing countries
- Measles occurs only in humans
- There is no animal reservoir of infection



# MEASLES (RUBEOLA)

- The term 'rubeola' means red spots
- Measles is endemic in virtually all parts of the world
- It tends to occur in epidemics when the proportion of susceptible children reaches about 40%



# MEASLES (RUBEOLA)

- When the disease is introduced into a virgin community, more than 90% of that community will be infected
- While measles is now rare in developed countries, it remains a common illness in many developing countries

# MEASLES (RUBEOLA)

- Its mortality varies in different parts of world
- The primary reason for continuing high childhood measles mortality and morbidity is the failure to deliver at least one dose of measles vaccine to all infants

# MEASLES (RUBEOLA)

- The challenges for measles elimination:
  - Weak immunization systems
  - High infectious nature of measles
  - Populations that are inaccessible due to conflicts
  - Increasing refusal of immunization

# MEASLES (RUBEOLA)

(The challenges for measles elimination)

- Changing epidemiology of measles
- The need to provide catch-up measles vaccination to millions of children
- The gaps in human and financial resources at the country, regional and global level

# MEASLES (RUBEOLA)

- Measles is 100-400 times more likely to cause death in a young child of a developing country than it is in USA
- Today it still kills 1 million children of the estimated 30 million who get measles every year



# MEASLES (RUBEOLA)

- In developing countries the case fatality rates range from 2-15 %
- Measles is still a leading killer among vaccine preventable diseases of childhood
- Malnutrition, debility, overcrowding and other infections predispose to high mortality

# MEASLES (RUBEOLA)

- Based on implementation of a combination of immunization and surveillance strategies, some countries of the world have reached the stage of “elimination” of measles (zero incidence)

# MEASLES (RUBEOLA)

- **WHO's Measles Elimination Strategy-  
3 Parts**

- 1. Catch-up:** It is defined as a one time nation wide vaccination campaign targeting usually all children aged 9 months to 14 years regardless of H/O measles disease or vaccination status

# MEASLES (RUBEOLA)

- WHO's Measles Elimination Strategy- 3 Parts

**2. Keep-up:** It is defined as routine services aimed at vaccinating more than 95% of each successive birth cohort

# MEASLES (RUBEOLA)

- WHO's Measles Elimination Strategy- 3 Parts

**3, Follow-up:** It is defined as subsequent nationwide vaccination campaigns every 2-4 years targeting usually all children born after catch-up campaign



# MEASLES (RUBEOLA)

- **Priorities for countries pursuing CONTROL**
  - 1) Improve routine vaccination coverage level to at least 90%
  - 2) Active coverage of more than 90% in catch-up and follow-up campaigns

# MEASLES (RUBEOLA)

- **Priorities for countries pursuing CONTROL**

- 3) Establish case-based surveillance with laboratory confirmation of suspected cases
- 4) Conduct supplementary vaccination campaign together with administration of vitamin A in high risk areas

# MEASLES (RUBEOLA)

- **AGENT FACTORS**

a) **AGENT:** Measles is caused by paramyxovirus, which has only one serotype. The virus cannot survive, outside the human body for long time. It has been grown in cell cultures

# MEASLES (RUBEOLA)

- **AGENT FACTORS - Continued**

- b) **SOURCE OF INFECTION:** It is only a case of measles. **Carriers are not known to occur in measles**
- c) **INFECTIVE MATERIAL:** Secretions of the nose, throat and respiratory tract of a case of measles during prodromal period & early stages of rash

# MEASLES (RUBEOLA)

## AGENT FACTORS

d) **COMMUNICABILITY:** It is highly infectious during the prodromal period and at the time of eruption. The period of communicability is 4 days before and 4 days after the appearance of rash. Isolation of a patient for a week from the onset of rash covers the period



# MEASLES (RUBEOLA)

## AGENT FACTORS - Continued

- e) **SECOND ATTACK:** There is only one serotype of measles virus. Infection confers life long immunity. The so-called second attacks represent errors in diagnosis either in the initial or second illness

# MEASLES (RUBEOLA)

- **HOST FACTORS**

- a) **AGE:** It affects virtually everyone in infancy or childhood. Following the use of measles vaccine, the disease is now seen in somewhat older age-groups
- b) **SEX:** Incidence is equal among both sexes

# MEASLES (RUBEOLA)

- c) IMMUNITY: No age is immune if there is no previous immunity. One attack of measles generally confers life-long immunity. Infants are protected by maternal antibodies up to 6-9 months of age. Immunity after vaccination is solid & lasting

# MEASLES (RUBEOLA)

d) **NUTRITION:** Measles tends to be very severe in the malnourished child, carrying a mortality up to 400 times higher than in well-nourished children with measles. This may be related to poor cell-mediated immunity response. Even in a healthy child, an attack of severe measles may be followed by weight loss precipitating the child into malnutrition

# MEASLES (RUBEOLA)

- **ENVIRONMENTAL FACTORS**

- Measles virus can spread in any season
- In our subcontinent, epidemics of measles are common during winter and early spring

# MEASLES (RUBEOLA)

- **ENVIRONMENTAL FACTORS**

- In temperate climates, measles is a winter season disease
- In general, the less favorable the prevailing socioeconomic conditions, the lower the average age at which children are attacked

# MEASLES (RUBEOLA)

- **TRANSMISSION**

- It occurs directly from person to person mainly by droplet infection and droplet nuclei, from 4 days before onset of rash and 4 days thereafter. Respiratory tract is the 'portal of entry'. Infection through conjunctiva is also considered likely



# MEASLES (RUBEOLA)

- **INCUBATION PERIOD**

- It is commonly 10 days from exposure to fever, and 14 days to appearance of rash

# MEASLES (RUBEOLA)

- **CLINICAL FEATURES**

There are three stages in the natural history of measles

- 1) Prodromal or pre-eruptive stage**

- It begins 10 days after infection & lasts for 4 days

# MEASLES (RUBEOLA)

- **CLINICAL FEATURES**

**(Prodromal or pre-eruptive stage)**

- It is characterized by fever, coryza, sneezing, nasal discharge, cough, redness of eyes, lacrimation and often photophobia
- There may be vomiting or diarrhoea
- Koplik's spots are pathognomonic of measles



# MEASLES (RUBEOLA)

## 2) Eruptive stage

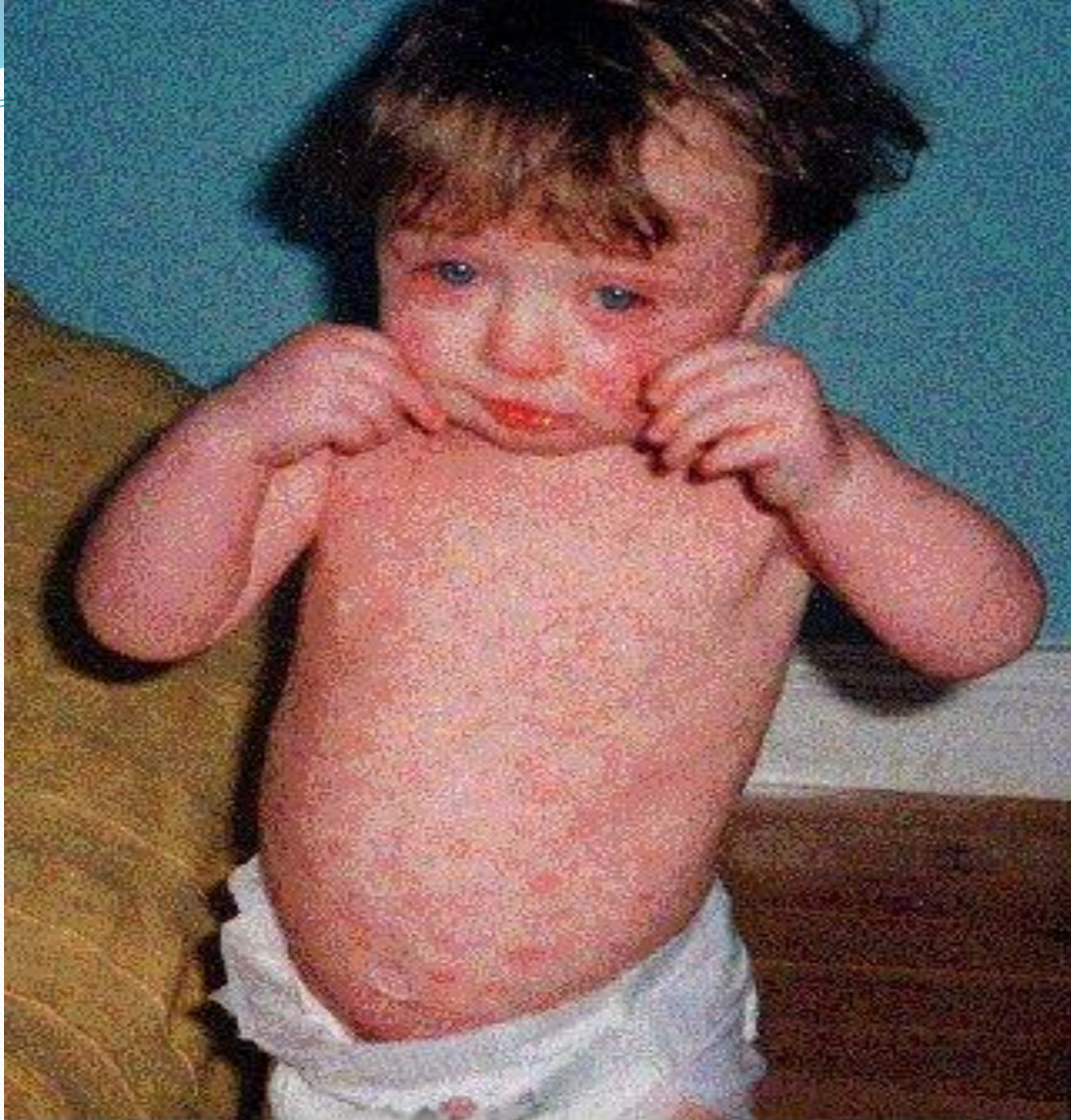
- This is characterized by typical, dusky-red, macular or maculo-papular rash which begins behind the ears, and spreads rapidly over the face and neck. It extends down the body taking 2-3 days to progress to lower limbs

# MEASLES (RUBEOLA)

( Eruptive stage )

- The rash may remain discrete but often it becomes confluent and blotchy
- The lesions and fever disappear in 3-4 days in the absence of complications
- The rash fades, leaving a brownish discoloration which may persist for 2 months or more











# MEASLES (RUBEOLA)

## 3) Post-Measles stage

- The child will have lost weight
- There is increased susceptibility to other bacterial and viral infections
- There may be growth retardation & diarrhoea, pyogenic infections, candidosis and reactivation of pulmonary tuberculosis etc.

# MEASLES (RUBEOLA)

## COMPLICATIONS

- Diarrhoea, pneumonia, otitis media
- Febrile convulsions
- Encephalitis
- Sub-acute Sclerosing Pan-Encephalitis (SSPE)
- Vitamin A deficiency

# MEASLES (RUBEOLA)

## PREVENTION

The following guidelines are important

- a. Achieving an immunization rate of over 95%
- b. Ongoing immunization against measles through successive generation of children

# MEASLES (RUBEOLA)

## MEASLES VACCINATION

- Measles is best prevented by vaccination
- Only live attenuated vaccine is recommended
- Measles vaccine is tissue culture vaccine
- It is presented as a freeze dried product



# MEASLES (RUBEOLA)

## VACCINE

- It is important to store the vaccine at the recommended temperature
- Immunize the child as close to the age of 9 months as possible
- The age can be lowered to 6 months if there is measles outbreak in community



# MEASLES (RUBEOLA)

## (VACCINE)

- However a second dose should be given as soon as possible after the child reaches the age of 9 months
- The diluent must be kept cold at 4-8 degree C
- The dose is 0.5 ml of constituted vaccine S/C

# MEASLES (RUBEOLA)

## (VACCINE)

- There is a mild 'measles illness' with fever and rash 5-10 days after vaccination
- Immunity develops 11-12 days after vaccination and appears to be of long duration, probably life long

# MEASLES (RUBEOLA)

## (VACCINE)

- Susceptible contacts may be protected by measles vaccination within 3 days of exposure
- Contraindications to vaccine use include acute illness, pregnancy and immuno-suppression

## **ADVERSE REACTIONS OF VACCINE**

- **Toxic Shock Syndrome (TSS)** occurs when the vaccine is contaminated or the same open vial is used for more than one sessions. Severe watery diarrhoea, vomiting and high fever are the typical symptoms of TSS. This may cause death within 48 hours. Case fatality rate is high
- **Anaphylactic shock** may occur one in 1 million cases of vaccinated children

# MEASLES (RUBEOLA)

## IMMUNOGLOBULIN

- Measles may be prevented by giving HIG early in the incubation period
- Recommended dose is 0.25 ml/kg body wt.
- It should be given within 3-4 days of exposure and must be followed by active immunization with measles vaccine 8-12 weeks later

# MEASLES (RUBEOLA)

## ERADICATION OF MEASLES

- Measles, is amenable to eradication, because there is effective vaccine available, virus cannot live outside human body for long , and one to two doses of vaccine are needed for immunity.
- It requires achieving an immunization coverage of at least 96% of under 1 children

# MEASLES (RUBEOLA)

## CONTROL MEASURES

- Isolation for 7 days after onset of rash
- Immunization of contacts within 2 days of exposure
- Prompt immunization at the beginning of an epidemic is essential to limit the spread



Thank you

