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National Focal Point for International Health Regulations

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Subject: **Advisory for the Prevention and Control of Measles**

Introduction:
Measles, also known as rubeola, is a highly contagious airborne viral infectious disease primarily of upper respiratory tract but can infect other systems if complicated. The infection may occur at any age but children less than 15 years of age especially non-immunized are more vulnerable to contract the infection.

Epidemiology:
Measles is an entirely human disease caused by a virus that belongs to the *Paramyxovirus* family, genus *Morbillivirus*. It is one of the oldest human infections but since the development of an effective Measles vaccine in 1963, transmission of measles has drastically decreased, still it remains an important cause of global mortality and morbidity accounting for about 100,000 deaths annually. Pakistan like other Asian countries is endemic to measles and it is included as national priority disease. Peak season for measles infection starts from late October to May.

Objectives:
The objective of this advisory is to sensitize the health care providers and other relevant stakeholders on the management of measles and role of preventing measures in containing the transmission of this highly contagious disease.

Transmission:

Measles may be transmitted from 4 days before to 4 days after rash onset. It transmits via respiratory droplets/aerosols in closed areas or by direct contact with the nasal and throat secretions of infected persons. Risk factors for contracting measles infection include poor socio-economic conditions, overcrowding, and travel to endemic areas of measles or contact with measles cases.

Clinical Presentation:
Incubation period ranges from 7-21 days after exposure to the virus. Prodromal phase lasts 2-4 days (range 1-7 days) characterized by fever followed by the 3 C's i.e. cough, coryza (runny nose) or conjunctivitis. Measles rash is a maculopapular eruption that usually lasts 5-6 days. It begins at the hairline behind the neck, and then involves the face and upper neck. During the next 3 days, the rash gradually proceeds downward and outward, reaching the hands and feet.

Koplik's spots is considered to be pathognomonic for measles. It occurs 1-2 days before the rash to 1-2 days after the rash and appears as punctate blue-white spots on the bright red background of the buccal mucosa opposite the 1st and 2nd lower molars.

Complications:
Measles can cause serious complications in malnourished children, people with compromised immunity and pregnant women. Complications include pneumonia, otitis media, diarrhea, dehydration. Otitis may lead to hearing loss. Pregnant women with measles are at increased risk for maternal death, premature labor, spontaneous abortion, intrauterine fetal death and low birth weight infants. Measles keratoconjunctivitis occurs mostly in children with vitamin A deficiency and can lead to blindness may occur. Encephalitis may occur in 1 out of every 1000 infected children manifesting with

seizures and progressive loss of cognitive and motor function.1-2 of all infected children will die of neurologic or respiratory complications from measles.

Specimen collection:

- Collect throat swab (nasal/nasopharyngeal) for virus isolation and genotyping, preserved in VTM.
- Collect 5 ml blood, centrifuged for serum separation at 3000 rpm for 5 minutes. If centrifugation is not possible blood should be kept in refrigerator until there is complete retraction of the clot from the serum. Carefully remove the serum and transfer aseptically to a sterile labeled vial.

Timings:

- 5 samples should be taken from fresh cases, less than 5 days from rash onset, in documented outbreaks
- **Real-Time Polymerase chain Reaction (RT-PCR):**1-3 days after appearance of rash
- **Measles specific IgM: 3** days after appearance of rash

Storage and transportation:
Store serum at 4-8 degrees for not more than 48 hours. Do not freeze the whole blood. Transport the specimens with complete request form maintaining cold chain.

Laboratory Confirmation: is achieved by means of the following:

- Serologic testing for measles specific IgM antibodies
- Reverse transcriptase polymerase chain reaction(RT-PCR) evaluation

Case Definition:
Immediately reporting any suspected case of measles to a local or state health department is imperative.

Suspected case: Any person in whom clinician suspects measles infection, or any person with fever, maculopapular rash (i.e. non-vesicular), cough, conjunctivitis and coryza.

Probable: Any person with history of fever, rash and linked with a confirmed case of measles.

Confirmed: Suspected or probable case confirmed through detection of Measles RNA virus through PCR or Measles specific IgM

Management:

- There is no specific anti-viral therapy for measles, treatment is essentially supportive, and most people recover within 2-3 weeks. Supportive management include control of fever, prevention and correction of dehydration, and infection control measures including appropriate isolation.
- Any complicated case should be referred to tertiary care settings for further management.
- All children 6-months to 5 years of age should also receive prophylactic vitamin-A in two doses given 24 hours apart. vitamin A supplementation is 50,000 IU in younger than 6 months old,100,000 IU in 6-11 months old, 200,000 IU in Older than 1 year.
- For children with ophthalmologic evidence of vitamin A deficiency, doses should be repeated administered on day 2 and day 28.
- Ensure adequate nutrition and liquids.

Prevention and control measures:
Measles is an easily preventable infection through 2 doses of safe, inexpensive and effective measles vaccine. The vaccine is a live attenuated measles strain that is used either as a single component or as a combination vaccine (MMR, MMR-V). Measles routine immunization first dose is given at 9 months and second at 15 months of age. During a measles campaign, priority is to immunize children 9 months to 5 years old, regardless of vaccination status or history of disease.

Post Exposure Prophylaxis:

- Live measles vaccine provides permanent protection and may also prevent disease if given within 72 hours of exposure
- If available, Immunoglobulin (IG) may prevent or modify disease and provide temporary protection once given within 6 days of exposure. The dose is 0.5 ml/kg body weight, with a maximum of 15ml intramuscularly and the recommended dose of IG given intravenously is 400mg/kg. IG may be specially indicated for susceptible household contacts of measles patients, particularly contacts younger than 1 year of age .IG should not be used to control measles out breaks.
- If the child is 12 months or older, live measles vaccine should be given about 5 months later when the passive measles antibodies have waned away.

Infection Control:

- Keeping in view the various routes of transmission, contact, droplet and aerosol precautions are recommended along with standard precautions
- Health care providers should follow respiratory etiquette and airborne precautions should be adopted in healthcare settings.
- Similar measures need to be adapted by the care givers of the patients

For any further assistance in this context, the CDC (051 – 9255237 and Fax No. 051-9255099) and Virology Department of Public Health Laboratories Division (051-9255082), NIH may be contacted.

The above 'Advisory' may please be circulated widely to all concerned.

(Dr. Muhammad Salman)
Chief Executive Officer
National Institute of Health

Distribution Overleaf

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50. Officer In-charge, Provincial Disease Surveillance & Response Unit (PDSRU) at Provincial Health Directorates, Lahore, Hyderabad, Peshawar, Quetta, Gilgit and Muzaffarabad
51. All Deputy Commissioners with the request to direct all concerned departments at district level.
52. Provincial Coordinator, EPI, Punjab, Sindh, KPK, Balochistan, GB and AJK

C.c:

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3. Chief Commissioner, ICT Administration Islamabad
4. WHO Country Representative, Islamabad
5. SPS to Federal Minister of Health, M/o NHSR&C, Islamabad
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