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

During March and April 2017, Measles outbreaks have been reported from few districts of Sindh, Balochistan, Khyber Pakhtunkhwa and Islamabad Capital Territory. The objective of this advisory is to alert the health care authorities to timely diagnose, manage the cases and undertake standard prevention and control measures including, awareness/ education and vaccination for further strengthening the level of preparedness in prevention and control of measles infection in upcoming summer season.

Background: Measles is an acute viral respiratory illness and is still a common and often fatal disease in developing countries. In 2015, there were 134,200 measles deaths globally which means about 367 deaths every day or 15 deaths every hour. Measles in developing countries has resulted in high attack rates among children younger than 12 months of age. Measles is highly communicable, with greater than 90% secondary attack rates among susceptible persons. Despite the existence of a safe, effective and inexpensive measles vaccine, it remains leading vaccine preventable killer of children worldwide. It is recommended that all countries fully implement the WHO/ UNICEF comprehensive immunization strategy for sustainable measles mortality reduction.

Severity of Cases: The disease is more severe in infants and adults than in children. The case-fatality rate in developing countries may be as high as 25%.

Infectious Agent: Measles is caused by virus of the genus *Morbillivirus* of the family paramyxoviridae.

Mode of Transmission: The disease is caused by airborne droplet spread, direct contact with nasal or throat secretions of infected persons and less commonly by soiled items with nasal and throat secretions.

Incubation Period: About 10 days (may vary from 7-18 days).

Clinical Picture:

- Measles may be transmitted between 4 days before and after the rash onset. Maximum communicability occurs from onset of prodromal phase through the first 3–4 days of rash. It is characterized by fever, followed by cough, coryza (runny nose), or conjunctivitis, the three "C"s.
- Koplik 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.
- The measles rash is a maculopapular eruption that usually lasts 5–6 days. It begins at the hairline 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.
- Measles illness during pregnancy results in a higher risk of premature labor, spontaneous abortion and low-birth weight infants.

Case Definition:

Probable Case: Any person meeting the clinical criteria and with an epidemiological link of measles.
Confirmed Case: Presence of any of the following:

- IgM: 3 days after appearance of rash
- IgG: (4th Fold increase between acute and convalescent phase)
- PCR for Measles RNA virus (RT PCR): 1 to 3 days appearance of rash

Patients with history of measles (satisfying case definition) within past one month should also be reported as suspected measles case. Hence, it is important for physicians to routinely ask patients (or parents) who presents with common complications of measles e.g. pneumonia, diarrhoea, otitis media, corneal scarring and malnutrition about history of rash illness.

Complications:

- Complications include diarrhea, dehydration, stomatitis, inability to feed, Subacute sclerosingpanencephalitis (SSPE) and bacterial infections (skin and elsewhere). Complications may result from viral replication or bacterial super-infection and includes otitis media, pneumonia, laryngotracheobronchitis (Croup), diarrhea and encephalitis.
- Complications of measles are most common among children younger than 5 years of age and adults 20 years of age and older. College and university students, healthcare personnel, and international travellers are at increased risk for measles and should receive two doses of the MMR vaccine should receive 2 doses of MMR with an interval of 4 weeks to ensure adequate protection. Measles can cause serious complications in malnourished children and people with reduced immunity.

Case Management

Treatment:

- There is no specific treatment for measles and most people recover within 2–3 weeks.
- Refer complicated cases to tertiary care settings for further management.
- All children 6 months - 5 years of age should also receive prophylactic Vitamin A in two doses given 24 hours apart. Vitamin A supplementation for two days is:
  - Less than 6months: 50,000IU
  - From 6 to 11 months: 100,000 IU
  - Older than 12 months: 200,000 IU
- 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 & Control measures:

Vaccination:

- ***Measles vaccination resulted in a 79% drop in measles deaths between 2000 and 2015 worldwide***
- Measles can easily be prevented through 2 doses of the measles-containing vaccine at 9 months with another dose at 15 months.
- During measles campaign and outbreaks, the priority is to immunize children 6 months to 5 years old, regardless of vaccination status or history of disease.

Post Exposure Prophylaxis (PEP):

Live measles vaccine provides permanent protection and may prevent disease if given within 72 hours of exposure. (Always ensure vaccine safety for specific groups).
https://www.cdc.gov/vaccines/pubs/pinkbook/meas.html.

- Immunoglobulins (IG) may prevent or modify disease and provide temporary protection if given within 6 days of exposure. The dose is 0.5 mL/kg body weight, with a maximum of 15 ml intramuscularly and the recommended dose of IG given intravenously is 400mg/kg. IG may be especially indicated for susceptible household contacts of measles patients, particularly contacts younger than 1 year of age. IG should not be used to control measles outbreaks.

- If the child is 12 months of age or older, live measles vaccine should be given about 5 months later when the passive measles antibodies have waned.

Infection control:

- The disease is transmitted by aerosols, therefore standard along-with contact, droplet and aerosol precautions are recommended.
- Healthcare providers should follow respiratory etiquette and airborne precautions in healthcare settings.
- Regardless of presumptive immunity status, all healthcare staff entering the room should use respiratory protection consistent with airborne infection control precautions (use of an N95 respirator or a respirator with similar effectiveness in preventing airborne transmission).

NIH support:

- Health professionals and authorities throughout the country are regularly sensitized through Seasonal Awareness and Alert Letters (SAAL) being issued by this Institute thrice a year since 2004 (the latest copy can be visited at the website **(www.nih.org.pk).**
- Laboratory samples may be collected (blood/ serum), packaged and transported as per guidelines to Department of Virology, Public Health Laboratories Division, NIH, Islamabad.
- For any further assistance in this context, the Field Epidemiology & Disease Surveillance Division (FE&DSD) (051 – 9255237 and Fax No. 051-9255575) 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. Mukhtar Ahmad)
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