Chattagram Maa-O-Shishu Hospital Medical College Journal
Volume 25, Issue 1, January 2026
https://doi.org/10.3329/cmoshmcj.v25i1.89831

Editorial

Measles Vaccine before 9 Months and Its Safety: Implications for Bangladesh

Mohammed Rezaul Karim[1*]

[1]Department of Paediatrics
Chattagram Maa-O-Shishu Hospital Medical College
&
Chittagong Medical College
Chattogram, Bangladesh.

Measles remains one of the most contagious viral diseases and a leading cause of vaccine-preventable morbidity and mortality among children worldwide. Despite the availability of a safe and effective vaccine for decades, measles has resurged globally due to immunity gaps, delayed vaccination, population mobility, and health-system disruptions. The World Health Organization (WHO) estimated that 10.3 million measles cases and more than 107,000 deaths occurred globally in 2023, predominantly among children under five years of age.[1] These figures underscore the fragility of measles control gains and the need for adaptive immunization strategies, particularly in high-density, high-risk settings.

Bangladesh has achieved substantial progress in measles control through its Expanded Programme on Immunization (EPI). The introduction of the Measles–Rubella (MR) vaccine, the addition of a routine second dose at 15 months, and periodic Supplementary Immunization Activities (SIAs) have resulted in high national coverage exceeding 90%.[2] Nevertheless, measles elimination has not yet been achieved and outbreaks continue to threaten vulnerable populations - especially infants below nine months of age who are not yet eligible for routine vaccination.

Measles Burden among Infants in Bangladesh

Evidence from Bangladesh consistently demonstrates a substantial burden of measles in infants younger than nine months. Hospital-based surveillance studies have reported that more than 40% of measles cases among under-five children occurred in the 6–<9-month age group, highlighting marked vulnerability prior to receipt of the first routine vaccine dose.[3] Earlier community-based studies also showed that up to one-third of measles cases and deaths occurred in infants below nine months, even in populations with established vaccination programs.[4]

This early susceptibility is largely explained by the waning of maternally derived antibodies. As maternal immunity increasingly originates from vaccination rather than natural infection, passive antibody protection in infants declines earlier, creating a widening "Immunity gap" before routine vaccination. In Bangladesh, this vulnerability is exacerbated by delayed vaccination, missed doses, urban overcrowding, and socioeconomic barriers. Recent estimates indicate that nearly half a million children remain under-immunised, sustaining the risk of measles transmission.[5]

Global Evidence of Early Measles Infection

Global surveillance data corroborate these findings. Analysis of measles cases reported to WHO from six regions during 2011–2016 showed that over 10% of measles cases occurred in children below nine months, including 4–5% in infants younger than six months, with incidence rates in this age group exceeding those among children older than five years.[6] These data challenge the adequacy of relying solely on routine vaccination schedules in high-transmission settings and reinforce the need for additional protective measures for young infants.

*Correspondence to:
Professor (Dr.) Mohammed Rezaul Karim
Professor & Former HOD of Paediatrics
Chattagram Maa-O-Shishu Hospital Medical College
&
Chittagong Medical College
Chattogram, Bangladesh.
Mobile : +88 01733 55 61 77
Email : mrk77cox@gmail.com

Date of Submission : 10.12.2025
Date of Acceptance : 06.01.2026

www.banglajol.info/index.php/CMOSHMCJ

WHO Guidance on Vaccination Before 9 Months

In response to this vulnerability, the WHO Strategic Advisory Group of Experts (SAGE) on Immunization has recommended measles vaccination from six months of age under specific circumstances. These include: during measles outbreaks; as part of SIAs in endemic or high-risk settings; among displaced or conflict-affected populations; for infants at particularly high risk of exposure; and for infants traveling to outbreak-affected areas.[7]

Vaccination administered before nine months is considered a supplementary dose (MCV0) and does not replace routine doses at nine months (MCV1) and fifteen months (MCV2). Instead, it provides interim protection during periods of heightened risk while ensuring durable immunity through completion of the standard schedule.

Safety and Immunogenicity of Early Measles Vaccination

Concerns regarding the safety and reduced immunogenicity of measles vaccination before nine months have been extensively evaluated. Available evidence demonstrates that measles vaccination at six months is safe, with adverse event profiles comparable to those observed when vaccination is administered at older ages.[8] While residual maternal antibodies may reduce seroconversion rates, early vaccination provides meaningful short-term protection during periods of intense transmission. Subsequent routine doses effectively restore and sustain long-term immunity.[7,9]

Importantly, early measles vaccination has not been associated with increased serious adverse events and has been successfully implemented in outbreak and high-risk settings in multiple countries.

Policy Implications for Bangladesh

Given persistent measles transmission, documented disease burden among infants below nine months, and strong international guidance, Bangladesh should consider targeted policy adaptations.

i) Introducing a supplementary measles vaccine dose at six months (MCV0) during outbreaks or in districts with sustained transmission could significantly reduce morbidity and mortality among young infants.

ii) Continued efforts to strengthen routine immunization services are essential, with emphasis on improving timeliness of MCV1 and completion of MCV2, particularly in urban underserved and mobile populations.

iii) Enhanced measles surveillance and rapid outbreak response should be prioritized to enable early detection and containment of transmission.

iv) Integration of nutrition and vitamin A supplementation into measles prevention strategies remains critical, given the strong association between malnutrition and severe measles outcomes.

v) Community engagement and caregiver education should be strengthened to address vaccine hesitancy, delayed vaccination and barriers to access.

Measles elimination in Bangladesh remains achievable but requires adaptive strategies to address immunity gaps in early infancy. Evidence from Bangladesh and global experience clearly indicates a significant burden of measles among infants below nine months of age. Early measles vaccination at six months, when used judiciously as a supplementary dose in high-risk settings, is safe, evidence-based and programmatically feasible. Incorporating this approach alongside strengthened routine immunization, surveillance and community engagement could accelerate progress toward measles elimination and prevent avoidable infant deaths.

https://doi.org/10.3329/cmoshmcj.v25i1.89831 Volume 25, Issue 1, January 2026

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