



Letter to the Editor

Bangladeshi neonates miss the potential benefits of early BCG vaccination

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Bangladesh is a high-TB-burden country. It is recommended, for TB-endemic areas, that BCG be given to neonates at the first possible opportunity of their life. Several observational studies and lately a few randomized trials show that BCG offers ‘heterologous protective effects’ beyond its target disease tuberculosis.¹ A recent review by WHO’s Strategic Advisory Group of Experts on Immunization (SAGE) on non-specific effects of BCG vaccine shows that vaccination at birth reduces neonatal mortality by 48% (18–67%),¹ which is mainly due to the prevention of neonatal sepsis and respiratory infections.² In Bangladesh, neonatal mortality is high (28 per 1000 live births) (and accounts for about two-thirds of all under-five deaths), mainly due to infections, birth asphyxia, respiratory infection and prematurity.³

Data on BCG vaccination coverage among 4584 children aged 12–23 months during 2011–15 in Chakaria Health and Demographic Surveillance System (HDSS) of icddr,b show that the median age at BCG vaccination was 8 weeks (range: 5–10 weeks) and only 2% of neonates received BCG by the first week (Figure 1). No newborns received BCG at birth, although 23% of them were born at facilities. Information on vaccination of infants in the Chakaria HDSS area is collected through 3-monthly home visitation. Each mother or caretaker is asked whether her infant received BCG or other vaccination; if the answer is positive, she is asked to show the vaccination card from which the date of vaccination is recorded. If a vaccination card is not available (which is about 6%), an approximate

date of vaccination is written. Our analysis on BCG data is for children between 12 and 23 months.

The BCG vaccination coverage was 99% in the Chakaria HDSS area; 65% received BCG and the first dose of Pentavalent simultaneously at age 6 weeks. It may be mentioned that 89% of neonatal mortality takes place in the first week in Chakaria. As a reason for not vaccinating their neonates, 70% mothers reported that the first week is unsuitable for vaccination.

The Bangladesh national immunization programme (known as the Expanded Program on Immunization) has achieved almost universal child vaccination coverage through its monthly outreach sessions along with fixed facility services, but a few newborns receive BCG at birth and only 20% receive it by the first month. Outreach health workers typically target to provide BCG along with the first dose of Pentavalent to minimize workload and to facilitate mothers’ preference of not taking a baby out of home in the early days of life due to some traditional beliefs.

Facility delivery is increasing in Bangladesh phenomenally—currently at 45%,⁴ which was 37% in 2014⁵ and even lower, at only 9%, in 2004⁶—which opens a window of opportunity to provide BCG vaccines at birth. The programme should arrange with facilities providing delivery care to ensure BCG vaccination at birth as well as organize community mobilization through outreach workers to provide the vaccine at the early neonatal period to reap the full benefits of BCG vaccination for newborns. Further implementation research can help to design an effective delivery

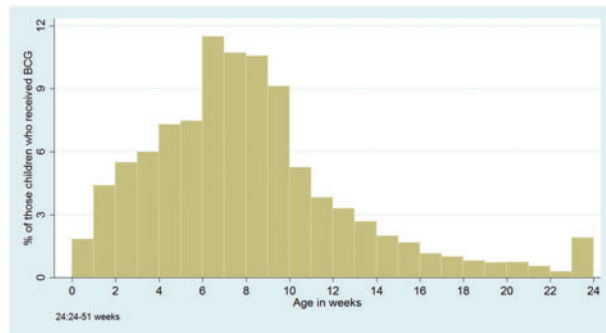


Figure 1. Age distribution (percent) of BCG vaccination recipients.

system for providing BCG vaccination immediately after birth to improve neonatal survival in Bangladesh, a TB-endemic country.

References

- Higgins JP, Soares-Weiser K, López-López JA *et al.* Association of BCG, DTP, and measles containing vaccines with childhood mortality: systematic review. *BMJ* 2016;355:i5170.
- Aaby P, Roth A, Ravn H *et al.* Randomized trial of BCG vaccination at birth to low-birth-weight children: beneficial non-specific effects in the neonatal period? *J Infect Dis* 2011;204:245–52.
- National Institute of Population Research and Training (NIPORT) Mitra and Associates, ICF International. *Bangladesh Demographic and Health Survey 2011*. Dhaka, Bangladesh, and Rockville, MD, USA: NIPORT, Mitra and Associates, and ICF International, 2013.
- National Institute of Population Research and Training (NIPORT). *Utilization of Essential Service Delivery Survey 2016 (Provisional Report)*. Dhaka, Bangladesh: NIPORT, 2017.
- National Institute of Population Research and Training (NIPORT) Mitra and Associates, ICF International. *Bangladesh Demographic and Health Survey 2014*. Dhaka, Bangladesh, and Rockville, MD, USA: NIPORT, Mitra and Associates, and ICF International, 2015.
- National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ORC Macro. *Bangladesh Demographic and Health Survey 2004*. Dhaka, Bangladesh and Calverton, MD, USA: National Institute of Population Research and Training, Mitra and Associates, and ORC Macro, 2005.