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Original Article

Maternal and Neonatal Tetanus Elimination: Another Feather in the Cap for India

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Abstract

Maternal and Neonatal Tetanus (MNT) has been a grave problem all over the world, including India, for centuries. To combat this problem Maternal and Neonatal Tetanus Elimination (MNTE) initiative was launched by UNICEF, WHO and UNFPA, in 1999. MNT is defined as less than one NT case per 1000 live births in every district. Maternal tetanus is assumed to be eliminated once NT elimination is achieved. To achieve the goal Government of India applied a mix of strategies which included universalising vaccination of pregnant women attending antenatal care with Tetanus Toxoid; promoting institutional delivery by providing cash incentives; capacity building by training more skilled birth attendants and strengthening the health care delivery systems; and intensive behaviour change communication to reduce harmful cord care practices.

The goal of MNTE was targeted to be achieved by 2009, which was further extended to 2015. The first MNTE validation was done by WHO in 2003 / 2004. The last validation survey was conducted in April 2015 which confirmed that maternal and neonatal tetanus is reduced to less than one case per 1000 live births in all 675 districts of the country. Finally on 15th May 2015, WHO declared India free of maternal and neonatal tetanus. However, intensive efforts should be implemented to maintain the status of elimination so that the significant public health milestone that India has achieved is sustained.

Keywords: Maternal; Neonatal; Tetanus; Elimination.

Introduction

Maternal and Neonatal Tetanus (MNT) has been a grave problem all over the world, including India, for centuries. This was due to unclean delivery practices by untrained persons and unhygienic umbilical cord care. Mortality rate of tetanus is very high and hence this was one of the most common causes of maternal and neonatal mortality.

In 1988, according to WHO estimates, about 787,000 newborns died of neonatal tetanus (NT), and the estimated annual global NT mortality rate was approximately 6.7 NT deaths per 1000 live births [1]. This was clearly a grave public health concern, which set a global alarm strong enough to call for curbing this problem.

Maternal and Neonatal Tetanus

Maternal tetanus is defined as tetanus during pregnancy, or within 6 weeks of the end of pregnancy, whether pregnancy ended with birth, miscarriage, or abortion. Neonatal tetanus is the occurrence of tetanus in the first 28 days of life [2].

The incubation period of tetanus is usually 3–21 days, and may range from 1 day to more than a month. The average incubation period for neonatal tetanus is shorter than that of non-neonatal tetanus. About 90% of neonates with tetanus develop symptoms in the first 3–14 days of life, mostly on days 6–8 [2].

Tetanus is characterised by muscle rigidity and painful muscle spasms due to action of tetanus toxin on excitatory motor neurons. Both maternal and neonatal tetanus progress to generalised tetanus and have similar courses. The rigidity usually begins in the masseter muscles. As disease severity increases, it extends throughout the body and muscle spasms begin. The onset period, or time from first symptom to first spasm, is usually 1–3 days, ranging from few hours to 5 days. Onset and disease progression are more rapid in neonatal tetanus than in non-neonatal tetanus, often taking hours instead of days [2].

Neonatal tetanus mortality was almost 100% in community-based surveys in the 1980s. Mortality is lower with proper hospital care. Low birth weight increases the risk of death. Overall case fatality rate for patients admitted in hospital with non-neonatal tetanus in developing countries is 8–50%. Mortality increases with age. Maternal tetanus has been associated with higher mortality and women with tetanus after abortion have especially high mortality. A history of previous tetanus immunisation, even if taken a long time back or if the course has not been completed, is associated with longer incubation periods, milder disease and decreased mortality than with no previous immunisation [2].

Maternal and Neonatal Tetanus Elimination

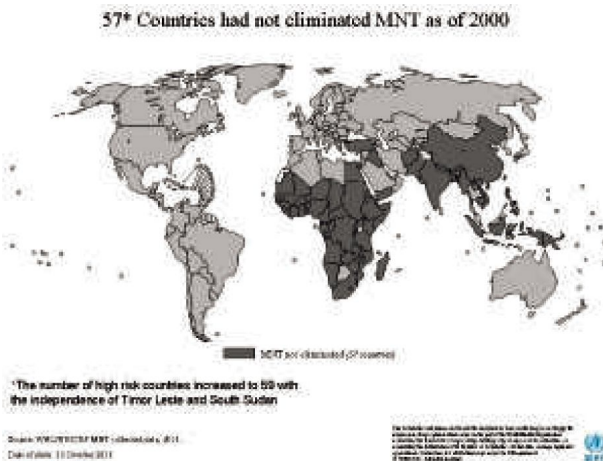
The definition of Maternal and Neonatal Tetanus Elimination (MNTE) as a public health problem is defined as less than one NT case per 1000 live births in every district. This definition also has been adopted as a proxy for the elimination of maternal tetanus and hence maternal tetanus is assumed to be eliminated once NT elimination is achieved [1,2].

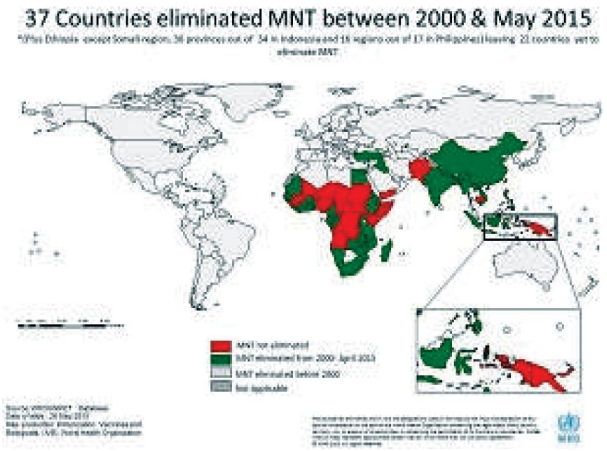
The problem of MNT has been addressed by international agencies and strategies for its prevention, control and finally elimination, have been implemented worldwide. In the year 1974 WHO launched the Expanded Program on Immunization (EPI) addressing the common vaccine preventable diseases of children. A few years later tetanus toxoid vaccination of pregnant women to prevent neonatal tetanus was included in EPI. To combat the substantial burden of neonatal tetanus in developing countries, the 1989 World Health Assembly (WHA) adopted a resolution to eliminate neonatal tetanus by 1995, through enhancing availability of tetanus toxoid, promoting clean deliveries, and improving surveillance [2]. In 1990 World Summit for Children listed neonatal tetanus elimination as one of its goals, and the goal was again endorsed by the 44th World Health Assembly in 1991. However, implementation of the recommended MNTE elimination strategies was slow and hence the target date for MNT elimination was postponed to the year 2000. In 1999, Maternal and Neonatal Tetanus Elimination Initiative was launched by UNICEF, WHO and UNFPA, reinforcing the goal of MNT elimination as a public health problem. Following this the Initiative was re-constituted and elimination of maternal tetanus by 2005 was added to the goal. The target date was subsequently shifted to 2015 [1].

Progress towards global Maternal and Neonatal Tetanus Elimination

According to data collected by the UNICEF/WHO/UNFPA, there were 57 countries that had not achieved MNTE in 1999. However, as Timore Leste and South Sudan gained independent status this number increased to 59 countries. India was included in this list. Significant progress was made since then and many countries achieved the status of elimination. As of May 2015, MNT remains a major public health problem in 22 countries. India has been declared free of neonatal tetanus and removed from the list [1].

Global status of MNTE in 1999 and 2015





Source: WHO, Immunization, Vaccines and Biologicals, Maternal and Neonatal tetanus (MNT) elimination; Progress towards global MNT elimination.

Maternal and Neonatal Tetanus Elimination in India

Vaccination in India started before independence with the small pox, the first vaccine being given in 1802. DPT, DT and TT vaccines became available in

India during the period 1920-1939. A national vaccination program was formally launched by the Government of India as the Extended Program on Immunization in 1978 with inclusion of BCG, OPV, DPT and Typhoid-Paratyphoid vaccines. Tetanus toxoid for pregnant women was added to EPI in 1983. Some major changes were made in the program and it was renamed as Universal Immunisation Program (UIP) in 1985, which subsequently became part of Child Survival and Safe Motherhood Program in 1992 and subsequently Reproductive and Child Health program in 1997. In 2005 UIP became a part of the overall umbrella health program, the National Rural Health Mission.3

In response to the global call for elimination of maternal and neonatal tetanus, India initiated and implemented measures for achieving the goal i.e. a rate of less than 1 case per 1000 live births in every district. Globally, year 2005 was set as target year for neonatal tetanus elimination. For India this goal was targeted to be achieved by 2009, which was further extended to 2015. The first MNTE validation was done by WHO in 2003/2004[3]. With all efforts the neonatal deaths came down from more than 80,000 in 1990 to less than 500 deaths per year in 2013 and 2014. According to WHO Nagaland in northeast India was the last state to achieve MNTE, after a validation survey conducted in April 2015. The validation confirmed that maternal and neonatal tetanus is reduced to less than one case per 1000 live births in all 675 districts of the country. Finally on 15th May 2015, WHO declared India free of maternal and neonatal tetanus [4,5].

Strategies for Maternal and Neonatal Tetanus Elimination in India

To achieve the goal, the Government of India applied a mix of strategies which included universalising vaccination of pregnant women attending antenatal care with Tetanus Toxoid; promoting institutional delivery by providing cash incentives; capacity building by training more skilled birth attendants and strengthening the health care delivery systems; and intensive behaviour change communication to reduce harmful cord care practices.

Classification of district/PHC by status of neonatal tetanus control: [6]

- ❖ High Risk
  - ☞ NNT Mortality Rate>1/1000 Live Births Or
  - ☞ TT2 Coverage < 70% Or
  - ☞ Attended Deliveries < 50%
- ❖ Control
  - ☞ NNTMortality Rate>1/1000 Live Births And
  - ☞ TT2 Coverage > 70% Or
  - ☞ Attended Deliveries > 50%
- ❖ Elimination
  - ☞ NNTMortality Rate<1/1000 Live Births And
  - ☞ TT2 Coverage > 90% Or
  - ☞ Attended Deliveries > 75%

Implementation of Strategies for Maternal and Neonatal Tetanus Elimination: [6]

- ☞ Coverage levels with two doses or a booster dose of TT in pregnant women was increased and sustained.
- ☞ Proportion of deliveries by trained personnel was increased and skilled birth attendants' training intensified.
- ☞ Disposable delivery kits were supplied to ensure clean practices for domiciliary deliveries.
- ☞ Essential newborn care, including cord care, was implemented to reduce risks of neonatal tetanus.
- ☞ Surveillance system was strengthened and follow-up action was promptly undertaken in areas from where cases were reported.
- ☞ Extensive Information Education Communication activities were carried out in the community to promote clean deliveries with special focus in areas from where cases were reported and in areas where the proportion of deliveries by untrained personnel was high.

Five Clean Practices followed during delivery

- ✓ Clean surface for delivery
- ✓ Clean hands of the attendant
- ✓ New blade for cutting the cord
- ✓ Clean cord tie
- ✓ No applicant on the cut stump of the cord

Programs and Schemes to Implement the Strategies

The National Rural health Mission was launched in 2005 as an umbrella program incorporating the major national programmes. In 2013 it was converted to the National Health Mission that incorporated both

rural and urban components within it. The NHM includes the Reproductive, Maternal, Newborn, Child Plus Adolescent Health Program, as well as several schemes that contribute towards MNTE [7].

- *Reproductive, Maternal, Newborn, Child Plus Adolescent Health Program (RMNCH+A)*

  It provides a package of services for maternal health that includes early registration of pregnancy, two doses of tetanus toxoid or one booster dose, institutional delivery and delivery by skilled birth attendants, and safe abortion services by increasing facilities for MTP. It also includes proper cord care and clean cord stump without any applicant, as part of the package of services for newborn care [8].

- *Janani Suraksha Yojana (JSY)*

  It is a safe motherhood intervention under NHM which provides cash assistance to pregnant women from Below Poverty Line (BPL) families for better diet. Cash assistance is linked to antenatal care during pregnancy, institutional care during delivery and immediate post-partum period in a health centre [7].

- *India Newborn Action Plan (INAP)*

  Its six pillars of interventions include some components that contribute to MNTE. These are antenatal care; care during labour and child birth; and immediate newborn care [8].

Conclusion

After achieving polio free status and being removed from WHO's list of polio endemic countries India has once again added a feather to its cap by achieving elimination levels of maternal and neonatal tetanus. This was possible through government's commitment towards the goal and extremely hard team work of all levels of health care providers. The community also has contributed to this achievement by accepting and utilising the services.

Tetanus has been targeted for elimination as it cannot be eradicated like small pox and polio. This is because the tetanus spores are present in the environment and may continue to transmit the infection. Hence intensive efforts should be implemented to maintain the status of elimination so that the significant public health milestone that India has achieved is sustained.

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