

Eliminating maternal and neonatal tetanus and closing the immunity gap



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Although progress has been made in achieving maternal and neonatal tetanus elimination (MNTE), WHO's Strategic Advisory Group of Experts on Immunization (SAGE) noted at its October, 2016, meeting that the 2015 goal for MNTE had been missed. Maternal and neonatal tetanus is still to be eliminated in 18 countries (Afghanistan, Angola, Central African Republic, Chad, DR Congo, Ethiopia, Guinea, Haiti, Kenya, Mali, Nigeria, Pakistan, Papua New Guinea, Philippines, Somalia, Sudan, South Sudan, and Yemen).¹

The failure to meet the MNTE goal was due to lack of political will and financial resources from governments and partners to implement sustainable elimination strategies in areas still affected by maternal and neonatal tetanus.¹ This failure is a sad reminder of enduring health inequities, and the inability of some countries to provide even basic health-care services to their vulnerable populations. SAGE made recommendations that will need political and financial commitment, such as improved disease surveillance and prioritisation of strategies to achieve and sustain MNTE efforts through routine immunisation of infants, children, adolescents, and all adults. Until these systems are fully in place, the focus should be on closing the immunity gap through vaccination of pregnant women during antenatal care visits, and clean delivery and cord care. Additionally, supplementary tetanus vaccination of women of reproductive age is necessary in high-risk districts. Since 1974 WHO's Expanded Program on Immunization has offered tetanus-toxoid-containing vaccines to infants at 6, 10, and 14 weeks of age. Many countries also began introducing booster doses to confer lifelong immunity. Each individual has to acquire immunity to tetanus since no herd immunity can develop, due to the fact that tetanus is not a communicable disease. The disease is caused by a toxin produced by the bacterium *Clostridium tetani*, whose spores are commonly found in soil, dust, and manure that can enter the body through any skin injury. Case fatality rates for untreated neonatal tetanus can be as high as 85–92%;^{2–4} case fatality rates for hospitalised cases vary greatly (depending on the standard of

care)^{4,5} and non-neonatal case fatality rates can be 50–60%.⁶ Most cases occur in the neonatal period, but disease surveillance in other age groups is suboptimum in many low-income and middle-income countries.^{7,8} The magnitude of deaths from neonatal tetanus was recognised in the early 1980s, with the introduction of community-based neonatal tetanus mortality surveys.⁹ The 1989 World Health Assembly passed a resolution for all countries to achieve elimination (subsequently defined as less than one case per 1000 livebirths per year in every district of a country) by 1995.¹⁰ But the 1995 target was missed and the initiative was re-launched in 1999 as MNTE, with a target for elimination in 59 selected priority countries by 2005. The initiative is a partnership between the individual countries, UNICEF, WHO, UN Population Fund, and other partners. Supplemental immunisation campaigns for all women aged 15–49 years were introduced where health systems were weak.¹¹ But the 2005 target was also missed due to insufficient resources and reset for 2015.¹

Achieving and sustaining tetanus elimination requires strong health systems and infrastructure that can routinely deliver immunisation and maternal health services to all, and is a signal of a country's ability to reach its underserved populations. Tetanus prevention should be a compelling investment for ministries of finance: the cost per dose of monovalent tetanus toxoid containing vaccines varies between US\$0.05 and \$0.20, when procured through UNICEF, and estimates of cost-effectiveness vary between \$8 and \$1000 per disability-adjusted life-year averted.¹² The MNTE initiative can be viewed as an attractive investment because it is cost-effective, equity-oriented, and integrated; it also has an elimination goal and considers sustainability, in line with universal health coverage (UHC) and health-related Sustainable Development Goals (SDGs).

The MNTE initiative has had many successes. More than 150 million women in the priority countries have been immunised with two or more doses of tetanus-toxoid-containing vaccines during supplementary vaccination campaigns between 1999 and 2016.¹³

41 of the priority 59 countries achieved MNTE from 2000 to 2016.¹ Annual neonatal tetanus deaths decreased from an estimated 780 000 in 1988 to 34 000 in 2015—a 96% reduction.^{14,15}

Despite these successes, there are clear reasons why the MNTE 2015 target was missed. Tetanus is not regarded as a global health security threat. Tetanus does not cause epidemics that otherwise might draw public attention to weaknesses in health systems. The disease occurs among poor and remote populations, so is often invisible to health authorities. Moreover, tetanus has a low profile in global health. Competition with other disease-specific initiatives for resources and insufficient political support have led to lack of prioritisation.¹

Achieving and sustaining MNTE requires identification of underserved populations, detailed planning, effective campaigns, community engagement, integrated delivery of maternal neonatal and child health services (including clean delivery and cord care), and annual monitoring of district performance. Many of the remaining 18 countries yet to achieve MNTE require support and extra resources, because they are affected by insecurity or conflict.¹ Making progress will require strong political and financial commitment. MNTE is now part of the WHO Global Vaccine Action Plan (GVAP) goals for elimination by 2020.¹⁶ WHO and UNICEF estimate that it will cost about \$125 million for the remaining 18 countries to achieve MNTE, including \$33 million to reach populations in insecure areas over the next 4 years, using vaccine in compact single-dose, prefilled, autodisable injection devices that can be delivered by any community worker.¹

Global commitment to reduce maternal and child mortality by focusing on underserved areas with lifesaving interventions is clear in the health-related SDGs, UHC agenda, Every Woman Every Child initiative, Global Strategy for Women's, Children's and Adolescents' Health, and GVAP. Achieving and sustaining MNTE seems to be a politically attractive low-hanging fruit, yet MNTE must be prioritised to ensure that no mother or child is allowed to suffer from tetanus in the 21st century.

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