GOAL 2: Meet global and regional elimination targets: Achieve maternal and neonatal tetanus elimination (INDICATOR G2.1)

DEFINITION OF INDICATOR
An incidence of <1 case of neonatal tetanus per 1000 live births per year in all districts or similar administrative units of a country; the neonatal tetanus indicator acts as proxy for maternal tetanus.

To monitor sustainability of elimination, the routine Expanded Programme on Immunization (EPI), reproductive health and surveillance data will be used, as sustainability is directly linked to health system strengthening with a focus on routine delivery of immunization, antenatal care (ANC), clean delivery, clean cord care practices and surveillance activities.

The draft guidelines for sustaining MNTE once achieved have been finalized and they are now awaiting final review by the SAGE Working Group on MNTE and the Director-General before publication and dissemination.

DATA SOURCES
- WHO-UNICEF Joint Reporting Forms (JRFs).
- Country health management information system (HMIS) reports.
- Country disease surveillance reports.
- Immunization coverage survey reports.
- Multiple Indicator Cluster Survey (MICS) reports, Demographic and Health Survey (DHS) reports and any other reports of immunization and reproductive health programme reviews.
- Reports of maternal and neonatal tetanus elimination validation surveys.

Highlights
- It was noted in last year’s report that the GVAP target for maternal and neonatal tetanus elimination (MNTE) for 2015 was not achieved. In 2015 (the latest year with data) about 34,000 neonates were estimated to have died from tetanus.
- In 2016, three additional countries eliminated MNT: Equatorial Guinea, Indonesia and Niger, in addition to the Punjab province of Pakistan.
- A success story of 2016 was Indonesia’s achievement of MNTE, the last remaining country in the South-East Asia Region to do so. The focus in this region has now turned to the efforts required to sustain the countries’ elimination status.
- Since 2010, 22 of the 40 countries required to meet the GVAP milestone for 2015 had achieved elimination.
- A total of 41 of the 59 priority Member States (70%) had achieved MNTE as of December 2016.
- At the end of 2016, maternal and neonatal tetanus (MNT) still continued to be a public health problem in 18 Member States. These countries have developed their MNTE plans of action as part of comprehensive multi-year planning. Competing health priorities, however, are a challenge to the timely implementation of the planned activities.

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8 Please refer to GVAP Secretariat Report 2013 for more information: http://www.who.int/immunization/global_vaccine_action_plan/GVAP_secretariat_report_2013.pdf?ua=1
9 http://www.who.int/immunization/diseases/MNTE_initiative/en/
10 Afghanistan, Angola, the Central African Republic, Chad, the Democratic Republic of the Congo, Ethiopia (Somali Region), Guinea, Haiti, Kenya, Mali, Nigeria, Pakistan, Papua New Guinea, Philippines (Autonomous Region of Muslim Mindanao), Somalia, Sudan, South Sudan and Yemen.
Introduction and background

Tetanus is an acute, potentially fatal disease caused by a neurotoxin produced by the bacterium *Clostridium tetani* that is commonly found in the soil and in the intestinal tracts of animals and humans. As such, the disease cannot be eradicated. Maternal and neonatal tetanus (MNT) are forms of generalized tetanus affecting mothers during pregnancy, due to unclean abortion or delivery, and infants during the first month of life. Neonatal tetanus (NT) infection begins when *C. tetani* spores are introduced into the umbilical tissue during delivery. The organisms produce a neurotoxin at the site of the umbilical cord wound which passes into the bloodstream of the newborn infant and into the central nervous system. This results in motor neuron hyperactivity, hypertonia and muscle spasms. Death occurs as a result of paralysis of the respiratory muscles and/or inability to feed.

Results

Since 2010, the total number of countries that achieved elimination is 22 of the 40 required to meet the GVAP milestone for 2015. As of December 2016, a total of 41<sup>11</sup> of the 59 priority Member States (70%) had achieved MNTE (see Table 1.3 and Fig. 1.3).

Table 1.3: Timeline of MNT elimination, 2011–2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Events</th>
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<tbody>
<tr>
<td>2011</td>
<td>Four Member States were validated as having achieved MNTE in 2011 (Ghana, Liberia, Senegal and Uganda) in addition to Ethiopia (excluding the Somali Region) and Indonesia (the third of the four phases)</td>
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<tr>
<td>2012</td>
<td>Six Member States (Burkina Faso, Cameroon, China, Guinea Bissau, Timor-Leste and the United Republic of Tanzania) were validated as having eliminated MNT</td>
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<td>2013</td>
<td>Five additional Member States (Cote d’Ivoire, Gabon, Iraq, Lao People’s Democratic Republic and Sierra Leone) and three additional areas in India (Mizoram and Uttarakhand States and Delhi Union Territory) achieved elimination bringing the total number of areas that achieved elimination in India to 18 out of 35 at the time</td>
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<tr>
<td>2014</td>
<td>Madagascar eliminated MNT as did 12 additional states of India (Andaman &amp; Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Daman &amp; Diu, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Tripura and Uttar Pradesh)</td>
</tr>
<tr>
<td>2015</td>
<td>Three Member States (Cambodia, India and Mauritania) and 16 of 17 regions of the Philippines achieved MNTE</td>
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<tr>
<td>2016</td>
<td>Three Member States (Equatorial Guinea, Indonesia and Niger) and Punjab Province (the largest province in Pakistan) achieved MNTE</td>
</tr>
</tbody>
</table>

11 Bangladesh, Benin, Burkina Faso, Burundi, Cambodia, Cameroon, China, Comoros, Congo, Côte d’Ivoire, Egypt, Equatorial Guinea, Eritrea, Gabon, Ghana, Guinea Bissau, India, Indonesia, Iraq, Lao People’s Democratic Republic, Liberia, Madagascar, Malawi, Mauritania, Mozambique, Myanmar, Namibia, Nepal, Niger, Rwanda, Senegal, Sierra Leone, South Africa, Timor-Leste, Turkey, Togo, Uganda, United Republic of Tanzania, Viet Nam, Zambia and Zimbabwe.
In addition in 2016, TT vaccination campaigns targeting women of reproductive age (15–49 years) were conducted in 10 Member States maintaining the total number of countries that have implemented TT SIAs from 1999 to 2016 to 53 (Fig. 1.4).

**Fig. 1.3: Member States with validated elimination of neonatal tetanus (as of December 2016)**

![Map showing member states with validated elimination of neonatal tetanus](image)

- **Not eliminated**
- **Eliminated prior to 2000**
- **Eliminated since 2000**

*This includes Ethiopia (except the Somali Region), 16 of 17 regions in the Philippines and the Punjab Province of Pakistan.*

**Source:** WHO-UNICEF database, 6 July 2017.

**Fig. 1.4: The 53 Member States that implemented TT SIAs between 1999 and 2016**

![Map showing countries that implemented TT SIAs between 1999 and 2016](image)

- **Countries achieved MNTE without TT SIAs between 1994 and 2016**
- **Countries having initiated or expanded SIAs between 1999 and 2016**
- **MNT eliminated before 2000**

**Source:** WHO-UNICEF database, as of 6 July 2017.

12 Chad, Ethiopia, Guinea, Kenya, Nigeria, Pakistan, Papua New Guinea, Philippines, South Sudan, Sudan.
Discussion: Areas requiring focus in order to keep progress on track towards the attainment of “MNTE in all countries”

In September 2016 SAGE provided recommendations (4) to ensure that the remaining priority countries attain MNT elimination, and that all countries that have achieved elimination receive the necessary guidance to sustain it. The issue of gender and geographic inequity in access to tetanus toxoid-containing vaccines (TTCV) is also to be addressed by SAGE, as well as the US$ 125 million (inclusive of TT Uniject cost of US$ 33 million) funding gap that is a serious challenge to the global goal for achieving MNTE. Contributions and advocacy from national governments have proved instrumental in the achievements thus far recorded, as has funding from the private sector – Kiwanis International, Procter & Gamble and Pampers – and other international organizations such as the UNICEF National Committees. To maintain this momentum, it is now the time for individual and collaborative fundraising efforts by all MNTE partners to tap bilateral and multilateral donors.

Targeted campaigns for women of reproductive age in high-risk areas with TTCV have protected over 180 million women globally (Fig. 1.5). However, 58 million women of reproductive age still remain to be reached through SIAs in the remaining 18 countries that have not yet attained MNTE. Timely availability of resources including funds has been dictating the phase of work in terms of reaching more women of reproductive age with protective doses of TTCV during SIAs (Fig. 1.6), and this will be critical to the implementation of countries’ action plans.

The reflection of MNTE plans in the comprehensive multi-year plan (cMYP) shows national commitments, but the execution of the plans depends on prioritization and allocation of resources by national governments. The target date for the attainment of MNTE cannot therefore be ascertained based on TT vaccination plans in the cMYP. However, it is envisaged that almost all of the remaining 18 countries will achieve elimination by the DoV target of 2020 – if the implementation challenges are addressed.

One of those challenges is vaccinating high-risk populations, primarily due to geographical difficulties and/or security challenges. Nine of the 18 countries that have yet to attain MNTE have such populations: Afghanistan, the Central Africa Republic, Chad, Mali, Nigeria, Pakistan, Somalia, Sudan, South Sudan and Yemen. TT Uniject is required in these countries. The use of TT Uniject by lay health workers after brief training in Afghanistan, Pakistan, Ghana, Mali and Somalia in the past attained coverage levels of at least 80% for TT3 (5) and an assessment of the experiences of the use by the Program for Appropriate Technology in Health (PATH) found that the vaccine was correctly administered, safe injection techniques were applied and no serious side-effects reported (5).

Integration of the Expanded Programme on Immunization (EPI) with guidelines on antenatal care (ANC) needs to be enhanced within Initiatives such as the Reaching Every Child approach or the Mother & Child Health Days. A package of high-impact interventions can be integrated into these efforts to support the most underserved communities. WHO now recommends at least eight ANC visits to give adequate opportunity for a pregnant woman to reduce perinatal mortality and improve her experience of care. This will allow a woman to receive all her due doses of TTCV based on her tetanus vaccination status, alongside other life-saving interventions. Coverage levels for ANC (https://data.unicef.org/topic/maternal-health/antenatal-care/) and institutional delivery (https://data.unicef.org/topic/maternal-health/delivery-care/) show the most recent data from surveys (updated in December 2016).

These important aspects of MNTE rely heavily on the performance of health systems and often progress slowly unless there is a concerted effort by governments. For example in China and India national resources were used to provide incentives to mothers to deliver in health facilities, an approach that is most sustainable when governments invest the use of domestic resources.

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http://apps.who.int/iris/bitstream/10665/250796/1/9789241549912-eng.pdf?ua=1
Fig. 1.5: Number of women of reproductive age targeted during TT SIAs, by year

![Graph showing the number of women of reproductive age targeted during TT SIAs, by year.](image)


Fig. 1.6: Cumulative number of women of reproductive age protected with at least 2 doses of TT during SIAs, by year

![Graph showing the cumulative number of women of reproductive age protected with at least 2 doses of TT during SIAs, by year.](image)

2017 Update

In 2016, the SAGE Working Group on Maternal and Neonatal Tetanus Elimination and Broader Tetanus Prevention proposed actions and timelines to achieve MNTE by 2020, which were endorsed by SAGE in October of that year. The countries that SAGE considered being likely to eliminate MNT by 2018 include Angola, Chad, Ethiopia, Haiti, Kenya, the Philippines and South Sudan. Of those, Ethiopia and Haiti sought validation of the elimination of MNT in June 2017 (see Annex 1.1).

There remain 16 priority countries yet to achieve MNTE, among which two have partially eliminated MNT: Pakistan (Punjab Province) and the Philippines (16 of 17 regions, except ARMM). All the remaining 16 countries are eligible for support from Gavi, the Vaccine Alliance (Gavi) support, except the Philippines.

Validation surveys are planned for the Philippines and the southeastern region of Nigeria in 2017. A pre-validation assessment of another region has also been conducted in Nigeria in 2017 and more of these assessments are planned for later in the year in Chad, the Democratic Republic of the Congo, Kenya and Pakistan (Sindh Province).

Chad, Kenya and the Philippines have completed planned activities and are close to achieving elimination. Angola and the Democratic Republic of the Congo are planning corrective activities in order to maintain the momentum towards MNTE.

A significant part of Nigeria, a significant part of Pakistan, Papua New Guinea and Sudan are lagging in their efforts to eliminate MNT, despite their relatively stable political situation (see Annex 1.2). South Sudan made significant progress towards eliminating MNT soon after its independence in 2011, and is one of the countries projected to achieve elimination before the end of 2018. The recent resurgence of fighting and increasing insecurity do, however, put the country at risk of missing the 2018 deadline. Other countries affected by political instability include Afghanistan, the Central African Republic, Mali, Somalia and Yemen. Efforts must be made to lobby donors to fund innovative approaches like TT Uniject to reach the vulnerable populations in these countries.

References


Annex 1.1: Update on the status of implementation of the October 2016 SAGE recommendations

<table>
<thead>
<tr>
<th>SAGE recommendation</th>
<th>Progress so far</th>
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<tbody>
<tr>
<td>1. &quot;Achieve elimination targets for maternal and neonatal tetanus, measles, rubella and congenital rubella syndrome. The Maternal and Neonatal Tetanus and Measles and Rubella Initiatives are each requested to develop an investment case that specifies the additional funding required to achieve and sustain elimination targets in routine immunization programmes and use the investment case to solicit necessary support from donors and national governments by the end of July, 2017.&quot;</td>
<td>The MNTE investment case is currently being developed in collaboration with UNICEF, WHO and the United Nations Population Fund (UNFPA) and support from contractors. The initial output on the investment case focusing on the needs of the remaining priority countries is expected by September 2017.</td>
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<tr>
<td>2. &quot;UNICEF, UNFPA, and WHO should make all efforts to secure timely supply of the available WHO prequalified TT vaccine in compact single-dose pre-filled auto-disable injection devices to facilitate vaccination of inaccessible populations by community workers.&quot;</td>
<td>A proposal has been submitted to the Gavi Alliance Policy and Programme Committee requesting financial assistance to support the production and availability of this critical pre-filled device. A concept note is being finalized in the context of using this initiative as a test case to assess the total system effectiveness to support the use of TT in the Uniject presentation to achieve public health objectives. The total system effectiveness in the context of innovation and markets is new and the Bill &amp; Melinda Gates Foundation is actively involved in this effort.</td>
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<tr>
<td>3. &quot;UNICEF, United Nations Population Fund (UNFPA), and WHO should support countries in securing the necessary resources to implement their national elimination plans, including procurement of Td vaccine and operational costs for SIAs.&quot;</td>
<td>A stakeholder’s meeting was convened at the end of November 2016 to follow up on this and the existing partners reiterated their commitment until 2019–2020. The concept note produced was to secure funding for TT Uniject from Gavi, with active collaboration of the Bill &amp; Melinda Gates Foundation. The final draft of MNTE investment case to facilitate resource mobilization to help support countries to implement their elimination activities is expected September 2017.</td>
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<tr>
<td>4. &quot;UNICEF, UNFPA and WHO should work with countries to generate and sustain political commitment to maintaining elimination of MNT, in order to guard against complacency once a country has been declared to have achieved elimination.&quot;</td>
<td>All opportunities including the Regional Immunization Technical Advisory Group meetings and Immunization Managers’ meetings are being utilized to advocate countries sustain their MNTE status. MNTE was discussed in 2017 in the Regional Immunization Technical Advisory Group meetings of the African, South-East Asia and Western Pacific Regions. Additionally, efforts are being made to finalize and disseminate the guidelines on sustaining MNTE to ensure that countries are guided through the appropriate steps to sustain their achievements.</td>
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<tr>
<td>5. &quot;Where feasible, the use of sero surveys to validate assessment of risk identified from other data sources should be considered to guide vaccination strategies, especially in high-risk districts. Close attention should be paid to sampling strategies and laboratory methods to ensure that results are valid and interpretable.&quot;</td>
<td>This recommendation has not yet progressed much as yet. Discussions initiated between UNICEF and CDC on the feasibility of combining some of the MNTE validation surveys with serosurvey.</td>
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Annex 1.2: Status of MNT elimination in countries

<table>
<thead>
<tr>
<th>Country category and definition</th>
<th>List of countries in this category</th>
<th>Progress</th>
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<tbody>
<tr>
<td>Countries at likely to attain MNTE by 2018</td>
<td>Angola, Chad, Democratic Republic of the Congo, Ethiopia, Guinea, Haiti, Kenya, Philippines, South Sudan</td>
<td>Ethiopia and Haiti were validated as having attained MNTE in June 2017. Chad, the Philippines and Kenya have completed planned activities and assessments are planned to begin at the end of 2017. Angola and the Democratic Republic of the Congo are planning corrective actions in some areas, to prepare for assessments. South Sudan is affected by conflict, however, the country is on course to attain MNTE, with completion of third round of SIAs in 2017. Guinea is reviewing the MNTE risk status of districts and planning further implementation of SIAs.</td>
</tr>
<tr>
<td>Countries likely to attain MNTE by 2019</td>
<td>Papua New Guinea, Sudan</td>
<td>Implementation efforts in Papua New Guinea and Sudan are lagging; implementation is on hold in Papua New Guinea due to upcoming elections and some logistical issues in Sudan.</td>
</tr>
<tr>
<td>Countries likely to achieve MNTE by 2020</td>
<td>Afghanistan, Central African Republic, Somalia, Mali, Nigeria, Pakistan, Yemen</td>
<td>Afghanistan, Central African Republic and Somalia: Implementation of MNTE activities has stalled due to a mix of low commitment and insecurity, requiring advocacy and preferably TT Unject devices to the meet validation timeline of 2020. Mali is planning TT SIAs in the northern part of the country following a risk assessment; a pre-validation assessment for the south is under discussion with the country team. Nigeria has conducted pre-validation assessments in the southeast and southwest regions of the country. The validation survey for the southeast zone is scheduled for 9–30 Oct 2017 while a few areas are conducting corrective activities in the southwest prior to conducting a validation survey. Nigeria's South South geopolitical zone is reviewing risk to commence implementation of TT SIAs early next year. The remaining three northern regions will be reviewed early next year to plan implementation of MNTE activities in a phased manner to meet the goal by 2020. Pakistan has embarked on a province-by-province approach. Punjab Province achieved MNT elimination in 2016. Sindh province has completed TT SIAs and is preparing for a pre-validation assessment. Further MNTE activities are planned in another two at-risk provinces with larger populations (Balochistan and Khyber Pakhtunkhwa). Yemen has resumed implementation of SIAs in a phased approach with the aim of achieving MNTE by 2020. The country has completed the 1st round in 46 districts and is planning the 2nd round for October 2017.</td>
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