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Elimination of maternal and neonatal tetanus in the WHO South-East Asia Region
FOREWORD

A good story is always worth telling.

Maternal and neonatal tetanus (MNT), a consequence of inadequate maternal protection with anti-tetanus vaccine, coupled with unclean deliveries and poor umbilical cord care was once one of the most lethal infections for mothers and their newborns across the South-East Asia Region. Following more than two decades of collective efforts, however, the WHO South-East Asia Region was in May 2016 validated as having eliminated the deadly disease.

After witnessing the historic public health milestone of certification of polio eradication in the Region in March 2014, I am now very proud that the South-East Region, home to 26% of the global population, is only the second among the six WHO Regions (the European Region being the first) to have achieved maternal and neonatal tetanus elimination.

This achievement is yet another powerful reminder of what we can accomplish when we work together. It provides a model of perseverance and patience, and demonstrates the critical importance of going the extra mile to protect pregnant women and their unborn children wherever they may be. And it is also an embodiment of our commitment to equity and empowerment of women and vulnerable communities.

Nevertheless, we must safeguard our hard-won victory over MNT with keen resolve. Given that tetanus spores are ever-present in the environment, strengthening measures that facilitated elimination in the first instance can best guarantee the ongoing safety of mothers and their newborns.

The 11 Member States of the South-East Asia Region, along with the thousands of frontline health workers, volunteers and community members that were a part of the elimination efforts, are commended for their hard work and dedication to overcoming the many challenges confronted over the years. Further, without the many partners whose commitment and support were instrumental—particularly UNICEF and UNFPA – the good story contained in the following pages could not have been told.

Dr Poonam Ketrapal Singh
Regional Director
Tetanus infection was once a major threat to the health of mothers and their newborns across the South-East Asia Region. For those unlucky enough to be infected with the ‘silent killer’, agonizing muscle spasms, lockjaw, and, more often than not, death could be expected. Tetanus infection was a tragedy that could happen anywhere and at any time that an unhygienic birth occurred, preying on communities that often fell far outside formal health-care systems.

Maternal and neonatal tetanus was, however, a tragedy that was wholly preventable. We have long had the tools to tackle the problem and keep women and their newborns tetanus-free and healthy. The tetanus vaccine is effective in preventing the problem in both mother and newborn while access to quality health services increases the likelihood that a birth will be safe and hygienic. Addressing the problem was simply a matter of doubling-down and expanding access to these lifesaving services.

When in May 2016 the WHO South-East Asia Region was confirmed to have reduced maternal and neonatal tetanus to such low levels that it was no longer a major public health problem, a decades-long struggle had been won. Millions of women and newborns are now better protected from the life-threatening disease thanks to the commitment and courage of everyone involved, from community health workers in far-flung villages to policy-makers and public health experts in international capitals. There is a story that must be celebrated, and its lessons harnessed for future public health interventions.
AN INTERNATIONAL CONCERN

The South-East Asia Region's efforts to eliminate maternal and neonatal tetanus were part of a wider push. A global campaign spearheaded by UNICEF in close collaboration with WHO and UNFPA to eliminate the life-threatening disease started in 1999, when WHO member countries banded together to take action. At the time, tetanus was killing approximately 737,000 newborns across the globe every year. That equated to around six deaths for every 1,000 births, with maternal and neonatal tetanus a major problem in around 90 countries.

The core strategies used to tackle it were remarkably straightforward.

First among them was increasing coverage of the tetanus vaccine. Despite significant gains in child immunization, just 27% of pregnant women worldwide were receiving the tetanus vaccine when the campaign was announced. The vaccine provides tetanus protection to pregnant women as well as their unborn child, dramatically reducing the prospect of tetanus infection at birth.

Second was expanding access to maternal and child health-care services and ensuring that every woman could have a supervised, hygienic birth. Maternal and neonatal tetanus is a reflection of health system inequities, meaning that upgrading infrastructure and skills to cover hard-to-reach or marginalized populations was necessary. So too was empowering women in vulnerable communities by circulating information on the importance of antenatal services and birth supervision.

Third was implementing an effective and robust surveillance network that could measure progress and track ongoing trouble-spots. By having good data on where and when instances of maternal or neonatal tetanus infection were occurring, health authorities could target interventions at high-risk populations and better protect their health.

Adapting each of these strategies to country-specific situations was always going to be key to achieving success.

“...in 1996 upon return from a 3-year WHO assignment in Equatorial Guinea, I was asked by Dr R Henderson, the Director of the Expanded Immunization Programme at WHO HQ in Geneva, to find out how I could be of use to the global immunization programme. I had two months to read, discuss and present my project.

I soon came across a paper written and published by P Antony Radford from Australia. It was a brief, concrete article that brought to light a shocking reality: up to 50% of newborn deaths occurring across the world were due to tetanus infection. This was so despite the existence of the tetanus toxoid (TT) vaccine – one of the most effective vaccines available, which is heat-stable and at just 8 US cents per shot was one of the cheapest out there. By providing every pregnant woman and woman of reproductive age with the vaccine the disease could be eliminated. At the time neonatal tetanus was a major killer in 4 of the 5 WHO regions, with the South-East Asia Region shouldering the largest burden. The need to act was pressing, and was recognized as such by the Programme and others in the global health sector.

The following year the World Health Assembly wrote a global resolution to eliminate neonatal tetanus (NT) by 1995, a goal re-endorsed by the UNICEF-World summit for children in 1990. A struggle was born – one that was aimed at protecting those most vulnerable to the disease’s tragic and fatal effects...”

Dr Francois Gasse
former Immunization Specialist at WHO and UNICEF
In the campaign’s initial years a number of countries in the Region made crucial gains.

The Democratic People’s Republic of Korea was able to take advantage of a strong routine immunization programme and high rates of institutional deliveries in both urban and rural areas, ensuring that women and their newborns were protected from tetanus toxins at the time of delivery.

In the early 1990s, Thailand was already effectively using surveillance data to provide targeted vaccine coverage of women at high-risk of tetanus infection. Health authorities carried out supplementary immunization activities with women of childbearing age (including pregnant women) based on comprehensive district-level data and effective planning. This greatly diminished the risk of tetanus infection even before the health system’s brick-and-mortar infrastructure was expanded.

Meanwhile, Sri Lanka integrated maternal and neonatal tetanus strategies within its safe motherhood programme and its broader effort to expand health-care coverage. Throughout the 1990s Sri Lanka demonstrated firm commitment to maternal and child health, with maternal mortality declining by over 50% between 1990 and 1998. This was largely the result of increases in supervised and hygienic births, which also afforded protection against tetanus infection.
The health, welfare and empowerment of women has been a key part of Sri Lanka’s development process, and proved a significant factor in eliminating maternal and neonatal tetanus. Sri Lanka’s Public Health Midwives were really important in increasing women’s health literacy and ensuring they can access the antenatal care needed.

Public Health Midwives look after the health of around 500 families each, and carry out about twenty door-to-door visits each day. Every month they make at least one visit to the families whose health they are tasked with protecting. This means that any issues can be followed up on at primary health facilities; that the needs of pregnant women can be registered early on and attended to; and that women across the country receive health counselling on a regular basis. Along with the Immunization programme, women’s empowerment and high literacy rates made eliminating maternal and neonatal tetanus much easier, as also did Sri Lanka’s high levels of health-care coverage.

Chief Epidemiologist & 
National Immunization Programme Manager
Ministry of Health, Sri Lanka
Thailand's Ministry of Public Health has given precedence to strengthening disease prevention programmes including immunization for maternal and neonatal tetanus. We have implemented tetanus vaccination since the beginning of the national EPI in 1977, with 2 doses of tetanus vaccine given during each pregnancy. In 1993, the tetanus vaccination course was expanded to 3 doses. After 2005, tetanus vaccine was replaced by diphtheria-tetanus vaccine to prevent adult diphtheria cases. Surveillance data show that the number of neonatal tetanus cases has decreased along with rising vaccine coverage. We thank our frontline health staff who are active on the ground and continue to access all pregnant women in Thailand regardless of their legal status to offer them the vaccine and bring down the case numbers to zero to date.

Dr Pornsak Yoocharoen
Chief of Immunization Section
Department of Disease Control
Ministry of Public Health, Thailand

Maldives and Bhutan, too, overcame unique challenges in their efforts to tackle maternal and neonatal tetanus in the campaign's early years.

Despite its population being spread across 200 inhabited islands, Maldives made rapid progress in expanding its immunization programme in the late 1980s, as well as training more skilled birth attendants. After introducing the tetanus toxoid vaccine for women of child-bearing age, by the late 1990s Maldives had overcome the problem countrywide.

The decentralization of Bhutan's health system aided efforts to expand coverage across the country's mountainous terrain, with outreach clinics proving vital to the provision of tetanus vaccines for pregnant women. The country's network of Volunteer Health Workers similarly helped pregnant women in remote areas access antenatal services, thereby guarding against infection.

Based on their longstanding performance with regards to routine immunization, access to antenatal services and birth supervision, and the strength of their surveillance systems, it is assumed that Thailand, Sri Lanka, Democratic People's Republic of Korea, Maldives and Bhutan eliminated maternal and neonatal tetanus before the year 2000.
Maldives’ journey towards maternal and neonatal tetanus or MNT elimination was the result of a longstanding commitment to maternal and child health and the benefits of immunization. Maldives began preparing birth attendants for safe delivery in the early 1970s, when the Ministry of Health—with the help of the only hospital facility established in Male, as well as the Allied Health Services Training Centre—initiated short training modules with practical exercises on safe delivery for ‘foohumas’, the traditional birth attendants who conducted deliveries in communities across all atolls and Male.

When combined with the success of Maldives’ routine immunization programme, we were able to make rapid strides towards eliminating MNT. The TT vaccine was first introduced as part of antenatal care services in the hospital in Male, later integrated in the EPI in 1985 and within two years covered all eligible women between 15 and 46 years of age through vaccination campaigns. Although in the 1970s MNT was highly prevalent across the country, since the late 1980s not a single case has been reported. We are immensely proud to have been a part of Maldives’ stunning success story, and to have provided a brighter future for all the women and children of our country.

Ms Aminath Mohamed Didi
A senior community health officer and midwife (retired) who was a key trainer of TBAs in the atolls
Maldives

Mr Mohamed Shaheed
A senior key public health official who managed the national immunization programme
Maldives
Bhutan’s primary health-care approach has been the key to the country’s success in eliminating and controlling many diseases, including MNT. The different tiers of the health system are strategically located across the country and have enabled delivery of health services – including immunization and antenatal care – to more than 90% of the population.

Underlying the health system’s high level of coverage is unwavering political commitment. Bhutan’s constitution (2008), for example, mandates the government to provide free basic health care. The resolutions passed by the national assembly in 1988 calling for universal immunization and strong support from the throne and central monastic body similarly reflect the firm commitment to achieving full immunization, and have contributed immensely to the country’s success in eliminating MNT and other vaccine-preventable diseases.

Dr Tandi Dorji
Pediatrician, Bhutan
ACCELERATING PROGRESS

Despite successes in the South-East Asia Region and elsewhere, global progress during the campaign’s first decade was limited. At the turn of the millennium, women and their newborns in 57 countries remained affected by the life-threatening disease. The need to fast-track efforts and enhance implementation of the campaign’s core strategies was apparent.

In 1999, WHO, UNICEF and UNFPA re-launched the campaign, this time with a greater focus on maternal tetanus. In the South-East Asia Region, as elsewhere, re-launching the campaign meant reinforcing commitment, securing funding, revisiting national-level planning and furthering technical assistance to priority countries still struggling to address the problem.

“The MNT elimination campaign was re-launched in 1999 due to the firmly-held conviction that eliminating the problem was both possible and necessary. Although progress in some areas had been inadequate, there was a strong sense of ownership and a catalytic passion among those involved in the campaign, from partner organizations and donors right down to community-level volunteers.

While there had always been a sense that MNT elimination was low-hanging fruit, until the re-launch the initiative was caught-up in an increasingly crowded field and was competing for the attention of governments, health workers and volunteers. Ahead of the re-launch, however, effective advocacy, fund-raising and strategic clarity changed the situation, as did the campaign’s creation of an accepted methodology to measure and validate MNT elimination. Also of significance was the increased attention given to maternal health issues throughout the 1990s, which helped many to see MNT elimination as an initiative capable of promoting a range of benefits.

The recent validation of MNT elimination in the South-East Asia Region demonstrates the fine judgment of those that always maintained elimination was possible, and reflects the momentum that the re-launch was able to create and sustain.”

Mr Basil Rodrigues
UNICEF Regional Adviser
Health Systems & Policy
In Nepal, immunization of adult women – both during pregnancy and in routine campaigns – was the key to eliminating MNT. In making sure every woman of reproductive age gained the tetanus toxoid vaccine’s life-saving protection, health workers often had to spend days trekking to remote and mountainous regions, while female community health volunteers went village-to-village disseminating positive health messaging and motivating women to receive the shot. The persistence and resolve demonstrated was remarkable, and is reflected in the steady gains Nepal made throughout the 1990s and into the new millennium.

While there remain challenges in Nepal in terms of improving access to clean birthing practices (neonatal deaths for reasons other than tetanus remain a public health problem), the success of MNT immunization efforts have been a life-saver to mothers and newborns across the country. Health authorities and healthcare workers across Nepal, as well as their international partners, can be immensely proud of the achievement.

Dr Jos Vandelaer
WHO Representative to Nepal

ACHIEVING TARGETS

Following the campaign’s re-launch, Nepal made rapid progress. Although by 1999 neonatal tetanus cases had declined significantly, between 2000 and 2004, supplementary immunization activities targeted at all women of childbearing age across the entire country provided the push necessary to realize elimination. The supplementary activities immunized 5.3 million women, providing 13.5 million tetanus vaccine doses. In 2005 the country was declared as having eliminated maternal and neonatal tetanus.

Bangladesh continued on its steady reduction of maternal and neonatal tetanus deaths in the years following the re-launch. By 2007 the country was one of six in the world that had decreased child mortality by half or more on 1990 levels, with much of the progress directly attributable to the massive and consistent gains in tetanus toxoid immunization coverage. Authorities sought to have all women in the country fully immunized by the time they were of marriage age, thereby protecting them for their reproductive lives. The campaign was a remarkable success. Bangladesh was declared maternal and neonatal tetanus-free in 2008.
I’ve been working as a field level immunization worker for over 15 years, and over that time it has been an immense joy to be part of MNT elimination efforts and to make childbirth safer in my upazila and across Bangladesh. To eliminate the problem we employed a number of strategies, but always had to be innovative and flexible. For example, in order to mobilize women to receive the TT vaccine we employed traditional counseling techniques while at the same time involving community leaders in the dissemination of positive messaging. Similarly, if an MNT case occurred, a team would be sent to the area to offer house-to-house vaccinations. This ensured that women in areas where vaccination coverage was low did not miss out on protection. We are immensely proud to have overcome the problem and will pull out all stops to make sure it never returns.

Mr Motiar Rahman
Health Assistant
Phulbari Upazilla, Bangladesh
In Myanmar, communicating effectively with local communities helped us immunize mothers and also encourage hygienic births. When carrying out immunization camps, health workers always explain the benefits vaccination brings and clarify any doubts the mothers may have. Similarly, for communities that have poor access to birth facilities, health workers counsel mothers and traditional birth attendants against applying potentially infectious materials on the umbilical cord. By encouraging best practices at the grassroots level, we made significant breakthroughs, and mothers and newborns are safer as a result.

Dr Vined Bura
WHO Myanmar Medical Officer for Immunization

Myanmar achieved elimination via effective surveillance combined with informed and targeted interventions. Between 1999 and 2006, 6.7 million women of childbearing age received two doses of the tetanus vaccine. Surveillance data allowed authorities to hone in on at-risk populations, leading to further rounds of immunizations and corresponding declines in cases of the life-threatening disease. Myanmar was validated as having eliminated maternal and neonatal tetanus as a major public health problem in 2010.

In Timor-Leste, the re-launched global strategy coincided with the country’s efforts to build its national health-care system. Timor-Leste’s immunization programme took shape in 2001, and aimed to eliminate maternal and neonatal tetanus by 2010. Timor-Leste’s Ministry of Health was keen to assert the population’s right to protection from preventable diseases, and provided every pregnant woman with an immunization booklet. As the health system expanded, the target was reached, with Timor-Leste achieving elimination in 2010.
Timor-Leste’s home-based health records (LISIO) for pregnant women, new mothers and their children were rolled out in 2004, just two years after the country’s independence. The colorful booklets represent a unique public health initiative that allows mothers and mothers-to-be to record all antenatal, natal and postnatal information of mother and child up to 6 years of age. They have proved vital to MNT elimination efforts and tracking a child’s immunization history – it is like a child’s health passport. While the booklets proved a useful tool in eliminating MNT, they will likewise help to monitor tetanus immunization coverage and ensure our country remains free of the disease.

Dr Triana Oliveira
Head of Mother and Child Health
Ministry of Health, Timor-Leste
India’s launching of the National Rural Health Mission in 2005 accelerated its efforts to eliminate maternal and neonatal tetanus. The Mission enhanced strategies to improve hygienic deliveries – including cash transfers and health promotion and outreach – and raised the rate of safe deliveries from 62% in 2007 to 75% in 2009. At the same time, the Mission targeted at-risk populations with tetanus toxoid vaccines, reducing the rate of neonatal tetanus mortality from 31,500 in 2005 to 500 in 2013, with subsequent gains leading to elimination in 2015.

Indonesia too made concerted efforts to rout maternal and neonatal tetanus from areas where it remained prevalent. Although by 2011 Indonesia had eliminated the problem in three of the country’s four regions, it continued to affect the health of women and newborns in Papua, West Papua, Maluku, and North Maluku provinces. By targeting tetanus vaccines at women of childbearing age in those areas, the country was able to finally eliminate the problem, receiving validation in May 2016.

“When I was posted in this village in 1985, most babies in the village were delivered by untrained dais who were careless about cleanliness regimen. That is why there were high maternal and neonatal deaths due to tetanus. Then we were trained in the five-point cleanliness plan for safe deliveries. The most important message we give out to women is that nothing should be applied to the skin after the cord is cut. This is very important to prevent tetanus infection. Because of this formula, neonatal mortality has reduced drastically.

The government has also started promoting and incentivizing institutional deliveries. The number of home deliveries has come down a great deal. Now, hardly one home delivery is reported every 2-3 months in the village. These deliveries are also conducted by trained dais.”

Ms Prasanna Kumari
Auxiliary Nurse Midwife, India
The midwife and other health workers visit us and carry out a monthly health clinic for women and children known as the Posyandu. At the Posyandu the health workers give immunizations – including the tetanus toxoid vaccine – to babies and pregnant women, and also tell us all about the importance of a clean delivery and umbilical cord care. They write down details in our MCH book, which helps keep track of everything. Sometimes they visit us and check the condition of our pregnancy.

I would recommend every woman to use these services when pregnant and giving birth. I have benefited immensely from them, and I hope that every woman and their baby can do the same to prevent the death of mothers and their newborns in our village and across Indonesia.

Ms Lidia Gaa
A mother and regular attendee at Iwor Public Health Center, Indonesia
ELIMINATION: AN ONGOING PURSUIT

The realization of a maternal and neonatal tetanus-free Region is a massive achievement. Mothers and newborns across the Region are now safer from the disease than at any other time in history.

Nonetheless, unlike with diseases such as polio and smallpox, the risk of maternal and neonatal tetanus will always exist. ‘Elimination’ must, therefore, be seen as an enduring pursuit.

The best way to avoid tetanus’ resurgence is by strengthening measures that facilitated elimination in the first instance. That means sustaining and enhancing access to quality maternal and newborn health care, maintaining and increasing immunization coverage, and upholding robust surveillance systems that can identify lapses and provide the information necessary for action where needed.

Countries in the Region are already active in these regards, providing reason to be optimistic.

“MNT elimination in the Region is a story of perseverance, opportunity and responsibility. Responsibility to guard the achievement by regularly analysing if mothers and babies continue to receive the protective health services they need as the threat of tetanus does not go away. We have practical tools available to do so where we carefully analyse service delivery data at the subnational level and go to communities to see what is happening on the ground.

Several countries in the Region are already doing this exercise. Bhutan for example was classified by WHO in 1995 as having eliminated MNT based on data review of vaccination rates and case reporting – way before the formal validation process started in 2000. While routine programme performance data had been good for many years, Bhutan requested ‘re-validation’ in 2013 to ensure that elimination has been maintained. The outcome of the exercise was positive in many ways: it confirmed that MNT has remained eliminated for almost 2 decades; it demonstrated how performance indicators linked to MNTE have progressed since 1995; and it highlighted areas where specific programme components can be still strengthened, particularly for booster doses to protect both boys and girls against tetanus already from school-age onwards.

Such forward-looking evaluation exercises should be done by all countries, not only to prevent the resurgence of MNT, but also to better understand the overall situation of vaccination services, target weak areas and promote working together with other health programmes for children and women.”

Dr Sigrun Reesel
Technical Officer, Immunization and Vaccine Development. WHO SEARO
EMPOWERED FOR LIFE

The story of maternal and neonatal tetanus in the South-East Asia Region provides lessons for future public health interventions. The achievement speaks of the need for firm commitment, targeted interventions and responsive programming among other virtues.

Most of all, though, the elimination of maternal and neonatal tetanus as a major public health problem demonstrates the critical importance of equity and empowerment in determining the health and well-being of mothers and their newborns. The achievement is, in the final analysis, a reflection of the greater agency women have with regards to controlling their reproductive lives.

Women everywhere must be given the opportunity to determine their destinies, and to protect and pursue their reproductive lives in the safest, healthiest ways possible. The future must be theirs.

Countries in the Region are already active in these regards, providing reason to be optimistic.