MEASLES ELIMINATION AND RUBELLA CONTROL
in the WHO South-East Asia Region

SUSTAIN ACCELERATE INNOVATE

MEASLES & RUBELLA INITIATIVE
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WAY FORWARD
In 2013, the Sixty-Sixth Regional Committee for the WHO South-East Asia Region set the ambitious goal of measles elimination and rubella control by 2020. In just seven years, the 11 Member States planned to protect every child, everywhere in the Region from these killer diseases. As we know today, measles elimination and rubella control are inextricably linked to health target 3.2 on child mortality, as well as to target 3.8 on universal access to safe, effective, quality and affordable vaccines for all under the SDG 3 for Health.

We have a huge opportunity: with more than 1.8 billion population, protecting them against measles and rubella will ensure significant health gains for the Region. By making measles elimination and rubella control a Flagship Priority in 2014, the stage was set to put in the best possible effort to achieve our goal. I am proud to announce that significant progress has been made in the Region with five Member States achieving and maintaining measles elimination and six Member States achieving the rubella control target. But the Region as a whole still faces challenges. Gaps in immunization and surveillance, especially at subnational levels, have delayed our Region from achieving the goal of measles elimination by 2020.
We must reaffirm our global and regional commitments, remaining mindful of global targets, our strengths and our vulnerabilities. As we prepare for the next phase in the elimination effort, we must realize that the goal post may change but the goal remains the same. I urge Member States to remain focused on our priorities to ensure that we **sustain the gains** and that the momentum of measles elimination and rubella control in the Region remains energetic; **accelerate progress** towards goals and **innovate** to find new solutions to age-old problems. Investment in programmatic, technological and operational research required to ensure that we achieve our vaccination goals on time must remain a priority.

As we approach the next phase in the measles elimination drive, I once more congratulate the people of Bhutan, Maldives, Sri Lanka and Timor-Leste on achieving and sustaining measles elimination and rubella control targets; Democratic People’s Republic of Korea on achieving measles elimination and Myanmar and Nepal on achieving rubella control. I look forward to the concerted efforts from the remaining Member States to forge ahead and ensure that no child in the Region should die or be disabled due to vaccine-preventable diseases like measles and rubella.

Dr Poonam Khetrapal Singh
Regional Director
MEASLES MOVES FAST.
WE MUST MOVE FASTER.

Between 2014 and 2018:

- 5 countries have achieved measles elimination and 6 countries have achieved rubella control.
- 5.5 million deaths averted due to measles vaccination.
- 167 million infants received first dose of measles-containing vaccine in routine immunization.
- 137 million infants received second dose of measles-containing vaccine in routine immunization.
- 485 million additional children vaccinated through mass campaigns.
- 8.1 million additional infants vaccinated with second dose of measles-containing vaccine in 2018 compared to 2014.

MEASLES MOVES FAST.
WE MUST MOVE FASTER.
1.1 MEASLES & RUBELLA – A SHORT HISTORY

Measles! People in their 40s today would well remember the common childhood scourge that afflicted almost every child at least once in his/her life. The belief was that the earlier you got it, the milder it would be. Mothers would actively expose their babies to the virus by taking them to visit households where the virus was active. The belief was that a few days of mild illness would protect their little darlings for life. But that is just one of the many myths associated with the virus. The reality, as we know, is far from benign. Measles is one of the leading causes of childhood mortality, even though a vaccine to prevent measles has been available for over 50 years now. Similarly, rubella or German measles,
was a dreaded disease that caused congenital disabilities if contracted by a pregnant woman. This too is easily prevented.

Measles and rubella are airborne diseases and spread quickly through droplets from the nose, mouth and throat.

Exactly when and where measles first occurred is, of course, unknown, but estimates made by modern molecular biology place it at around 500 CE—since then, numerous people have lost their lives to the disease.

The past half century has seen the fight against measles gain traction with the licensing of the first measles vaccine in the United States of America in 1963. Further improvements were made and a live attenuated vaccine, called the Edmonston–Enders vaccine, has become available since 1968. The vaccine is generally combined with the mumps, rubella and varicella vaccines and is known as the MR or MMR or MMRV vaccine, depending on the combination in which it is given.

Although any unvaccinated person can get measles, the disease is more likely to occur among poorly nourished children who have weak immune systems. Around 200 million people across the world are estimated to have died of measles in the span of 145 years between 1855 and 2005.1

One measles-infected person can infect as many as 16 unvaccinated people, while one rubella-infected person can infect 6 unvaccinated people.

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It is estimated that for every 1000 children vaccinated with two doses of measles vaccine, 18.4 deaths are averted.
There is no specific cure for measles or rubella but both these diseases are easily preventable through vaccination.

While areas of the developed world are experiencing a resurgence of the measles virus, the Region stands out for making remarkable progress towards meeting the Sustainable Development Goal (SDG) target of reducing infant and under-5 mortality. With five of the 11 Member States of the Region eliminating the dreaded disease and the other six Member States significantly reducing the incidence of rubella, the Region has reason to believe that it is on the right track, though the road still to be travelled is long.

A game-changing public health intervention

Being a safe, easy-to-administer and highly effective vaccine with low rates of adverse effects following immunization and easy to administer, the measles and rubella vaccine is one of the most feasible public health interventions available. However, to create a herd immunity, ≥95% children must be vaccinated with two doses of the measles-containing vaccine. Those missed in routine immunization should be vaccinated through supplementary vaccination campaigns to ensure that the required coverage is achieved. Attaining such high coverage requires dedication and commitment at the highest levels. Leadership in the Region has fast-tracked this intervention across all 11 Member States.
As of 2019, five countries in the WHO South-East Asia Region have successfully eliminated measles and six countries have controlled rubella.
RESPONSE TO THE DISEASE

Eliminating measles and controlling rubella would appear to pose a daunting challenge in a region that accounts for a large proportion of the world’s population. As recently as in 2013, the Region had the highest burden of the disease. Yet, it took on the challenge, setting in motion initiatives that would make this enormous task doable.

At the Sixty-sixth session of the Regional Committee for South-East Asia held in September 2013, the goal of eliminating measles and controlling rubella and congenital rubella syndrome (CRS) in the Region by 2020 was drafted. The next step was to make it a priority health agenda for each Member State. The Regional Director of the WHO Regional Office for South-East Asia, Dr Poonam Khetrapal Singh, rose to the task, and responded to the call of eliminating measles and controlling rubella by 2020. With the vision and determination to make the impossible possible, the Regional Director initiated

How making measles elimination and rubella control a priority helps in the success of the initiative

It ensures:

- high-level monitoring;
- submission of the annual report and review to the Regional Director;
- annual report and joint review by the Ministry of Health and WHO country representatives for each Member State;
- prioritized resource allocation – both financial and human resources;
- progress review at the Regional Committee Meeting every alternate year. This renders the programme a high priority for everyone: Member States, WHO country offices and partners.
wide-ranging advocacy, reaching out to each Member State in the Region. In consultation with the 11 Health Ministers of Member States, the Regional Director announced measles elimination as one of the eight Priorities for the Region at the 2014 Regional Committee Meeting held in Colombo, Sri Lanka. In the next five years, intensive efforts were made by the Regional Office, working closely with Member States, to accelerate progress towards measles elimination.

Progress made towards this goal was significant and the year 2019 saw the Regional Office, in consultation with Member States, suggest that the goal be upscaled from measles elimination and rubella/CRS control to include rubella elimination as well. A decision on this is expected to be taken at the Regional Committee meeting of 2019.

The fruit of these efforts is visible in a simple fact: more than 167 million infants born between 2014 and 2018 received at least one dose of measles-containing vaccine and an additional 485 million children were reached through supplementary vaccination campaigns. Because of this, almost 5.5 million deaths have been averted and every child born after 2003 in 10 Member States of the Region is protected against measles and rubella, either through routine immunization or through supplementary vaccination campaigns.
No child should **suffer** or die from a disease as easily prevented as measles, no pregnant woman should lose her unborn child due to a virus as avoidable as rubella, no neonate should be born with a heart ailment or loss of hearing owing to a tragedy as needless as in utero rubella infection.

– DR POONAM KHETRAPAL SINGH  
Regional Director, WHO South-East Asia Region at the third South-East Asia Regional Verification Commission meeting
Felicitation of Member States on achieving measles elimination
Felicitation of Member States on achieving rubella control
1.3 PARTNERSHIPS

Stimulating the generation, translation and dissemination of valuable knowledge

WHO’s leadership in making measles elimination and rubella control a priority agenda in the Region was unstintingly supported by Member States. Partner organizations also have played a crucial role, providing expertise in areas as diverse as vaccine logistics and advocacy to ensure that the Region was and is geared towards the effort.

Among the key partners in the measles elimination and rubella control initiative are the Bill and Melinda Gates Foundation, Gavi, the Vaccine Alliance, Lions International, Rotary International, United Nations Children's Fund (UNICEF) and US Centers for Disease Control and Prevention (CDC). Joint assessments and regional working groups have been fundamental in establishing partner engagement and support, and have helped in identifying priorities and areas of collaboration, starting at the regional level. The technical expertise and resources that international partners have brought to the programme cannot be underestimated.

Learning from the knowledge and experience of others is a fundamental principle of the programme. Information is disseminated and shared through various mechanisms. To this end, a regional workshop on Lessons from the Big Six countries explored the status of, challenges to, and innovations in, measles elimination and rubella control for Member States that are yet to eliminate measles and control rubella. Elimination kits comprising a coffee-table book, fact sheet and presentation for Bhutan, Maldives, Sri Lanka, DPR Korea and Timor-Leste document the processes and lessons from Member States that have achieved elimination. Cross-learning through observation visits were also hugely successful in sharing experiences across the Region. Hence, the Expanded Programme on Immunization (EPI) officers from Bangladesh, Indonesia, Myanmar and Nepal observed measles and rubella supplementary vaccination campaigns in India, and officers from India and Nepal observed vaccination campaigns in Cox’s Bazar, Bangladesh.
Campaigns and special initiatives provide excellent opportunities to cross-pollinate learning and experiences. For example, experience-sharing between Bangladesh and Nepal on the fully immunized districts concept in Nepal.

In 2017, Sri Lanka and Timor-Leste signed a “twinning” agreement whereby Sri Lanka would mentor and coach Timor-Leste officers and help them become programatically and financially stable.

WHO facilitates partnerships between Member States to increase opportunities for learning and sharing in the regional measles elimination effort.
Among the many effective strategic partnerships forged by WHO, the specific ones between WHO, UNICEF and Gavi that must be mentioned are as follows:

- identifying areas for improved collaboration and streamlining support to Member States through a Regional Working Group Meeting;
- assessing the requirement for Gavi support in different Member States, monitoring the progress in implementation of activities, and identifying key priority actions;
- establishing a partners’ working group for India and another for Indonesia.
1.4 KEY AREAS OF INTERVENTION

Technical leadership and ethical and evidence-based policy and programming options

The Regional Office has provided technical leadership to accelerate progress in the fight to eliminate measles and control rubella at both regional and national levels.

In 2014, in consultation with the Member States, global and regional experts and partner organizations, WHO set the road map for measles elimination and rubella control, launching the "Strategic plan for measles elimination and rubella/CRS control in South East Asia, 2014–2020". This seminal document provides an ethical framework within which the elimination programme functions. In 2014, WHO also helped Member States build their national plans for measles elimination and rubella/CRS control, which were tailored to the health programme of each individual country.

Building sustainable institutional capacity is an important aspect of the support that WHO offers to the Member States in the Region. In 2018, interventions
WHO supports each Member State with customized solutions that work within the broad framework of the Regional Guidelines and are realigned with the national immunization programme.
were introduced to support Member States to successfully develop proposals to Gavi. The proposals were for follow-up supplementary vaccination campaigns, capacity-building of measles and rubella laboratories through site visits and regional training workshops, and capacity-building of the EPI through dissemination of updated surveillance guidelines on measles, rubella and CRS and data quality assessment through hands-on skills workshops.

**Benchmarking norms and standards**

In 2017, a Regional Surveillance Guide set out the ground rules for conducting elimination-standard surveillance for measles, rubella, CRS and other vaccine-preventable diseases. Based on a number of rigorous consultations and deliberations on standards with programme officers of Member States, academics, regional experts and WHO country office teams, this has now become the gold standard for surveillance. As a result, surveillance has become more sensitive across the Region, with case-based surveillance becoming the norm in Member States. The *regional surveillance guide* has provided a framework for Member States to develop and/or update their own national surveillance guides for measles and rubella.

A regional-level, independent evaluator in the form of the South-East Asia Regional Verification Commission (SEA-RVC) for measles elimination and rubella/CRS control was established in March 2016. This Commission monitors each Member State in the Region, based on the norms and standards it established in its very first meeting. Three criteria and five lines of evidence are the measures used to verify measles elimination and rubella/CRS control throughout the Region. This ensures that every Member State is evaluated using the same rigorous process in judging the progress towards measles elimination and rubella control. Based on these criteria and lines of evidence, the Commission in 2018 verified that Bhutan and Maldives have sustained measles elimination, and that DPR Korea, Sri Lanka and Timor-Leste have achieved measles elimination, while Bangladesh, Bhutan, DPR Korea, Maldives, Nepal, Sri Lanka and Timor-Leste have controlled rubella transmission.
The South-East Asia Regional Verification Commission (SEA-RVC) for measles elimination and rubella/CRS control was established in March 2016.
Providing technical support and building sustainable institutional capacity

Each Member State in the Region has a unique national programme on immunization. Programmes have started at different times and evolved in different ways. For example, when the measles elimination and rubella control goal for the Region was set, Bhutan already had the measles and rubella vaccine as a part of its routine immunization while India first introduced measles-containing vaccine and then the measles and rubella vaccine. Case-based surveillance was also introduced at different times in different Member States. As the milestones for each country differ, WHO supports each Member State in moving forward to achieve the next milestone on its road to complete measles elimination and rubella control.

Three criteria and five lines of evidence are the measures used to verify measles elimination and rubella/CRS control in the Region.
A glimpse of how the Regional Office supports Member States of the Region

In 2018 alone, WHO provided support:

- to curtail transmission of measles and rubella in the refugee camps of Cox's Bazar in Bangladesh;
- to prevent re-establishment of measles in Bhutan following an importation of the virus and also build sustainable institutional capacity through improved and updated outbreak response and surveillance;
- to develop the national strategic plan for measles and rubella elimination in DPR Korea, enhance capacities within the health system and develop a successful proposal for a measles and rubella supplementary vaccination campaign;
- to implement supplementary vaccination campaigns through pre-campaign readiness assessments, intra-campaign and post-campaign monitoring in India, Indonesia and Timor-Leste;
- to develop successful proposals for Gavi for follow-up supplementary vaccination campaigns to Myanmar and Nepal;
- to enhance the capacity of programme personnel in all 11 Member States on updated surveillance guidelines and data quality assessment;
- to strengthen the measles and rubella laboratory network and ensure quality through a laboratory quality management system (LQMS) in all laboratories and re-organize the accreditation review process in the Member States that have multiple laboratories so as to sustain the quality of the measles and rubella laboratory network.
WHO provides technical support to Member States on a day-to-day basis, as the need arises. It covers activities as disparate as assisting in efforts to curtail the transmission of measles and rubella at Cox’s Bazar, where nearly 1 million displaced persons live in camps, to investigating and conducting molecular epidemiology, to helping Member States develop their National Strategic Plan for Measles and Rubella Elimination. Field visits, hiring of experts and consultants to support country programmes and remote assistance through long-distance mentoring are all part of the effort that the Regional Office undertakes.
Monitoring and trend assessment for measles and rubella transmission

Measles disease or outbreaks are indicators of gaps and deficiencies in immunization programmes. Given its critical impact on under-5 mortality, the measles elimination and rubella control programme receives high-level advocacy and monitoring. Advocacy keeps the programme alive and relevant, while careful and high-level monitoring ensures that the Strategic Plan recommendations at both the regional and country levels are adhered to. The Immunization Technical Advisory Group (ITAG) provides guidance at the regional level. It is worth noting that this is the only WHO Region that, in addition to the regional ITAG, has a National Immunization Technical Advisory Group (NITAG), comprising independent experts, established in each of the 11 Member States. The presence of NITAGs leads to bolstering of the measles elimination and rubella control programme through high-quality implementation and to making improvements in the Strategic Plan for each Member State. The Region, since 2003, has been publishing a weekly bulletin on laboratory and surveillance performance, with more measles-related indicators added in 2014 to ensure data quality so that corrective action can be taken wherever needed.
Every Member State of the Region has established a National Verification Committee (NVC) to monitor progress of the immunization initiative at the national level and report findings to the SEA-RVC. NVCs are independent and expert bodies that contribute to high-level monitoring, which is a hallmark of the measles elimination effort. It is thus the only WHO Region to have national-level verification committees in all the Member States. Although NVCs require strengthening and adequate resources, this is a pathbreaking initiative that can greatly help in delivering a high-quality programme across the Region.
When the first phase of the supplementary vaccination campaign in India was besieged by fake news that drastically reduced immunization coverage in the early stages, WHO along with its partners helped the country to revise and put in place a robust communication and social mobilization strategy. This helped to prevent anti-campaign rumours and vaccine hesitancy in the subsequent phases. The learning from India was shared with the other Member States of the Region, who applied it during their campaigns as well.

**Shaping the research agenda**

The Regional Office has been active in facilitating research. In conjunction with an ITAG, an operational research agenda was agreed upon as a priority for the Region. The agenda was drafted mainly to initiate research in India. Ongoing research includes a point-of-care testing device, contact assessment of measles cases, sero surveys to assess the immunity profile and an assessment of the differential diagnosis of fever and rash.

Innovations such as point-of-care testing, contact assessment, sero surveys, etc. are under way to bolster measles elimination and rubella control efforts.
The Regional Office has created a composite Excel-based tool on measles transmission that records and makes available details of each measles case in the Region. This is a significant shift away from the earlier outbreak-based response mechanism.

As early as 2014, WHO initiated country reviews to identify and close immunity gaps based on profiling of measles immunity in terms of birth cohorts of up to 40 years of age in all Member States across the Region. Subnational measles and rubella risk assessments are also conducted annually, which not only help assess progress but also develop subnational strategies and prioritize key activities.
1.5 SUCCESSES

With 75% fewer measles deaths in 2018 as compared to 2000, there is no doubt that measles elimination in the Region is on the right track. It has been seen that even a short span of five years between the start of the programme in 2014 and now, can make a significant dent of 23%. The report of fewer measles deaths is indeed heartening and infuses renewed energy into the Programme to close the final immunity gap that still exists in six Member States.
A mid-term review held in 2017–2018 measured the momentum of the Programme against the framework laid out in the Strategic Plan. Mandated to review the pace of the Programme, provide recommendations and refine strategies to advance progress towards the regional goal, the mid-term review noted with "cautious optimism" that significant progress has been made across all Member States, all of whose national governments are committed to the achievement of this regional goal.

The strategies are sound.

Measles elimination and rubella control have achieved significant momentum in the Region.

However, due to suboptimal implementation in some countries, the goal of measles elimination and rubella control will not be achieved by 2020.
The number of children now receiving the measles vaccine as part of routine immunization has also grown, with an average of 89% coverage in 2018, and six of the 11 Member States of the Region reporting more than 95% coverage of first dose of measles-containing vaccine. Two doses of the measles vaccine were administered in all 11 Member States in 2018, and the rubella-containing vaccine has been introduced in 10 Member States.

A high-quality laboratory network across the Region was recognized early on as being essential to the measles elimination and rubella control effort. Monitoring of laboratories in the Region, through both on-site and desk reviews, has helped to build their capacity for serology and virology testing for measles and rubella.

As a result, great strides have also been made in the area of surveillance, with the network of laboratories increasing from 23 in 2013 to 50 in 2018, of which 41 are accredited as being proficient in measles and rubella testing. Case-based surveillance of measles and rubella, supported by laboratory testing, has been initiated across the Region. Each country has at least one accredited national laboratory.

**Stronger laboratory surveillance**
Measles is the most infectious disease known to humanity. Its elimination is therefore a painstaking process as the slightest lowering of the guard allows the virus to jump back into the community, undoing the gains made in the past. Achieving the 95% coverage required for elimination in all Member States of the Region remains a challenge.

It is estimated that some 4 million children still do not receive measles-containing vaccine through annual routine immunization. Coverage of 89% has been achieved, but the push to achieve herd immunity through 95% coverage has still not been reached.

Low funding is another challenge. As the global resource envelope shrinks, a funding gap of US$1.3 per live birth looms large; current strategies are suboptimally implemented and the disease is either underreported or underestimated. The problem is rooted in low levels of commitment to the goal at subnational levels and therefore needs to be addressed locally. To a great extent, the measles elimination and rubella control programme has been a victim of its own success. The rapid progress of the campaign meant that the number of cases of measles and rubella reduced drastically and, as the saying goes, out of sight is often out of mind. Lack of visibility of the measles virus resulted in a degree of complacency that the virus has been defeated. But then, it lifts its head and horrific outbreaks occur – as happened in Thailand in 2018, when within a short span of just three months, more than 30 measles deaths occurred in a single area.

There is need for renewed hope and belief that success is possible. Just as no battle was ever won by soldiers who did not believe that victory was possible, this public health battle too needs belief and commitment from all stakeholders.
The story of five Member States that have successfully eliminated measles is inspiring. Of these, four Member States have controlled rubella. Though similar in the broad contours of their journey, each Member State has forged a unique experience that holds lessons for the other Member States, big and small, that are also walking down the same path towards measles elimination and rubella control.
Controlling Rubella
A reflection of how Bangladesh overcame rubella and congenital rubella syndrome

Bangladesh

Eliminating measles
A look at how Democratic People's Republic of Korea did it

DPR Korea

Towards the Rubella-free Dream
Maldives' journey towards overcoming rubella and congenital rubella syndrome

Maldives

A Killer Nailed
A recreation of Maldives' triumph over measles
SUSTAIN ACCELERATE INNOVATE

Confronting Rubella
The story of how Nepal protected its people from rubella and congenital rubella syndrome

Reducing Rubella
The story of how this island nation safeguarded its people from rubella and congenital rubella syndrome

A Double Victory
The story of how this young nation triumphed over measles and restrained rubella

Restraining Rubella
How Bhutan controlled the transmission chain for rubella and congenital rubella syndrome

BANISHED from Bhutan
The story of how a small mountain kingdom eliminated measles

Nepal
Sri Lanka
Bhutan
Timor-Leste
Confronting Rubella
The story of how Nepal protected its people from rubella and congenital rubella syndrome
**SIGNIFICANT EVENTS**

2018
Verification that Bangladesh has adequately controlled rubella and CRS

2017
National Polio and Measles Laboratory (NPML) last accredited

2015
Second dose of rubella-containing vaccine introduced in NIP; National Verification Committee (NVC) for Measles and Rubella established

2014
Measles and rubella catch-up campaign

2012
Second dose of measles-containing vaccine and MRI introduced in Expanded Programme on Immunization

2008
Case-based surveillance for rubella introduced*

2003
Mandatory reporting for rubella started

1979
First dose of measles-containing vaccine introduced in National Immunization Programme (NIP)

*There is no rubella-specific surveillance. Rather all measles IgM negative samples are tested for rubella IgM as per the National Guideline

The water lily is the national flower of Bangladesh and representative of the many rivers that run through the country. Known for its glorious and pristine beauty, the water lily here is a harbinger of a vibrant and healthy future for Bangladesh.
Small in land mass and population, big in determination and with the heart of a lion – or of the dragon that is their national symbol. That, in a nutshell, is the essence of Bhutan. This remote mountainous kingdom, nestled in the Himalayas, has a population of less than one million people, but it has ideas that are the size of giants and decisive actions that led to its eliminating measles and controlling rubella well ahead of the target date of 2020.
SIGNIFICANT EVENTS

1979
Launch of Extended Programme of Immunization
first dose of measles-containing vaccine

2006
Second dose of measles-containing vaccine and rubella vaccine introduced in routine immunization

2007
Case-based measles and rubella surveillance initiated

2010
Three outbreaks of measles

2012
Last endemic measles case

2019

Zero cases of measles for two years

Strengthened surveillance

Two outbreaks of measles; measles, mumps, rubella vaccine (MMR) introduced in routine immunization

Measles eliminated

Rubella controlled

2013 & 2014

2015

2016

2017

2018
Secured financing

The leadership in Bhutan has always been committed to the welfare of the people. Health, therefore, is a key concern. Strong investment in the development of the health sector since the 1960s was followed. In May 1998, the Bhutan Health Trust Fund was established. The Fund ensures that sufficient funds are available to meet all expenditure required for vaccines as well as other health initiatives.

Strong partnerships

Strategic partnerships, both international and local, have strengthened the delivery of universal health care. WHO, UNICEF, the World Bank, Japan Committee “Vaccines for the World’s Children”, OPEC and Gavi are some of the important international partners providing technical and financial support.

Strategies and delivery frameworks

The Ministry of Health is responsible for planning and implementing the fight to eradicate measles and control rubella. A comprehensive Multi-Year Plan 2014–2018 and strategic guideline ensure the effectiveness of the National Immunization Policy, which covers such aspects as immunization coverage and documentation, identification of target groups, reaching the unreached and quality assurance in the form of cold chain and logistics, safety and safe disposal of vaccine waste.
There is a three-tier system of health-care delivery in the country, with three regional referral hospitals at the apex. Of these, the autonomous Jigme Dorji Wangchuk National Referral Hospital is the only national referral hospital in Bhutan. Thirty district hospitals, 210 basic health units and 49 sub-posts provide primary care across the country. Outreach clinics carry out immunization and undertake measles and rubella surveillance. Overall responsibility for immunization activities lies with the EPI unit of the Department of Public Health under the Ministry of Health.

In 2006, a measles and rubella vaccination campaign reached out to 332,041 people in the 15–44 years age group, through 1495 immunization posts in a period of 11 days, achieving a coverage of 98%.
Immunization for all

Although Bhutan is a country of treacherous mountain terrain and far-flung villages where very few people live, the country has a strong health system in which health care is available to all.

Launched in 1979, the EPI introduced the measles vaccine for children at the age of nine months. Subsequent years saw the strengthening of the programme, and universal child immunization (UCI) was achieved in 1991. A second dose of the measles and rubella vaccine, administered at the age of 24 months, was introduced in 2006. Despite these efforts, there were three outbreaks of measles in 2010. This was followed by some years with no reported cases, but in 2016 there were two outbreaks. Though worrisome, these were found not to be indigenous, but to have originated from non-vaccinated children of nomadic families who had crossed the border. The measles and rubella vaccine was replaced by the measles, mumps, rubella vaccine that year.

Surveillance

Case-based measles and rubella surveillance was introduced in Bhutan in 2006, and strengthened in 2015 through the training of all health-care workers in hospitals and basic health units. Surveillance is meticulous, and under the National Early Warning Alert and Response Surveillance (NEWARS), any patient with fever and a rash is reported via an online web-based system to the Royal Centre for Disease Control (RCDC). An SMS alert is also sent to the Vaccine-Preventable Disease Surveillance Office and other relevant authorities.

Specimens are collected from all suspected cases and transported, with adequate cold chain maintenance, to the National Measles, Rubella Laboratory at the Royal Centre for Disease Control. This has been accredited by WHO since 2006 and does serology and virology tests on specimens for the entire country; genetic testing support is provided by the Regional Reference Laboratory in Thailand.
The NVC for Elimination of Measles, Rubella and CRS, formed on 29 September 2015 in Bhutan is mandated to monitor population-level immunity gaps, particularly in difficult geographical locations and among nomadic populations so that supplementary vaccination campaigns can be conducted. Part of the task of the NVC is to report progress to the SEA-RVC.

The RVC confirmed that Bhutan has achieved measles elimination and rubella control.
The Democratic People’s Republic of Korea, or DPR Korea as it is more commonly known, occupies the northern half of the Korean peninsula, with the capital city at Pyongyang.

DPR Korea describes itself as a self-reliant socialist state, and the concept of *juche* – the ideology of national self-reliance – was introduced into the Constitution in 1972. As such, most essential services, including health-care, education, housing and food production are subsidized or funded by the government. DPR Korea has been a member of the United Nations since 1991, and it is also a member of various international and regional bodies, such as the Non-Aligned Movement, the G77 and the Association of Southeast Asian Nations (ASEAN) Regional Forum.
SIGNIFICANT EVENTS

- **2018**: Verification that DPR Korea has eliminated measles
- **2015-2016**: Measles and rubella supplementary vaccination campaign for children aged 12 months–16 years in select areas
- **2014**: Country’s surveillance system ably detects three imported cases of measles from a neighbouring country
- **2007**: Nationwide measles-containing vaccine supplementary vaccination campaign for individuals ranging from 6 months to 45 years of age
- **2008**: Introduction of second dose of measles-containing vaccine; first accreditation of the National Laboratory for Measles and Rubella by WHO
- **2006**: Introduction of disease surveillance for measles and rubella
- **1997**: Switch to WHO-prequalified measles-containing vaccine
- **1967**: Introduction of domestically produced first dose of measles-containing vaccine
Leadership

Guided by the Supreme Leader, DPR Korea is fortunate to have his keen interest in the health and well-being of children. The Supreme Leader’s visit to the Taesongsan General Hospital in Pyongyang during the measles outbreak in 2014 provided the impetus to improve immunization delivery, which can now be benchmarked against high international standards. Taking this cue, the Ministry of Public Health (MoPH) ably manages the provision of health care, allocating responsibilities from the community level upwards so that there are no gaps or missed opportunities, and taking swift action to rectify any shortcomings.
Key players

Although largely self-reliant, the Government of DPR Korea recognizes the value of strategic partnerships to develop its immunization programme. Key partners in the fight against measles are WHO and other UN agencies that provide technical and financial support to the MoPH. The National Strategic Plan for Measles Elimination and Rubella Control names WHO and UNICEF as the agencies coordinating the introduction of the measles and rubella vaccine, and advocates increased use of international UN and non-UN agencies operating in the health sector as external monitors for activities financed by foreign funds.

Strategies and delivery frameworks

DPR Korea has a two-part National Strategic Plan (NSP) for Measles Elimination and Rubella Control, which recommends the introduction of the measles and rubella vaccine into both routine and supplementary vaccination campaigns in 2019. However, with no indigenous cases of measles for a three-year period, the focus shifted, and the NSP was revised in 2018 to concentrate on verification and to maintain the post-elimination stage.

A three-tier health system was established in the early 1960s. Primary care is provided by 6233 “Ri” clinics (people’s hospitals), which report to county hospitals. These in turn are overseen by provincial hospitals; there is a network of approximately 133 hospitals in the country. Their efforts are supported by other medical staff; hygiene and anti-epidemic stations (HAES) conduct epidemiological investigations and collect samples, and the chief of hygiene of each community identifies families with a sick child.
DPR Korea has an impressive record with no report of endemic measles case in the country for over 10 years. A domestically produced first dose of measles-containing vaccine was introduced as long ago as 1967. In the early 1980s, the EPI was launched and children aged between 12 months and 16 years were immunized with the measles vaccine. DPR Korea has, and maintains, national coverage of over 95%. When there was a measles outbreak in 30 counties in 2007, the government took swift action, conducting a nationwide campaign with the support of key partners such as WHO, UNICEF and other agencies. The current protocol is to administer two doses of the measles vaccine, the first at the age of nine months, and the second dose at 15 months. Replacement of the measles-only vaccine with two doses of the combined measles and rubella vaccine is being rolled out between 2018 and 2020.
Surveillance

2006 witnessed the introduction of case-based surveillance for measles and rubella, and in 2007 mandatory reporting was initiated. Cases of fever and rash are reported by the chief of hygiene of the village to the household doctors who are responsible for making daily visits to the community. These are investigated and, if required, referred to the Hygiene and Anti-Epidemic Station for further epidemiological investigation. Performance is monitored via a weekly reporting system.

The National Measles–Rubella Laboratory was first certified by WHO in 2008. Laboratory surveillance is outstanding, and has consistently scored 100% on all parameters since 2012. Specimens from all suspected cases of measles or rubella are transported swiftly and safely, ensuring adequate cold chain maintenance. The laboratory continues to provide investigative facilities for the entire country. Of the 135 suspected measles cases tested at the laboratory in 2014, three were found to be positive. These are the last cases of measles to have been identified in DPR Korea.

Verification

In DPR Korea, the five-member NVC was formed in June 2014, and charged with verification of polio as well. With a holistic overview of the programme, the NVC initiated boundary quarantine to block the spread of measles and rubella, and after closely evaluating the criteria set by WHO for elimination of the disease, requested independent verification from the WHO RVC. On 2 August 2018, the SEA-RVC verified that DPR Korea had successfully eliminated the measles vaccine, two years ahead of the regional target.
DPR Korea has a unique system of household doctors. Through this system, frontline health care is brought to the people in their own homes, as fully qualified medical doctors make daily visits to the 130–170 households in their care. The system is followed in both rural and urban areas – a great boon for health care in general and particularly useful in the early tracking of any disease outbreak.
A tropical island paradise, Maldives comprises 1192 islands located in the Arabian Sea around 1000 kilometres from the mainland of Asia.

Maldives is one of the smallest countries in the world, and certainly one of the most geographically dispersed, being spread over some 90 000 square kilometres. With a population of under 500 000 people, the country sees well over 1 million tourists each year. Despite this influx, Maldives has been successful in the quest to eliminate measles.
SIGNIFICANT EVENTS

1981
First dose of measles-containing vaccine introduced

1985
Expanded Programme on Immunization (EPI) launched

1994
Verification of completion of all childhood vaccinations at school entry

2005-2006
Measles and rubella mass vaccination campaign held targeting 6–25-year-old males and 6–35-year-old females

2007
Measles, mumps, rubella (MMR) introduced in routine immunization following mass vaccination of children aged 18 months–6 years

2013
WHO South-East Asia Regional Committee resolution on measles elimination and rubella/CRS control by 2020

2014
Case-based surveillance for rubella started; mandatory reporting of measles and rubella

2015
National Verification Committee established

2017
Measles elimination verified

2018
Rubella control verified
Leadership

In the words of the WHO Regional Director, "Maldives has once more shown us that when dedicated men and women come together under committed leadership, they can achieve their goals, surely and convincingly." The commitment that Maldives has made to the health of its people is written into the Constitution of the country: Article 23 guarantees every citizen the right to universal and quality health-care. This Constitutional commitment has been further strengthened with the introduction of universal health insurance in 2011, and health insurance with no ceiling in 2014. It is guided by the seniormost leaders of the country.

Key players

Maldives has long recognized that an island country by geography cannot and must not be an island unto itself. It has, over the years, welcomed international cooperation to assist in meeting its health goals. The relationship between Maldives and WHO goes as far back as the 1950s, and in 1965 WHO was the first UN agency to establish a country office in Malé. WHO, UNICEF, CDC and Federation of the Red Cross and Red Crescent Societies, as well as other international agencies, have provided the Government of Maldives with significant technical assistance in its health-care initiatives, including the immunization programme. In addition to working with international partners, the Health Ministry has worked closely across the government to deliver the immunization drive, making it a joint effort with the Ministries of Education, Tourism, Housing and Infrastructure and Economic

Intra-government partnership enhanced the reach and effectiveness of the measles–rubella vaccination campaign.
Communication has been a force multiplier in Maldives. In addition to more traditional methods of communication and information-sharing, the health authorities of Maldives also make use of up-to-date technology and social media platforms. They mobilize communities via Viber, Facebook, Twitter and Instagram, and overcome the barriers of distance by conducting teleconferences. As a result, the entire population was sensitized and energized for the measles and rubella campaign.
Development. Together, the various arms of government have played their part in reaching all sections of the population. At the local level, the health authorities worked closely with councils on the immunization programme.

**Strategies and delivery frameworks**

Providing health care to a population dispersed over more than a hundred islands separated by vast tracts of ocean is no straightforward task. The Government of Maldives has put in place a number of multilayered plans, the most recent of which is the Health Master Plan 2016–2025. The Maldives Technical Advisory Group on Immunization has established immunization and surveillance strategies, including a comprehensive multi-year plan,

The health infrastructure has come a long way from the days when hospital boats were the only source of health care available to most islanders. Today, every single inhabited island has a permanently manned health facility providing basic health services, with at least one medical doctor and trained nurses. The staff at these health facilities are key players in the fight to eliminate measles and other vaccine-preventable diseases, as they

Zero case reporting since 2017 ensures that no case of measles or rubella can go unreported.
undertake surveillance activities and administer vaccines. Prescribed drugs are provided free of cost by the pharmacy on each island, and adequate facilities exist for maintaining the cold chain. Every group of two–four atolls has a specialty hospital that can cater to between 5000 and 15 000 people. Tertiary care is available in the capital of the country, Malé, which also has a WHO-accredited laboratory for measles and rubella.

The immunization journey

The fight to eliminate measles started in the early 1980s, when the measles vaccine was introduced, first on a limited basis, and then, in 1985, as a part of the EPI. The country saw two outbreaks of measles, in 2002 and 2005, and in 2007 the second dose of the MMR vaccine was introduced into RI. Community participation has always been key, and government initiatives have been met with an enthusiastic response from volunteers who have helped to achieve an understanding and acceptance of the value of immunization among the community. This has led to more than 95% target coverage. Such efforts bore fruit as the last endemic case of measles in Maldives was recorded in 2009.

Surveillance

All cases of fever and rash have been monitored as suspected measles cases since 1 January 2017, and the surveillance system is so efficient that cases anywhere in the country are detected within 48 hours. Weekly reports are filed by health facilities, even when their records show that there are no cases to report. All public health facilities investigate suspected cases using the standard case format within 48 hours of presenting, and throat swabs and blood samples are transported to the central laboratory at the Indira Gandhi Memorial Hospital (IGMH) in Malé, maintaining the integrity of the cold chain. The Health Protection Agency is notified immediately of all positive measles cases. This triggers the response plan to stop transmission.
Maldives has one centre for measles and rubella testing – this is the IGMH in Malé, which has been accredited by WHO since 2010. The laboratory maintains a comprehensive database of all suspected measles cases and shares information globally, thus playing a significant role in the elimination of measles in Maldives and the Region.

**Verification**

An independent three-member National Committee for Verification of Measles, Rubella and Congenital Rubella Syndrome (NVC) came into being in 2015. It tracked progress of the elimination efforts and, satisfied that endemic measles had been eliminated from Maldives, approached WHO for international verification of this fact. On 20 April 2017, the SEA-RVC verified Maldives as having eliminated endemic measles. In 2018, Maldives was also verified as having controlled rubella.

A determined nation

The requirement for children to have completed all childhood vaccines before being admitted to school was introduced in 1994, and vaccinators would travel by boat and water taxi between islands, facing great personal privation to deliver the immunization programme.
Confronting

Rubella

The story of how Nepal protected its people from rubella and congenital rubella syndrome
Verification that Nepal has adequately controlled rubella and congenital rubella syndrome

Second dose of measles- and rubella-containing vaccine introduced in EPI; National Verification Committee formed; subnational-level supplementary vaccination campaign (measles and rubella vaccines) conducted (6–59 months)

2016
Subnational-level supplementary vaccination campaign (measles and rubella vaccines) conducted (9–59 months); National Public Health Laboratory last accredited

2015
2012–2013
Measles and rubella wide age-range campaign (9 months–15 years)

2012
Full Immunization Declaration initiative introduced; measles and rubella campaign conducted (9 months–15 years of age)

2010
Mandatory reporting on measles and rubella started

2004
Outbreak surveillance started

1988
First dose of measles-containing vaccine introduced as part of the EPI

Source: Country report and WHO UNICEF estimates of national immunization coverage series
The “pearl of the Indian Ocean”, the Democratic Socialist Republic of Sri Lanka is one of the oldest democracies in South-East Asia, becoming an independent country in 1948.

With a coastline that is 1585 km long, a warm tropical climate and a documented history that goes back 3000 years, the country today has a population of almost 21.5 million people, spread across nine provinces and 26 districts. Sri Lanka is the most recent country in the WHO South-East Asia Region to have eliminated measles throughout the land.
Veriﬁcation that Sri Lanka has adequately controlled rubella and CRS

2019
Measles eliminated

2018
Verification that Sri Lanka has adequately controlled rubella and CRS

2016 onwards
Zero cases of measles

2015
First dose of measles, mumps, rubella (MMR) rescheduled to 9 months

2014
Outbreak response measles vaccination for 6–11 month olds

2011
First dose of measles-containing vaccine replaced with measles, mumps and rubella vaccine; schedule advanced from 9–12 months to 1 and 3 years

2010
National Measles, Rubella laboratory accredited

2007
Formats of case-based surveillance updated

2004
Catch-up measles and rubella campaigns for 16–20 year olds; case-based surveillance and zero reporting started

2003
Catch-up measles and rubella campaign for 10–15 year olds; school boys included in rubella vaccination

2002
Rubella vaccination for 14-year-old girls in schools

2001
First dose of rubella-containing vaccine at 3 years introduced

1996
First dose of rubella-containing vaccine introduced for women aged 16–44 years

1995
CRS outbreak (212 cases)

1994
Congenital rubella syndrome outbreak (275 cases)

1994
Congenital rubella syndrome outbreak (275 cases)
**Leadership**

The health of its people has been a primary concern of the Government of Sri Lanka from the time the country first achieved independence, and free universal health care for all citizens was established as long ago as 1952. As the WHO Regional Director has noted, “Sri Lanka has demonstrated that when the leaders of a country commit to health, the people reap rich dividends.” This is clearly exemplified by the principle that guides the functioning of the Ministry of Health, Nutrition and Indigenous Medicine: if a disease is preventable, it must be prevented.

The high level of commitment to health from the political leadership has created a strong health-care system in Sri Lanka; in fact, it is recognized as one of the best in the world.

**Key players**

The Government of Sri Lanka works closely with WHO, which provides technical support to the health programme of the country. UNICEF also works with the health authorities in Sri Lanka to assist in the planning and management of vaccination campaigns while Gavi helps the country to negotiate competitive rates for vaccine purchase from the government’s own funds.

Sri Lanka has a literacy rate of over 90%. Local communities are empowered and actively engaged in health initiatives. This contributes to the willingness and cooperation of citizens when it comes to participating in any public/government-led initiative.

**Strategies and delivery frameworks**

One reason for the success of the immunization programme in Sri Lanka is the detailed strategies that are in place at both macro and micro levels. The Advisory Committee for Communicable Disease (ACCD) takes responsibility for making evidence-based vaccine-
9 PROVINCIAL DIRECTORATES

26 REGIONAL DIRECTORATES

347 HEALTH AREAS

610 GOVERNMENT HEALTH-CARE UNITS
related decisions. Policy development, vaccine procurement, implementation, monitoring and evaluation are carried out by the Epidemiology Unit, Ministry of Health, which implements the decision of ACCD. National policies for monitoring the adverse effects following immunization (AEFI), and for health-care waste management, are in place, so that no aspect of the immunization initiative is left to chance. Detailed microplans were also created by each of the 26 districts.

The immunization journey

The measles vaccine was introduced into RI in 1984. In addition, supplementary vaccination campaigns have been conducted periodically to close the immunization gap, including a catch-up vaccination campaign in 2003, targeting 10–15 year olds, followed by a campaign in 2004 aimed at the 16–20 years age group and an outbreak response supplementary campaign in 2014 targeting the 6–11 months age group. Immunization coverage for two doses of the measles-containing vaccine has been at more than 95% since 2004, with at least 88% districts reporting coverage of more than 95% for both doses of measles-containing vaccine.
Surveillance

Reporting on measles, rubella and CRS is included in the routine surveillance system, and in the sentinel site zero weekly notification along with other vaccine-preventable diseases. The Central Epidemiology Unit monitors the timeliness and completeness of reporting.

A new strategic plan for 2017–2020 has put even more rigorous measures in place, strengthening the already robust procedures followed in Sri Lanka. The definition of a suspected measles case has been broadened to include all cases of fever and rash. More sensitive surveillance, early identification of geographical clustering, rigorous monitoring, case-based early notification and laboratory confirmation of all suspected cases are key to the Programme. Refresher training on the updated measles and rubella elimination strategies was given to the already highly trained medical staff to ensure that all frontline workers were aware of the new strategies.

Laboratory testing has been available since 1994, and epidemiological surveillance was incorporated in 2001. The National Measles Rubella laboratory, located at the Medical Research Institute in Colombo, was accredited by WHO in 2010.

Verification

The National Certification Committee for Polio Eradication and Measles, Rubella, Congenital Rubella Syndrome Elimination Verification Committee (NCCPE & MRCE) was formed in 2015, following reorganization of the existing NCCPE. This National Verification Committee is tasked with ensuring that the three criteria of documentation are met, and on 2 August 2018 the SEA-RVC for measles elimination and rubella/CRS control verified that Sri Lanka has adequately controlled rubella and CRS.

In 2019, the country achieved another huge milestone with the verification that it has successfully eliminated measles.
The vaccination programme has been broadened to cover unprotected adults. When there is a laboratory-confirmed case, all children under 15 years of age within a 1 km radius or in 50 surrounding households are screened and vaccinated, as are all those who have been in contact with the patient.
TIMOR-LESTE

Restored to Independence on 20 May 2002, the Democratic Republic of Timor-Leste has a population of under 1.5 million people, of which around a quarter live in the capital, Dili, and the rest are dispersed across a landmass of some 15 410 square kilometres, including the Oecusse Special Administrative Area, which is separated from the rest of the country by Indonesian territory.

Political instability and conflict in the early years of this new nation left a legacy of problems with an impoverished and internally displaced populace and destruction of the health infrastructure. Add to this natural disasters, such as flooding, landslides and droughts, and it is clear that the obstacles facing Timor-Leste were huge. Yet, despite these odds, the country has succeeded in its goal of eliminating measles and controlling rubella.
First dose of measles-containing vaccine introduced

Limited immunization services re-established following disruption surrounding the struggle for restoration of Independence

Supplementary vaccination campaigns conducted for children aged 6 months to 15 years

Supplementary vaccination campaigns conducted for children aged 9 months to 5 years; measles and rubella case surveillance started

Nationwide measles supplementary vaccination campaign conducted to provide measles vaccine, Vitamin A and deworming tablets

Second dose of measles-containing vaccine introduced; CRS surveillance started; 2 imported cases of measles reported

Mandatory reporting of measles and rubella cases started

Supplementary vaccination campaigns conducted for children aged 9 months to 5 years; measles and rubella case surveillance started

Supplementary vaccination campaigns conducted for children aged 6 months to 5 years

National Measles Elimination Verification Committee formed; rubella vaccine introduced; measles–rubella/oral polio vaccine catch-up immunization campaign conducted

Verification that Timor-Leste has met both goals: endemic measles eliminated and rubella controlled

Significant events:

1989

- First dose of measles-containing vaccine introduced

2000

- Limited immunization services re-established following disruption surrounding the struggle for restoration of Independence

2003

- Supplementary vaccination campaigns conducted for children aged 9 months to 5 years

2006

- Supplementary vaccination campaigns conducted for children aged 6 months to 15 years

2009

- Supplementary vaccination campaigns conducted for children aged 9 months to 5 years; measles and rubella case surveillance started

2011

- Nationwide measles supplementary vaccination campaign conducted to provide measles vaccine, Vitamin A and deworming tablets

2014

- Mandatory reporting of measles and rubella cases started

2015

- Second dose of measles-containing vaccine introduced; CRS surveillance started; 2 imported cases of measles reported

2016

- National Measles Elimination Verification Committee formed; rubella vaccine introduced; measles–rubella/oral polio vaccine catch-up immunization campaign conducted

2018

- Verification that Timor-Leste has met both goals: endemic measles eliminated and rubella controlled

Legend says that Timor-Leste was formed out of a crocodile who remembered the kindness of a young boy who saved its life. As a token of gratitude, the crocodile fulfilled the boy’s wish of exploring the world. As it carried him on its back, the crocodile and the boy travelled the oceans and followed the sun for years. After the crocodile’s death, its rigid back grew to form the mountains and its scales the hills of Timor, becoming the home of the kind boy and his children – the people of Timor-Leste.
Leadership

For a health initiative to succeed, commitment from the top is essential. Fortunately for the people of Timor-Leste, each successive government has been focused on achieving universal health care. From a starting position of merely 20 doctors to serve the entire population, swift and effective investment in health care meant that by 2017 this number had risen to almost 900 doctors. As well as investing money, the leadership has also taken a more personal and hands-on approach, with the Prime Minister, himself a medical doctor, delivering the first vaccination of the National Measles, Rubella and Polio Immunization Campaign on 13 July 2015. Quarterly meetings with local leaders at village and sub-village levels have also helped to disseminate information on the importance of immunization, and have contributed to the success of the drive at the community level.

Key players

Strategic partnerships, coupled with the vision and guidance of the leadership of the country lie at the heart of the success that Timor-Leste has achieved. WHO has been a key partner since 1999, providing continuing
support to the Ministry of Health. UNICEF, United Nations Population Fund (UNFPA), World Food Programme (WFP), the World Bank, the European Union, Gavi and the Global Fund to Fight AIDS, Tuberculosis and Malaria have all contributed resources and/or technical expertise. Timor-Leste has bilateral partnerships with Member States across the Region and the world, with the Cuban Medical Brigade providing resources, support and training.

Strategies and delivery frameworks

Despite the violence that ravaged the country in 2006, the government has implemented effective strategies to achieve its goal of universal health care. The Programa Nasional Saúde na Família (National Programme of Health in the Family) is the bedrock of the health-care system. The programme places great emphasis on the provision of primary health care to all citizens as the best method of "leaving no one behind". It has, as a result, reached families who previously had no dealings with the health-care system. Hence, it has successfully traced and immunized children who would otherwise have been left behind.

Health services are delivered via 602 integrated community health services (SISCA) posts, which provide access to basic primary health care at community and household levels; secondary and tertiary care is provided via a network of community health centres, referral hospitals and the national hospital. Medical teams play a crucial role in providing records for use in health campaigns. The government also employs technology effectively, using media and radio to reach communities.

The immunization journey

The history of immunization in Timor-Leste is fractured due to past political turmoil, making the achievement of measles elimination all the more praiseworthy. The first dose of measles-containing vaccine was first introduced into routine immunization in 1989,
In September 2017, a unique two-year "twinning agreement" was signed between the governments of Timor-Leste and Sri Lanka, which will allow Timor-Leste to access Sri Lankan expertise in effective management of immunization initiatives such as the EPI. As Timor-Leste transitions out of the support of Gavi, this expertise will help the Timor-Leste programme to become self-reliant and financially stable.
but was disrupted during the struggles to restore independence. It was reintroduced in a limited way in 2000. Four supplementary vaccination campaigns were conducted between 2003 and 2011, and in 2015 the Prime Minister launched a comprehensive immunization campaign for measles, rubella and polio. In 2016, two doses of the measles and rubella vaccine were introduced into RI through the EPI, administered at 9 and 18 months. A supplementary campaign in 2018 achieved more than 95% coverage among its target group of children aged between 9 and 59 months.

**Surveillance**

Surveillance has been in place since 2009, with mandatory investigation and reporting of all cases of fever and rash since 2014. Surveillance for CRS commenced in 2016. All levels of the health-care system, from the national hospital to community health centres, have dedicated surveillance staff who report on vaccine-preventable disease surveillance data on a weekly basis.

The National Public Health Laboratory in Dili investigates all reported cases. Functioning at elimination standard since 2016, the laboratory was accredited by WHO in February 2017.

**Verification**

In October 2015, the National Committee on Certification of Polio Eradication and Verification of Measles Elimination (NVC) was formed. The NVC meets regularly to review the performance of measles/rubella surveillance, and conducts field visits as a prelude to making recommendations to the government after assessing the quality of data and validating analysis and assessment.

On 2 August 2018, the SEA-RVC was able to verify that Timor-Leste has both eliminated measles and controlled rubella and CRS – a double victory.
Six Member States in the South-East Asia Region still have some way to go to achieve the goal of measles elimination. These six countries, Bangladesh, India, Indonesia, Myanmar, Nepal and Thailand, are all making sustained efforts to overcome the barriers they face in achieving 95% coverage for measles vaccine. Many innovative and inspiring strategies are being used in these countries, which could greatly benefit wider public health programmes. This chapter takes a look at each country’s journey so far.
3.1 USING QUALITY DATA TO STRENGTHEN SURVEILLANCE

Bangladesh faced a daunting situation – the incidence of measles rose from a low of 1.6 per 1 million population in 2015 to as much as 22 per 1 million population in 2017. However, a measles outbreak among Rohingya refugees in Cox’s Bazar, in 2018, shone a light on the strong surveillance and response system that the National Immunization Programme, with the assistance of WHO, has put in place.

Bangladesh introduced integrated measles surveillance in 2003 and case-based measles and rubella surveillance in 2008. Reporting is done through 787 reporting facilities across the country, including 143 active surveillance sites. WHO provides technical support to the Government for data collection and management as well as training of health staff for vaccine-preventable diseases. A system of zero reporting ensures that no suspected case of measles goes unreported.

WHO has helped the Ministry of Health and Family Welfare to set up a user-friendly dashboard for swift and accurate data-sharing. Surveillance and immunization medical officers of WHO provide assistance at the district and national levels.

Ensuring the data are accurate and free of bugs is a key concern that the Government of Bangladesh and WHO address jointly through an effective communication framework. Information-sharing and periodic meetings with national and subnational programme managers, weekly data reviews by the Technical and Data Team of WHO and two-way communication across the surveillance network through monthly WebEx meetings have shown that the country is using modern communication technology to effectively strengthen the health system. In addition, all partners such as WHO, UNICEF, Gavi, US CDC, among others, share the responsibility of periodic data quality assessment and necessary corrective actions with the Ministry of Health and Family Welfare.

Data management in Bangladesh is proving to be a game changer in strengthening the health system of the country.
Bangladesh is the only country where a coverage-evaluation survey to evaluate vaccination coverage at the subnational level is conducted on a regular basis.

**MEASLES AND RUBELLA VACCINATION COVERAGE IN BANGLADESH, 2018**

- First dose: 97%
- Second dose: 93%

Exploring technological options

Bangladesh provides free immunization for all children. However, as families have become more nuclear and more women have joined the workforce, parents often miss their children's vaccination dates. SMS reminders for vaccination due dates for children registered within the health system and a pilot project to assign a lifelong health identification number are innovative ways in which the Government of Bangladesh is trying to plug the gaps of people dropping out from the health system, including full immunization. If the health identification number proves successful in the pilot, it will enable health workers anywhere in the country to track a person's health information. Losses and dropouts due to internal migration would hence reduce substantially.
3.2 HARNESSING THE POWER OF COMMUNICATION

In a country as huge and diverse as India, closing the immunity gap by vaccinating over 404.6 million children in 29 states and seven union territories with an injectable vaccine delivered in campaign mode is indeed a challenge. Powered by major government funding, India’s eight-phase measles and rubella campaign is proving that a responsive and trained health force can achieve even difficult health targets.

In 2017, when the first phase of the measles and rubella campaign was launched, the ramifications of preparedness for such a large-scale outreach were unknown. Although targeting school-aged children and with a substantial part of the campaign being conducted in schools, teachers and school administrators were unprepared, private practitioners were not on board and neither was the media. As soon as it was launched, the campaign hit a wall of fake news on AEFI. Mainstream media carried stories and equally, if not more, damaging were the wildfire rumors about the campaign that spread on social media. Resistance to the vaccine was high. The country learnt quickly and recovered from this debacle by getting effective influencers – private practitioners, grassroots politicians, community leaders and media – on board. WHO supported the government in ensuring campaign preparedness at national and subnational levels. At district level, WHO surveillance medical officers worked closely with administration officials in ensuring that the districts could be marked as "Go" in the campaign-preparedness matrix that WHO had developed. Although short of the target, efforts are ongoing to reach 95% vaccination coverage in all districts of the country.

Super Sundays

In urban and semi-urban areas, Sunday was announced as the vaccination day in non-school centres. This helped mop up out-of-school children as well as those who had missed the immunization activity in their school. A boon for parents who stay busy from Monday to Saturday!
MEASLES AND RUBELLA VACCINATION COVERAGE IN INDIA, 2018

- First dose: 90%
- Second dose: 80%
Media matters

UNICEF, supported by WHO and other partners, helped Government of India to quickly put together a communication campaign to create a positive approach towards the measles and rubella campaign. This was a multipronged effort that involved taking steps such as:

► Using heroes in advertisements– a series of print and electronic media advertisements using Mr Amitabh Bachchan, the brand ambassador for the measles and rubella campaign, were aired.

► Airing of radio stories on channels such as Radio4Child and Zilla ki Halchal, helped reach out to people across the country, often through local radio stations. Local radio jockeys also did their bit in sharing information and positive anecdotes to encourage uptake of the vaccine.

► Sensitizing Indian journalists reporting on health and development issues in partnership with the Thomas Reuters Foundation and also with the Maulana Azad National Urdu University in Hyderabad.

Leveraging the power of the social mobilization network for regular outreach with influencers and religious leaders as well as with the community directly.

Social media comes of age

At each district, the Health Department used WhatsApp groups effectively. Customized messages for immunization officers/auxiliary nurse midwives (ANMs)/Accredited Social and Health Activitists (ASHAs)/nodal teachers/parents, etc. became a part of the measles and rubella campaign plan and added the dimensions of flexibility, localized information and rapid response. A designated social media consultant was embedded within the Health Ministry in most states. Other forms of social media, such as Facebook, were also used to share information, celebrate successes and create a buzz about the campaign. Both WHO and the Ministry of Health and Family Welfare put up FAQs on the campaign on their websites.
3.3 PRIORITIZING PREPARATION

In 2006, there were 55,000 reported cases of measles in Indonesia. In 2017, there were a little more than 10,000 cases. Indonesia has made huge strides in increasing measles vaccine coverage, strengthening its RI programme, undertaking a nationwide crash immunization programme in high-risk areas in 2016 and carrying out two phases of supplementary vaccination campaigns in 2017 and 2018.

Measles and rubella vaccination campaigns have received huge political support at every level in the country and this has energized the programme, giving it visibility and priority. The country has made strategic choices in the management of its campaigns, paying great attention to preparing the groundwork. Using the WHO Supplementary Vaccination Campaign Readiness Assessment Tool, it conducted two rounds of readiness assessment: one four weeks prior to the campaign and another just a week before the campaign. The district-level assessment was a joint effort by the EPI staff of MoH, WHO, UNICEF, CDC, and partners during which 87% of districts and 22.6% of health centres were visited. High-risk districts were prioritized with assessment being carried out in 100% of the sites. Indonesia adapted the Supplementary Vaccination Campaign Tool to align with the national measles–rubella campaign operational guidelines, which improved its relevance at the district and puskesmas levels.

As a result of the effective preparation, in Phase 1 of the measles and rubella campaign, of the 118 districts in six provinces of Java Island that were covered, only three districts had under 90% coverage and over 90% of the districts achieved the 95% coverage target.
MEASLES AND RUBELLA VACCINATION COVERAGE IN INDONESIA, 2018

- First dose: 75%
- Second dose: 67%

Introduction of the One Gate Policy in Indonesia brought about seamless vaccine and logistics management at all levels of the health set-up. In 2017, RapidPro technology was introduced during the measles campaign to provide real-time monitoring of vaccine coverage and enable rapid response at every level of the health structure. Using this free app, field workers can input data on vaccine coverage from their mobile phones. Data are aggregated and can also give details of coverage at national, province, district and health-facility levels.
In 2015, Myanmar recorded a mere six cases of measles. In 2017, it recorded 1306 cases. Surprisingly, and significantly, the areas that recorded the highest coverage in RI and supplementary vaccination campaigns also recorded the highest number of cases. Those with a lower coverage also had a lower incidence of measles cases. Approximately 44% of the cases were among adolescents of 15 years or above, pointing to significant numbers that had missed immunization. Something was clearly wrong with the data.

Diligent surveillance needed to be assured and sensitivity increased. Laboratories had an alarmingly low discard rate while information flow and response to outbreaks was slow. The Government of Myanmar swung into action and with the support of WHO and other partners conducted a four-step data quality self-assessment (DQSA) between 1 and 10 August 2017 to identify and close the gaps. The purpose of the DQSA was to strengthen the programme and address issues such as accurate assessment of numbers, including from hard-to-reach, migrant and temporary populations; improve alignment of the Health Management Information System (HMIS) and EPI; secure vaccine logistics management; establish effective supervision standard operating procedures (SOPs) for consistent programme delivery; improve training, data management and analysis, monitoring; etc.

Approximately 190 high-risk population areas were identified for action. Through initiatives such as the Crash Programme in the remote Naga Self-Administered Zone, vaccination with all antigens was provided to under-5 children and steps were taken by the Ministry of Health and Sports, supported by WHO regional surveillance officers, to respond to and control outbreaks. Similarly, outbreak response measles campaigns ran for children aged 9 months–15 years in five townships of Yangon in February 2017. Myanmar responded swiftly and effectively to sharpen all systems needed for quality immunization delivery and regain the momentum for measles elimination and rubella control.
Sixteen teams conducted the Data Quality and Surveillance Assessment in 16 townships in eight regions that were representative of the entire country.

MEASLES AND RUBELLA VACCINATION COVERAGE IN MYANMAR, 2018

- First dose: 93%
- Second dose: 87%
3.5 CREATING OWNERSHIP – FROM FULLY COMMITTED FUNCTIONARIES TO FULLY IMMUNIZED DISTRICTS

Providing health services in Nepal is no easy task. Remote villages, difficult terrain, a devastating earthquake in 2015 and recent administrative restructuring in the country all pose challenges. Yet Nepal is making gains in public health initiatives. In 2017, it eliminated trachoma and is now confident of eliminating measles and controlling rubella. The leadership in Nepal has followed an effective strategy of empowering districts and encouraging them to work not only to ensure high coverage with the measles vaccine but to strive for full immunization coverage of all recommended vaccines. With this strategy, the push was originally to ensure that all one-year olds were fully immunized. However, more recently, the age for full immunization has been increased to cover children up to the age of 2 years.

Stakeholders at the district level all recognize the importance of their role in contributing to the success of the district in achieving full immunization. With small units such as villages and urban municipalities as the building blocks for success, the first effort is to create a local focus on immunization. Hence, the village development committee secretaries, executives of municipalities, heads of health facilities, district-level officials, political leaders, media persons and local representatives of social organizations spend three days at a sensitization workshop. This creates a buy-in that goes beyond just professional commitment. It captures the “hearts and minds” of the stakeholders, heightening their commitment and ownership towards ensuring that every child in their area is vaccinated. While media and local influencers inspire and motivate the community towards a shared dream, focus is also given to operational aspects such as recruitment of vaccinators and incentives to female community health workers to achieve quality
vaccination for every child in the target age group. Although immunization is given at fixed session sites on a daily, weekly or monthly basis, people in hard-to-reach areas are served by mobile clinics, which make at least four visits to such areas annually to ensure that no child is left behind.

When the community takes responsibility for getting every child vaccinated and when it is convinced that all children in the target group have received all their due vaccines, the district coordination committee verifies the results. It does this through a random survey before making a full immunization declaration. Professionalism is high and checks are maintained at all levels to ensure quality service delivery and accuracy of data, but once an administrative area’s status of full immunization has been validated, it is time to celebrate. A certificate of full immunization is presented to the district or municipality in a felicitation ceremony.

As of June 2019, 56 districts out of 77 were declared as Fully Immunized Districts while first dose of measles-containing vaccine achieved a coverage of around 81% and second dose of measles-containing vaccine achieved a coverage of 66%.
3.6 OVERCOMING OBSTACLES

The big picture for Thailand looked rosy. By 2013, the country had an average national vaccine coverage of between 90% and 96%. The devil, however, was in the details as disaggregated data showed low vaccine penetration in the provinces of the deep south. Focusing on the deep south was a clear necessity if measles was to be eliminated and rubella controlled in Thailand, but this was no easy task as skepticism regarding AEFI was rife and insurgency and civil strife dogged the deep south, or Health Region 12, which has 23% (over 1.1 million) of the population in the under 15 years age group. Working in the region was unsafe for government health functionaries.

To strengthen the immunization programme, a national-level strategic plan (2017–2021) introduced measures such as:

- fortifying vaccine coverage data by using an electronic database, or the Health Data Centre (HDC) system;
- conducted a national 30/60 clustered survey every 5 years;
- tailoring the immunization programme for high-risk population clusters such as migrants, urban areas with pockets of underserved population, the deep south region, and border areas.

The Government of Thailand extended unstinting support to achieving the vaccine coverage target. Development partners such as WHO, UNICEF and Gavi have also provided technical and financial support for measles elimination and rubella control efforts.

Thailand has proved that local leadership is crucial for the success of a health campaign. When huge gaps in children’s vaccinations in the area came to light, the governor stepped in and, with the provincial communicable disease committee, took bold decisions to rectify the situation. Instead of limiting themselves to the government health set-up,
they reached out to imams, madrasa leaders and other local influencers to mobilize support for measles and rubella immunization. Private practitioners in the area also played a huge role. The "I’M HERE" mantra of Influencing, Motivating, Honouring, Encouraging, Recognizing and Empowering worked. Detailed district-wise planning went hand-in-hand with interventions from local leaders and extensive, localized and targeted behaviour change campaigns were conducted in each district.

Strong surveillance and evaluation systems were put in place, catch-up campaigns carried out to cover children who had missed out on the vaccine earlier and emergency outbreak centres were set up at provincial and district levels to assess the situation and provide recommendation on a daily basis. Slowly but steadily vaccine coverage started to increase, based on the understanding among the authorities that this would not be a single campaign, but a continuous process of activities until the target of 95% coverage for all children in the target age group was achieved.
Great progress has been made since the clarion call was given for measles elimination and rubella control in the WHO South-East Asia Region. At the regional level, the programme has been strengthened and systems put in place to support Member States in their individual efforts to achieve the required measles immunization coverage. Periodic consultations, reviews and sharpening of the strategy at the regional level have kept the focus on the collective goal of measles elimination and rubella control.

Five Member States of the Region have achieved the goal of measles elimination and six Member States have successfully controlled rubella. Committed national leadership, support from development partners and strong implementation have achieved what seemed a mere dream in 2013. The sheer will of the gigantic health machinery that has worked relentlessly to ensure that children in the target age group, whoever and wherever they were, received the required vaccines cannot be sufficiently complimented.

But the road ahead is still bumpy. Six Member States in the Region have a lot of work to do to improve vaccine coverage and ensure strong and equitable implementation. National leadership is supportive of the efforts, but the trickle down to the last mile is slow.

Following an extensive review of data from across the Region, WHO undertook a consultation with the Member States on the feasibility of measles elimination and rubella control in the Region. It was widely agreed that the goal of measles elimination and
rubella control by 2020 would not be met and hence, it was suggested to revise the current goal for measles elimination and rubella control. All Member States unanimously agreed that the Region should adopt a new goal of measles and rubella elimination by 2023 and decided to put this forward as an agenda item in the Regional Committee meeting in 2019 to endorse and adopt the goal. All Member States also agreed on a draft strategy proposed by WHO to “Achieve and Sustain Measles and Rubella Elimination in WHO South-East Asia Region: 2020–2024”.

It is now up to Member States to put their best foot forward for the children of the Region and ensure that this extended deadline is met.