

## **Measles, Rubella, and Congenital Rubella Syndrome Elimination Initiative**

High sustainable immunization coverage against measles and rubella, as well as stringent surveillance activities, lead the country to achieve the elimination targets.

### **Immunization against Measles**

Measles is a highly infectious viral disease that results in high morbidity and mortality in children. The disease leads to severe complications such as pneumonia (1-6%), severe diarrhoea (8%), middle ear infection (7-9%), blindness in children under 5 years, and brain inflammation or Subacute Sclerosing Panencephalitis (SSPE).

According to the hospital in ward statistics available at the Medical Statistics Unit, the annual incidence of measles in Sri Lanka during the period of 1951 to 1960 varied from 20 to 47 cases per 100,000 population. In the year 1982, a total of 13,273 measles cases (87 per 100,000) were reported through the intensive surveillance carried out before the introduction of the measles vaccine.

The monovalent measles vaccine was introduced into the National Immunization Program in Sri Lanka in 1984 targeting children at the age of 9 months. Since then, there was a remarkable reduction in the morbidity and mortality related to the disease. In 1998, 263 cases were reported from government hospitals (incidence 0.5 per 100,000).

Sri Lanka experienced an unexpected massive measles outbreak in October 1999, where 15,000 suspected cases of measles were reported to the Epidemiology Unit. The outbreak was predominantly among unvaccinated adolescents. In response to this outbreak, an island-wide

measles catch-up campaign was launched initially targeting unvaccinated adolescent cohort aged 10-14 years in 2003 with high coverage of 95%. In 2004, 16-20-year-old cohort was immunized using Measle-Rubella vaccine (MR) with 72% coverage. This outbreak led to the introduction of a second dose of Measles containing vaccine.

In 2001, Measles-Rubella containing vaccine (MR) was introduced into the National Immunization Program and the children were immunized with two doses of measles to ensure high population immunity against measles transmission among the young population. Under the National Immunization Program, all children received the Measles vaccine at 9 months and Measles-Rubella (MR) vaccine at 3 years.

In 2011, a national policy decision was taken to replace both the measles vaccine at 9 months and the MR vaccine at 3 years with Mumps-Measles-Rubella (MMR) vaccine, and shifted the first dose of measles-containing vaccine to one year of age for better seroconversion. This was decided considering the fact that the country had a very low incidence of measles for a considerable period of time.

During 2013-2015, on the verge of elimination, Sri Lanka experienced another measles outbreak where around 3000 cases were reported predominantly among unvaccinated infants. In response to this outbreak, the country carried out a national-level supplementary immunization activity (SIA) in 2013, targeting children aged 6 months to 12 months. Following this outbreak, it was decided to revert to the MMR 1<sup>st</sup> dose at 9 months of age, continuing the second dose at 3 years.

The country has achieved and sustained a very high immunization coverage against measles for more than two decades which largely contributed to the control of disease in the country. The last endogenous case of measles reported in the country has been in April 2016.

## **Immunization against Rubella and Congenital Rubella Syndrome**

Rubella is a mild infection affecting children and adults. However, rubella in pregnant women can lead to adverse pregnancy outcomes such as abortions and babies with congenital deformities, as the virus can get transmitted to the foetus across the placenta.

A rubella epidemic occurred in Sri Lanka in 1994 and 1995, which led to 275 and 169 Congenital Rubella Syndrome (CRS) cases respectively. In response to this outbreak, the Rubella vaccine was introduced into the National Immunization Program in 1996, targeting all reproductive-aged women of 15-44 years, with the objective of preventing CRS. This was carried out as an island-wide community-based vaccination program.

Later, in order to control Rubella transmission, both male and female children were immunized against Rubella with two vaccines through the National Immunization Program; monovalent rubella vaccine was introduced in 1996 and Measles and Rubella vaccine (MR) in 2001. Additional campaigns were carried out in 2003 targeting all children aged 10-14 years and in 2004 targeting all youth aged 16-20 years in order to achieve immunization coverage.

Before 2011, the first dose of MR vaccine was given to male and female children at the age of 3 years, while Rubella immunization to all children was given at grade 8 in school (13 years) as a monovalent Rubella vaccine. In 2011, both monovalent Rubella vaccine and MR vaccine were replaced by the MMR vaccine which was given to all children in the country at the age of 9 months and 3 years of age.

Reported immunization coverage with a single dose of a rubella-containing vaccine has been more than 95% since 2001. Reported rubella cases fell from 364 (incidence 19/million population) in 1999 to 12 cases (incidence 0.6/ million population) in 2014, while reported CRS cases fell from 22 cases (incidence 7/100 000 live births) in 2002 to 3 cases

(incidence  $<1/100\,000$  live births) in 2014. Last endogenous cases of rubella and Congenital rubella syndrome were reported in year 2015.



### **Surveillance of Measles, Rubella, and Congenital Rubella Syndrome**

Measles, Rubella, and Congenital rubella syndrome have been notifiable diseases in Sri Lanka for over three decades. Surveillance of measles, rubella, and congenital rubella syndrome was strengthened during 2005-2010 when all suspected cases of measles, rubella, and congenital rubella needed to be notified to the Epidemiology Unit and laboratory confirmed. In par with the global Measles, Rubella, CRS elimination initiative, rubella and measles surveillance was further intensified, where the case definition for surveillance was broadened to “any person with fever and maculo-papular rash” was required to be notified as either suspected measles or rubella case based on the clinical judgment of the health care personal and subjected to laboratory investigation. Furthermore, under

this accelerated surveillance mechanism all hospitals where specialist paediatrician and/or physicians are available, were considered sentinel site hospitals for active surveillance for Measles/Rubella/CRS with mandatory weekly reporting. In addition, the Medical Officer of Health (MOH) of the patient's residence has to proceed with the routine surveillance procedure, contact tracing, and outbreak prevention for all notified or community-detected cases of Measles, Rubella, or CRS and complete the special field investigation form for all clinically confirmed measles or rubella cases irrespective of the laboratory confirmation status or the availability of results.

The strategy of testing all cases with fever and maculopapular rash for both measles and rubella is identified as an essential component in heading for elimination and sustaining post-elimination status. Early detection of imported measles and rubella cases is another key objective of measles-rubella surveillance.

Apart from the strengthened disease surveillance activities, achieving high coverage of measles and rubella vaccination, strengthening country preparedness for outbreak prevention and response, adequate patient care, and management were some of the other strategies that helped to achieve and sustain the elimination target. A population-based serological survey conducted in 2015 among people aged 1-40 years demonstrated a high level of immunity to measles in the community.

Due to the successful implementation of the measles, rubella, and CRS elimination initiative, the country achieved endogenous measles-free status in the year 2019 and endogenous rubella and CRS free-status in 2020, well ahead of the regional elimination target timeline.

Even during COVID-19 pandemic, during which a drastic drop in child immunization coverage was seen both globally and regionally, the country's immunization program was able to sustain the high vaccine coverage and keep the country's measles, rubella, and CRS-free status on track.

### **Resources**

1. [Measles, Rubella, CRS elimination initiative- Sri Lanka \(circular no. EPI/151/1/2017\)](#)
2. [MEASLES AND RUBELLA Elimination Sustainability Plan](#)