Introduction of Measles-Rubella (M-R) vaccine in routine immunization following M-R Campaign - National perspective

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Abstract:
In India, measles claims the lives of approximately 500 children daily and while 40000 babies are born with birth defects every year due to the Congenital Rubella syndrome. Despite this, the national vaccine coverage by Measles Containing Vaccine 1 & 2 (MCV1 & MCV2) is only 83% and 66% respectively, far below the expected 95%, while Rubella remains to be included in the schedule. The proposed campaign consists of the administration of a live attenuated virus of both the diseases, to be given to children between 9 months to less than 15 years. This drive has already been rolled out in stages and the first phase of the campaign was conducted from February 6 to February 28, 2017 in Karnataka, Tamil Nadu, Goa, Puducherry and Lakshadweep, vaccinating approximately 3.3 crore children.

Key words: Measles rubella vaccine, campaign, routine immunisation.

Introduction
Measles and Rubella are highly contagious airborne viral diseases that spread through the respiratory route. Measles is characterized by high fever, rash that spreads over the body, cough, coryza (running nose) and conjunctivitis (red watery eyes). It weakens the immune system & leads to serious complications like blindness, encephalitis, severe diarrhoea and severe pneumonia. Most measles-related deaths are consequences of its complications. On the other hand rubella infection is mild, mostly affecting children and young adults and presents with rash, low grade fever with occasional lymphadenopathy & joint pain. What is of grave concern is rubella infection during pregnancy, which can cause abortions, stillbirths and may lead to multiple birth defects in the new born, like blindness, deafness, and multiple cardiological defects, collectively called the Congenital Rubella Syndrome (CRS).1

In India, measles claims the lives of approximately 500 children daily. Over 40000 babies are born with birth defects every year because of CRS. India constitutes one third of both measles related deaths and children with CRS worldwide.1 Despite this, the national vaccine coverage by Measles Containing Vaccine 1 & 2 (MCV1 & MCV2) are only 83% and 66% respectively, far below the expected 95%. Moreover, vaccines against rubella, is a newcomer in the National Immunization Schedule (NIS) with phasic implementation.2

Measles and rubella have to be eliminated, among others, if we want to attain the Sustainable Development Goal (SDG target 3.2) of ending preventable deaths of newborns and children of under five years of age by 2030. This can be done by vaccination as both the diseases are vaccine preventable.

Rationale for measles-rubella (M-R) vaccination campaign-India3
There are widespread M-R outbreaks as the national population immunity (herd immunity) is insufficient to stop the ongoing M-R transmission. When the rubella vaccination coverage in communities is sub-optimal, there will be a paradoxical increase in CRS, as the infection will be shifted to an older age group, affecting women in the early stages of their pregnancy. As a risk mitigation strategy, high level of population immunity, through wide range prior supplementary immunization activities (SIAs) are required. The National Technical Advisory Group on Immunization (NTAGI) has recommended wide age range M-R vaccination campaigns targeting 9 months to less than 15 years before introducing Rubella containing vaccine (RCV) in routine immunization in all the states of India. This campaign dose will boost individual as well as "herd immunity" and protect the entire community by eliminating transmission of measles and rubella. This approach was a significant factor in achieving measles elimination in the Western Hemisphere in 2002, and elimination of indigenous rubella in 2009.3

Simultaneously, India will continue to further strengthen surveillance for measles and rubella. Vulnerable areas and populations are identified during polio eradication programme, which enables the programme to adopt appropriate strategies to eradicate the disease.

The drive
The M-R vaccination drive (carried out by the Government of India) has been rolled out in phases and the first phase of the campaign was conducted from February 6 to February 28, 2017 in Karnataka, Tamil Nadu, Goa, Puducherry and Lakshadweep, vaccinating approximately 3.3 crore children. It was planned Over the next two years the entire country is planned to be covered that the entire country will be covered over the next two years with subsequent replacement of measles vaccine with M-R vaccine in RI.4,5

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Eligible candidate for M-R vaccination campaign
Regardless of the previous immunization status of measles or rubella vaccine or whether previous disease by measles or rubella, the population aged between nine completed months to below 15 years, are eligible for vaccination during M-R campaign. Malnourished children should be vaccinated on a priority basis, as they are more likely to develop complications following disease. Children with minor illnesses like mild respiratory infection, diarrhoea, and low grade fever can be vaccinated. Children on steroid therapy or on immunosuppressant drugs (or known to be immune-compromised), high fever or other serious disease (eg: unconscious, convulsions, etc.), with history of a severe allergic reaction to measles/rubella vaccine in the past or hospitalized children should be spared from vaccination.\(^1\)

Safety of the vaccine & side effects following vaccination
The M-R vaccine being used in the campaign & thereafter in RI, is completely safe. Transient mild pain, redness at the injection site, low-grade fever, rash and muscle aches are common. The vaccine is not known to cause any other adverse event. Nevertheless, all immunization sessions will be linked to well-equipped health centers having fully trained health staffs to handle adverse events if any.\(^1\)

M-R campaign: Vaccination strategy (in a nutshell)\(^2,3\)
- The free of cost MR vaccine consists of a live attenuated virus of both the diseases.
- Target age group: 9 months to <15 years (regardless of their prior MR immunization status or any past history of Measles/Rubella disease)
- Target 100% vaccination of all children in this age group
- Campaign will not interrupt the regular RI sessions.
- All immunizations from fixed-static posts (no House-To-House (H-T-H) vaccination).
- To cover one school in one day; one Area / ward in one day,
- Average campaign duration: Approximately 3+1 weeks that is approximately 16-20 working days
- 1st week: School based campaign (for 5-15 year children).
- 2nd and 3rd weeks: From facility based session site, outreach site, mobile/special team. 4th week will be for sweeping/ repeat activity based on supervision-monitoring
- On completion of the campaign, M-R vaccine will be introduced in routine immunization and will replace measles vaccine currently given at 9-12 months and 16-24 months of age of child.
- Both boys and girls need to take Measles-Rubella vaccine during M-R campaign as well as in routine immunization as both are at an equal risk of getting infected as well as transmitting the rubella virus.

M-R campaign in India –challenges\(^6\)
In this campaign approximately 410 million children (9 months-less than 15 years) will be covered in multi phased SIAs. High and safe coverage needs quality training of stakeholders, detailed micro planning from village level and extensive monitoring. As learnt from last MCV-2 campaigns, injection safety, waste management, AEFI management must be ensured. While social mobilization (IEC/IPC/BCC) should get priority and focus, interrupted vaccine availability and poor management may hinder the objectives of the campaign. To make the largest ever campaign a grand success, multisectoral collaboration is needed with Health, Education and WCD (women and child development department) playing the pivotal role.

Way forward\(^6\)
Intensified efforts are being undertaken by GoI to enhance both MCV 1 and MCV 2 in routine immunization. A Laboratory based measles-rubella surveillance system has been established across the country on the existing AFP surveillance framework. CRS surveillance efforts are being initiated throughout the country to monitor the effectiveness of rubella vaccination programmes, to detect and isolate affected infants rapidly, and to mitigate the consequences of the disease for infants and their families through early provision of appropriate medical care. Subsequent to the M-R campaigns, laboratory based M-R surveillance will transit to a case based surveillance for the diseases. Based on the data generated during the SIAs, future campaigns with M-R will be determined.

References