EDITORIAL

RUBELLA – SHOULD IT BE A PRIORITY IN THE NATIONAL IMMUNIZATION PROGRAMMES?

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Rubella is a mild infection of childhood and young adults with 75% of cases occurring in age group 15–45 years. In unvaccinated populations, rubella usually occurs in spring with epidemics in 6–9 years cycles. Rubella has devastating effects on growing foetus if contracted by women in the first trimester of pregnancy. Perinatal infection of Rubella contributes to 2–3% of all congenital anomalies. Over the past three decades many resource risk countries have introduced universal or selective immunization programs against rubella with evidence that such interventions reduce the incidence of congenital rubella syndrome. In Pakistan the schedules of the Expanded Program on Immunization (EPI) do not include immunization against rubella and evidence is needed to estimate the risk of congenital rubella with a view to start immunization programmes to combat the menace of Congenital Rubella Syndrome (CRS). Logistically it is easy to add rubella vaccine to the already existing EPI schedules as measles is given on 9th and 15 month with little implications for cost, resulting in great reduction in CRS.

Keywords: Rubella, Congenital Rubella Syndrome, Perinatal infections Immunization, MMR

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In a correspondence to Lancet, Cutts *et al* mentioned that Global Alliance for Vaccines and Immunization (GAVI) had announced support for eligible countries to introduce a measles-rubella vaccine in their routine immunization programs. The authors have pleaded that due to its importance, support for such initiatives shall not be business as usual.[1] Pakistan is one of those countries where no such programme, selective or universal, is even contemplated at any level.

Rubella is a viral infection caused by a single stranded RNA virus, a member of *togavirus* family. It is also called German measles or 3-day measles and is a mild infection of childhood and young adults. In unvaccinated populations, rubella usually occurs in spring with epidemics in 6–9 years cycles. The duration of illness is short, i.e., approximately three days. If symptomatic, the disease is characterized by slight fever, malaise, coryza, rash, posterior occipital lymphadenopathy and arthralgia. More cases are subclinical and outnumber clinically apparent cases by a ratio of 2:1.[2] Rubella mainly occurs in children of both genders equally above the age of five years. About 75% of cases of rubella occur in age group 15–45 years both in endemic and epidemic years. But rubella gains its importance from its devastating effects on growing foetus if contracted by women in the first trimester of pregnancy[3] and can cause congenital rubella. The cluster of severe birth defects caused by Rubella is known as Congenital Rubella Syndrome (CRS).[4]

There are more than 100,000 cases of CRS occurring throughout the world annually with most of them in developing countries.[5] Rubella infection in the TORCH group continues to lead morbidity and mortality by causing intrauterine infections, contribute to 2–3% of all congenital anomalies.[6] Rubella, if acquired in the first 4 weeks of gestation, fetuses born have congenital abnormalities in 85% cases and fetal losses reaching up to 40%. During 13–16 weeks of gestation, 35% infants are born with abnormalities.[7] Congenital rubella is most commonly associated with hearing impairment (60%), congenital heart disease (45%), microcephaly (27%), congenital cataracts (25%) and mental retardation (13%). CRS is the second leading cause of non-traumatic childhood cataracts with hereditary cataracts as the number one cause. The visual outcome of children having congenital cataracts due to CRS is generally quite poor. The poor visual outcomes are made worse by the fact that 50% of these children have hearing impairments also.[8] CRS is usually present in infants with more than one sign or symptom consistent with congenital rubella infection. Recently it has been suggested that CRS also includes autism spectrum disorders.[9] A cursory look at history reveals that in 1750s, two German physicians, De Bergen and Orlow, described German measles, then known as *Ro¨thel*. In 1866 the name rubella was given to the disease by a Scottish physician Veale. In 1941, an Australian ophthalmologist, N. McAlister Gregg, observed that mothers with rubella having congenital defects of their offspring, including small size and birth weight, cataracts and heart defects. Gregg's work was further confirmed by other epidemiologists and expanded Gregg's observations, recording the associations of congenital heart disease, cataracts, deafness, the frequent presence of low birth weight, and failure to thrive besides and other congenital defects.[10]

Like other such viral infections, rubella confers lifelong immunity to the individuals. Immunity may also be achieved through vaccination. A live attenuated vaccine is available which may be administered alone, as a combination with measles, as part of triple vaccine known as measles, mumps and rubella (MMR) vaccine, and part of tetra vaccine measles-mumps-rubella-varicella (MMRV). It is important that women should be immune to rubella before they start their

reproductive life to prevent the occurrence of CRS.[11] Numerous studies emphasize on the women of childbearing age with a view to assess their susceptibility to rubella. The ages before the females actually start reproduction are more important to be assessed in terms of immune status against rubella because methods of primary prevention can be employed more meaningfully.[12]

Over the past three decades many resource risk countries, in consonance with the World Health Organization's (WHO) guidelines, have introduced universal or selective immunization programs against rubella with evidence that such interventions reduce the incidence of congenital rubella syndrome. Until 2006, 123 out of 193 member states of the WHO had universal immunization programs against rubella up from 65 in 1996.[13] In the case of Pakistan there are a few studies available through literature search and no meaningful estimate can be achieved. Moreover, the schedules of the Expanded Program on Immunization (EPI) in Pakistan do not include immunization against rubella though voluntary vaccination is practiced but on a very small scale. Studies have shown that immune status for RV IgG in women (16–30 years) ranged between 81–93%[14,15] and similarly in pregnant women, the status of RV IgG was between 61–89%[16]. A study by the author on adolescent schoolgirls (10–19 years of age), above 94% tested positive.[17] There have been analytical studies and systemic reviews showing a positive association of congenital defects with congenital rubella.[18,19]

Robinson *et al* have outlined research priorities to prevent CRS as: establish the incidence of rubella and CRS worldwide, research into immunization rates, its effectiveness and cost-effectiveness, and screening for immunity against the virus. In Pakistan, evidence is needed to estimate the risk of congenital rubella and its burden through mathematical modelling in the absence of surveillance systems with a view to start immunization programmes that could be both selective and universal to combat the menace of CRS. Logistically it should be easy to add rubella vaccine to the already existing EPI schedules as measles is given on 9th and 15 month. A dose of measles alone could be replaced by MR or MMR vaccine. Such an ease with logistics shall also have little implications for cost as combined vaccines are not more costly to single vaccines in the case of measles and rubella.

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