

Editorial

Some thoughts on the revised Sri Lankan expanded programme of immunisation

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It has been universally acknowledged that the Sri Lankan National Immunisation Programme is one of the most successful preventive strategies ever initiated and propagated in this country. The results are there for everyone to see. We have practically eliminated several killer infective diseases by a public-private partnership that has been championed as virtually a “gold standard” for the region. Very high and sometimes near-complete coverage of the children in the country has led to these splendid results. However, such programmes need regular review with modifications and revisions being made from time to time depending on the progressive requirements spanning a number of years. This year the Epidemiology Unit of the Sri Lankan Ministry of Health has recommended some modifications and commenced a revised line-up for the Expanded Programme of Immunisation (EPI). One needs to look at this programme a little more carefully in view of the global evidence available on the minutiae of vaccination strategies.

The first concern is really nothing new. It is on the timing of the hepatitis B vaccine. Sri Lanka is a very low prevalence country for hepatitis B and the primary object of immunisation against hepatitis B is to prevent transmission of the disease from undiagnosed mothers to their babies by vertical transmission. Over the years, the vaccine has been administered to infants at two months, four months and six months of age. One does wonder whether this timing is quite right. As the aim is to prevent vertical transmission, the first dose of the vaccine is perhaps best given at birth. It is of course acknowledged that this will be a major change in immunisation policy and would incur extra expense but is perhaps the best course of action based on available evidence. In addition, one could even question the need for this vaccine to be given routinely as well. In fact, several highly developed countries with low endemicity, including the United Kingdom, Japan, and the Scandinavian countries, do not routinely vaccinate children but have instead created policies targeting immigrant groups from highly endemic parts of the world, adolescents and adults with risk factors for hepatitis B virus infection¹. However, the use of this vaccine which could prevent long term chronic liver disease and primary liver cancer due to persistent hepatitis B infection² is probably justified in our country.

The new schedule has inserted the live Japanese encephalitis vaccine at the age of nine months. It is given just as a single dose at present. There is evidence that in China, since 1989, an estimated 120 million children have been immunised with the live-attenuated Japanese encephalitis vaccine at ages 1, 2, and 6 years³.

Subsequently two doses were found to be 98 per cent effective and even later researchers found that single-dose vaccine efficacy was high³. One however needs to look carefully at the necessity to use a second dose at a later date to ensure adequate protection persisting into adolescence and adult life. It is pertinent to recall the terrible effects of epidemics of this disease that occurred a few decades ago in specific areas of the country, way before immunisation against the disease was initiated. One does not wish to go back into that stage, ever again.

The new schedule has removed the live attenuated measles vaccine that was given at the age of nine months and replaced it with the Measles-Mumps-Rubella (MMR) vaccine, administered at the age of one year. The introduction of the MMR vaccine is definitely a very desirable move. However, the timing of this vaccine at the age of one year is a cause for concern. Before 1980s, when the measles vaccine was introduced, there were large numbers of cases of measles with major complications, particularly in the second six months of infancy. The measles vaccine was given at nine months of age as during the 1980s, maternal immunity was due to immunity following natural infection and the antibodies in the mother that had crossed over to the baby afforded protection only up to about six months. Thereafter, the immunity wanes and was thought to be at a very low level at nine months of age. The vaccine given at that time was not likely to be interfered with by the crossed antibodies. At the present time, maternal immunity is not due to natural infection but due to measles vaccine as most of the mothers today were born after introduction of the measles vaccine. There has been considerable uncertainty as to whether the immunity produced by the vaccine in the mother wanes off even quicker than that produced by natural infection. In fact, a recent study from Belgium has shown that vaccinated women had

significantly fewer IgG antibodies against measles and their infants had significantly lower antibody concentrations than infants of mothers with naturally acquired immunity⁴. In that study, at six months of age, more than 99 per cent of babies of vaccinated women and 95 per cent of babies of naturally immune women had lost the protection from their mother's antibodies. At age between nine and twelve months, no babies had any levels of protection. In fact now there are recommendations to consider giving the MMR vaccine earlier to cover the immunity gap⁵.

A common feature in developing countries is the substantial proportion of measles cases occurring in the first year of life⁶. Infants under 9 months of age are traditionally regarded as too young to be vaccinated. Increasingly however, babies are being born to mothers with minimal measles immunity, often owing to minimal natural boosting after childhood immunization. Such mothers pass less-protective immunity to their infants, who are therefore protected for a shorter period, and it has been proposed that these infants be vaccinated at a younger age⁷. A recent trial of measles immunization at 4 months of age in Guinea-Bissau showed adequate protective efficacy⁶. Some authorities point out that if these results can be replicated elsewhere, it would be appropriate to revisit the recommended age of first measles vaccination in order to close the current window of susceptibility. In Sri Lanka, by not giving the measles vaccine at nine months and giving the MMR at one year, one may be leaving a group of infants in the second six months of infancy quite vulnerable to measles and at risk of major complications. There is a possibility that this may cause some problems in the future.

It has been said that the reorientation of the live JE vaccine was also slotted into age nine months to facilitate routine checking of the baby at the same time as when the measles vaccine was discontinued and MMR instituted at one year, there would have been a considerable gap from the age of six months to one year when there would not be any formal assessment of the baby. One wonders whether it would not have been better to substitute the MMR vaccine at nine months and keep the JE vaccine at one year. In fact, very recently, at least in the United States, it has been advocated to administer MMR vaccine to babies of age 6 to 12 months who are scheduled to travel outside the USA⁸. That contention must surely be based on efficacy of the vaccine even at such an early age. Furthermore, in the current Sri Lankan plan, a second dose of MMR vaccine has been scheduled at age three

years but most countries administer this second dose around 4 to 6 years of age. It is a bit uncertain as to how the scheduling of the second dose at 3 years of age was arrived at.

Even with all the incredible results that have been secured so far in our EPI Programme, one cannot be complacent and be reassured that all will be well in the future. We need to be vigilant to the unfolding information from all over the globe and take steps to reassess the situation regarding any modifications to a system with a splendid track record. The concerns aired on this editorial are made in good faith, in a concerted effort just to make such a winning regime, that much better.

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