Measles vaccine is safe if given to infants under nine months of age

A first vaccination dose against measles is a safe and reasonably effective option if given to infants earlier than usual, and before the age of nine months, according to a meta-analysis (Nic Lochlainn et al, 2019) summarised in a National Institute for Health Research Alert. However, vaccine effectiveness does increase when administered at older ages, as it is currently. This review pooled data from global studies and found that the vaccine is around 58% effective when administered before the age of nine months compared with 83% after nine months.

Two doses of measles-containing vaccines are recommended as part of a childhood immunisation programme. In the UK, the first dose of the measles-containing vaccine (MCV1) is recommended at 12 months as part of the measles, mumps and rubella (MMR) vaccination. In countries with ongoing measles transmission, MCV1 is recommended at nine months.

This systematic review and meta-analysis, funded by the World Health Organisation, identified 56 studies in which MCV1 was administered to infants under the age of nine months. The outcomes of interest included seroconversion (a sign that the immune system is reacting to the presence of the virus), antibody concentrations (levels of a protein produced by the body when it detects harmful substances), vaccine effectiveness against measles and its safety.

Measles is a highly contagious viral infection that can lead to life-threatening complications. In the UK, there were 966 cases of the disease in 2018 – a substantial increase from the 259 cases the previous year. This has been mostly attributed to travel within Europe and large events, such as music festivals (vk.ovid.oa.ac.uk/vk/measles).

Due to this increase in incidence, the researchers wanted to assess whether a first dose could be given earlier by reviewing and analysing the existing evidence. The results summarised in Box 1 show that the earlier dose is effective, although not as effective as when given at over nine months of age. With measles on the rise, it is helpful to know that in the event of a measles outbreak, it could be used safely in younger infants as an additional measure. A follow-up dose as part of the usual vaccination programme would then be given from the age of 12 months to ensure full immunity.

Implications for nursing

The UK immunisation schedule recommends administering the first dose of the MMR vaccine in infants at 12 months of age. The WHO has a range of recommendations for when to give measles vaccines earlier in countries with higher rates of measles, including an extra dose before nine months during an outbreak.

This review’s findings indicate that vaccine administration before nine months can still provide useful protection against measles and could, therefore, be an effective solution in areas where there is a high risk of contracting the disease.

In the UK, administering the first dose of measles-containing vaccine under nine months of age is considered to be an extra dose, and is currently considered if an infant is in contact with a child with measles or as an emergency solution to contain any measles outbreaks. If this occurred, the usual doses would be subsequently given from 12 months to ensure full immunity.

To read the full Alert with additional references go to: Bit.ly/NIHRMeasles

References

Box 1. What did the study find?

- Pooled results from 20 studies showed that the proportion of infants who seroconverted increased from 50% in those vaccinated with MCV1 at the age of four months to 85% in those vaccinated at eight months.
- Infants vaccinated with MCV1 between the ages of four and eight months had lower antibody levels compared with those vaccinated after nine months. However, there was very wide variability between the studies, which reduces the confidence in this result.
- The pooled vaccine effectiveness of MCV1 in infants younger than nine months was 58%, according to eight studies. A similar proportion was effectively vaccinated when using within-study comparisons from five studies, at 51% compared with the increased effectiveness after nine months of 83%.
- There were no differences in the risk of adverse events between infants administered with MCV1 under or over the age of nine months.