

## SNIPPET

# New measles vaccination schedules in the European countries?

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## Key words

Measles • Vaccine • Calendar • Europe • Outbreak

## Summary

*Over the last 5 years, a number of outbreaks of measles have occurred in several European Union (EU) countries. Many of these outbreaks continue and/or continued for more than 1 year after the notification of the first case. Curiously in many of measles outbreaks about 10% of the patients were less than 12 months of age. All these patients according to the current EU countries vaccination calendars were not yet vaccinated against measles. Based on the results of measles outbreaks, especially age of affected*

*patients, we should consider changing measles vaccination schedules in all EU countries. Most of mothers between 30 and 40 years of age are not vaccinated against measles, and many of them are not naturally immune against measles. These mothers do not pose antibodies against measles and in turn do not provide vertical protection for their infants. In conclusion, administrating the first dose of measles vaccine in the EU countries should be considered before 12 months of age, most probably at 9 months of age.*

Measles is a highly infectious disease caused by the virus paramyxovirus, which is a linear single strand RNA. Measles was first described by Abu Becr Rhazes in the 10th century as Hasbah, which means eruption in Arabic. Since then measles epidemics continue to occur, with inter-epidemic periods of 3-5 years [1, 2]. This has been substantially changed since the inclusion of measles vaccine in the obligatory vaccine calendar in all European Union (EU) countries about 30 years ago. All EU countries included two doses of measles vaccine, with the first dose between 12 and 18 months of age [2, 3]. Previous studies showed that measles vaccine when given in two doses, at least 98% of vaccine recipients develop protective immunity against the disease [2]. In concordance, epidemiological investigation of a measles outbreak in a preschool in Incheon (Korea) showed that measles vaccine efficacy was 88.8% in the one dose group and 98% in the two doses group. The authors recommended improving the coverage with two doses vaccination [4].

Over the last 5 years, a number of outbreaks of measles have occurred in several EU countries [5]. Many of these outbreaks continue and/or continued for more than 1 year after the notification of the first case. One of the explanations for these outbreaks was the presence of non-vaccinated population over 30 years of age. Another explanation was vaccination rejection by several sectors of the population; anthroposophic, and ultra-orthodox Jewish communities, and immigrants [2, 6].

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ination calendars were not yet vaccinated against measles [2, 3].

Old studies on measles infection showed that infants were protected against measles with maternal antibodies over the first year of their lives. Vaccination of infants after 12 months of age aimed at avoiding the neutralizing effect of maternal antibodies and in turn improving measles vaccine effectiveness [7]. Based on the results of measles outbreaks, especially age of affected patients, we should consider changing measles vaccination schedules in all EU countries. It is necessary to administrate the first dose of measles vaccine below 12 months of age, for example at 9 months of age, because of several reasons.

First, most of mothers between 30 and 40 years of age are not vaccinated against measles, and many of them are not naturally immune against measles. These mothers do not pose antibodies against measles and in turn do not provide vertical protection for their infants [3, 7]. In concordance with this observation, a recent study conducted in Sheffield (UK) evaluated the risk of health-care workers (HCWs) of contracting and transmitting measles and mumps to patients and staff. To examine this risk at the point of entry to healthcare, the authors assessed the serological results of new HCWs presenting for pre-placement clearance without evidence of measles-mumps-rubella (MMR) immunity between 1 April 2010 and 31 March 2012. Overall rates of serological positivity to MMR across all age groups were 88.2%, 68.8% and 93.9%, respectively. With regard to measles and mumps, there were statistically significant decreases in the percentage of HCWs born after 1980 that had positive serology ( $P < 0.05$ ) [5].

Second, over the last 30 years the prevalence of measles infections in the EU countries was progressively lowering. The contact of vaccinated women between 30 and 40 years of age was almost negligible. This contact acts like a booster dose and stimulates the immunity systems to generate measles antibodies. Again vaccinated mothers aged between 30 and 40 years old provide very low levels of antibodies to their infants, not sufficient to protect them over the first 12 months of their lives [2, 7].

Third, the prevalence of breast feeding is lowering or at least reduced in duration all over the EU countries, especially over the last 20 years because of several social and economic changes. Maternal milk provides antibodies which offers major protection for infants against many bacterial and viral infections including measles [1, 8].

The recent vaccine calendar of the Spanish Association of Paediatrics (2013) recommended administration of the first dose of measles vaccine at 12 months of age, not at 15 months as recommended before. The second dose is recommended between 2 and 3 years of age to achieve a protection > 98% [9].

In conclusion, administrating the first dose of measles vaccine in the EU countries should be considered before 12 months of age, most probably at 9 months of age.

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■ Received on September 9, 2013. Accepted on February 10, 2014.

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