Executive summary

Health Council of the Netherlands. Universal vaccination against hepatitis B. The Hague: Health Council of the Netherlands, 2001; publication no. 2001/03

In this advisory report a Health Council Committee discusses the question of whether universal vaccination against hepatitis B via the National Vaccination Programme for children (RVP) is desirable. In 1996, the Health Council recommended that preparations should be made to this end. In response to that advice, the Minister of Health, Welfare and Sport (VWS) asked the National Institute of Public Health and the Environment (RIVM) to study the cost-effectiveness of universal vaccination. It was partly on the basis of an interim report from this study (issued in May 2000) that the Minister decided not to include vaccination against hepatitis B in the RVP for the time being. In response also to parliamentary discussion of this issue, the Minister is asking the Health Council to reconsider the 1996 advisory report in the light of new scientific findings.

Infection with the hepatitis B virus (HBV) is one of the causes of hepatitis (inflammation of the liver). The clinical symptoms and signs of HBV infection vary markedly. The vast majority of previously healthy individuals experience a transitory infection, but chronic infection and carrier status frequently occur, especially in young children. The fact that an individual is carrying the virus plays a primary role in the transmission of HBV infections and is an important determinant of the long-term sequelae of hepatitis B: cirrhosis of the liver and liver cancer.

On the basis of the prevalence of HBV carrier status, the World Health Organisation (WHO) makes a distinction between three categories of countries and

regions. The Netherlands belongs to the so-called low-endemicity countries, in which the prevalence of carrier status is less than two percent. In most parts of the world, however, hepatitis B has either intermediate endemicity (prevalence between two and eight percent), or high endemicity (prevalence eight percent or above). Between these three categories there are differences in the relative importance of the various transmission routes for HBV infection. In countries with high and intermediate endemicity a relatively large proportion of transmission occurs via the vertical route (from mother to child during pregnancy or childbirth) or via horizontal, non-sexual transmission (contact in the home, especially among young children). In countries with low endemicity, such as the Netherlands, the majority of acute infections occur after sexual contact in early adulthood.

Safe and effective vaccines are available for the prevention of hepatitis B, including combinations with the vaccines from the current RVP. Regardless of the prevalence of carrier status, the WHO recommends that vaccination against hepatitis B should be included in a universal vaccination programme for infants or schoolchildren. In recent years, however, the question has arisen of whether universal vaccination is always appropriate even in countries where hepatitis B already occurs relatively infrequently. Apart from the Netherlands, the United Kingdom, the Scandinavian countries, Ireland and Japan have made it known that they will not yet embark on universal vaccination of all children.

Vaccination against hepatitis B already takes place in the Netherlands as part of a policy directed at risk groups and also in children of mothers identified as carriers during screening of pregnant women. The Committee believes that these programmes must be continued, even if a decision is taken in favour of universal vaccination. It attaches great importance to the screening of pregnant women and the subsequent vaccination of newborn babies, but suspects that organisational improvements can – and indeed must – be made. The Committee also considers it important that the National Health Insurance Council's Coordinating Committee on Pre- and Postnatal Screening (CPPS) should evaluate the functioning of the programme.

Furthermore, it is possible to significantly improve protection against hepatitis B by actively approaching the following groups via the Municipal Health Authorities (GGDs) with regard to vaccination:

- housemates and family members of carriers
- children who will be living for a lengthy period in a country with high or intermediate hepatitis-B endemicity
- children in centres for asylum-seekers.

In the Committee's opinion, a decision on universal vaccination must primarily hinge upon an assessment of the effects on public health. However, it is then advisable to distinguish subpopulations in which both the criteria and the desired age for vaccination are different.

In immigrant populations in countries with low endemicity, there is evidence to suggest that the pattern of transmission is, to a significant extent, a reflection of the prevailing pattern in the country of origin. Children with at least one parent who originates from a country with either intermediate or high hepatitis-B endemicity are more likely to come into close contact with carriers – whether this be within their family or their social environment in the Netherlands or when visiting the country of origin of their parent(s). At present, approximately 15 percent of neonates nationwide belong to this subpopulation. Because the risk of developing carrier status is much greater in connection with infection at a young age than with infection in adulthood, there is a disproportionate influence on the total number of carriers. Only vaccination during infancy can improve this situation. The Committee recommends that this approach be adopted for the subpopulation in question.

In families in which neither of the two parents originates from a country with high or intermediate endemicity, children up to around 12 years of age are, in general, not at risk. Here, vaccination during infancy is not necessary.

Results of new model calculations performed by the RIVM confirm the importance of vaccination during infancy for the subpopulation of children with an increased risk of infection. Using the present model, however, it is not possible to assess the appropriateness of vaccinating the remaining children when they reach school age.

In an effort to determine the practicability of the proposed selective vaccination of children with an increased risk of infection, the Committee has assembled a working group of experts from the fields of home care, the vaccination authorities, tuberculosis control and the GGDs. Based on this consultation, it recommends that hepatitis-B vaccination should be added to the National Vaccination Programme for children with at least one parent born in a country with intermediate or high hepatitis-B endemicity. The Committee strongly recommends combining that vaccination with immunisation against *Haemophilus influenzae* type-B infection. The success of this initiative depends on the possibly to include the item ‘country of birth of the parents’ from municipal in the selection of children for vaccination records. Also important is the quality of the information that is given to individuals who either fall into this category or do not, as the case may be. The Committee believes that after three years it will be necessary to

assess whether the programme is being sufficiently successful in reaching the intended subpopulation.

In the rest of the population transmission is mainly by sexual contact. Here vaccination at 9 to 12 years would be more appropriate, but at this point there are insufficient data to assess the risk of infection and the effectiveness of vaccination strategies. It would be very useful if the RIVM could refine its modeling of the spread of HBV and the effects of vaccination strategies in such a way that the model could be used in evaluating the effects of possible vaccination against hepatitis B at this age, along with the effects of existing vaccination programmes and of the selective vaccination of children with an increased risk of infection, as recommended in this advisory report. The possibilities of vaccination at school age are being discussed as part of a broad-based review of the RVP, on which the Health Council has been asked to advise in the near future.