

Preface

Protection of newborns through maternal immunization

Each year, nearly 2 million infants under 1 year of age die of infectious diseases such as diarrhea, pneumonia, acute respiratory diseases, meningitis, malaria, and septicemia. These deaths often occur during the first month of life, before childhood vaccines can be administered or are effective. At birth, the immune system, which protects the body against infection, is still immature. Nonetheless, newborns are often partially protected by their mother's antibodies, transmitted across the placenta near the end of pregnancy, and to a lesser extent, through lactation. This is only possible if the mother herself has sufficient levels of antibody. The advantages related to vaccination of women in the last trimester of pregnancy are of interest.

Despite the success of maternal immunization in the reduction of neonatal tetanus, and the extensive use of other inactivated vaccines, this strategy for protecting newborns is not being applied in several cases in which it could be beneficial in reducing infant morbidity and mortality. In the case of influenza, maternal immunization should be used in the late stages of pregnancy to reduce morbidity and mortality in pregnant women as well as in neonates. The use of influenza vaccine in pregnant women remains low.

This special issue presents the proceedings of the International Symposium 'Protection of Newborns through Maternal Immunization' organized by the Fondation Mérieux, with the co-sponsorship of the WHO, in Veyrier-du-Lac, France, 8–11 December 2002. The symposium reviewed the state-of-the-art of maternal immunization, evaluated the potential outcomes of vaccination during pregnancy, and addressed ethical and regulatory issues involved. Discussions aimed at identifying future research needs, and the most promising vaccines and public health strategies to be further developed for newborn protection.

The volume begins by looking at the biological and immunological basis of maternal immunization with the immunity of the pregnant woman, maternal–foetal transmission of antibodies and transmission via mother's milk, and the effects of maternal antibodies on the infant immune response. The potential outcomes of vaccination during pregnancy are discussed, with the issues of autoimmune disease and the risk of atopic disease specifically addressed.

The meeting provided a forum for comparing the impact of maternal immunization in developing and industrialized

countries, reviewing recent clinical trials, and considering the difficult societal issues in each setting, and this is reflected in the present volume. From developing countries, an update on the Maternal and Neonatal Tetanus Elimination Initiative is given, as well as studies on maternal immunization with pneumococcal polysaccharide vaccine from Papua New Guinea and the Philippines.

Reports from industrialised countries include clinical trials with *Haemophilus influenzae* type B, inactivated influenza, respiratory syncytial virus (RSV) purified fusion protein-2, and group b streptococcal type III capsular polysaccharide-tetanus toxoid conjugate vaccines. Pertussis is also focused on as a potential target for maternal immunization. These promising studies show the high potential for the use of maternal immunization.

The acceptability of vaccinating pregnant women poses societal difficulties at several levels. Recruitment of pregnant women for clinical studies is looked at in both developing and industrialised country settings. Questions of vaccine licensure, liability and appropriate victim compensation systems remain the greatest barriers to the development and implementation of maternal vaccination, resulting in both a lack of industry and governmental support.

We are grateful to all those who participated in the meeting, to the authors of the manuscripts, and to the staff of *Vaccine* for their kind collaboration in publishing the symposium proceedings as a special issue. Our sincere gratitude is conveyed to the Scientific Committee for their participation in drafting the program.

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