VACCINE PREVENTABLE DISEASES IN THE XXI CENTURY

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All over the world, both in developing and developed countries there are public health authorities and other organizations that are making the best effort to reduce morbidity and mortality of children due to vaccine preventable diseases. At this moment this is mandatory in many countries because by reducing morbidity and mortality, vaccination can contribute substantially to achieve the Millennium Development Goal of reducing the mortality rate among children under five years by two thirds between 1990 and 2015.

The vaccination is one of the most cost-effective strategies to control infectious diseases, even at this moment when new and more expensive vaccines are needed[1,2].

Pneumonia[3], neonatal severe infections (most of them pneumonia), measles[4], diarrheal disease, neonatal tetanus and meningitis represent the most frequent vaccine preventable diseases.

There are available vaccines that have demonstrated that it is possible to reduce significantly the incidence of infection by bacteria and viruses that cause pneumonia in children, e.g. vaccines against S. pneumoniae (pneumococcal conjugated vaccine 7,10 or 13 valent)[5], conjugated vaccine against Haemophilus influenzae type b, acellular or cellular Bordetella pertussis vaccines, pneumonia caused by influenza virus and measles virus or varicella virus.

it hvaccines, it is possible to reduce significantly the incidence of severe diarrhoea caused by rotavirus, one of the most frequent cause of diarrhea[6].

Vaccines against measles[4] and tetanus have high effectiveness if the children receive the doses at the age indicated by vaccine schedules in different countries. It is not any more acceptable that these diseases are in the list of the ones that cause death in children. Data from different studies suggest the need for systematic review of vaccine-preventable incidents to examine the effect of exemptors, increased surveillance of the number of exemptors and cases among them, and research to determine the reasons why individuals claim exemptions[7]. Studies provide evidence that MMR or a single measles vaccine does not have adverse effects, such as for example autism[8].

There are conjugated vaccines with high efficacy and effectiveness to reduce the incidence of meningitis caused by S. pneumoniae, H. influenza type b and N. meningitidis A, C, Y and W135 [9]. The available vaccines to control infections by N. meningitidis type B are not appropriate to control outbreaks or endemic disease in different regions of the world, but there are big efforts to demonstrate the safety, immunogenicity, and tolerability of the new recombinant meningococcal serogroup B vaccines (the 4CmenB vaccine and the recombinant lipoprotein 2086 vaccine) or to improve the old vaccines.

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All the vaccines, including the old and the new ones, can offer a chance for children to live healthy and not die because of vaccine preventable diseases. All the potential benefits that the vaccination can offer to the public health does not only depend on the maintenance of the vaccines or the introduction of new ones in the vaccination schedule, but also on achieving high coverage for all primary doses and boosters.

If high vaccination coverage[10] (up to 90 %) is not

achieved, the effectiveness of vaccination will not be optimal and the herd immunity that some vaccines can provide to the whole population could not be considered as an additional benefit of the national immunization programs (NIP)[11].

One of the reasons that tetanus, measles and polio are still public health problems is that communities have not enough information about the importance of receiving all vaccine doses at the age recommended in the NIP. The vaccination can control infectious diseases like pneumonia, diarrhoea and bacterial meningitis[12], but in order to be able to achieve this goal, the objective must be to strengthen partnership between researchers, people involved in health care and whole community in providing benefits of vaccination to entire communities and sharing information on importance of this strategy in reduction of mortality in children[13].

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