Practical Use of Vaccines to Prevent Infection with Influenza Virus and Streptococcus pneumoniae

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Summary

Effective vaccines for the prevention of influenza and pneumococcal disease are available. Inactivated influenza vaccines should be administered yearly to those at high risk for influenza-related complications, including the elderly and those with chronic cardiac, pulmonary, and selected other conditions. Pneumococcal capsular polysaccharide vaccines should be administered once to individuals at high risk for pneumococcal disease or complications, including the elderly, individuals with pulmonary or cardiac conditions, and immunocompromised individuals, particularly those with splenic dysfunction. More effective vaccines for both pathogens are currently being developed, and show promise for further reducing the impact of these public health problems.

A number of highly effective vaccines for the prevention of respiratory diseases are available, including vaccines for the prevention of pertussis, diphtheria, measles, mumps and rubella, and, recently, Haemophilus influenzae type b. Efforts to refine further these vaccines are continuing, in order to:

- decrease the reactogenicity of pertussis vaccines
- develop measles vaccines effective in younger age groups
- optimise and standardise the schedule of administration of H. influenzae b vaccines.

Immunisation of infants and children with these vaccines is generally accepted as part of routine paediatric care, and recommendations for their use in infancy and childhood are widely known and
available. In addition, new vaccines for the prevention of other important respiratory disease pathogens, such as respiratory syncytial and parainfluenza viruses, are in development but are not yet available for clinical use.

The focus of this article will be on the use of vaccines to prevent influenza and *Streptococcus pneumoniae*. Although these 2 pathogens are obviously quite different, there are a number of similarities between them relevant to vaccine development and utilisation:

- Both agents cause significant disease in all age groups, particularly in children, the elderly, and those with chronic diseases. Thus, both adults and children are candidates for vaccination.
- Effective vaccines for both agents have been developed and available for many years, but the level of efficacy of these vaccines is less than that for the childhood vaccines mentioned above.
- Neither vaccine is utilised optimally in high-risk target populations.

In the remainder of this review, we will describe the biological and epidemiological features of these 2 pathogens relevant to vaccine development, review current vaccine options and recom-