衞生防護中心
Centre for Health Protection

Scientific Committee on Vaccine Preventable Diseases

Updated Recommendations on the Use of Pneumococcal Vaccines for High-risk Individuals

Background

Invasive pneumococcal diseases (IPD), including sepsis, meningitis and bacteraemic pneumonia, are caused by *Streptococcus pneumoniae*. IPD can occur in persons of any age but the risk is substantially higher for people at extremes of age. In Hong Kong, the annual incidence of IPD ranged from 1.7 to 2.5 per 100,000 from 2007 to 2014[#]. The incidence is higher in children younger than 5 years of age and adults 65 years of age and older. Other at risk groups of severe IPD include persons who have history of clinical IPD, are immunocompromised, have underlying chronic illnesses, or have cochlear implants.

2. There are two types of pneumococcal vaccines available in the market, namely a 23-valent pneumococcal polysaccharide vaccine (23vPPV) and pneumococcal conjugate vaccines (PCV). The Scientific Committee on Vaccine Preventable Diseases (SCVPD) has recommended 23vPPV to high risk individuals 2 years of age and older and elders 65 years of age and older since 2007. Moreover, SCVPD recommended to incorporate the 7-valent PCV (PCV7) in the Hong Kong Childhood Immunisation Programme (HKCIP) for children under 2 years of age since September 2009. The standard regimen includes a primary series of 3 doses at 2, 4 and 6 months and a booster dose at 12-15 months. PCV7 was later replaced by PCVs with greater serotype coverage (PCV10 in October 2010 and PCV13 in December 2011) while the vaccination schedule remains unchanged.

[#]data in 2014 up to September

3. In recent years, there are several developments in the use of PCV13. First, the indication of PCV13 was extended to adults in overseas countries such as the United States, United Kingdom and Australia in 2013 and 2014. Moreover, several studies on the immunogenicity and safety of PCV13 on older adults were also published in 2013 and 2014. Furthermore, some data from a large-scale randomized placebo-controlled trial (CAPiTA trial) conducted in the Netherlands evaluating clinical efficacy of PCV13 against pneumococcal pneumonia and IPD in over 80,000 adults 65 years of age and older was released in March 2014. The preliminary results of the CAPiTA trial demonstrated clinical efficacy of PCV13 against both IPD and non-invasive pneumococcal pneumonia in this age group, whilst previous studies on 23vPPV indicated that though the vaccine is generally effective in preventing IPD, its efficacy against non-invasive pneumococcal pneumonia is poor. Immunogenicity studies on PCV13 and 23vPPV showed that PCV13 elicited non-inferior or better immune response for serotypes commonly covered by both vaccines*. However, it is worth noting that 23vPPV contains 11 additional serotypes and theoretically offers extra protection. According to the laboratory surveillance of IPD under the Public Health Laboratory Services Branch (PHLSB) of the CHP, from 2007 to September 2014, 71% and 81% of IPD cases in adults 65 years of age and older were caused by serotypes covered by PCV13 and 23vPPV respectively.

Recommendations

4. In December 2014, the SCVPD and the Working Group on Pneumococcal Vaccination (WGPV) convened a meeting to review the use of pneumococcal vaccines for high-risk individuals. Having reviewed current scientific evidence and recommendations among the international communities, the recommendation of pneumococcal vaccination for high-risk individuals 2 to 64 years of age and elders 65 years of age and older was updated (Table 1).

5. The SCVPD recommends high-risk individuals aged 2 to 64 years to receive a single dose of PCV13, followed by a single dose of 23vPPV at least 2 months later. For those who have already received 23vPPV, PCV13 should be administered at least 1 year later. For those who have already received any PCV13, a single dose of 23vPPV should be administered at least 2 months later. The list of high risk conditions is summarized in Box 1.

6. For elders 65 years of age and older, SCVPD recommends either a single dose of PCV13 or a single dose of 23vPPV. For those with additional high risk conditions, one-time revaccination may be considered 5 years after the first dose, depending on clinical judgment.

7. As more scientific evidence is expected to be available in the coming year, the SCVPD will review the recommendation of pneumococcal vaccination again in 2015.

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*PCV13 consists of pneumococcal capsular polysaccharides for serotypes 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, 23F. 23vPPV consists of pneumococcal capsular polysaccharides for serotypes 1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F, 33F.

Box 1: High Risk groups in which pneumococcal vaccination is recommended for personal protection

1. Persons age 65 years or above, with or without additional high risk conditions
2. Persons age between 2 to 64 years and with the following high risk conditions:

(a) History of invasive pneumococcal disease

(b) Immunocompromised states:

- Asplenia, HIV/AIDS, primary immunodeficiency
- Immunodeficiencies related to malignancies and transplantation
- Immunodeficiencies related to use of immunosuppressive drugs / systemic steroid

(c) Chronic disease

- Chronic cardiac, pulmonary, liver or renal disease
- Diabetes mellitus or CSF leakage

(d) With cochlear implants

Table 1: Recommended use of 13-valent pneumococcal conjugate vaccine (PCV13) and 23-valent pneumococcal polysaccharide vaccine (23vPPV) for personal protection in high-risk individuals 2 to 64 years of age and elders 65 years of age and older.

Risk Groups	Pneumococcal Vaccine
High risk individuals aged 2 to 64 years who have not received any pneumococcal vaccines	One dose of PCV13 followed by one dose of 23vPPV at least 2 months after the previous PCV13 vaccination.
High risk individuals aged 2 to 64 years who have received 23vPPV	Single dose of PCV13 at least one year after previous 23vPPV vaccination. Additional dose of 23vPPV is not recommended.
High risk individuals aged 2 to 64 years who have received PCV13	Single dose of 23vPPV at least 2 months after previous PCV13 vaccination. Additional dose of PCV13 is not recommended.
Elders aged 65 years and above	Either a single dose of PCV13 or a single dose of 23vPPV. For those with additional high risk conditions, one-time revaccination may be considered 5 years after the first dose, depending on clinical judgment.