Frequently Asked Questions on Pneumoccocal Infection and Pneumoccocal Vaccines

1. What is Pneumococcal Infection?

Pneumococcal infection represents a wide range of diseases caused by the bacterium pneumococcus (Streptococcus pneumoniae). It usually causes mild illnesses such as paranasal sinus or middle ear infections, but may also cause severe diseases and complications, including pneumonia, meningitis and septicaemia, affecting hearing and the brain and even causing death.

2. What is Streptococcus pneumoniae/pneumococcus?

Streptococcus pneumoniae (pneumococcus) is the causative agent of pneumococcal infections. It is a Gram-positive coccus encapsulated with polysaccharides. The difference in the composition of capsular polysaccharides constitutes to at least 90 different serotypes of pneumococci identified thus far.

3. How does pneumococcal disease spread?

Pneumococci are commonly found in the nose and throat of healthy people, in particular children. They mainly spread from one person to another through coughing, sneezing or direct close contact; and via contact with articles soiled with sputum or nasal discharges.

4. Are invasive pneumococcal diseases common in Hong Kong? What is the incidence rate of invasive pneumococcal diseases in Hong Kong?

The incidence rate of invasive pneumococcal diseases in Hong Kong was reported to be 2.3 per 100,000 populations. It is lower than that of most Western countries including the U.S. and Canada, before the introduction of pneumococcal vaccination programme for children in these countries.

5. Does previous pneumococcal infection immune children from future invasive pneumococcal diseases?

As there are over 90 serotypes of pneumococcus, previous infection of a serotype of pneumococcus may not confer immunity to other serotypes of pneumococcus. Children who have experienced invasive pneumococcal diseases are recommended to follow the immunisation schedule according to age and health risks.

6. How can pneumococcal infections be treated?

The treatment of pneumococcal infections usually involves the use of antibiotic(s). But there is a problem of increasing resistance of the bacterium to antibiotics, which makes prevention of pneumococcal infections important.

7. Is there any effective way of preventing the disease?

Pneumococcal vaccination is one of the most effective ways of preventing the disease.

8. How many types of pneumococcal vaccine are there?

In Hong Kong, pneumococcal vaccines can be broadly classified into two major types, including pneumococcal conjugate vaccine for children and 23-valent pneumococcal polysaccharide vaccine (23vPPV) for children and adult. There are three registered pneumococcal conjugate vaccines in Hong Kong, namely 7-valent pneumococcal conjugate vaccine (PCV7), 10-valent pneumococcal conjugate vaccine (PCV10) and 13-valent pneumococcal conjugate vaccine (PCV13).

9. What is the difference between various pneumococcal conjugate vaccines and 23-valent pneumococcal polysaccharide vaccine (23vPPV)?

All pneumococcal vaccines are safe and efficacious against IPD. For young children, researchers have demonstrated that pneumococcal conjugate vaccine is more immunogenic than 23vPPV. The table below shows the serotype of capsular polysaccharide antigens contained in various pneumococcal vaccines:

23-valent pneumococcal polysaccharide vaccine (23vPPV)	1-5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F and 33F
7-valent pneumococcal conjugate vaccine (PCV7)	4, 6B, 9V, 14, 18C, 19F and 23F

10-valent pneumococcal conjugate vaccine (PCV10)	1, 4, 5, 6B, 7F, 9V, 14, 18C, 19F and 23F
13-valent pneumococcal conjugate vaccine (PCV13)	1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F and 23F

10. Are the pneumococcal conjugate vaccines and 23-valent pneumococcal polysaccharide vaccine (23vPPV) interchangeable?

No. According to recommendations by the Scientific Committee on Vaccine Preventable Diseases, vaccinees should receive appropriate type of vaccine according to their age.

11. Are the pneumococcal conjugate vaccines interchangeable?

According to recommendations by the Scientific Committee on Vaccine Preventable Diseases, children who have yet finished the four doses of PCV7 may receive PCV10 for the remaining doses. Please consult your doctor for the interchangeability of other combinations of pneumococcal conjugate vaccines.

12. Can a vaccine be considered as better if it contains more pneumococcal serotypes than others?

According to the World Health Organization, a pneumococcal conjugate vaccine cannot be assumed better simply on the basis of the number of pneumococcal serotypes included, because the pneumococcal serotypes that are prevalent in different countries vary, and the immune responses in different person groups may not be identical. So far, the World Health Organization has not indicated the preferential use of which pneumococcal conjugate vaccine.

13. Is there any difference between the immunisation schedule of 7-valent, 10-valent and 13-valent pneumococcal conjugate vaccines?

No. The routine immunisation schedule for the these 3 pneumococcal conjugate vaccines is 3 doses of primary series (at 2, 4 and 6 months of age) and one dose of booster (at one year of age).

14. Who should get the pneumococcal vaccination?

The Scientific Committee on Vaccine Preventable Diseases of the Centre for Health Protection recommends the high risk groups including children aged below 2 years to have pneumococcal vaccine for personal protection.

15. What is the vaccination schedule of Childhood Pneumococcal Vaccination Programme?

Newborns should receive a standard 3-dose primary series at 2nd, 4th and 6th months of age with a booster dose at 12-15th months. Under the Childhood Pneumococcal Vaccination Programme, for older children, the number of doses required will depend on the age when the first dose is given. Children aged 12 months or above who have never received pneumococcal vaccine will receive one dose.

16. How much protection does the pneumococcal vaccine provide?

The standard 3-dose primary series and booster should provide more than 90% protection against the serotypes contained in the vaccine.

17. Is pneumococcal vaccine safe?

Pneumococcal vaccine is safe. Most children have no serious reactions after receiving pneumococcal vaccine. Occasionally there may be mild fever (usually occur within 3 days after vaccination) or slight tenderness or swelling around the injection site, but these will gradually subside in a few days. If fever or discomfort persists, please consult a doctor.

18. Are there any reasons my child should not take the pneumococcal vaccine?

Children who had a severe allergic reaction following a prior dose of pneumococcal vaccine, or to the vaccine component including diphtheria toxoid, should not receive further doses of pneumococcal vaccine.

19. Can my child receive pneumococcal vaccine if he/she has received/will receive other immunisation?

Yes. Pneumococcal vaccine is an inactivated vaccine. It will not interfere with the immune response to other vaccines. Pneumococcal vaccine can be received at the same time with other vaccines at different injection sites.

20. Can my child receive the pneumococcal vaccination if he/she is unwell?

The vaccination may be deferred if the child suffers from acute fever on the day of vaccination.

21. If a child has suffered from invasive pneumococcal diseases when he/she has already started the immunisation of pneumococcal vaccines, should he/she receive the remaining dose(s) of vaccine?

Children who had invasive pneumococcal diseases should complete the recommended pneumococcal vaccination schedule appropriate for their age and health risks. He/she should receive the remaining dose(s) of pneumococcal vaccines once his/her condition improved.

22. Should pneumococcal vaccine be given prior/ after some specific medical procedures?

For individuals who will undergo elective splenectomy, cochlear implant, initiation of cancer therapy or other immunosuppressive therapy, pneumococcal vaccination should be completed 4 to 6 weeks before the medical procedures if possible. When it is not feasible, the vaccines can be given up to 2 weeks before the medical procedures.

If vaccination prior to the procedure is not possible, vaccination should be delayed and may start as soon as 2 weeks after the procedure in general. You may wish to consult your family doctor for vaccination with pneumococcal vaccines after undergoing the above medical procedures.

23. Will receiving pneumococcal vaccine increase the risk of acquiring pneumococcal infection in others (e.g. pregnant women)?

No. Pneumococcal vaccine is an inactivated vaccine. There is no known evidence for being at risk by contacting recently vaccinated individuals.