

立法會 *Legislative Council*

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Panel on Health Services

Background brief prepared by the Legislative Council Secretariat for the special meeting on 2 December 2013

Measures in prevention and control of invasive pneumococcal disease

Purpose

This paper gives an account of the measures in prevention and control of invasive pneumococcal disease ("IPD") in Hong Kong and the past discussions by the Panel on Health Services ("the Panel") on issues relating to childhood pneumococcal vaccination.

The pneumococcal disease

2. IPD, such as bacteraemic pneumonia, meningitis and septicaemia, are infections caused by the bacteria pathogen called *Streptococcus pneumoniae* (or more commonly referred to as pneumococcus). More than 90 serotypes of pneumococcus have been identified so far, though relatively few of these are responsible for most serious disease due to this bacteria pathogen. IPD is more common in young children and elderly persons. While most pneumococcal infections can be treated effectively with antibiotics, growing antibiotic resistance points to the need for vaccines to control the disease. Four types of pneumococcal conjugate vaccine ("PCV") are available to lower the risk of serotype-specific pneumococcal infection. These include the 7-valent PCV ("PCV7")¹, the 10-valent PCV ("PCV10")², the 13-valent PCV ("PCV13")³, and the 23-valent pneumococcal polysaccharide vaccine ("23vPPV")⁴. Available scientific evidence shows that no pneumococcal vaccine formulation can confer 100% protection to IPD, and IPD can occur in vaccinated individuals.

¹ PCV7 contains capsular antigens of serotypes 4, 6B, 9V, 14, 18C, 19F, 23F.

² PCV10 contains all capsular antigens of serotypes in PCV7 and serotypes 1, 5 and 7F.

³ PCV13 contains all capsular antigens of serotypes in PCV10 and serotypes 3, 6A and 19A.

⁴ 23vPPV contains capsular antigens of serotypes 1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F and 33F.

Prevention and control of IPD in Hong Kong

3. To monitor the local trend of IPD, occurrence of serotype replacement and pattern of antimicrobial resistance, a laboratory surveillance system on IPD has been set up and maintained by the Public Health Laboratory Services Branch of the Centre for Health Protection ("CHP") under the Department of Health ("DH") since 2007. From 2008 onwards, the surveillance system covers all microbiology laboratories in public and private hospitals in Hong Kong. In addition, schools or institutions that notice or suspect an outbreak of IPD cases must make early notification to CHP in accordance with DH's guidelines on prevention of infectious diseases. Where necessary, CHP will conduct epidemiological investigation, inspection and medical surveillance, as well as provide professional advice on preventive and control measures to the schools or institutions concerned.

4. According to CHP's IPD laboratory surveillance findings, the annual number of invasive pneumococcal isolates for persons of all ages reported was 136, 137, 116, 122, 157 and 136 respectively from 2007 to 2012. For children below five years of age, the corresponding numbers were 19, 19, 10, 15, 21 and 13. A total of 92 invasive pneumococcal isolates were received for persons of all ages in the first six months of 2013, of which six were aged under five. For the period of January 2007 to June 2013, the most common serotypes isolated were serotype 3 (i.e. 24%) and serotype 14 (i.e. 17%) among all ages. Serotype 19A cases were increasing and this increase was more prominent in children below five years of age, accounting for 38% and 23% of IPD cases in 2011 and 2012 respectively, as compared with only 5% in 2007.

5. The Scientific Committee on Vaccine Preventable Diseases ("SCVPD") of CHP recommended the use of PCV for personal protection for those at risk of severe IPD in October 2007. Having reviewed the latest scientific evidence including a local economic study commissioned by CHP, SCVPD recommended incorporation of PCV7 into the Childhood Immunization Programme ("CIP")⁵ in October 2008. Based on the recommendation and a number of public health considerations, the Government has incorporated PCV7 into CIP since 1 September 2009. All newborns born on or after 1 July 2009 can receive free vaccination at MCHCs during scheduled CIP visits. A one-off catch-up programme for children born between 1 September 2007 and 30 June 2009 to receive free pneumococcal vaccination was launched at the same time and lasted till 31 March 2011. Based on SCVPD's subsequent recommendations, PCV7 was replaced by PCV10 in October 2010, and the latter was replaced by PCV13 in December 2011. The immunization schedule is three primary doses at two, four and six months of age, followed by one booster dose at 12 to 15 months of age.

⁵ DH provides free immunization against childhood infectious diseases for infants and children under CIP. The vaccines are given at birth in hospitals, during pre-school period by DH's 32 Maternal and Child Health Centres ("MCHCs"), or in primary schools by DH's outreaching School Immunization Team.

6. Separately, SCVPD recommended in March 2009 that elders aged 65 years or above who had never received any 23vPPV before, or had received one dose of 23vPPV before 65 years old and more than five years earlier should receive single dose of 23vPPV on a one-off basis. For those elders with the at-risk conditions, it was recommended that one-time revaccination might be considered five years after the first dose. Based on SCVPD's recommendations, free pneumococcal vaccination has been provided to all elders living in residential care homes, those aged 65 years or above with chronic illness attending public clinics, and those aged 65 years or above receiving Comprehensive Social Security Assistance under the Government Vaccination Programme ("GVP") since October 2009. For other elders aged 65 years or above who are not on GVP, they can receive pneumococcal vaccination from private doctors with Government subsidy under the Elderly Vaccination Subsidy Scheme ("EVSS")⁶ which was introduced in the same month.

Deliberations of the Panel

7. The Panel discussed issues relating to childhood pneumococcal vaccination at three meetings in 2008 and 2009. The deliberations and concerns of members are summarized below.

Consideration in adding new vaccines to the vaccination programmes

8. Question was raised on the factors taken into consideration by the Administration in determining whether a particular vaccine should be included in its vaccination programmes. There was a view that any such decision should be based on scientific evidence.

9. The Administration advised that all provision of vaccinations to a specific population was based on the recommendations of SCVPD. SCVPD would make recommendations to DH on vaccination matters having regard to the latest position of the World Health Organization on immunization and vaccination, scientific developments and application of new vaccines, vaccine formulations and cost-effectiveness, changes in the global and local epidemiology of vaccine preventable diseases and the experiences of other health authorities. Besides taking reference from SCVPD's recommendations, the Administration would take into account a number of important public health considerations based on well established scientific criteria, such as the overall disease burden to society; the efficacy and safety of the vaccine; herd immunity or protection introduced by the vaccine; the availability of other effective preventive measures; cost

⁶ The subsidy level for a dose of pneumococcal vaccination given to eligible elders by private doctors enrolled in EVSS was \$190 under the 2009/2010 EVSS, which included a \$140 subsidy for vaccine cost and another \$50 subsidy for injection cost. The subsidy level remains at \$190 per dose under the 2013/2014 EVSS.

benefit and cost effectiveness; as well as the administrative arrangements for vaccination, public acceptance of the vaccine and adequacy of vaccine supply.

10. Members were of the view that the need to provide better protection for the public, rather than complexity of the logistic arrangements and costs of vaccination, should be the prime factor of consideration in determining whether a vaccine should be added to a vaccination programme. The Administration advised that while complexity of logistic arrangements concerned might affect the implementation schedule, it would not be a factor for not incorporating a new vaccine into the vaccination programmes if the incorporation was recommended by SCVPD.

11. On the question of whether the incidence of a disease had to reach a certain threshold before the Administration would consider incorporating a vaccine into its vaccination programmes, the Administration advised that it had not drawn up such threshold.

Coverage of PCV

12. While welcoming the Administration's decision to incorporate PCV into CIP in September 2009, there was a suggestion that the Administration should also provide subsidy for those children who received pneumococcal vaccination in private doctors' clinics. The Administration pointed out that most newborns would receive their vaccinations under CIP at MCHCs. Statistics showed that the overall vaccination coverage rates of CIP remained high at over 90%.

Recent developments

13. Two fatal cases of IPD caused by serotype 3 pneumococcus involving a three-year-old boy and a five-year-old girl, both with good past health, occurred in November 2013. According to the Administration, the boy had been immunized with PCV7 and PCV10 booster, and laboratory testing revealed that the strain was resistant to macrolides. The girl had not been immunized with PCV, and the strain was found to be resistant to macrolides but sensitive to penicillin. Both cases had no recent travel history and their family contacts had so far remained asymptomatic. The cases have aroused wide public concern across the community, in particular those parents whose young children have not been immunized with PCV13, which confers, among others, protection against serotype 3 pneumococcus.

14. On 25 November 2013, SCVPD and its Working Group on Pneumococcal Vaccination convened a joint meeting to follow up on the fatal cases of IPD. The meeting considered that requiring all children under five years old who had received PCV7 or PCV10 to receive a booster dose of PCV13 was not indicated

at this point in time. There was also no evidence to suggest that children who had received PCV7 or PCV10 were more susceptible to serious illness caused by serotype 3 pneumococcus than those who had not received any PCVs.

15. Taking into account SCVDPD's view together with concerns across the community and parents, the Government decided on the same day to subsidize one booster dose through a vaccination subsidy scheme for children aged two to under five years old who had never received PCV13. The implementation details of the scheme will be announced shortly.

16. At the Council meeting of 27 November 2013, Dr Hon KWOK Ka-ki raised an urgent oral question on the emergency measures to cope with an outbreak of invasive pneumococcal epidemic. The question and the Administration's reply are in **Appendix I**.

Relevant papers

17. A list of the relevant papers on the Legislative Council website is in **Appendix II**.

Council Business Division 2
Legislative Council Secretariat
29 November 2013

Press Releases *27 November 2013*

LC Urgent Q1: Invasive pneumococcal disease

Following is an urgent question by the Dr Hon Kwok Ka-ki under Rule 24(4) of the Rules of Procedure and a reply by the Secretary for Food and Health, Dr Ko Wing-man, in the Legislative Council today (November 27):

Question:

The two successive fatal cases involving two children infected by serotype 3 *Streptococcus pneumoniae* (pneumococcus) last week have aroused public concern. After a meeting held on November 25, the Scientific Committee on Vaccine Preventable Diseases and its Working Group on Pneumococcal Vaccination of the Centre for Health Protection of the Department of Health considered that a booster dose of 13-valent Pneumococcal Conjugate Vaccine (PCV13) among children under five years old who had received PCV7 or PCV10 was not required at this point in time. However the Government announced concurrently that it decided to subsidise, through the Vaccination Subsidy Scheme, one booster dose each for children aged two to under five years old who had not previously received PCV13 (booster dose programme) and the details of the programme would be announced later. Some parents have said that these two pieces of news, which contain contrasting information concerning the need or otherwise for children to receive vaccination, have sent out confusing messages, which is not conducive to stabilising the epidemic and will also pose a serious threat to the health of children. In this connection, will the Government inform this Council:

(a) whether it will immediately publish clear guidelines to assist parents in deciding whether their children need to receive pneumococcal vaccination; if it will, of the contents of the guidelines; if not, the reasons for that;

(b) whether it has put in place any immediate measures to ensure an adequate supply of vaccines by pharmaceutical manufacturers; if it has, of the details; if not, the reasons for that; and

(c) when the booster dose programme will be implemented the soonest; whether the Government has put in place emergency measures to cope with an outbreak of invasive pneumococcal epidemic prior to the implementation of the booster dose programme; if it has, of the details, including the circumstances under which the Government will implement such measures; if not, how the Government can ensure that the epidemic will be under control?

Reply:

President,

My reply to Dr Hon Kwok Ka-ki's question is as follows:

(a) and (c) The Scientific Committee on Vaccine Preventable Diseases (SCVPD) and its Working Group on Pneumococcal Vaccination (Working Group) of the Centre for Health Protection (CHP) of the Department of Health (DH) convened a joint meeting in the afternoon of November 25 in light of the two recent fatal cases of children infected with invasive pneumococcal disease (IPD). SCVPD and the Working Group have closely examined the global and local IPD situation, in particular the situation caused by serotype 3 *Streptococcus pneumoniae*. Based on the information currently available, the joint meeting considered that a booster dose of 13-valent Pneumococcal Conjugate Vaccine (PCV13) is not required at this point in time for children under 5 years old who had received 7-valent or 10-valent Pneumococcal Conjugate Vaccines.

Taking into account the SCVPD's view together with concerns across the community and parents, and noting the SCVPD and other experts' views, the Government has decided to subsidise one booster dose through a vaccination subsidy scheme for children

aged 2 to under 5 years old who have never received PCV13. The Government aims to launch in December this year a PCV13 Vaccination Subsidy Scheme (the Subsidy Scheme), under which private doctors will provide a booster vaccine to children aged 2 to under 5 years old who have never received PCV13. Implementation details of the Subsidy Scheme will be announced in due course. In parallel, the Government will step up dissemination of related information to the public, including information on the prevention of IPD and the effectiveness of PCV13 etc., to keep the public well informed.

All along, CHP has been maintaining an established notification and surveillance mechanism, and devises infectious disease prevention and infection control strategies in accordance with the gathered surveillance information and data. The Government remains vigilant and monitors the latest developments of infectious diseases, and will convene relevant meetings when necessary to make timely reviews and adjustments to the surveillance mechanisms and prevention and control strategies in order to prevent the occurrence and spreading of epidemic to protect public health.

The Government has been implementing the following measures:

- * Surveillance of Pneumococcus: DH has set up a laboratory surveillance system targeted at IPD for comprehensive surveillance of the local trend of IPD and changes in serotype replacement and antibiotic resistance, etc. This surveillance system covers all the microbiology laboratories in public and private hospitals in Hong Kong and therefore can provide comprehensive and detailed epidemiological data of IPD in Hong Kong.
- * Control of Outbreaks: According to DH's guidelines on prevention of infectious diseases, schools or institutions that notice or suspect an outbreak of cases must make early notification to CHP. Upon receipt of notification, CHP will contact the schools and institutions, and as necessary conduct epidemiological investigation, inspection and medical surveillance, as well as provide professional advice on preventive and control measures and environmental hygiene.
- * Publicity and Risk Communication: CHP has all along been monitoring the local epidemiological data on IPD. It has issued a letter to all doctors in Hong Kong to update them on the local situation of IPD and advise on medication, in order to remind them to stay alert of IPD and minimise the impact of disease.
- * Free and Subsidised Vaccination Programmes: Parents should continue to have their new-born children vaccinated in accordance with the recommendations under the Childhood Immunisation Programme. Elders aged 65 or above who have never received a pneumococcal vaccination should receive one dose of the pneumococcal vaccine, and can receive it for free or with a subsidy under the Government Vaccination Programme or the Elderly Vaccination Subsidy Scheme. Moreover, as preceding infection with influenza will lead to more severe complications caused by IPD, children aged 6 months and above should receive seasonal influenza vaccination unless there is contraindication.
- * Public Education: The public should maintain good personal and environmental hygiene practices. The Government will strengthen its messages to the public on maintaining personal and environmental hygiene through a variety of means, including websites and health education material.

(b) According to information provided by the pharmaceutical company, there is sufficient stock of PCV13 vaccine in Hong Kong at present, and more vaccines will be sent to Hong Kong next month. The Government is liaising with the vaccine supplier to ensure that there are sufficient vaccines to meet local needs.

Ends/Wednesday, November 27, 2013
Issued at HKT 14:15

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**Relevant papers on issues relating to
childhood pneumococcal vaccination**

Committee	Date of meeting	Paper
Panel on Health Services	16.6.2008 (Item III)	Agenda Minutes
	31.3.2009 (Item II)	Agenda Minutes
	9.11.2009 (Item III)	Agenda Minutes
Council meeting	27.11.2013	Urgent oral question raised by Dr Hon KWOK Ka-ki

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