

## **Pneumococcal Conjugate 13-Valent Vaccine (PCV13) for HIV-infected Individuals Questions and Answers for Immunization Providers – April 2015**

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### **REFERENCES**

## 1. What is pneumococcal disease?

*Streptococcus pneumoniae* is a gram-positive bacterium of which 92 serotypes are recognized worldwide.<sup>1</sup> *S. pneumoniae* is the cause of invasive pneumococcal disease (IPD) which can manifest as bacteremia, septicemia, meningitis or bacteremic pneumonia. Symptoms depend on the site of infection. It is a major cause of morbidity and mortality in children, the older adults, and individuals with immunosuppression and other chronic conditions.<sup>1</sup>

## 2. Which vaccines are available to protect against pneumococcal disease?

Two pneumococcal vaccines are available in BC:

**Pneumococcal polysaccharide vaccine 23-valent (PPV23)** is a polysaccharide vaccine which stimulates B cells without the help of T cells, resulting in a T cell-independent immune response which does not result in immunologic memory; as well, the resultant antibodies have lower avidity (predominately IgM).<sup>2</sup> PPV23 contains twenty-three serotypes (twelve of which are the same as in PCV13) and has been formulated to cover serotypes responsible for pneumococcal disease in adults. PPV23 is approved for use in Canada for those aged 2 years and older.

**Pneumococcal conjugate vaccine 13-valent (PCV13)** is a conjugated pneumococcal vaccine. The polysaccharide serotypes are conjugated individually to a diphtheria protein carrier prior to compounding to a multivalent vaccine.<sup>1</sup> Conjugate vaccines stimulate T cells and B cells, resulting in a T cell-dependent immune response which results in immunologic memory. Therefore initial immunization is 'priming' and subsequent vaccination results in a booster (anamnestic) response.<sup>2</sup> PCV13 contains thirteen serotypes. PCV13 is approved for use in Canada for those aged 6 weeks and older.

## 3. Why does the National Advisory Committee on Immunization (NACI) recommend PCV13 for HIV-infected individuals?

HIV-infected individuals are at greater risk of invasive pneumococcal disease than uninfected individuals, with an incidence 35-100 times higher observed in the developed world data.<sup>3</sup> Even with appropriate healthcare and treatment, IPD continues to be a significant disease in HIV-infected individuals. As well, studies have shown the sub-optimal effectiveness of PPV23 in HIV-infected individuals.<sup>1</sup>

In October 2013, the National Advisory Committee on Immunization (NACI) issued an updated statement on use of pneumococcal conjugate vaccine in high-risk adults. In addition to hematopoietic stem cell transplant recipients (HSCT, covered in the British Columbia program), NACI also recommended PCV13 for those with HIV infection.<sup>2</sup>

## 4. How is British Columbia expanding the use of PCV13?

In British Columbia (BC), PCV13 is in use for routine immunization of infants and healthy children under 5 years of age, as well as for asplenic to 18 years of age and HSCT recipients. Effective April 1, 2015, BC is expanding the PCV13 program to include HIV-infected adults as well as HIV-infected 5 – 18 year old children and adolescents who have not previously completed an age appropriate PCV13 series.

## **5. Why are other immunocompromising or chronic medical conditions listed in the NACI statement not included in the expanded BC program?**

While NACI concludes that there is **good** evidence to recommend the use of PCV13 for HIV-positive individuals, at this time, NACI has concluded that there is only **fair** evidence to recommend the vaccine for other immunocompromising conditions or **insufficient** evidence to recommend it for several chronic conditions. As new data become available, these recommendations will be reviewed and updated.

## **6. When can I start offering PCV13 to HIV-infected individuals?**

The program will start in British Columbia on April 1, 2015.

## **7. How is PCV13 supplied?**

In British Columbia, the publicly funded PCV13 vaccine is Prevnar<sup>®</sup>13 (Pfizer Canada Inc.). The format is a single dose, prefilled syringe. Contact your local health unit to obtain vaccine.

## **8. What is the PCV13 dosage and route for HIV-infected individuals?**

The PCV13 dose is 0.5 mL and it is administered intramuscularly (IM).

## **9. Can PCV13 be administered at the same time as other vaccines?**

Yes, PCV13 vaccine can be administered concurrently or at any time before or after the administration of another inactivated vaccine or a live vaccine. The only exception to this is the recommended 1 year interval following PPV23.

## **10. What is the PCV13 schedule for HIV-infected individuals?**

HIV-infected individuals who have not been previously immunized against pneumococcal disease are recommended to receive one dose of PCV13 vaccine first, followed by PPV23 at least 8 weeks later. If PPV23 has been administered in the past, PCV13 should be administered at least one year later.

## **11. Why is a 1 year interval recommended between a prior dose of PPV23 and a subsequent dose of PCV13?**

An interval of this length is recommended to minimize the possibility of blunting of the antibody titers following PPV23, called 'hyporesponsiveness', which has been observed with the use of the polysaccharide pneumococcal vaccine. The clinical significance of hyporesponsiveness is unknown.<sup>5</sup>

## **12. Are HIV-infected individuals still recommended to receive a total of 2 lifetime doses of PPV23?**

Yes. A total of two lifetime doses of PPV23 are recommended, with the second dose given 5 years after the first dose of PPV23. PPV23 continues to be recommended in HIV-infected adults because about 38% of reported cases of invasive pneumococcal disease among adults in British Columbia are due to serotypes covered only by PPV23; 25% are due to serotypes not contained in either PCV13 or PPV23.<sup>4</sup>

Individuals who have previously received PPV23 five or more years ago, and receive PCV13 vaccine, should receive a 2<sup>nd</sup> dose of PPV23 no sooner than 8 weeks after PCV13 and no sooner than 5 years after the initial dose of PPV23.

### **13. Why are both PCV13 and PPV23 recommended for those with HIV?**

PCV13 was developed to produce effective protection in young children and has been associated with reduction in nasopharyngeal carriage and herd immunity. As well, conjugate vaccines are not associated with hyporesponsiveness or blunting of the immune response with subsequent doses, which has been observed in studies of polysaccharide vaccines including one study among HIV-infected adults in Uganda.<sup>5</sup> While this phenomenon is not well understood and may vary by pneumococcal serotypes and the unique immunogenetic profile of the host, these concerns are overcome by priming with conjugate vaccines.

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### **14. What if an HIV-infected individual has previously received two doses of PPV23 five years apart?**

If an HIV-infected individual has previously received two doses of PPV23 five years apart, PCV13 should be given at least one year after the last dose of PPV23.

### **15. If an HIV-infected individual has received PCV13 as a child, is a booster dose given?**

If an HIV-infected individual completed an age appropriate series of PCV13 before 5 years of age, a booster PCV13 vaccine is not recommended. There is currently no evidence that a PCV13 booster dose adds any benefit.<sup>1</sup> If an individual did not complete the PCV13 series before 5 years of age, one dose of PCV13 is recommended.

### **16. When is the best time to give PCV13 during the HIV disease process?**

The ability of an HIV-infected individual to respond to vaccine antigens is related to the degree of immunosuppression at the time of immunization.<sup>6</sup> As the HIV illness progresses, the immune system weakens and the effectiveness of immunization decreases because an optimal immune response may not be achieved.<sup>1</sup> Therefore, it is preferable to administer PCV13 early in the course of HIV infection; however, there is benefit from immunization at any time during the course of the infection.

### **17. Are there any contraindications or precautions to PCV13?**

The only contraindication for receiving PCV13 vaccine is a history of an anaphylactic reaction to a previous dose of any pneumococcal vaccine, or to any component of PCV13.

The only precaution for receiving PCV13 vaccine is an interval of less than one year since receipt of PPV23. In those who have received PPV23 less than a year ago, a year should elapse following the PPV23 receipt prior to giving a dose of PCV13.

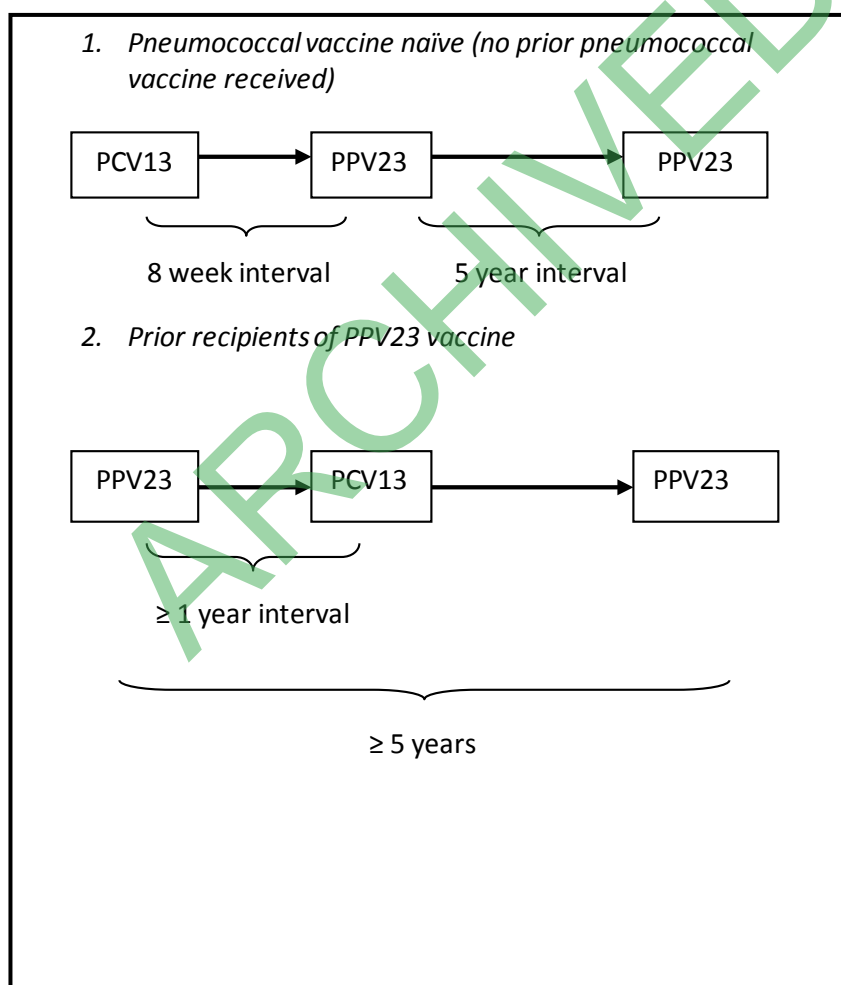
### 18. What are the adverse events of PCV13?

Local reactions can include redness, swelling and tenderness at the injection site and limitation of arm movement. Systemic reactions can include fever, decreased appetite, headache, vomiting and diarrhea, muscle and joint pain, and rash.

### 19. How will this program be marketed to those clients who are eligible?

Promotional materials (i.e., brochures and posters) will be distributed to health authorities, HIV care providers, community partners and support groups. Information will also be posted on the ImmunizeBC website.

### 20. Sequential administration and recommended intervals for PCV13 and PPV23 for HIV positive adults



## REFERENCES

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