In Canada, the current recommendation is to offer one dose of the 13-valent pneumococcal polysaccharide-protein conjugate vaccine (PCV) at age 60 years.

When comparing the pneumococcal polysaccharide-protein conjugate vaccine (PCV) introduction programs, the overall IPD incidence decreased significantly in children less than 5 years of age and the proportion of serotypes covered by the three conjugate vaccines was significantly reduced (Fig. 1A) (15). A decrease in the frequency of conjugate vaccine-serotypes was also observed among adults due to reduced transmission at population level.

However, the overall IPD incidence in adults remains unchanged due to replacement by serotypes not covered by conjugate vaccines.

PCV7 is now licensed for adults and forecasting future IPD incidence and serotype distribution is a key component of any economic evaluation of strategies for the vaccination of adults.

**Introduction**

- Study population: Adults 60-74 years of age in the province of Quebec.
- Data sources: IPD cases reported to regional public health authorities and characterized by the Quebec Public Health Laboratory (QPQ).
- Annual population denominators and projections obtained from the Quebec Statistics Institute.

**Methods**

- Serotype-specific IPD rates were adjusted for improvement in reporting in 2000-2004 and incorporate serotype identification.
- Models were based on empirical evidence and theoretical considerations.

Of note:
- In absence of PCV use in children, the serotype incidence of the different IPD categories is stable over years.
- The indirect effects of PCV and PCV13 on outside the study period 2000-2024.

**Results**

- Forecasting pneumococcal incidence is based on the pneumococcal polysaccharide-protein conjugate vaccine (PCV) introduction program, the overall IPD incidence decreased significantly in children less than 5 years of age and the proportion of serotypes covered by the three conjugate vaccines was significantly reduced (Fig. 1A) (15).
- A decrease in the frequency of conjugate vaccine-serotypes was also observed among adults due to reduced transmission at population level.
- However, the overall IPD incidence in adults remains unchanged due to replacement by serotypes not covered by conjugate vaccines.

PCV7 is now licensed for adults and forecasting future IPD incidence and serotype distribution is a key component of any economic evaluation of strategies for the vaccination of adults.

**Conclusion**

- Forecasting pneumococcal epidemiology should be made with great care but is an asset for any economic evaluation of pneumococcal adult vaccination.
- In the age group 60-74 years, IPD caused by PCV-only types has been decreasing since December 2009 and stabilization at low level was observed and will continue.
- The same patterns are observed for additional PCV13, with the exception of PCV1.
- Serotype 2 incidence in adults due to PCV13 use in children. Great attention should be paid to the evolution of this particular serotype.
- The possible interest of PCV13 to improve outcomes on the risk since 2014 and this trend will continue as a consequence of replacement of the decreasing incidence of PCV types.
- In four of 10 serotype categories, serotypes were observed to be stable and alternative models. The only exception was PCV7, for which time introduction was kept as predictor in the alternative models.

**Interpretation**

- The relative contribution of PCV13 and additional PCV23 types to the overall IPD incidence during the next decade will be determined by the time needed to reach a new equilibrium. Based on empirical evidence, a new equilibrium will be reached in 10 years after the last switch to the new generation conjugate vaccines.
- A longer or shorter delay to reach the equilibrium will increase or decrease the magnitude of herd effect, replacement and overall IPD incidence risk.

- The potential usefulness of a vaccination program consisting of one PCV13 dose, or one PPV23 dose or one PCV13 and PPV23 dose each for adults will be influenced by the magnitude of herd effect and replacement.