The 13-valent Pneumococcal Conjugate Vaccine Provides Excellent Coverage of Multi-drug Resistant *Streptococcus pneumoniae* in Canada

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**ABSTRACT**

The 13-valent pneumococcal conjugate vaccine (PCV-13) was designed specifically to address the burden of disease caused by multi-drug resistant *Streptococcus pneumoniae* (MDR 

**MATERIALS & METHODS**

Bacterial isolates. *S. pneumoniae* isolates were collected as part of the CANWARD study (an annual national surveillance study) from patients in 15 tertiary-care centres across Canada between 2007 and 2009, inclusive [4]. Eight hundred isolates (450 respiratory and 450 blood isolates) were randomly selected for this study.

Antimicrobial Susceptibility Testing. Antimicrobial susceptibility testing was performed using the broth microdilution method recommended by the Clinical and Laboratory Standards Institute (CLSI) [21] with a commercial broth microtitre plate (Clinical Diagnostics Systems, Inc., Wayne, NJ) according to the manufacturer’s instructions. For *S. pneumoniae*, minimum inhibitory concentrations (MICs) were interpreted based on CLSI M35-P2 guidelines. Serotype Determination. The serotype of each isolate was determined by the Quellung reaction using standard methodology. Typing was performed at the National Microbiology Laboratory – Public Health Agency of Canada. Statistical Analysis. Statistical significance was evaluated by two-tailed Chi-squared analysis or Fisher’s exact test, as appropriate.

**RESULTS**

**Results.** The most common serotypes circulating in Canada are 19A, 5, 22F, 4, and 14. Serotypes 5, 7F, and 19A were isolated significantly more frequently from bloodstream infections than respiratory samples (p < 0.001). Conversely, serotypes 6A (p = 0.04), 19F (p = 0.04), 23F (p = 0.02) and non-typeable isolates (p < 0.001) were more commonly observed from respiratory specimens. The first ID ISG in Canada was identified in this study.

**Conclusions.** The vaccine is highly effective against MDR serotypes circulating in Canada. The vaccine is most effective against typeable serotypes, while little benefit is observed against non-typeable isolates. The vaccine is most effective against isolates circulating in children 0-4 years of age, while little benefit is observed against isolates circulating in adults over the age of 50.

**ACKNOWLEDGMENTS**

This study was funded by the Public Health Agency of Canada. The authors acknowledge the technical support of the National Microbiology Laboratory – Public Health Agency of Canada, Winnipeg, Canada.

**REFERENCES**