

Invasive Pneumococcal Disease

Q1-Q3, 2008 Report

A report by the Health Protection Surveillance Centre

16th December 2008



Background

Invasive pneumococcal disease (IPD) caused by the organism *Streptococcus pneumoniae* is notifiable in Ireland since 2004. Therefore, all IPD cases diagnosed should be notified by laboratories and the clinicians to the relevant Department of Public Health, in a timely manner. IPD notification data are collated on the Computerised Infectious Disease Surveillance (CIDR) system.

An enhanced surveillance system for IPD commenced in September 2008, to coincide with the introduction of the 7-valent conjugate pneumococcal vaccine, Prevenar (PCV7), to the routine childhood immunisation schedule at 2, 6 and 12 months of age. CIDR will be updated in early 2009 to enable collation of the complete IPD dataset as per the enhanced notification form.

A national *S. pneumoniae* typing project commenced in April 2007. This is a collaborative project between RCSI/Beaumont Hospital, The Children's University Hospital, Temple Street and HPSC and it will continue through 2009. One of its objectives was to determine the baseline serotype distribution of invasive *S. pneumoniae* isolates prior to the introduction of PCV7 in Ireland. The results from the first 12 months of this study were published in the August 2008 edition of Epi-Insight – available at <http://www.hpsc.ie>

Surveillance of *S. pneumoniae*, from the perspective of antimicrobial resistance, is undertaken by the European Antimicrobial Resistance Surveillance System (EARSS), a collaboration involving microbiology laboratories and HPSC. Quarterly EARSS reports by HPSC are available at <http://www.hpsc.ie>

This report focuses on the epidemiology of IPD based on the notification data. Data were extracted from CIDR on 16th December 2008. These data are provisional. Serotyping data relating to these notifications are also presented.

Sincere thanks to all for providing data for this report and for contributing to the surveillance of IPD in Ireland.

Results

Notification data

Between January and September 2008 (Q1-Q3, 2008), 339 cases of IPD were notified in Ireland. The majority of these cases (91%, n=308) were classified as confirmed and 9% as probable (n=31) (Fig. 1). More IPD cases occurred in males than in females, 1.4:1.0. Cases ranged in age from 1 week to 91 years, with a median age of 63 years. Seven deaths associated with IPD infection were notified, 2 young children and 5 elderly adults.

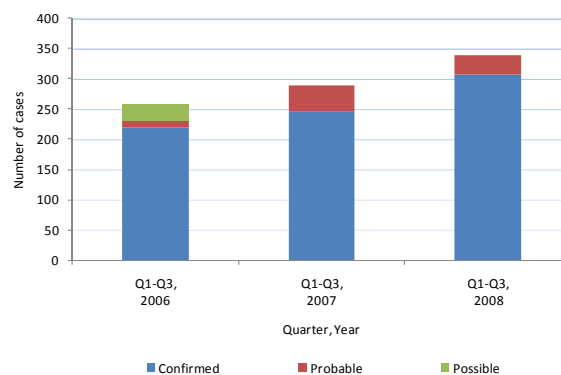


Figure 1. Number of IPD notifications by case classification in Ireland Q1-Q3, 2006 - 2008

There was a 14% increase in IPD notifications in Q1-Q3, 2008 compared with the same period in 2007 (n=290) and a 24% increase compared with 2006 (n=258) (Fig. 1). This increase is considered to be a reflection of improved reporting of IPD cases through the notification system rather than any change in the burden of IPD. Data from the EARSS project support this conclusion. The number of cases reported through that system in Q1-Q3 over recent years has been quite stable; 2008 (n=322), 2007 (n=334) and 2006 (n=333).

Clinical diagnosis was reported for 117 of 339 notifications in Q1-Q3, 2008. The clinical manifestations of the disease were reported as follows: pneumonia (n=60), bloodstream infection (n=34), meningitis (n=17), meningitis and septicaemia (n=4) and other (n=2).

In Q1-Q3, 2008 the overall incidence of IPD was 8 cases per 100,000 total population. The incidence was highest in those 75 years of age and older (43/100,000) followed by infants <1 year of age (36/100,000) (Fig. 2). The incidence of disease was also high in children 1 year of age (27/100,000) and in elderly persons aged 65-74 years (22/100,000) (Fig. 2). For all age groups between 2 and 64 years of age the incidence of IPD was <10 cases per 100,000 population, dropping to approx. 1 case per 100,000 for 5-24 year age groups (Fig. 2).

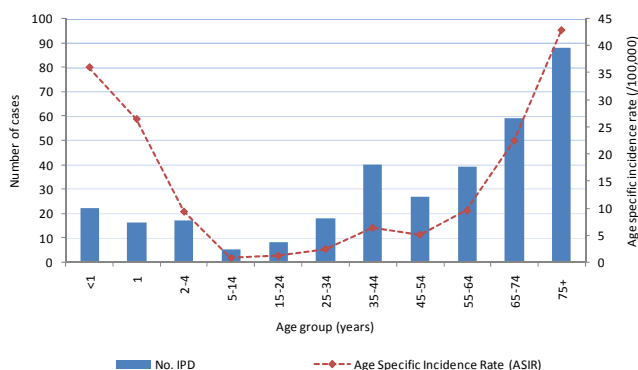


Figure 2. Number and age specific incidence rates of IPD notifications by age group in Q1-Q3, 2008

Typing Data

Eighty percent of the confirmed IPD notifications (246/308) in Q1-Q3, 2008 had an isolate submitted for typing. Of these 246 typed cases, the five most common serotypes were 4, 14, 8 and 9V and 7F, accounting for 44% of the typed isolates (Fig. 3). Three of these are covered by PCV7 (serotypes 4, 9V and 14). Serotype 14 was the most common one associated with infection in children <2 years of age (Fig. 3).

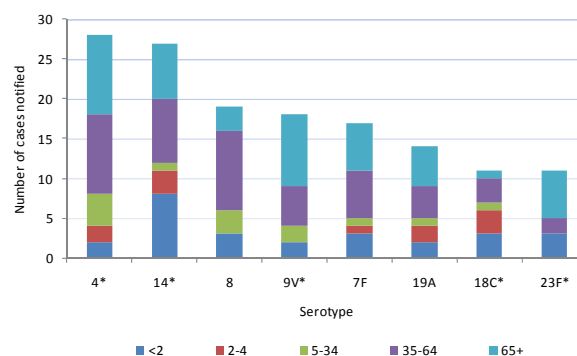


Figure 3. Number of IPD notifications of the eight most common serotypes by age group, Q1-Q3, 2008
*Denotes serotypes contained in PCV7

Discussion

IPD is predominantly associated with young children and elderly adults. Based on the most recent Irish data as presented in this report, IPD causes a considerable burden of disease in these age groups. Following the introduction of PCV7 to the childhood immunisation schedule this autumn, the HPSC will be monitoring the impact of this vaccine in reducing the burden of IPD and on the serotype distribution of *S. pneumoniae* strains associated with invasive infection. The continued funding of the Pneumococcal Typing Project and the successful implementation of a quality IPD enhanced surveillance system are vital to the success of monitoring the impact of this important vaccination strategy and of informing future Public Health policies.

Note:

1. All cases of IPD diagnosed should be notified in a timely manner to the relevant Department of Public Health
2. Laboratories are invited to submit all invasive *S. pneumoniae* isolates to RCSI/Beaumont for typing
3. Data on antimicrobial resistance profiles of invasive *S. pneumoniae* isolates are reported via the EARSS project
4. Since 1st September 2008 enhanced surveillance should be performed on cases of IPD notified in children born in or since 2000.