1.8 *Streptococcus pneumoniae* (invasive)

Summary

Number of cases in 2007: 361
Number of cases in 2006: 293
Number of deaths in 2007: 18
Crude incidence rate, 2007: 8.5/100,000

Since 1st January 2004, invasive infections due to *Streptococcus pneumoniae* are notifiable. For the purposes of this report the term invasive pneumococcal disease (IPD) will be used to describe these infections.

In 2007, 361 cases of IPD (8.5/100,000) were notified in Ireland. This is a 19% increase from 2006 (293 cases; 6.9/100,000). Although, the number of IPD notifications has steadily increased each year since 2004 (figure 1), this increase is believed to be a reflection of improved reporting of IPD through the notification system rather than an increase in disease burden. The fact that the number of invasive *S. pneumoniae* isolates reported through the European Antimicrobial Surveillance System (EARSS) has remained relatively stable over these years with between 400-438 cases reported *per annum* would support the above assessment (figure 1).

In 2007, 310 IPD cases were classified as confirmed (86%) and 51 as probable (14%). The clinical diagnosis was reported for 158 of the notifications and the clinical manifestations included pneumonia (51%; n=81), septicaemia (24%; n=38), meningitis or meningitis & septicaemia (22%; n=35), others (3% n=4; 1 each of peritonitis, mastoiditis, muscoskeletal infection and soft tissue infection).

Slightly more cases of IPD occurred in males (52%, n=189) than in females (48%, n=172). Cases ranged in age from 1 week to 98 years, with a median age of 58 years. Sixty percent of the IPD cases notified were in the young and the old; 18.8% (n=68) of cases were in children <5 years of age and 41.6% (n=150) were in elderly adults 65 years of age and older (figure 2).

In children the incidence of IPD was highest in infants <1 year of age (41/100,000) followed by 1 year old children (38/100,000). Thereafter, the incidence declined and it was <10 cases per 100,000 for the age groups between 5-54 years (figure 2). In the elderly the incidence of IPD increased considerably with increasing age; from 22 cases per 100,000 in the 65-74 year olds, to 38 cases per 100,000 in 75-84 year olds and reaching the highest

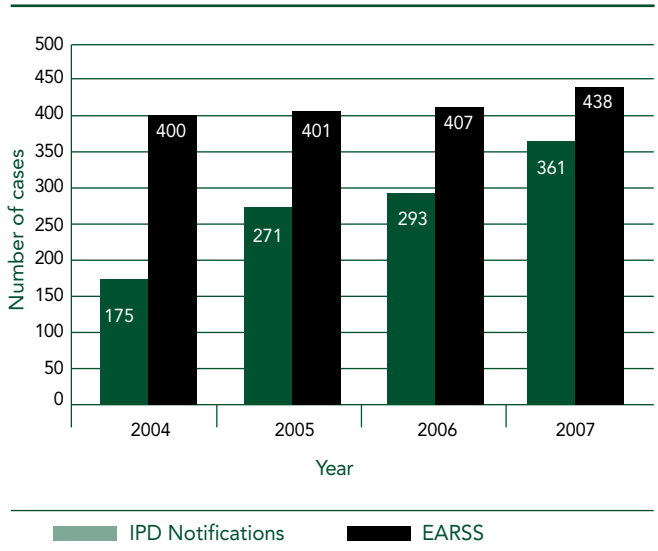

Figure 1. Annual number of invasive pneumococcal disease cases reported through the infectious disease notification system and EARSS, 2004-2007

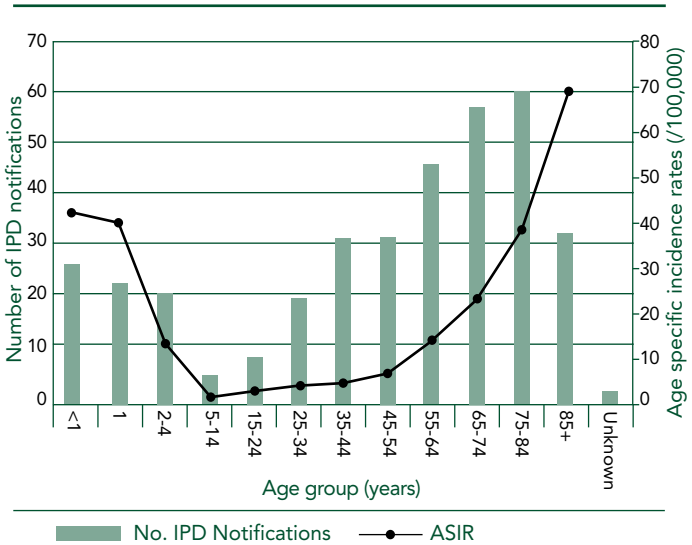

Figure 2. Number and age specific incidence rates of IPD notifications by age group, 2007

rate in those 85 years of age and older, at 69 cases per 100,000 population (figure 2).

Outcome was reported for 35% (127/361) of IPD notifications in 2007 and although this is an improvement from the 10% reported in 2006, the figures presented here may underestimate mortality due to IPD in Ireland. In 2007, 18 deaths associated with IPD were reported, involving five children (28%; all <2 years of age) and 13 adults (72%) ranging in age between 38 and 98 years. Cause of death was reported as follows: pneumonia (39%; n=7), meningitis or meningitis & septicaemia (28%; n=5), septicaemia (11%; n=2) and clinical diagnosis not reported (22%; n=4).

In April 2007 a collaborative project commenced between the RCSI Beaumont Hospital, the Children's University Hospital Temple Street and HPSC on the typing of invasive *S. pneumoniae* isolates submitted by Irish microbiology laboratories. A primary objective of this project was to determine the serotype distribution of IPD isolates in circulation in Ireland prior to the introduction of the pneumococcal conjugate 7-valent vaccine (PCV7, Prevenar) to the infant immunisation schedule. Based on data from the first 12 months of the project (April 2007 – March 2008) the most common serotypes in circulation are 14, 4, 9V, 7F, 19A; accounting for 45% of the isolates typed. The seven serotypes contained in PCV7 occur in the top 10 most prevalent serotypes associated with IPD in Ireland. Eighty four percent of isolates from children aged <2 years had serotypes covered by PCV7. Further details and results from this typing project are presented in the August 2008 edition of Epi-Insight, available at www.hpsc.ie.

On 1st September 2008, PCV7 was introduced in Ireland to the infant immunisation schedule, offering three doses at 2, 6 and 12 months of age, to those born on or after 01/07/2008. A catch-up campaign for those born between 02/09/2006 and 30/06/2008 is also being undertaken. The monitoring of *S. pneumoniae* serotype distribution needs to continue in order to assess the impact of introducing PCV7, to investigate vaccine failures and to inform future public health policy regarding immunisation schedules and the value of introducing expanded valency IPD conjugate vaccines as they become available. To ensure this work can continue in the long term, provision of a permanently resourced reference facility is an absolute priority.

The IPD notification figures presented in this report are based on data extracted from the Computerised Infectious Disease Reporting (CIDR) system on 29th August 2008. These figures may differ slightly from those previously published due to ongoing updating of notification data on CIDR. EARSS data were obtained from the Whonet database at HPSC.