



Féidhmeannacht na Seirbhíse Sláinte
Health Service Executive



Health Protection Surveillance Centre
Lárionad Faire um Chosaint Sláinte



Epidemiology and Surveillance of Invasive Pneumococcal Disease in Ireland

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HPSC

Aims

- To describe the epidemiology of Invasive Pneumococcal Disease (IPD) in Ireland
- To discuss surveillance of IPD in Ireland

Invasive Pneumococcal Disease

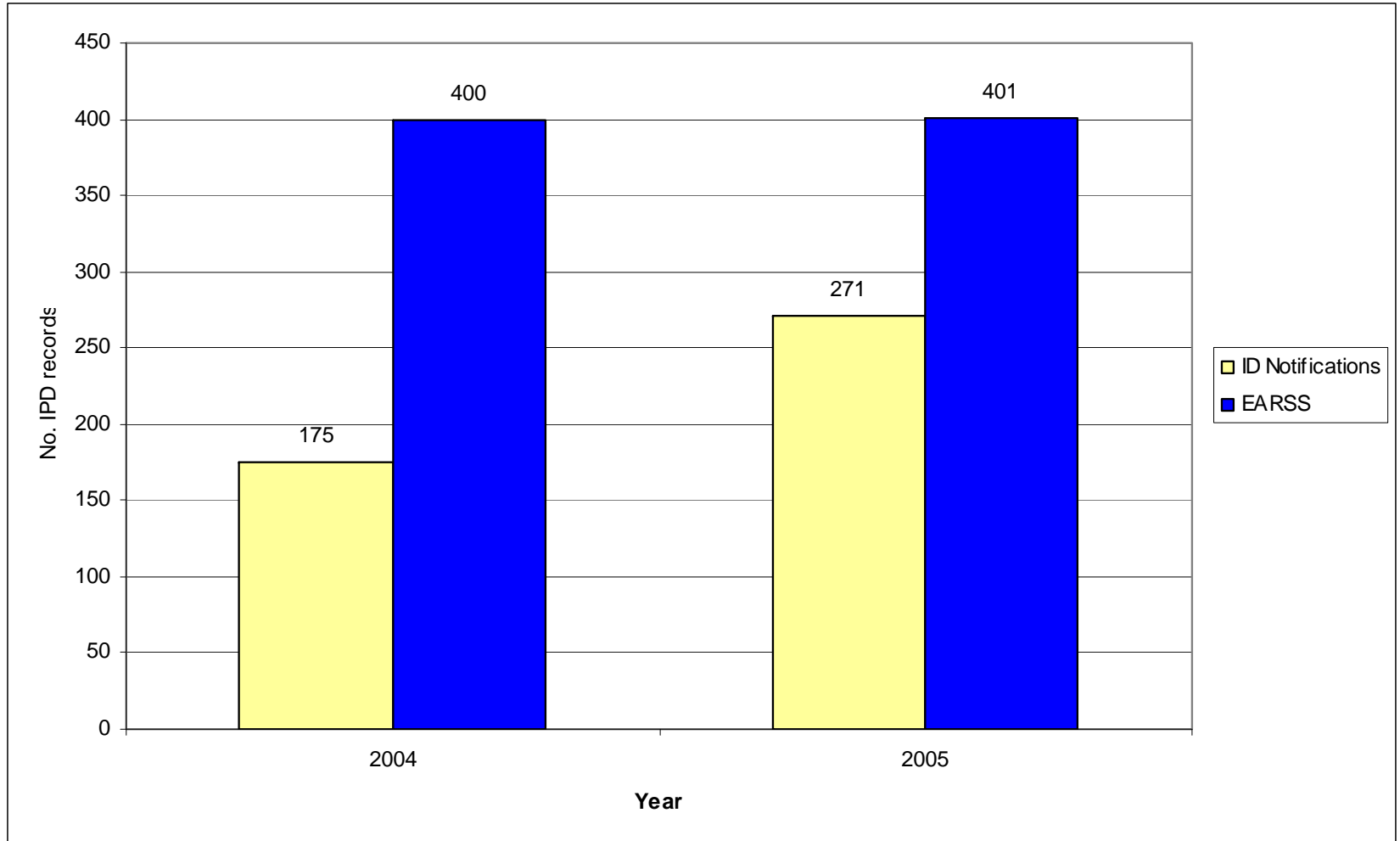
- *Streptococcus pneumoniae* can cause both invasive and non-invasive disease
- IPD - disease of early childhood and older adults
- 90 serotypes *S. pneumoniae* have been described
- Vaccination only tool available to prevent IPD
 - 23-valent pneumococcal polysaccharide vaccine (PPV)
 - 7-valent pneumococcal conjugate vaccine (PCV)
- Routine pneumococcal vaccination with PCV
 - Some countries have introduced it to the childhood schedule
 - In Ireland, PCV is currently recommended for use in infants and children, who are at increased risk IPD and its complications

Materials and Methods

- IPD is a notifiable disease since 1st Jan 2004
 - Notification Data from CIDR
 - Data extracted on 6th Dec 2006
- Invasive *S. pneumoniae* isolates reported through EARSS since 1999
 - Lab records from WHONET
 - EARSS in 2005 – 98% population coverage
- Enhanced Bacteraemia Surveillance

Number of IPD cases

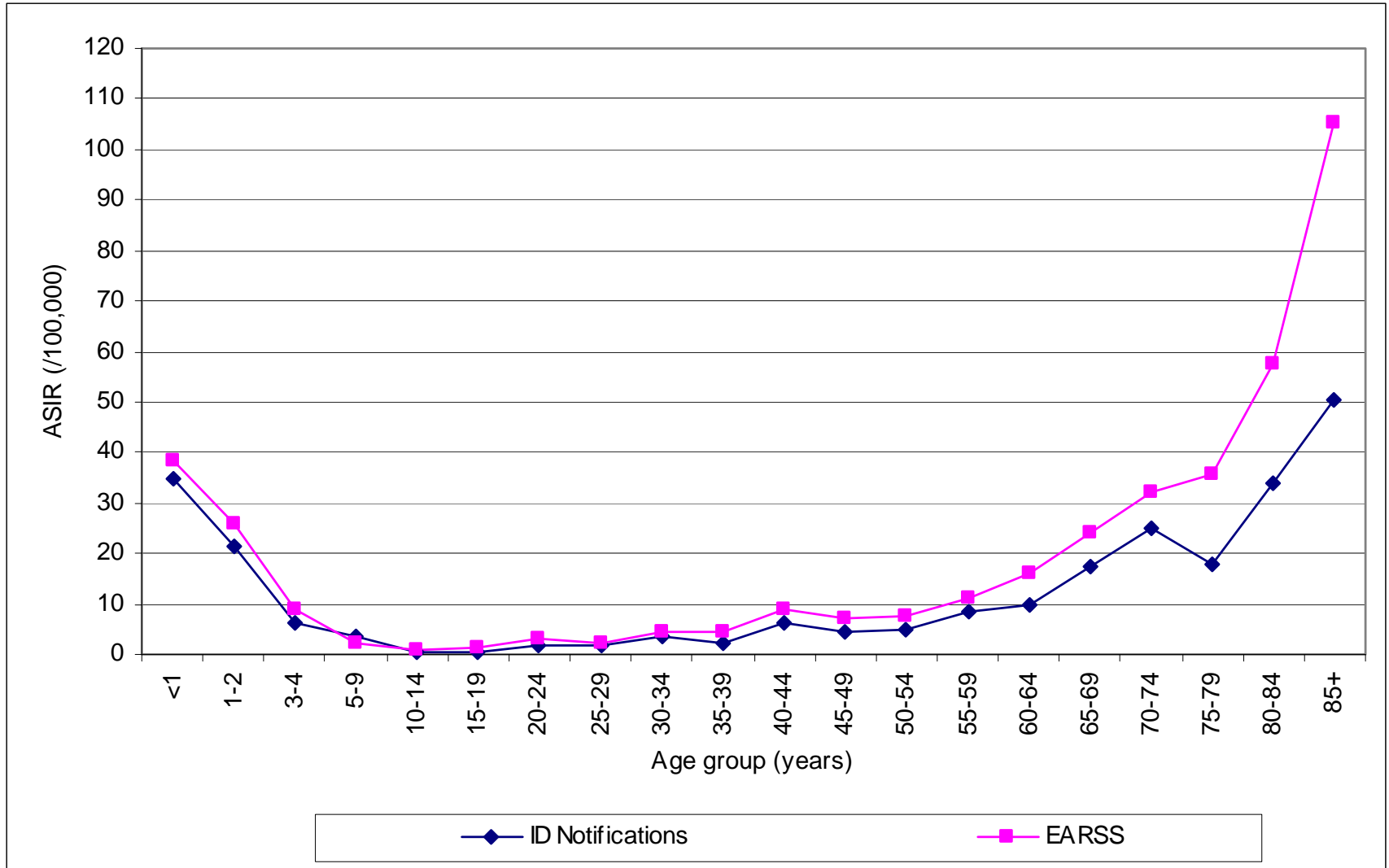
ID Notifications v EARSS, 2004-2005



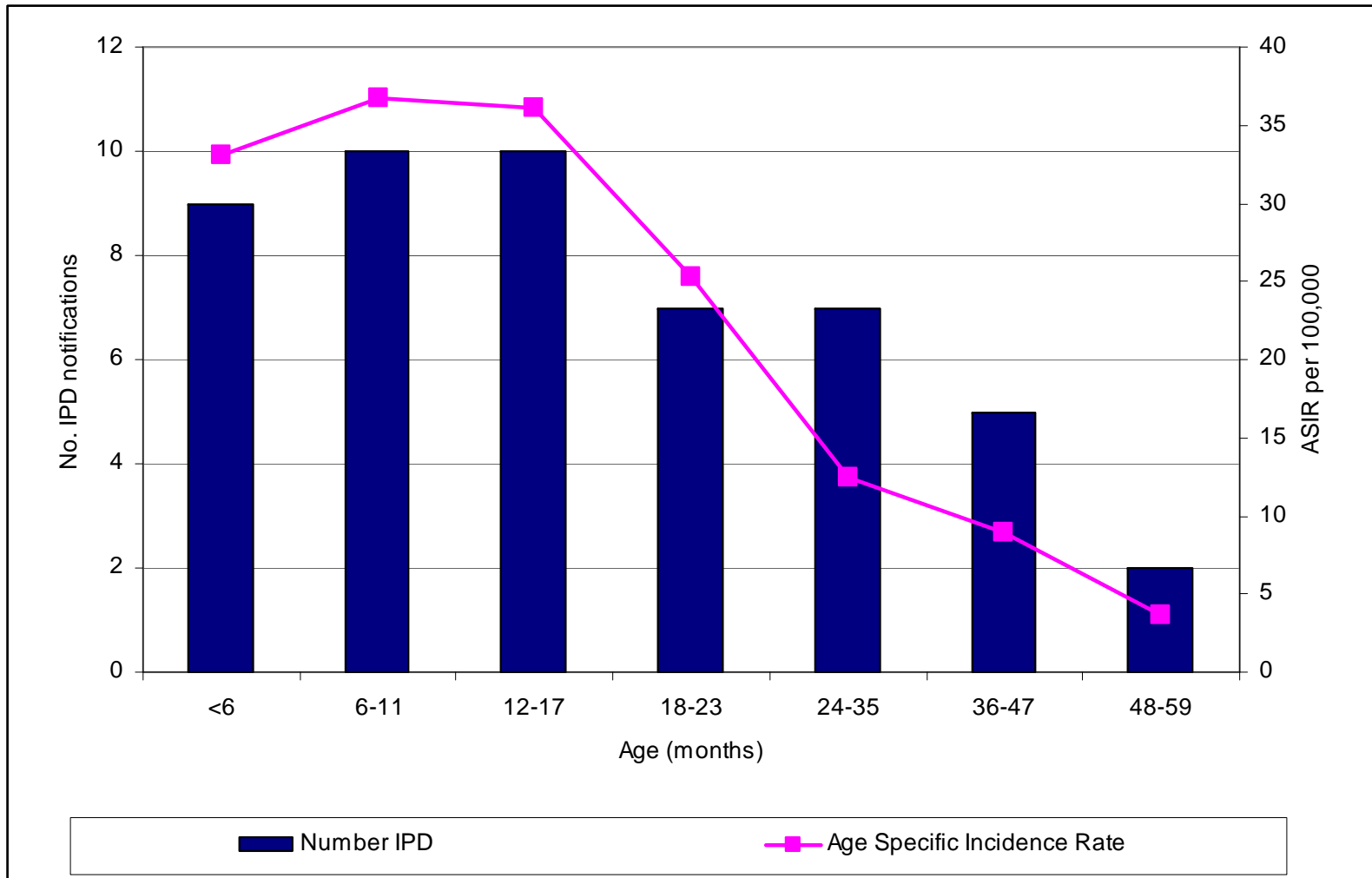
IPD Notifications 2005

- n = 271
- Age range: 1 mo – 96 years
- Median age: 57 years
- Predominance in males: M:F = 1.4:1.0
- Clinical diagnosis: n= 25/271
 - 12 meningitis, 7 meningitis-&-septicaemia
 - 5 septicaemia, 1 pneumonia
 - 247 not indicated
- Outcome: n=14/271
 - 3 died, age range 40-88 years
 - 10 survived and 1 outcome unknown
 - 257 not indicated

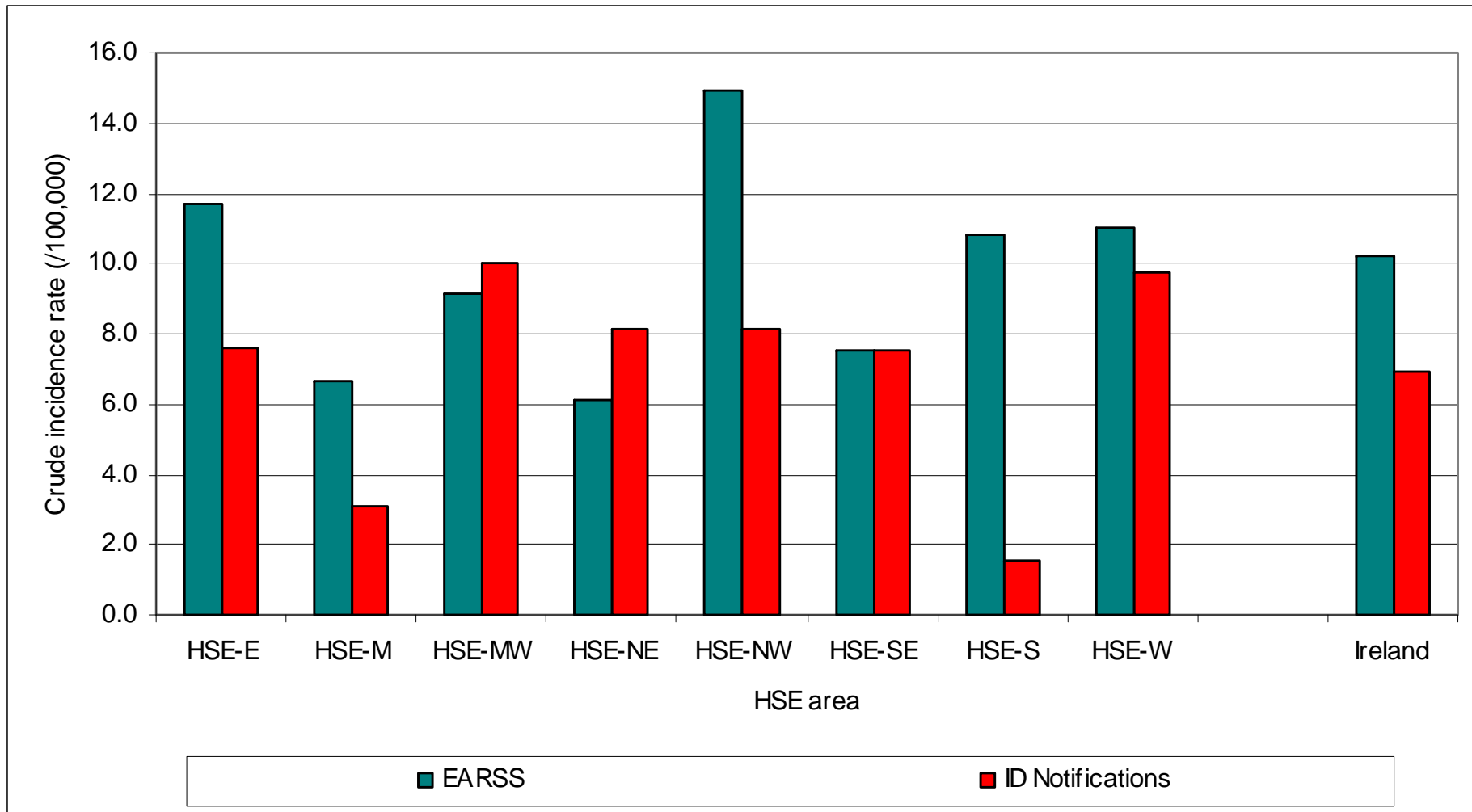
Age Specific Incidence Rates of IPD in 2005



Number and ASIR of IPD Notifications in Infants and Children, in 2005



Crude Incidence Rates IPD in 2005 by HSE Area



S. pneumoniae typing - 2005

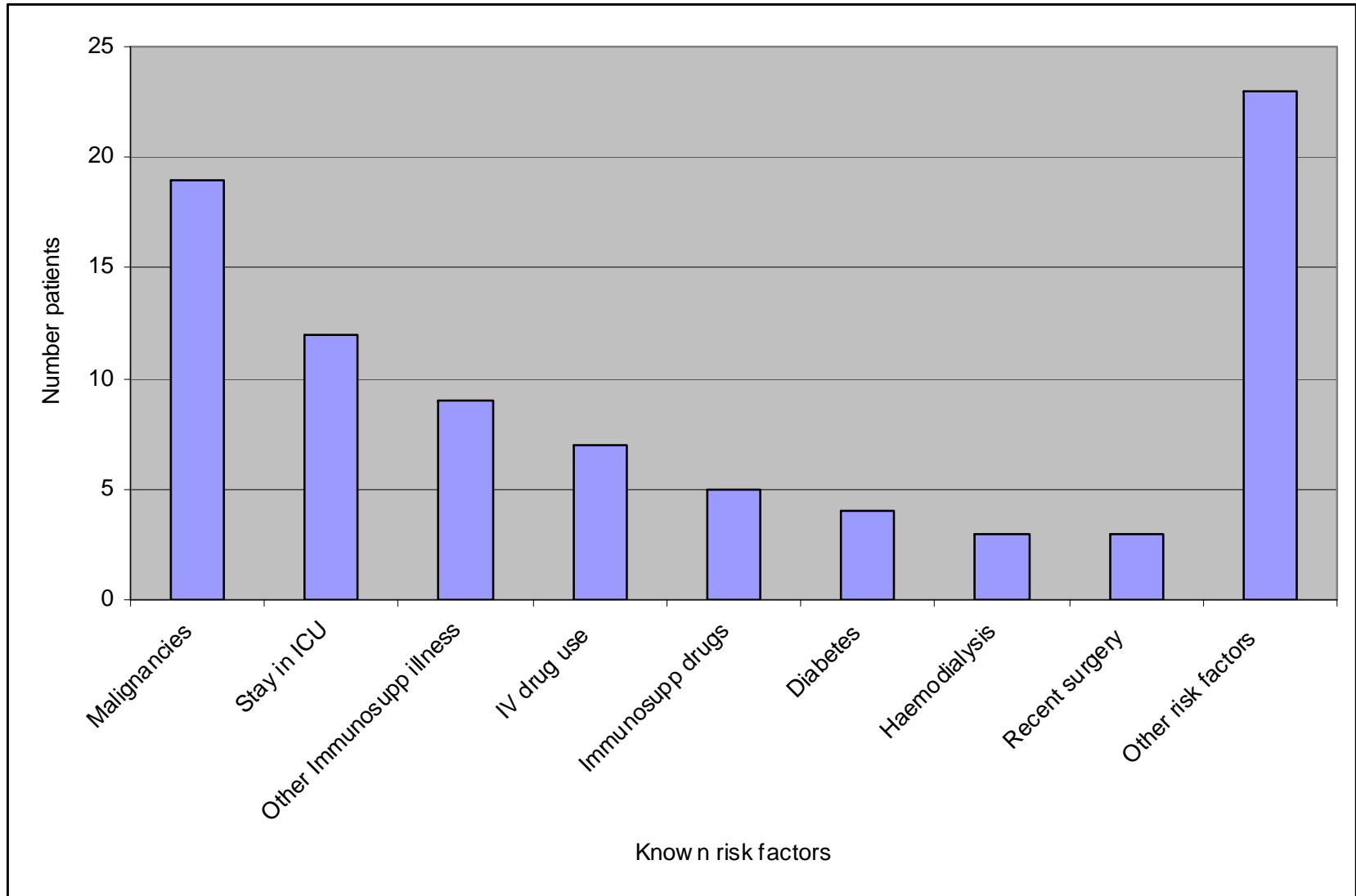
	No. typed	No. (%) covered by PCV	No. (%) covered by PPV
All ages	24	11 (46%)	22 (92%)
<5 years	11	5 (45%)	10 (91%)

Based on data from 2 of 42 participating EARSS laboratories

Enhanced Bacteraemia Surveillance

- Surveillance of bloodstream infections (BSI)
- Eleven labs participating, representing 29 hospitals
- Enhanced data on approx 25% EARSS IPD isolates
- Main findings 2004-2005 (n=194):
 - 45% of cases female
 - All infections were community acquired
 - Primary source of infection was respiratory tract (n=135)
 - 14% penicillin non-susceptible *S. pneumoniae* (PNSP)
 - Outcome Data, 2005 (n=110)
 - Eight labs, representing 11 hospitals
 - 21 died – 19.1%
 - 3/12 with PNSP died – 25%

Known Risk Factors Identified by BSI Surveillance, 2004-2005 (n=85)



Pneumococcal Vaccination

- PCV introduced to routine schedule
 - USA – Aug 2000
 - At 2, 4, 6 and 12-15 months
 - Netherlands – Apr 2006
 - At 2, 3, 4 and 11 months
 - UK – Sept 2006
 - At 2, 4 and 13 months
 - Catch-up children under 2 years
 - Also at risk children >12 months and <5years, single dose
 - Also Canada, Australia, Norway, Italy, Greece, Spain, Austria, Switzerland
- Other countries have selective immunisation programmes

Pneumococcal Vaccination Policy in Ireland

- Currently recommended for at risk groups
- PCV actively being considered by NIAC for introduction to routine schedule
 - Epidemiology has been reviewed
 - Cost benefit analysis underway

Conclusions

- ID notifications underestimate burden IPD when compared with EARSS data
- Comprehensive typing data is not available
- Enhanced bacteraemia data is limited
- Surveillance IPD needs strengthening
 - Enhanced surveillance system required to:
 - Inform Public Health Policy
 - Evaluate impact of immunisation initiatives
 - Ascertain vaccination status of cases and therefore determine continued efficacy of vaccines and suitability of schedule in use
 - Monitor distribution of pneumococcal serotypes
 - Those included in vaccines – potential vaccine failures
 - Evolution non-vaccine serotypes – serotype replacement
- Pneumococcal Reference Laboratory – a priority

Acknowledgements

- Departments of Public Health
- Microbiology Laboratories
- Hospitals participating in Enhanced Bacteraemia Surveillance