

BURDEN OF INVASIVE PNEUMOCOCCAL DISEASES IN OLDER ADULTS IN THE NEW EU COUNTRIES OF THE CENTRAL EUROPE

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Introduction

Streptococcus pneumoniae causes a wide spectrum of illness from upper respiratory tract infection to severe invasive pneumococcal disease (IPD), defined as the identification of *S. pneumoniae* normally sterile site. The most severe IPD forms are meningitis, bacteraemia and septicaemia. Older adults are in an increased risk of death from IPD. The former socialistic countries of the central Europe form a unique region with specific health care and epidemiology characteristics, and where the local evidence on the underlying epidemiology is scarce.

The objective was to estimate the economic burden of IPD in those ≥ 50 years of age in the Czech Republic (CR), Slovakia (SK), Poland (PL), and Hungary (HU) using most recent data available.

Methods

The national demographics data stratified by age were obtained from the respective statistical office in each country (table 1).

The incidence of IPD stratified by age groups 50-64, 65-74, 75-84 and ≥ 85 was obtained from national surveillance systems (PL, CR, SK) and insurance records (HU).

Direct costs from the payer's perspective were based on published national sources (CR, SK), DRG lists (PL) and the insurance records (HU).

The incidence and the CFR for all IPD forms were estimated using the national surveillance and reporting systems (PL, CR, SK)¹⁻⁴ and national insurance records (HU)⁵.

Results

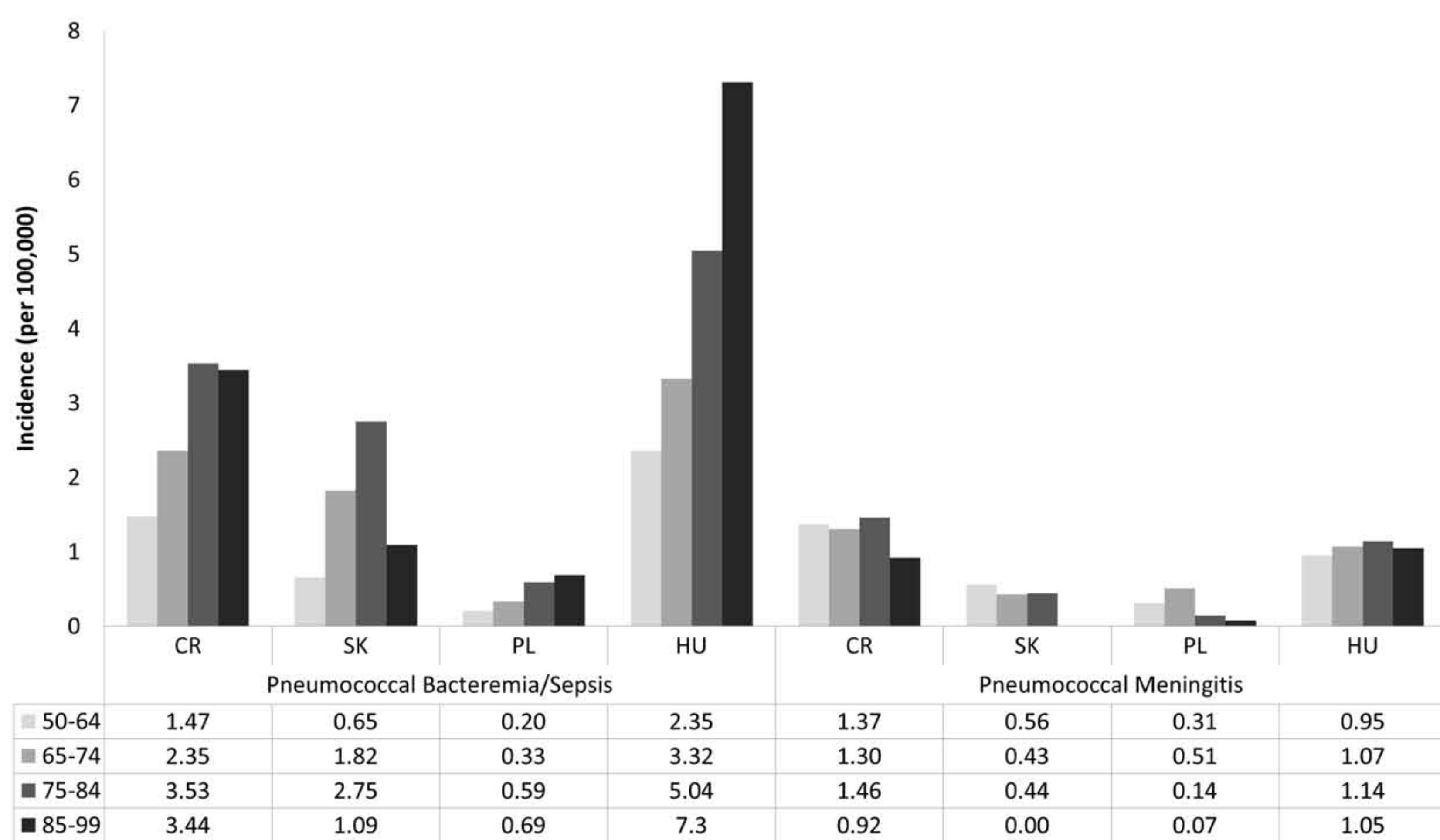


Figure 1: Country-specific incidence of IPD forms by age group per 100,000

The incidence of hospitalized bacteraemia/sepsis and meningitis per 100,000 person years are given in Figure 1 for individual age groups and cumulated in Table 1.

The older adults present a substantial part of the population with 40% of those older than 65 years (Figure 2).

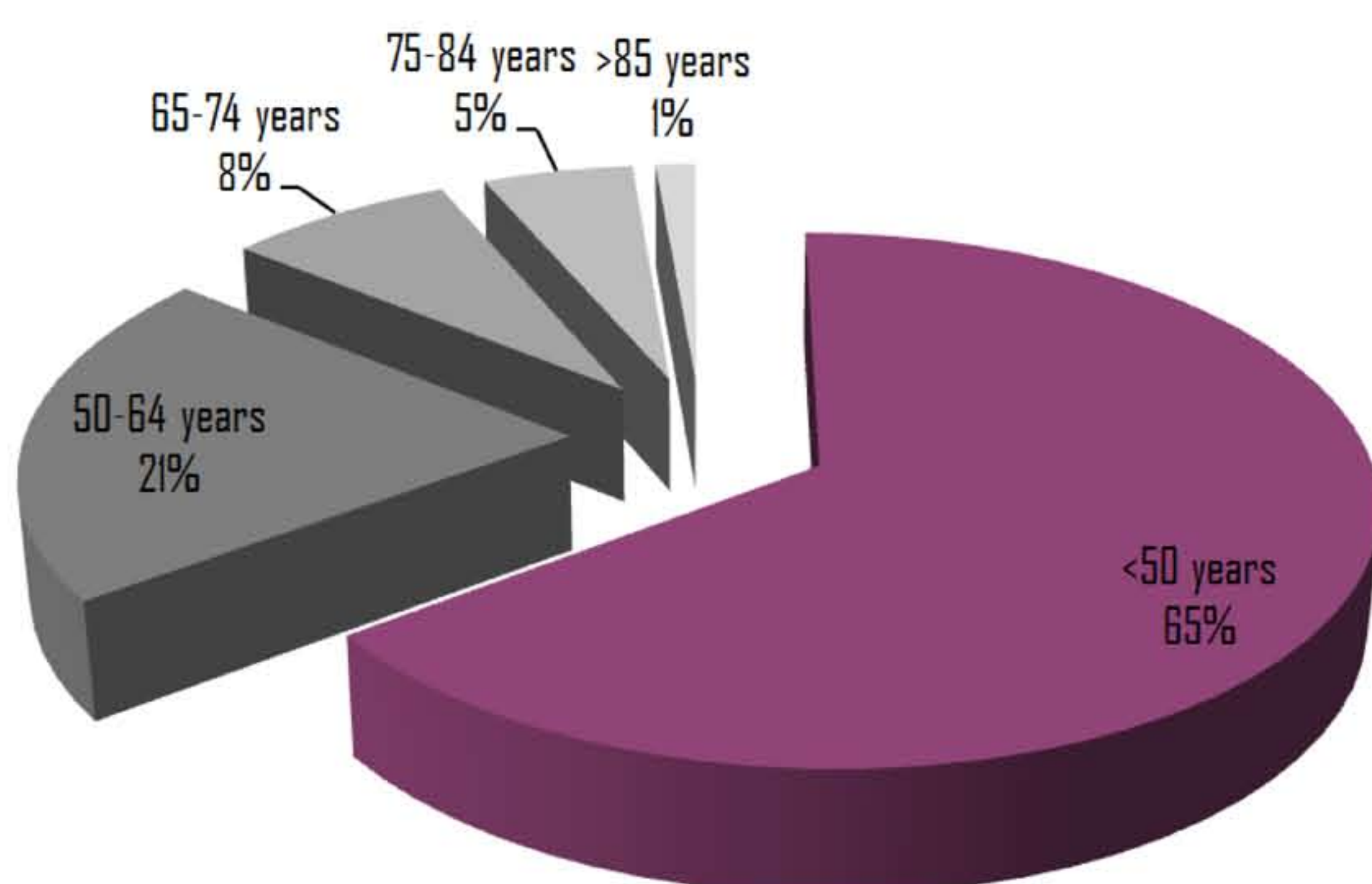


Figure 2: Demographics of the joint populations of CR, SK, HU and PL stratified into studied age strata

Results

There is a sharp exponential increase in incidence with advancing age. Compared with adults 50-64 years of age, the incidence of bacteraemia was:

- 1.6 fold higher in those 65-74
- 2.5 fold higher in those 75-84
- 2.6 fold higher in those 85-99

The case fatality rates for both forms of IPD are given in Figure 3. Meningitis seems to pose a great risk of death in all four countries with strikingly high rate in PL, reaching up to 83% in the group of 75-84 years of age. Most likely, it is even higher in those 85-99 years of age.

The great variability in the older age strata is due to small absolute number of cases recorded among generally small cohort.

The total economic burden of IPD in adults over 50 was: EUR 666,050; 159,528; 180,015 and 140,249. Adults ≥ 65 , who represent 41% of the combined population, account for 54% of the costs.

	IPD Incidence per 100,000 People		IPD Case Fatality Rate per 100 Cases	
	Bacteremia/Sepsis	Meningitis	Bacteremia/Sepsis	Meningitis
Czech Republic	2.07	1.34	31	25
Slovakia	1.2	0.49	12	25
Poland	0.66	0.32	40	63
Hungary	3.16	1.01	11	29

Table 1: Incidence and CFR cumulated for the whole >50 age group.

	Invasive Pneumococcal Diseases			
	Czech Republic	Slovak Republic	Poland	Hungary
Cases	130	30	130	152
Deaths	37	5	78	23
Cost	€ 666,050	€ 159,528	€ 180,015	€ 140,249
PPPY	€ 0.17	€ 0.09	€ 0.01	€ 0.04
Death rate	0.97	0.28	0.59	0.63

Table 2: Absolute and derived IPD totals by country together with estimated costs of the illness. PPPY denotes the Per Patient Per Year costs.

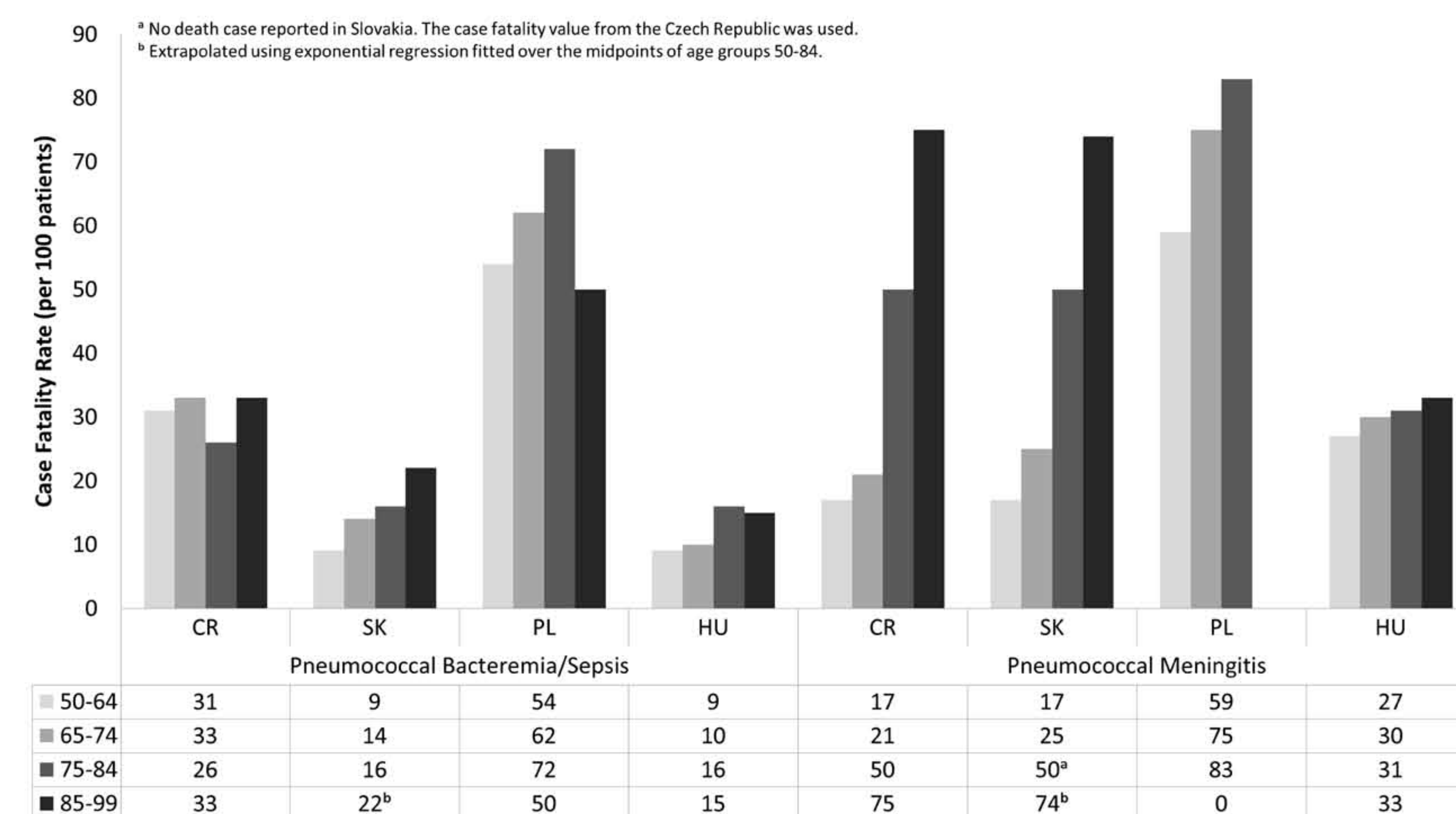


Figure 3: Country-specific case fatality rate per 100 IPD cases by age group

Conclusions

IPD poses a significant economic burden in all four countries among adults ≥ 50 years of age. The burden increases exponentially with progressing age.

Both the morbidity and mortality increases sharply with advancing age, signalling a likely increasing public health problem. In PL, adults over 65 represent 14% of the study population, while they account for 80% of deaths from CAP. Greater life expectancy and lower birth rates the proportion of older adults is expected to grow in these countries, making efforts to efficiently treat or prevent CAP a public health priority.

While CZ and SK can well be compared within this study, HU data were obtained from a different source and may hence be a subject of bias.

Records from Poland in contrary may suffer of systematic underreporting to the national surveillance system.

The older adults may be considered for a direct vaccination intervention.