

Additional medical expenditures attributable to pneumococcal disease in Japan

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INTRODUCTION

- ✓ In 2018, there were 39,194 patients from whom *S. pneumoniae* isolates were obtained during hospitalization in Japan.
- ✓ The decision-making process for shifts in vaccination policy must be informed by cost-effectiveness analyses, but these are precluded by the paucity of relevant cost data in Japan.
- ✓ To overcome this issue, this study was performed to quantify the community-acquired PD-attributable medical expenditures in Japan.

METHODS

Data

- ✓ The study was conducted using surveillance data from the Japan Nosocomial Infections Surveillance (JANIS) program's Clinical Laboratory Division and insurance claims data under the Diagnosis Procedure Combination (DPC) system.
- ✓ Data from April 2015 to September 2017 were obtained from 145 hospitals throughout Japan.
- ✓ A deterministic record linkage was performed to identify the same patients in both datasets (JANIS & DPC) using specimen test dates, admission dates, birthdates, and sex.

Case Patients

- ✓ Patients who were hospitalized for community-acquired PD.
- ✓ PD was identified as cases in which *S. pneumoniae* isolates were recovered from clinical specimens.
- ✓ Patients with isolates from blood cultures were designated invasive PD (IPD) cases, and patients with isolates from any other specimen were designated non-IPD cases.
- ✓ Only community-acquired PD cases were included in the analysis.

Medical Expenditure

- ✓ The medical expenditures incurred during the PD hospitalization episodes directly represented the additional expenditures attributable to these infections.

Statistical Analysis

- ✓ The descriptive statistics of the medical expenditures (mean, standard deviation, median, and interquartile range) were calculated.

RESULTS

1. Patient characteristics

	All patients (n = 1,426)	IPD (n = 73)	Non-IPD (n = 1,353)
Age, mean years [SD]	28.2 [34.9]	51.2 [31.0]	27.0 [34.7]
0–4 years, n (%)	784 (55.0%)	16 (21.9%)	768 (56.8%)
5–59 years, n (%)	184 (12.9%)	14 (19.2%)	170 (12.6%)
60–64 years, n (%)	52 (3.6%)	10 (13.7%)	42 (3.1%)
≥65 years, n (%)	406 (28.5%)	33 (45.2%)	373 (27.6%)
Female, n (%)	579 (40.6%)	27 (37.0%)	552 (40.8%)
CCI, mean [SD]	0.5 [1.0]	1.0 [1.7]	0.5 [1.0]
In-hospital mortality, n (%)	51 (3.6%)	11 (15.1%)	40 (3.0%)
Year			
2015, n (%)	441 (30.9%)	22 (30.1%)	419 (31.0%)
2016, n (%)	589 (41.3%)	26 (35.6%)	563 (41.6%)
2017, n (%)	396 (27.8%)	25 (34.2%)	371 (27.4%)

CCI, Charlson comorbidity index; IPD, invasive pneumococcal disease; SD, standard deviation.

2. Additional medical expenditures attributable to community-acquired pneumococcal disease

		Medical expenditures (US\$)		
		All patients	IPD	Non-IPD
All ages	Mean [SD]	7,010 [13,718]	15,404 [20,573]	6,557 [13,107]
	Median (IQR)	3,290 (2,172 – 6,027)	9,726 (4,442 – 17,236)	3,183 (2,146 – 5,547)
0–4 years	Mean [SD]	3,378 [6,072]	8,137 [10,239]	3,279 [5,925]
	Median (IQR)	2,587 (1,969 – 3,503)	4,276 (2,804 – 5,465)	2,558 (1,953 – 3,467)
5–59 years	Mean [SD]	10,048 [24,491]	18,454 [24,155]	9,355 [24,460]
	Median (IQR)	3,837 (2,288 – 7,025)	11,218 (6,250 – 20,240)	3,710 (2,197 – 6,270)
60–64 years	Mean [SD]	13,196 [19,801]	17,415 [23,424]	12,191 [19,024]
	Median (IQR)	7,416 (3,658 – 13,882)	10,554 (6,696 – 15,947)	5,682 (3,438 – 12,099)
≥65 years	Mean [SD]	11,854 [14,572]	17,024 [21,849]	11,397 [13,694]
	Median (IQR)	7,083 (4,157 – 13,703)	11,304 (5,901 – 21,351)	6,668 (3,903 – 13,134)

IPD, invasive pneumococcal disease; IQR, interquartile range; SD, standard deviation.

CONCLUSIONS

- ✓ This study is the first to quantify the community-acquired PD-attributable medical expenditures in Japan.
- ✓ The estimates can be applied to cost-effectiveness analyses of preventive measures for *S. pneumoniae* infections, thereby informing and guiding national vaccination policies.

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