

Risk of Cardiovascular Events after *Streptococcus Pneumoniae* Infections: LIFE Study

Nishimura N¹⁾, Fukuda H²⁾

¹⁾Kyushu University School of Medicine ²⁾Kyushu University Graduate School of Medical Sciences

INTRODUCTION

- ✓ *Streptococcus pneumoniae* is a common cause of community-acquired pneumonia (CAP).
- ✓ Cardiovascular events, such as acute coronary syndrome, heart failure, arrhythmias and stroke have been witnessed to increase after CAP.
- ✓ This study aimed to evaluate long-term effects on cardiovascular diseases in CAP patients compared to non-CAP.

METHODS

Data

- ✓ The analysis was conducted using the Longevity Improvement & Fair Evidence Study (LIFE Study) database, which comprises municipality-level information centered on claims data.
- ✓ Claims data from April 2014 to March 2020 were obtained from 3 municipalities.
- ✓ We merged data from National Health Insurance enrollees aged <75 years and Long-term Care Insurance enrollees aged ≥75 years.

Exposed and Unexposed Groups

- ✓ Patients with *S. pneumoniae* infections were identified as those with a recorded diagnosis codes developed by Japan's Ministry of Health, Labour and Welfare.
- ✓ Non-infected patients were exactly matched with infected patients according to age, sex, and Charlson Comorbidity Index score.
- ✓ The occurrence of cardiovascular events was examined by using ICD-10 codes.

Statistical Analysis

- ✓ We analyzed the effects of *S. pneumoniae* infections on the subsequent cardiovascular events by using (1) the incidence of stroke and arrhythmia after infections and (2) Kaplan-Meier curves among infected and non-infected patients.

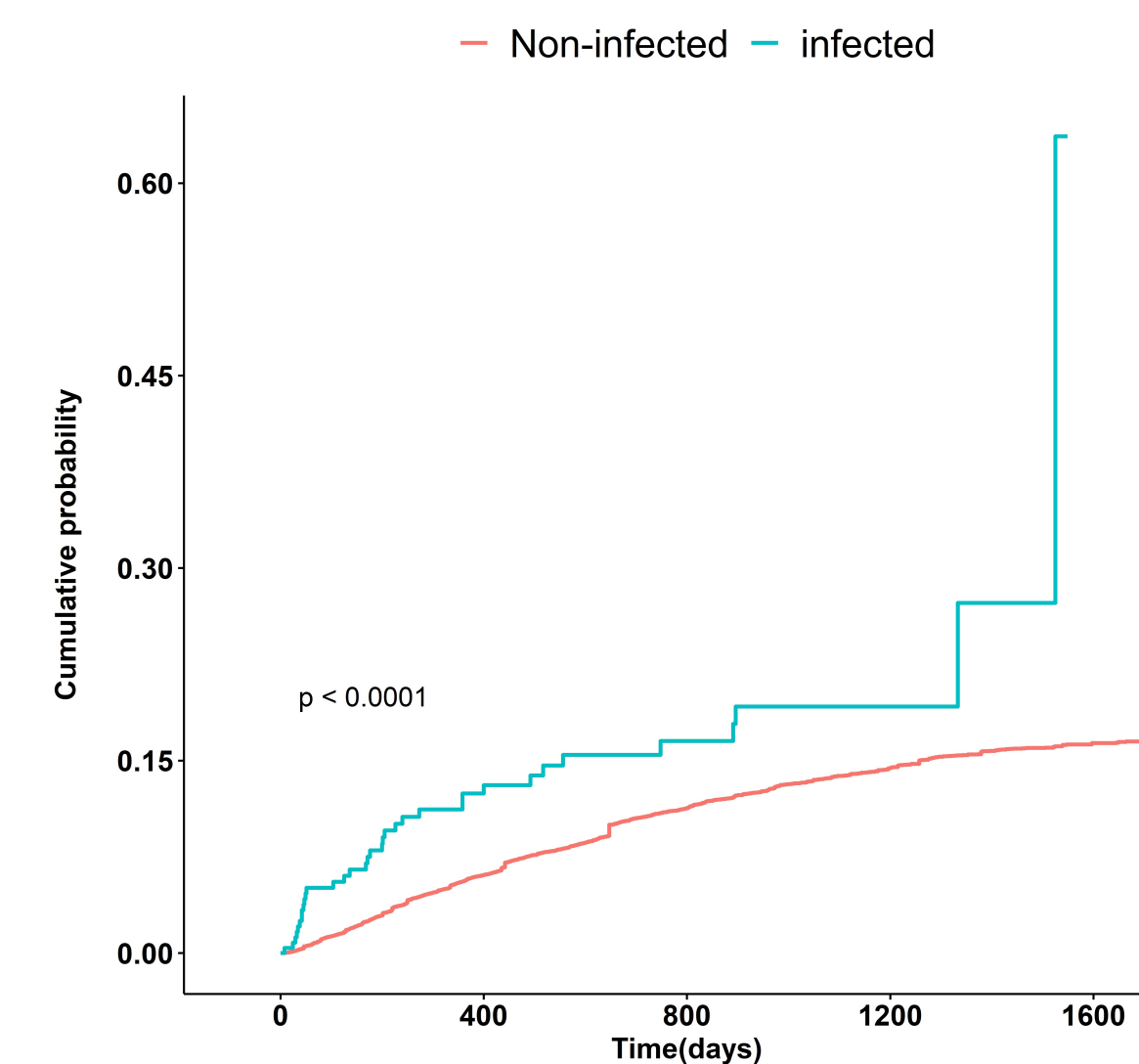
RESULTS

1. The incidence of stroke and arrhythmia after *S. pneumoniae* infections

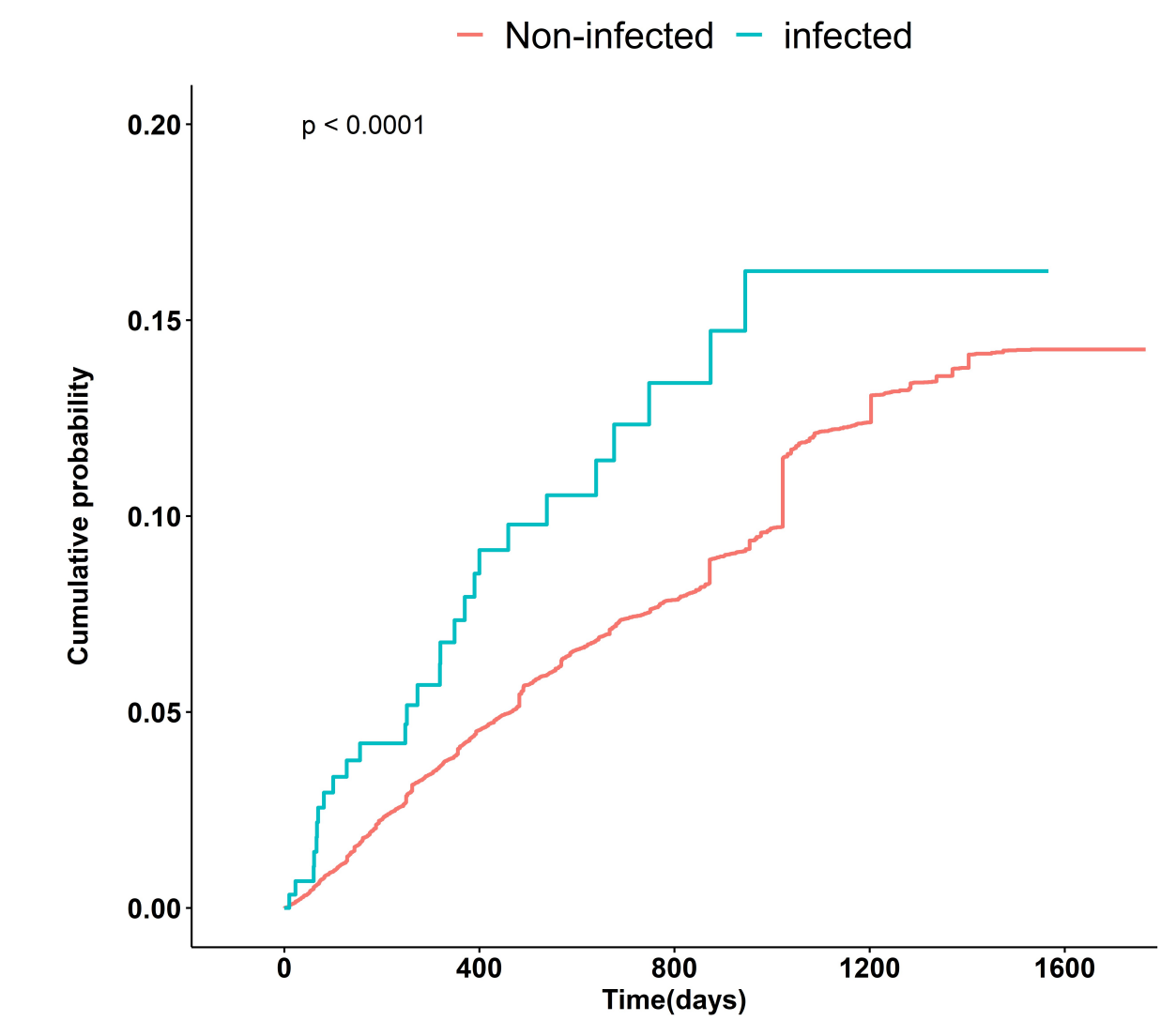
| | Stroke | | Arrhythmia | |
|---|-------------------------|--------------------------|-------------------------|-------------------------|
| | Non-infected | infected | Non-infected | infected |
| N | 87,626 | 252 | 91,631 | 299 |
| Incidence, n (%) | 7,308 (8.3%) | 35 (14%) | 5,745 (6.3%) | 27 (9.0%) |
| Incidence rate per 1000 person-years (95%CI) | 52.0 (50.8 - 53.2) | 95.7 (66.7 - 133.1) | 40.0 (38.9 - 41.0) | 40.0 (38.9 - 41.0) |
| Hazard ratio (95%CI) | - | 1.84 (1.27 - 2.66) | - | 1.64 (1.08 - 2.48) |

2. Kaplan-Meier Curves of stroke and arrhythmia after *S. pneumoniae* infections

(A) Stroke



(B) Arrhythmia



CONCLUSION

- ✓ The long-term risk of subsequent cardiovascular events such as stroke and arrhythmia is elevated by *S. pneumoniae* infections.
- ✓ Our findings could help in developing vaccination strategies to expand and optimize the target population.

Funding

- ✓ The construction of the study database was funded by a KAKENHI Grant-in-Aid for Scientific Research (19H21590 & JP20H00563) from the JSPS.
- ✓ Data analysis and publication were funded by grants from Pfizer Japan Inc.