

Improved Penicillin Susceptibility of *Streptococcus pneumoniae* and Increased Penicillin Consumption in Japan, 2013-18

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Background

- *Streptococcus pneumoniae* is one of the major targets of AMR surveillance¹.
- The first objective of this study is to assess the appropriateness of meningitis MIC (0.06 mg/L)^{2,3} as an indicator for the penicillin susceptibility of *S. pneumoniae*.
- The second objective is to evaluate the relationship between penicillin consumption at the population level and the penicillin susceptibility of *S. pneumoniae*.

Materials

- We included 636 facilities that continuously submitted their data to Japan Nosocomial Infections Surveillance (JANIS)⁴ between 2013 and 2018.
- To assess antibiotic consumption, we used monthly sales data collected by IQVIA Services Japan, which covers more than 99% of drug distribution among wholesalers in Japan.

Results

Figure 1. Annual change in penicillin susceptibility of *Streptococcus pneumoniae* in Japan, 2013-2018 (based on meningitis and non-meningitis MICs)

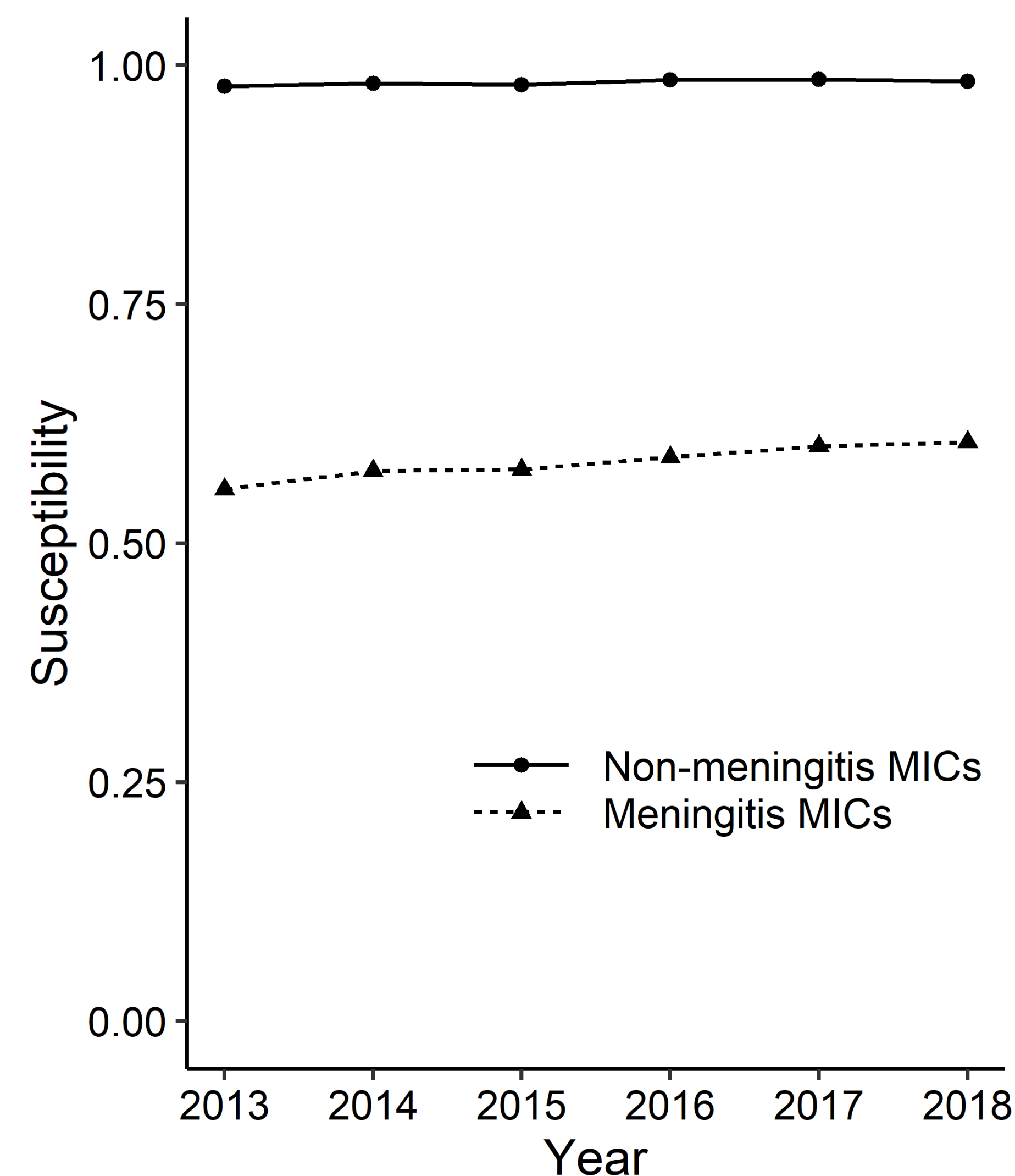


Figure 2. Annual change in the sales volume of antibiotics

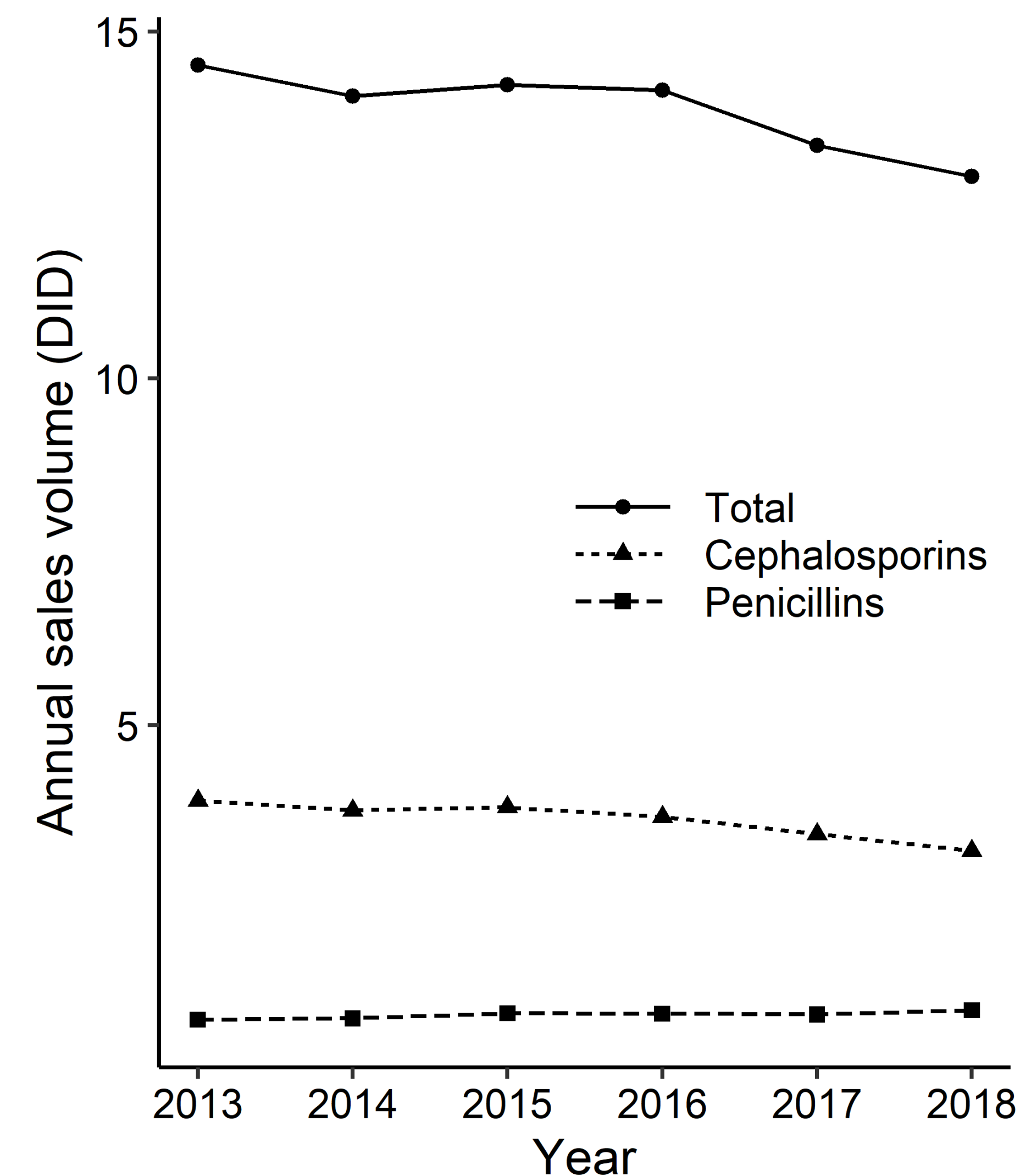


Table 1. Correlation between antibiotic consumption and rate of susceptible isolates, 2013-2018

	Coefficient*	p value
Cephalosporins	-0.981	< 0.001
Penicillins	0.801	< 0.001
All antibiotics	-0.888	< 0.001

*Spearman's rank correlation coefficient. susceptible isolates were defined as those MICs ≤0.06 mg/L.

Methods

- First, we decomposed both datasets into a trend component and a seasonality component to evaluate the chronological trend by using locally-weighted scatterplot smoother (LOWESS) method.
- Next, we used Spearman's rank correlation test to examine the correlation between components.

Discussion

- Our findings suggest that non-meningitis MICs defined by CLSI might be useful indicators for the monitoring of the susceptibility of *S. pneumoniae* to penicillins.
- The increase in penicillin use is not positively associated with susceptibility of *S. pneumoniae*.

References

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