

CORRECTION

# Correction: Direct and indirect impact of 10-valent pneumococcal conjugate vaccine introduction on pneumonia hospitalizations and economic burden in all age-groups in Brazil: A time-series analysis

The PLOS ONE Staff

The abstract of the article is missing. The publisher apologizes for this error. The abstract of the paper is as follows:

**Background:** Ten-valent pneumococcal conjugate vaccine (PCV10) was introduced in the National Immunization Program of Brazil in March/2010. Although there are recent reports of PCV10 impact on pneumonia hospitalizations, there is still uncertainty regarding the indirect impact in individuals non-targeted by vaccination. We assessed both direct and indirect effect of PCV10 on pneumonia hospitalizations and the impact on the economic burden of pneumonia hospitalizations.

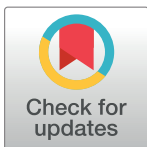
**Methods:** An interrupted time-series analysis was conducted considering monthly rates of pneumonia hospitalizations and comparison groups, in all age-groups, from January/2005-December/2015. We used records of the National Hospitalizations Information System. Observed pneumonia rates in the post-vaccination period (2011–2015) were compared to predicted rates, should PCV10 had not been introduced. Relative percent difference in rates and its 95% confidence interval were estimated. The number of pneumonia hospitalizations averted by vaccination was calculated as the difference between the predicted and observed cumulative number of pneumonia hospitalizations in the post-vaccination period. The impact of PCV10 on economic burden was presented as averted costs of pneumonia hospitalization.

**Results:** Significant decrease in rates of pneumonia hospitalization was observed in both children targeted by vaccination (17.4%–26.5%;  $p < 0.01$ ), and in age-groups not targeted by vaccination (11.1%–27.1%, in individuals 10–49 years;  $p < 0.01$ ). In contrast, PCV10 introduction did not alter the increasing trends in pneumonia hospitalization among elderly  $\geq 65$  years. A total of 457,564 pneumonia hospitalizations was averted in Brazil for individuals aged  $< 50$  years, with a total averted costs of BRL 383.2 million (Int\$ 225.2 million, and USD 147 million) for the 5 year period after PCV introduction.

**Conclusion:** Vaccination with PCV10 5 years after its introduction in Brazil was associated with a relevant reduction in pneumonia hospitalization in the target age-groups, with an indirect effect in individuals aged 10–49 years, and significant reduction in associated economic burden. The increasing trends in pneumonia hospitalization rates in the elderly is a matter of concern for public health and should be further investigated.

## Reference

1. Andrade AL, Afonso ET, Minamisava R, Bierrenbach AL, Cristo EB, Morais-Neto OL, et al. (2017) Direct and indirect impact of 10-valent pneumococcal conjugate vaccine introduction on pneumonia hospitalizations and economic burden in all age-groups in Brazil: A time-series analysis. PLoS ONE 12 (9): e0184204. <https://doi.org/10.1371/journal.pone.0184204> PMID: 28880953



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