

MODELED OUTCOMES AND OVERALL COSTS OF THE 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE IN THE TUNISIAN NATIONAL VACCINATION PROGRAM

Zigmond J¹, Pecan L¹, Tichopad A¹, Roberts CS², Jomaa I³
 For discussion visit us at booth #203 or call +420 608 606 282

1 CEEOR s.r.o., Prague, Czech Republic, 2 Pfizer Inc., New York, NY, USA, 3 Pfizer Pharmaceuticals Tunisia, Tunis, Tunisia

Introduction

Similar to other North African countries, Tunisia has large prevalence and fatality of community-acquired pneumonia and invasive pneumococcal diseases. In February 2000, a 7-valent pneumococcal conjugate vaccine (PCV7) was introduced in the United States and recommended for routine immunization of under two years of age [1]. In 2010, a 13-valent vaccine (PCV13) was introduced, offering seroprotection against six serotypes that are not included in Prevenar. Three of them are not covered by any other vaccine [2].

Aim

The aim was to evaluate the costs and health outcomes of PCV13 vaccination compared to no vaccination.

Methods

- A decision-analytic model was developed to evaluate the costs and outcomes of PCV13 vaccination compared to no vaccination.
- The simulated diseases were bacteremia, meningitis, all cause pneumonia, and all cause otitis media.
- The population demographics [3-5] and disease characteristics were obtained from local sources or adjusted to local conditions [6-12].
- PCV13 direct and indirect effectiveness was extrapolated from PCV7 clinical trials and surveillance and adjusted by local serotype distribution [13-20].

Results

Overall, 58,524 cases and 184 deaths were avoided when using PCV13 compared to no vaccination. When herd effect was included, 141,971 cases and 347 deaths were avoided (Figure 1).

Figure 1: Cases avoided.

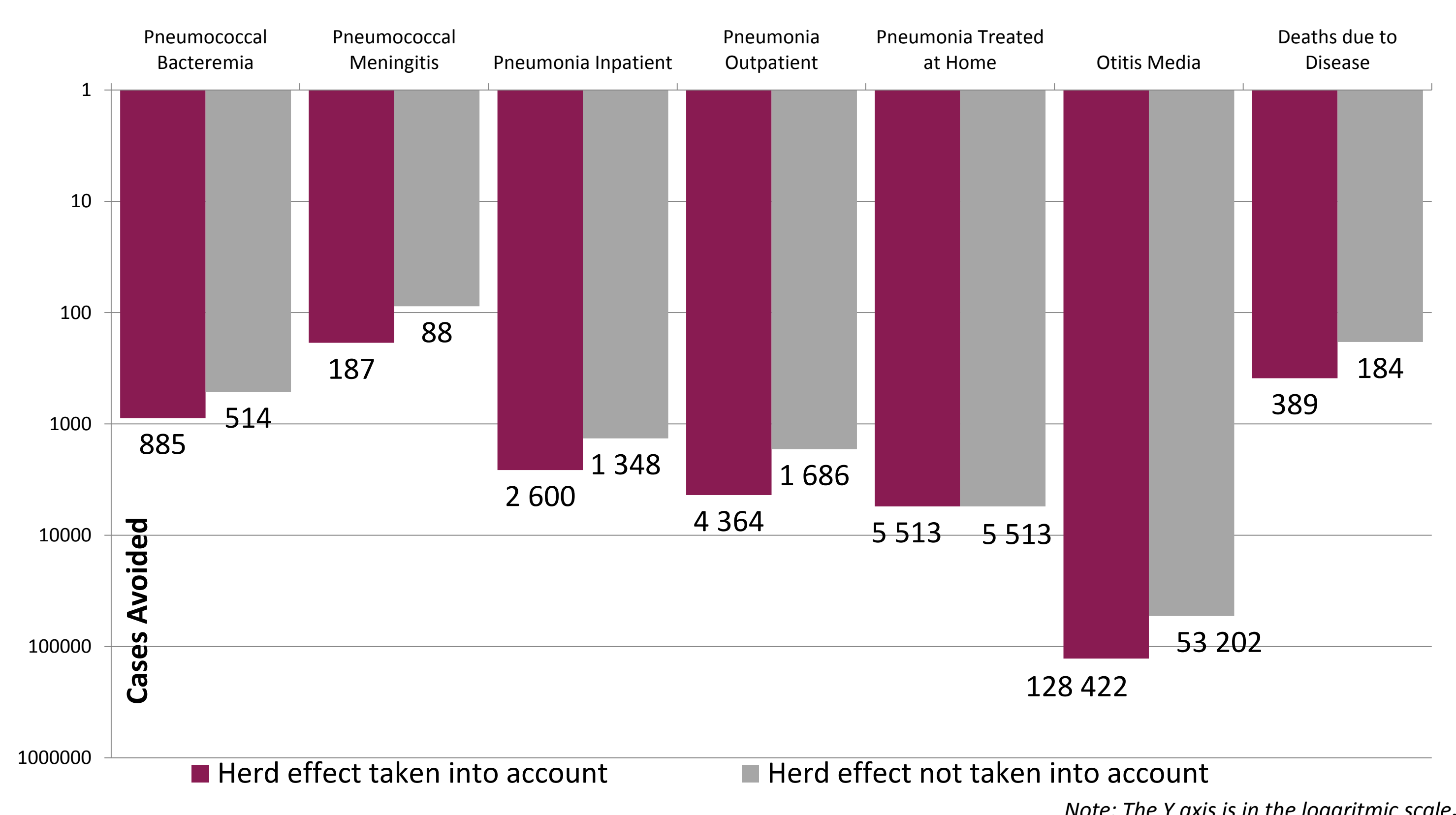
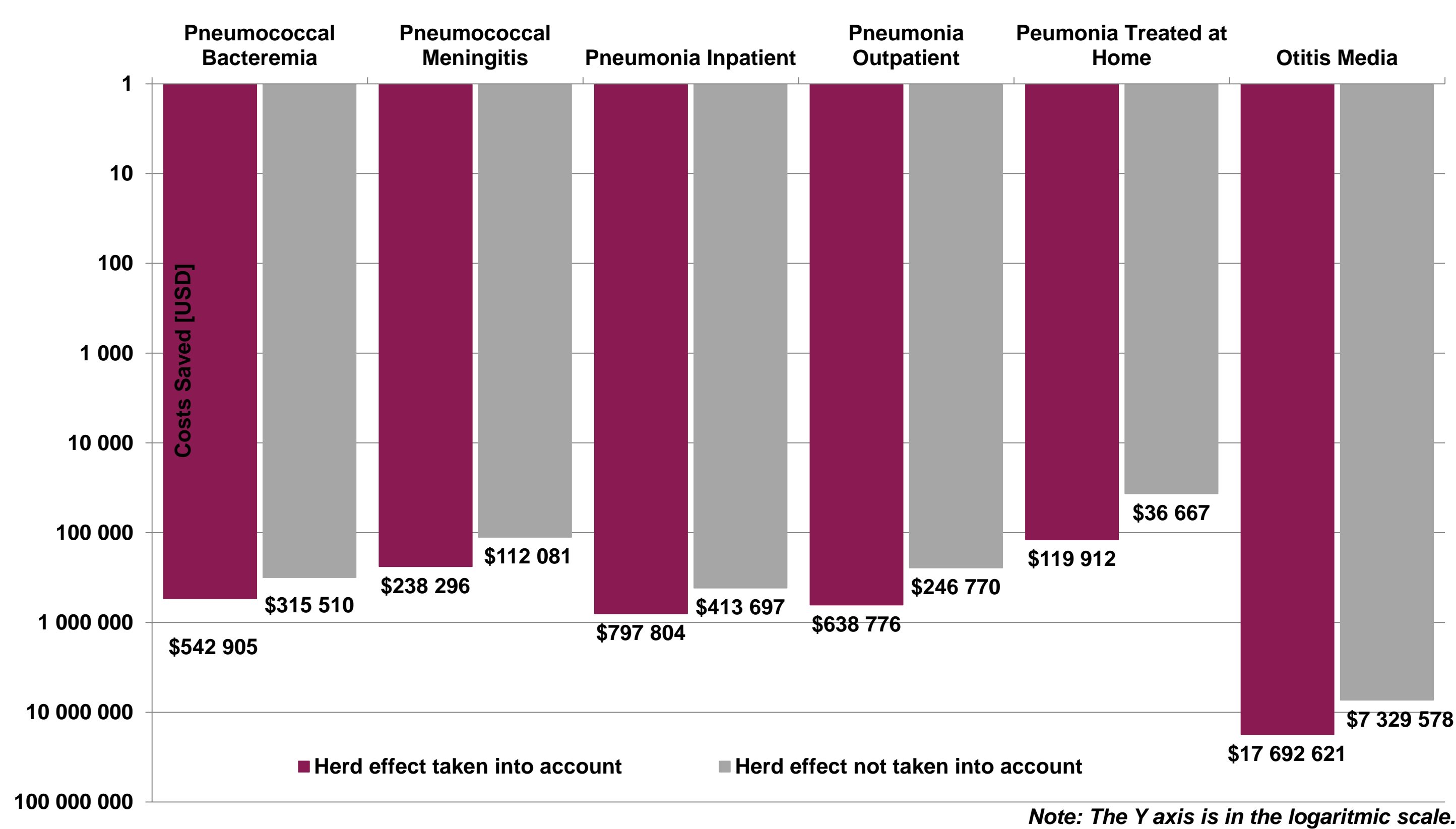


Figure 2: Difference in costs from societal perspective.



Based on the comparison of the costs of illnesses in a one-year horizon, PCV13 was estimated to save USD 8,454,303 from the societal perspective (Figure 2 & 6). The vaccine use would save USD 2,706,657 from the payer's perspective (Figure 3 & 7). The savings are USD 20,030,314 and USD 6,216,479 when including herd effect.

This leads to an ICER (incremental cost-effectiveness ratio) of USD 140 per LYG (life-years gained) and USD 152 per QALY (quality-adjusted life-years) from societal perspective and USD 1,157 per LYG and USD 1,254 per QALY from payer's perspective (dominant alternative from societal perspective and USD 340 per LYG and USD 367 per QALY including herd effect, Figure 4 & 5).

Figure 3: Difference in costs from payer's perspective.

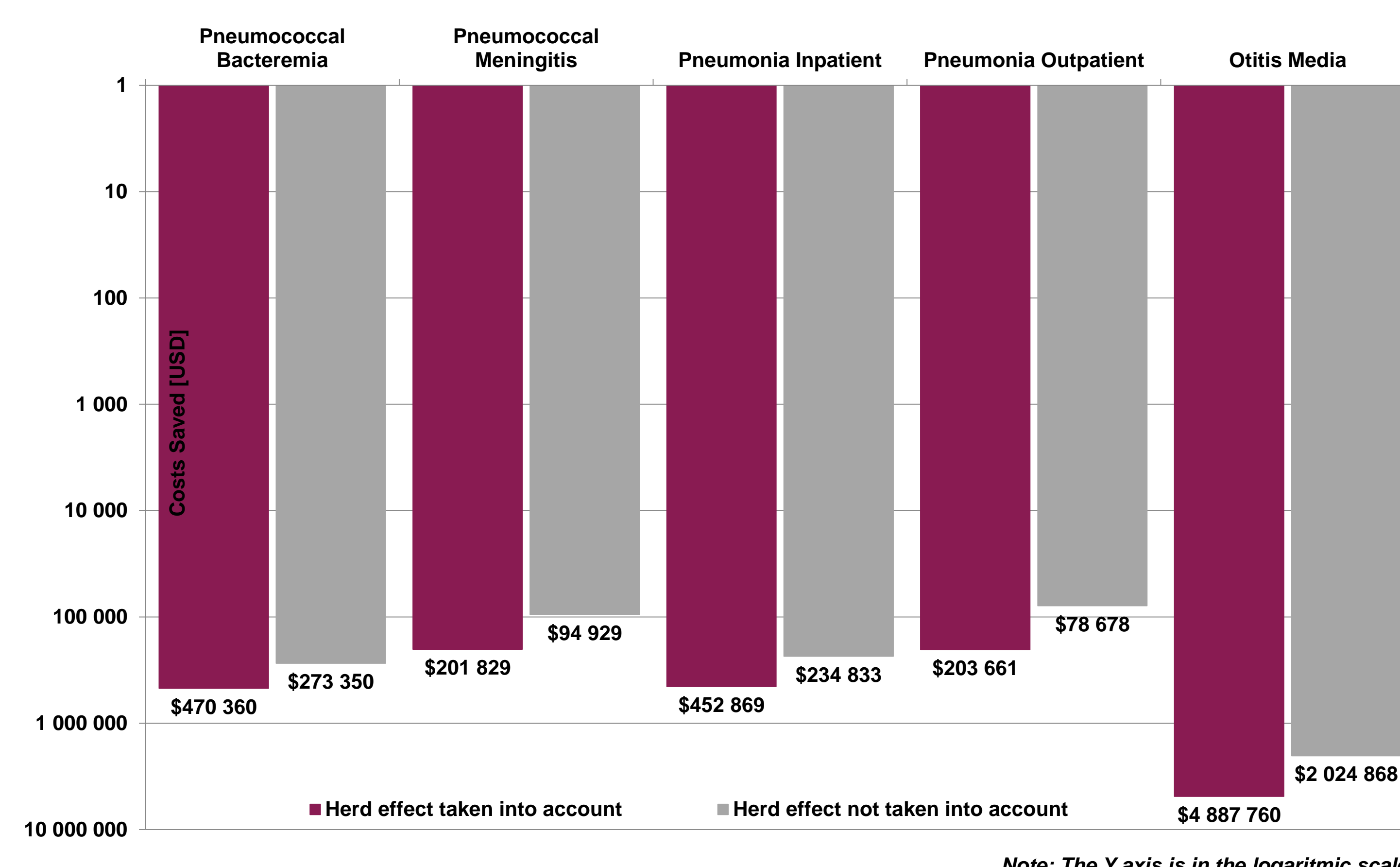


Figure 4: Cost effectiveness of PCV13 compared to no vaccination from societal perspective including herd effect.

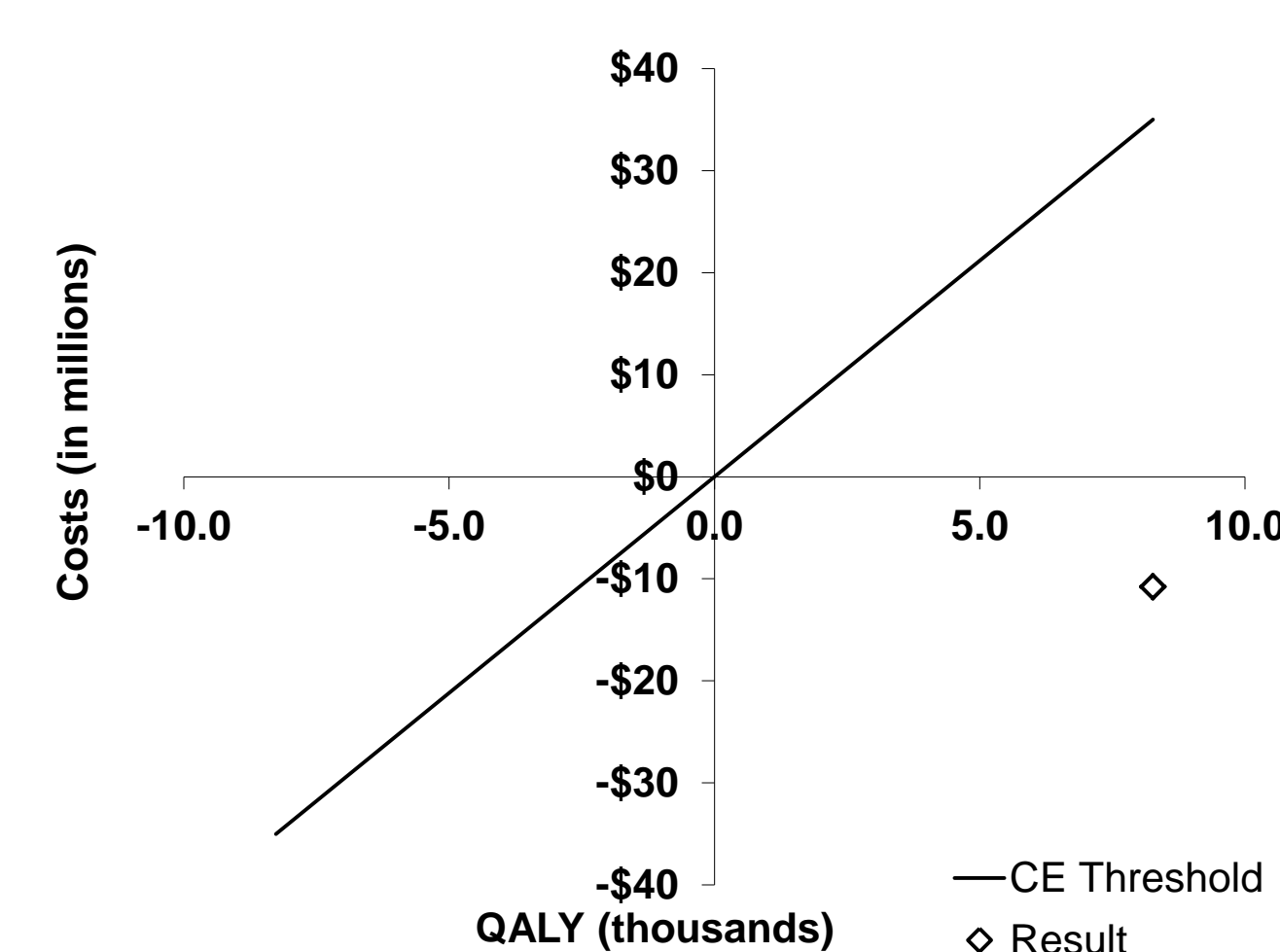


Figure 5: Cost effectiveness of PCV13 compared to no vaccination from payer's perspective including herd effect.

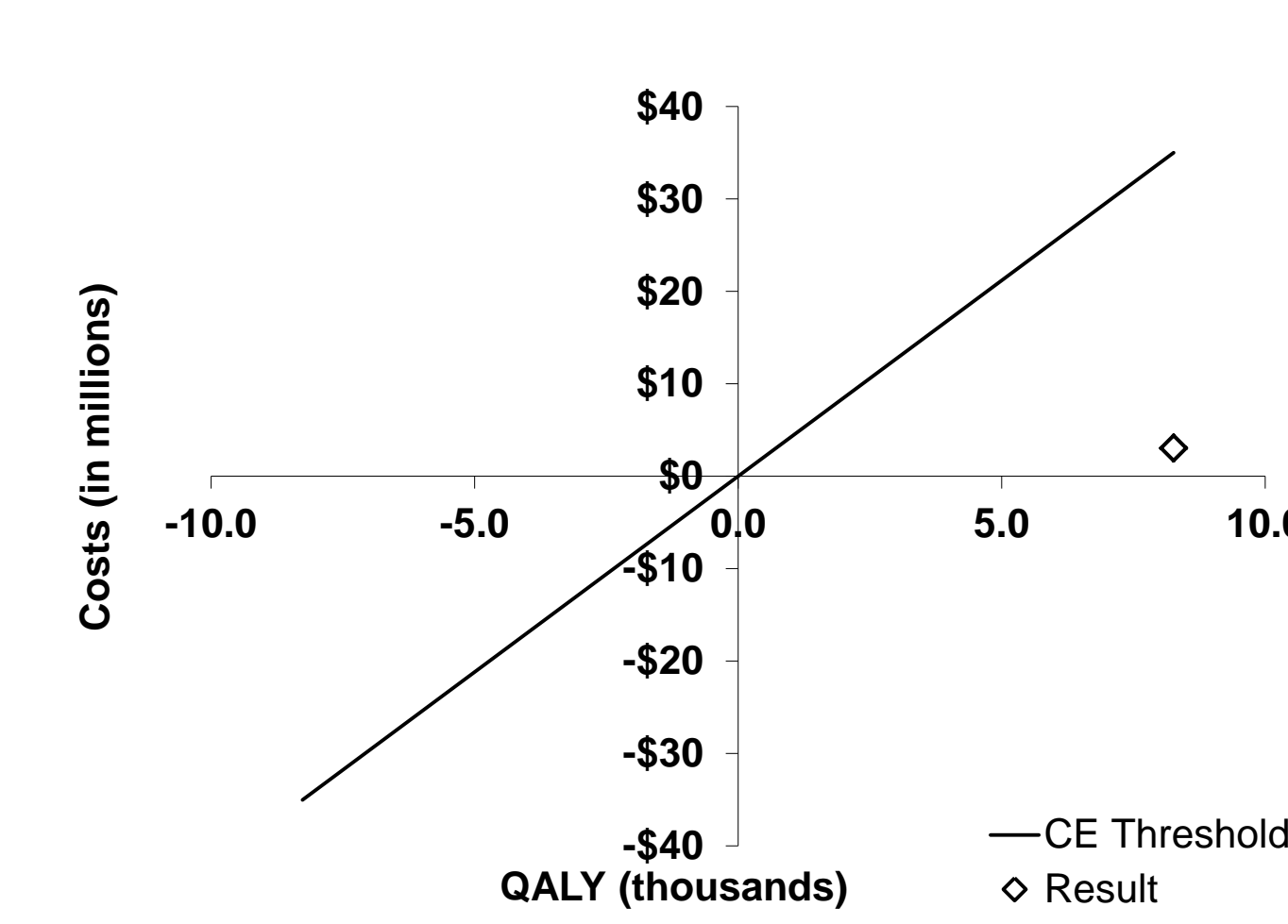


Figure 6: Total net costs from societal perspective including herd effect.

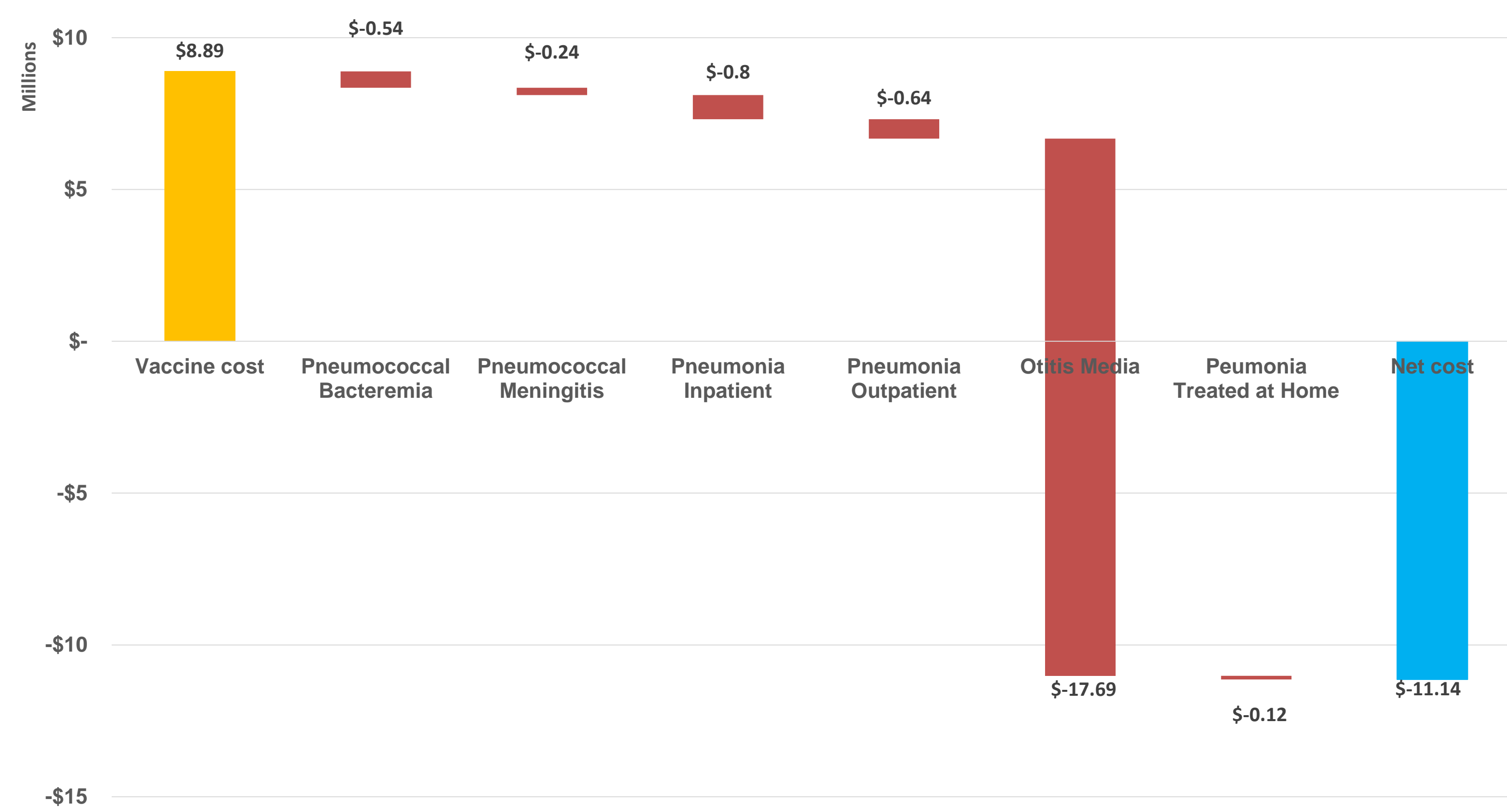
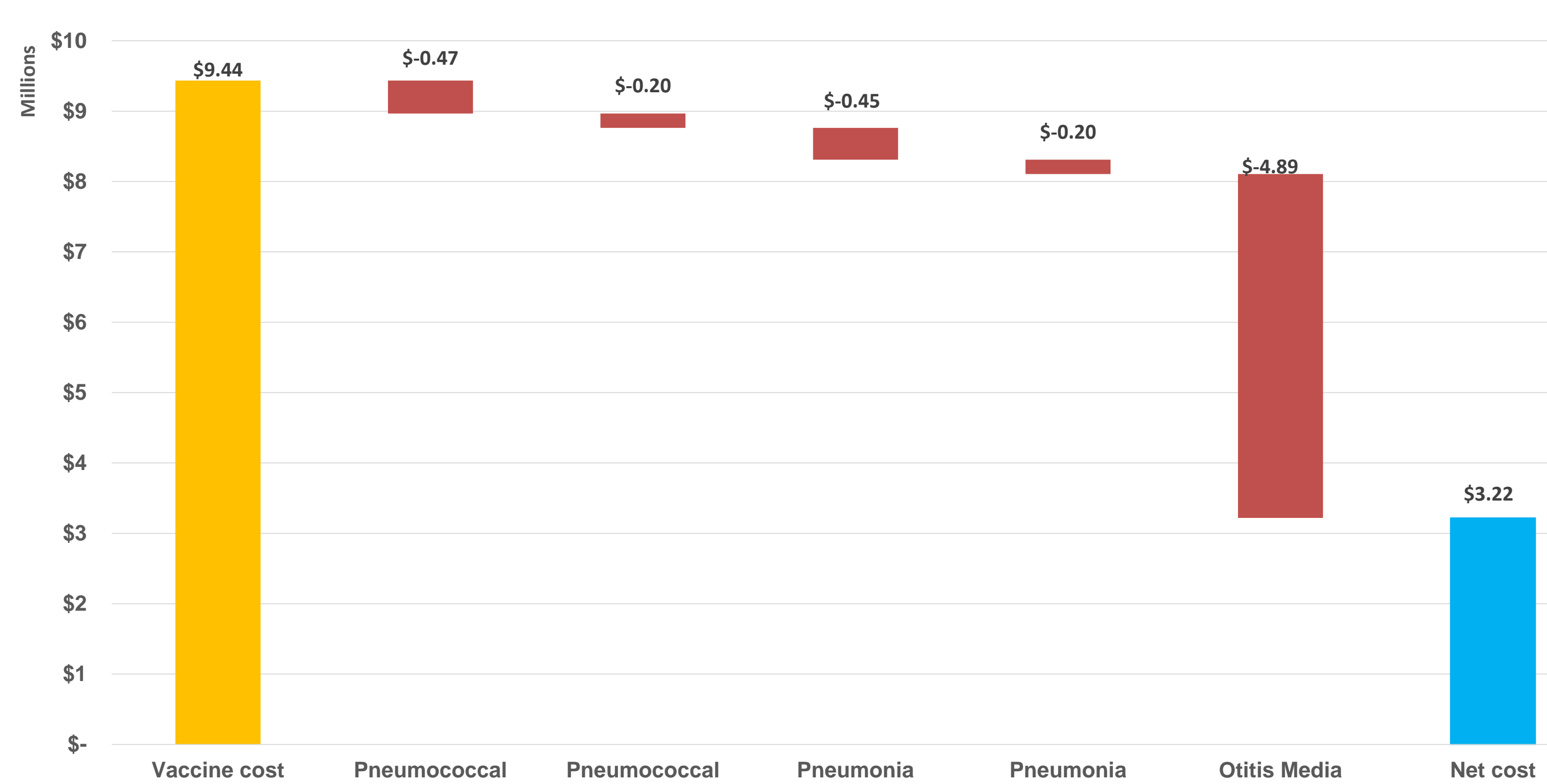


Figure 7: Total net costs from payer's perspective including herd effect.



Conclusions

PCV13 can be a highly cost-effective and even dominant alternative to no vaccination. This can lead to substantial cost savings and health benefits to whole Tunisian society.