

**The introduction of combined haemophilus influenza type b and
Pneumococcal conjugate vaccination in infants in Japan:
A cost-effectiveness analysis**

日本におけるヒブワクチンと肺炎球菌ワクチンの
乳幼児定期予防接種への同時導入に関する費用効果分析

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Objective: Currently, six WHO-recommended vaccinations are omitted from the Japanese routine immunization schedule. Although the Japanese government is planning to introduce haemophilus influenza type b (Hib) and pneumococcal conjugate vaccination (PCV) from 2013, the cost-effectiveness of this decision was not analyzed comprehensively. This study aimed to assess the benefit and cost of three vaccination programs relative to no program by calculating cost-effectiveness ratios (CERs) and to investigate the best vaccination strategy by calculating incremental cost-effectiveness ratios (ICERs).

Methods: A cost-effectiveness analysis of Hib vaccination, PCV and their combination was conducted using a Markov Monte Carlo simulation model. Cost-effectiveness

analysis was conducted over a five-year time horizon from both the health care payer and societal perspectives. Effectiveness was assessed using quality-adjusted life years (QALYs) gained and costs in yen. Strategies were compared using ICERs.

Results: All programs were effective relative to no program. From the societal perspective, the PCV program was the most cost-effective with an average CER of 45,200,000 (95 % UI: -5,910,000 – 108,000,000) yen per QALY gained. This outcome was cost-effective from two different willingness-to-pay criteria with thresholds of 11,000,000 yen or 4,500,000 yen per QALY gained. The combined program was possibly cost effective from the societal perspective. The best vaccination strategy was to introduce the PCV program, and introducing the combined program was the next best alternative choice, with an ICER of 134,000,000 (46,300,000 – 166,000,000) yen per QALY gained relative to the PCV program.

Conclusion: Under current evidence introducing the PCV program is the most cost-effective vaccination strategy, followed by the combined Hib/PCV program.

Key words: Cost-effectiveness analysis, Haemophilus influenza type b, Pneumococcal conjugate vaccination, Markov Monte Carlo simulation model