

Cost-Effectiveness Analysis of Introducing Maternal Tetanus, Diphtheria, And Pertussis (TDAP) Vaccination During Pregnancy to Prevent Childhood Infections in Malaysia

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INTRODUCTION

- Pertussis, Diphtheria and Tetanus are life-threatening diseases but are preventable through vaccination.
- These diseases can relate to: **neurological disorders, pneumonia, bronchial asthma, DEATH**
- Recently, an increment in the prevalence of these diseases.
- In 2020, 24 million cases were reported among children with 160 thousand deaths from pertussis.
- **Suggestion of antepartum TDAP vaccination** to curb issues on Pertussis, Diphtheria and Tetanus.
- Australian study reported that the antepartum TDAP vaccination reduced the risk of pertussis among infants < 4-year old by 51.0%

RESEARCH GAP

- Barriers to the antepartum TDAP administration:
- COST OF INTRODUCING VACCINATION PROGRAMME
- Lack of information regarding the vaccine and administrative cost of this antepartum TDAP vaccination compared to existing vaccination plan

OBJECTIVE

To assess the cost-effectiveness of introducing TDAP antepartum vaccination in the maternal vaccination programme in Malaysia

METHODOLOGY

Research Design : Economic Evaluation Study
 Research Setting : Secondary data collection from Casemix Database at Hospital Canselor Tuanku Muhriz

Data Analysis :

- Decision Analytic Model was used to analyse the cost and outcomes of the TDAP vaccination vs. no vaccination in Malaysia.
- Incremental Cost-Effectiveness Ratio (ICER) was calculated between 2 alternatives, with and without TDAP vaccination from 3rd-party payer's perspective

RESULTS

TABLE 1 : SUMMARY OF DESCRIPTIVE FINDINGS

Disease	Number of Cases	Mean Cost (RM)	Weighted Cost (RM)	QALYs
Pertusis	112	2892.32	2550.87	6.96
Bronchial Asthma	3689	4070.00	3710.54	9.96
Pneumonia	4564	4718.11	4955.40	8.04
Neurological Disorder	1457	3296.68	4914.06	6.12

SUMMARY OF FINDINGS ON CEA

- Vaccination would avert 25,521 cases
- Cost per averted cases : RM 13646.49.
- QALYs gained due to vaccination : 1.65 which is equivalent to RM 344.39 per QALY gained.
- Highest ICER obtained from multiple-1-way sensitivity analyses was 13399 (Lower than WTP threshold of 130134.
- Lowest ICER obtained was 1475 when the uptake rate reduced to 0.5.
- The minimum and maximum ICERs obtained through Probabilistic Sensitivity Analysis were 1161 and 340812, respectively.

CONCLUSIONS

- The adoption of TDAP vaccination would result in MYR3442.39 per QALY gained, which was considered cost-effective.
- Sensitivity analysis showed that the adoption of this vaccination among Malaysian pregnant mothers is cost-effective compared to no vaccination.
- TDAP vaccination would relate to cost-saving, fewer hospitalisation and fewer mortality rates.