ABSTRACT

COST UTILITY ANALYSIS OF EXPANDING HUMAN PAPILLOMAVIRUS VACCINATION PROGRAM FOR BOYS IN INDONESIA USING MARKOV MODEL

Ditya Tiwi Syafira

22/501541/PFA/02250

Background: The high rate of cancer caused by the Human papillomavirus (HPV) affects the economic level of people in Indonesia. They must pay for treatment and maintain quality of life. HPV virus is proven to be a cause of cervical and non-cervical cancer, such as head and neck cancer and anogenital cancer. The HPV vaccine has been introduced to prevent HPV-related cancers cervical. **Objective:** This study aims to determine how cost-effective the expanding HPV vaccination program for boys in Indonesia is to prevent HPV-related cancers. **Method:** This study used pharmacoeconomic analysis based on cost utility analysis (CUA). Cost and utility outcomes were simulated using Markov model compared in girls' population and included boys who were given HPV vaccination with no vaccination to prevent HPV-related cancers in Indonesia. The model developed based on cohort simulation in 100.000 girls aged 11 years old, and included boys with the same age according to WHO rules regarding receiving two doses of the HPV vaccine using Microsoft Excel with three health stages (susceptible, HPV-related cancers, and death). Model developed reflects a lifetime with annual cycles and 3% discount rate. We performed our analysis from the payer (BPJS, INA-CBG's tariff) perspective into 2 scenarios: HPV vaccination program in girls only and expanding vaccination for including boys. **Result:** Cancer prevention in the girls population through HPV vaccination was cost saving. The ICER was obtained -Rp16.246.719 per QALY in preventing cervical cancer and -Rp17.037.640 per QALY for HPV-related cancers prevention. Unfortunately, the expanding of HPV vaccination to boys was not cost-effective with the ICER value were -Rp9.280.499 per QALY (negative dominant) compared to girls-only vaccination in preventing HPV-related cancers. The HPV vaccine has proven effective in reducing the incidence of HPV-related cancers (38,97% in boys and 37,69% in girls). **Conclusion:** HPV vaccination program for boys was temporarily not relevant if implemented in Indonesia at this time (not cost-effective). The extended of girls vaccination coverage is preferred to prevent HPV-related cancers.

Keywords: CUA, HPV vaccination, Markov model, HPV-related cancers, Boys.