

Authors' Reply to "Is Hib Vaccine of Economic Value in South Korea?"

We appreciate Dr. Griffiths and colleagues' letter and their interest in our paper (1). They raised quite an important fundamental issue regarding the cost-benefit analysis (CBA) study. In CBA study, many assumptions are needed because of the lack of baseline data, which are the main weakness of this kind of study. We also did several assumptions, which are not verified in other studies. Dr. Griffiths et al. pointed out this. Therefore, the CBA study can be a reference in decision on health policy, especially when the policy on national immunization, but many other discussions are also very important.

First, Dr. Griffiths et al. mentioned the unreasonably high price of the Hib vaccine in Korea in our study. It was one of most serious difficulties when gathering information regarding the vaccine price in the conduction of CBA. Thus far, the Hib vaccine has not been included in the Korean universal vaccination, and no data existed regarding the Hib vaccine. Therefore, we went through the vaccine prices in private clinics in 2003. The price of the Hib immunization is KRW 40,000, which includes the vaccine (around KRW 27,000-30,000) and administration (around KRW 10,000). Based on this data, it was assumed that there would be a 50% reduction in the administrative costs and a 20% reduction in the cost of the Hib vaccine. Therefore, we used KRW 26,000 per shot.

If the Hib immunization, however, was adopted in a national immunization schedule, the cost of the vaccine would probably be lower due to the economy of scale. Under another scenario, applying US\$9 or US\$11 per dose as in US, the benefit-cost ratio of Hib immunization in our paper (1) would be increased to 1.52-1.86, and then we could expect the economic efficiency to increase significantly.

Second, Dr. Griffiths et al. pointed out the incidence data of Hib infection in this study. The study by Kim et al. (2), which was used to estimate the annual incidence in our study, was the first population-based study and the only report of annual incidence of Hib meningitis in Korea. However, this study did not include Hib infection apart from Hib meningitis. Unavoidably, we had to assume the incidence rate of Hib pneumonia based on United States' epidemiology data (3). To estimate Hib pneumonia in Korea, the proportion of meningitis and pneumonia in US was initially estimated, and the rate was then applied to estimate Korean Hib pneumonia incidence. In addition, the trend of Korean Hib meningitis is not equal to those of other Asian countries; therefore, it is also difficult to assume that Hib pneumonia is more prevalent than Hib meningitis, as in Indonesia. Although a sensi-

tivity analysis was conducted to test uncertainty concerning the incidence of Hib infection, we also recognize that a problem of estimation of the incidence based on other country's epidemiologic data exists.

We completely agree with Dr. Griffiths et al. last point. Economic evaluation is just one method available to provide information to help develop policy. Despite the low economic efficiency, we would like to point out that there are a significant number of cases of disease, deaths and sequelae that can be prevented by Hib vaccination. The scope of this study, however, was to test the efficiency of Hib universal immunization based on a CBA. Except for the CBA, other discussions regarding whether Hib vaccination should be included in the Korean national vaccination program are beyond the scope of this study; therefore, discussion on that point was not included.

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Received : 19 December 2008

Accepted : 24 December 2008

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