

Author Response

## The Increasing Hepatitis A Incidence in Korea: Is It Possible Within a Limited Time?

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We appreciate the correspondents' letter and their interest in our paper [1]. The correspondents raised quite an important fundamental issue regarding the validity of Korea national insurance data.

The national health insurance system of Korea covers the entire population, including management of medical aid for low income families (approximately 100% coverage including foreign immigrants in 2009 [2]). We obtained insurance claims data from the National Health Insurance Corporation, with modified unique numbers representing the national registration numbers to ensure patient confidentiality. Using these unique numbers, we checked and removed overlapping cases.

Regarding the diagnosis of hepatitis A, not only laboratory test results such as serum IgM anti-hepatitis A virus antibody positive and the increases in alanine aminotransferase and as-

partate aminotransferase, but also non-specific clinical symptoms such as jaundice, nausea, vomiting, fatigue, and dyspepsia are considered. Since the national health insurance data is the support used by doctors to claim reimbursement for the cost of diagnosis and treatment, it is unclear how they diagnose hepatitis A. However, most are believed to conduct an antibody test, because if they claim the cost of treating patients without such evidence, the Health Insurance Review & Assessment Service would provide lower the reimbursement amount for hepatitis A diagnosis. The accuracy of health insurance data may be lower than the primary data collected by the researcher, yet it is the most useful data for comparing the national disease patterns by region. Furthermore, a number of studies have been carried out in Korea in order to evaluate the usefulness of the existing health insurance data; for example, the validity of diagnosis for aseptic meningitis of children was 88% [3].

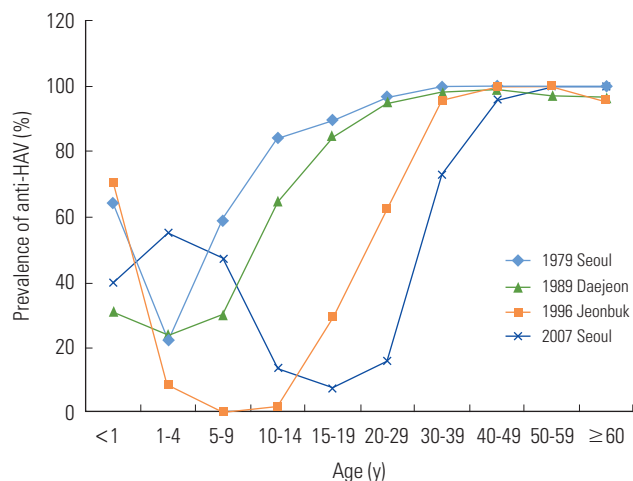
Regarding the changing epidemiology of hepatitis A, the main cause of hepatitis A before the 1970s was an inapparent infection during childhood; however, the number of patients with hepatitis A had sharply dropped since the early 1980s and risen again from the late 1990s. Moreover, most patients were in their 20s and 30s [4,5]. Such a change in the incidence age is attributable to the changing positive rate of hepatitis A antibody. In fact, the positive rate of hepatitis A antibody was 0% to 25% in those under the age of 20 after the 2000s, which is a significant drop from 45% in children under 10 and over 90% in adults above the age of 20 in the early 1980s. However, after 2000, the seroprevalence of hepatitis A in children under 10 increased compared to the past; this phenomenon was caused by vaccination being generalized in children since 1997 (Figure 1). This showed that the susceptible population included mainly adults in their 20s and 30s. This contributed to a decrease in the natural acquisition of immunity during babyhood as the spread of hepatitis A virus was reduced due to socioeconomic development. The incidence of hepatitis A according to age group (unit of 10 years) could be explained as de-

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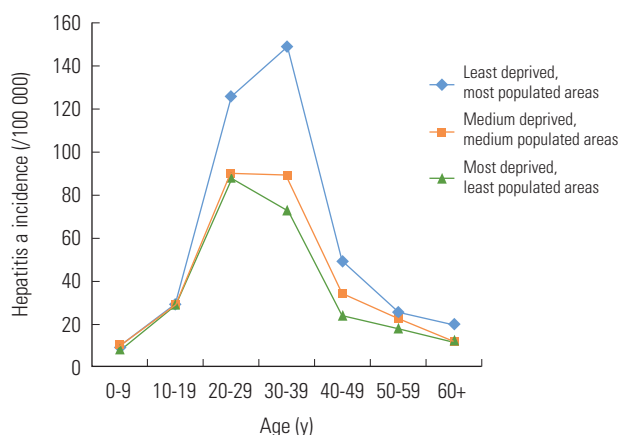
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**Figure 1.** Changing epidemiology of seroprevalence of hepatitis A in Korea. HAV, hepatitis A virus.



**Figure 2.** The 2008 nationwide of Korea hepatitis A incidence (/100 000) according to deprivation index and population density of area. From Seo et al. Pattern of hepatitis a incidence according to area characteristics using national health insurance data. *J Prev Med Public Health* 2012;45(3):164-173 [1].

scribed in Figure 2 (this figure was extracted our article published) of our paper [1]. A sharp increase between 2007 and 2008 followed the increase in the susceptible population. However, it is not enough to explain the phenomenon completely, as reflected by the correspondents' concern, so it would be desirable to perform further studies on the cause of the surge in the incidence of hepatitis A, especially between 2007 and 2008.

### CONFLICT OF INTEREST

The authors have no conflicts of interest with the material presented in this paper.

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