

COVID-19 Vaccine, Availability Herd Immunity

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Abstract

To manage COVID-19 pandemic, COVID-19 vaccine becomes the new hope. The aim for controlling of COVID-19 pandemic is the generation of herd immunity. However, there is still no occurrence of herd immunity. In addition, due to rapid accelerating increase of demand, the supply of COVID-19 is not sufficient. Availability of vaccine in different settings is different and becomes important consideration in herd community generation.

Keywords: COVID-19 Vaccine, Availability, Herd Immunity.

Introduction

COVID-19 is the new disease that already causes pandemic [1-2]. To manage COVID-19 pandemic, COVID-19 vaccine becomes the new hope. The aim for controlling of COVID-19 pandemic is the generation of herd immunity. However, there is still no occurrence of herd immunity. In addition, due to rapid accelerating increase of demand, the supply of COVID-19 is not sufficient. Availability of vaccine in different settings is different and becomes important consideration in herd community generation.

Herd immunity the hope for management of COVID-19

How many dose of COVID-19 vaccine required for generation of herd immunity in a setting? This depends on many factors. First, it has to consider for local occurrence of disease. Infectivity can result in the group that has natural immunity after infection. Second, the overall number of local people has to be included for prediction. The important parameter for calculating in the model is the vaccine efficacy.

For example, if there are overall 60 million local people and there are only 50 million adult people who are in the indication of vaccination and there are already 100,000 infected adults, the expectation of herd immunity generation can be further calculated. If the vaccine has efficacy 70 % and two doses are required for complete a vaccination, then, the overall required doses of vaccine to generate herd immunity will be $(50,000,000 \times 2 \times 100/70) - 100,000$. It can be seen that more than 100,000,000 does of COVID-19 vaccine is required. This usually exceeds the ability of the local government to find sufficient vaccine. The generation of herd immunity must require a very long time.

It can also imply that vaccine is not the whole answer to the pandemic. Prevention is still needed. Respiratory prevention, control of traveling is and social distancing is still necessary. The vaccine passport might be issued but it is not a guarantee of any risk. Quarantine is still needed.

Other problems in vaccine distribution

There are also other problems in vaccine distribution. In fact, many developing areas usually have the limitations. In a part, where the disease earlier occurs, many local scientists try to report their success in diagnosis and treatment [3]. Exaggeration of the excellence is common but there is no success in vaccine development [3]. The local availability of vaccine is usually limited. For the area with local politic conflict, the local protest and virulence can result in totally neglecting public health management.

Additionally, the transparency in vaccine acquisition by local government is usually a topic for discussion [4]. Corruption and commission are possible problem by a bad administrator. Indeed, a poor administrator who thinks only his/herself is not uncommon and exists during the COVID-19 pandemic [5]. The distribution of vaccine might be a way for promoting of popular vote but not a public health success in disease containment. In many areas, local administrator try to appear on mass media showing receiving of vaccine and the physician who administers the vaccine might not be a specialist in medicine but one who words in command of local administrator. In many developed country, local people are the first ones who get vaccination by a general physician.

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