BRIEF REPORT

CORONAVIRUS DISEASE 2019 (COVID-19) VACCINE: IS IT ENOUGH TO CONTROL COVID-19 EPIDEMIC IN A DEVELOPING COUNTRY? – A PERSPECTIVE

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Abstract. Indonesia officially confirmed the first case of Coronavirus disease 2019 (COVID-19) in March 2020, but the national trend shows no sign of decrease of cases. Dissemination of misinformation on COVID-19 vaccines has created situations in which the public and even healthcare professionals have doubts for need for vaccines. Some people decline vaccines due to religious reasons. In order to convince the general population on the importance of receiving COVID-19 vaccine, a range of spokespersons to relay information about religious aspect of COVID-19 vaccine, including religious and community leaders. In addition, equal distribution of the vaccines is still a challenge due to the limited number of health workers and difficulty in access to some regions, and the Indonesian people and health workers are still waiting for a government decision. It is important to realize COVID-19 vaccine could be the solution to control the epidemic in a developing country, but the vaccine should be available to all members of the community.

Keywords: COVID-19, developing country, infection, pandemic, vaccine

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INTRODUCTION

In late December 2019, reports emerged of a mysterious pneumonia in Wuhan, Hubei province, China caused, as the Chinese scientists rapidly discovered, by a new coronavirus distantly related to SARS virus that previously emerged in China in 2003 (Chan *et al*, 2020). The World Health Organization (WHO) officially named the disease as Coronavirus disease 2019 (COVID-19) and the causative agent severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) on 11 February 2020 (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it). Indonesia officially confirmed the first case on 2 March 2020 (Phelan *et al*, 2020). The national trend shows no sign of decrease in number of cases, and on 3 December 2020 a new mark of 8,000 new cases in a day was reached. The government strategy is to implement three main pillars of action, namely, travel restriction, testing and isolation and a rigorous contact tracing, but these procedures have not led to a reduction in the rate of COVID-19 infection and transmission (Sparrow *et al*, 2020). In addition, the lack of community commitment to compliance of these measures has made control of the epidemic more difficult (Ariawan and Jusril, 2020).

PERSPECTIVE

The Ministry of Health, Indonesia through a Minister of Health decree (no. HK 01.07/MENKES/9860/2020) permitted AstraZeneca, China National Pharmaceutical Group Corp (Sinopharm), Moderna, Pfizer/BioNTech, and PT Bio Farma (Persero, producing Sinovax under license from Sinovax Biotech Ltd) to undertake phase III clinical trials in the country, some of which have been completed (Ministry of Health Indonesia, 2020a). Indonesia through Eijkman Institut, Jakarta is developing Merah Putih Vaccine that is expected to complete its phase III third clinical trial during the fourth quarter of 2021 (Ministry of Health Indonesia, 2020b).

Dissemination of misinformation regarding deployment of COVID-19 vaccines has created situations in which the public and even healthcare professionals have doubts about the need for vaccines. Thus, there is need for a range of spokespersons, including religious and community leaders, to provide the correct information. Certain sector of the population declined vaccines due to religious reasons (Rujis *et al*, 2012; Ruijs *et al*, 2013; Shelton *et al*, 2013), but few components used to develop a vaccine contain religiously forbidden substances. There have been concerns expressed regarding the ethics of employing cell lines from electively aborted fetuses in the production of

some vaccines (Anonymous, 2019). It is important to ensure correct and accurate information on the components of COVID-19 and possible, but rare, side effects, which might appear once a vaccine is used on a large scale, reaches everyone in every level and religion of the community.

That COVID-19 vaccines are ready to be distributed in the country herald the promise of eliminating COVID-19 through inducing herd immunity against SARS-CoV-2 infection (and possibly transmission). However, Indonesia is an archipelago country comprising tens of thousands of islands, large and small, and providing equal distribution among the widely dispersed population poses a challenge. An unequal distribution of health workers will be a challenge. The Indonesian people and health workers are still waiting for the government decision regarding vaccination schedule and solutions to make the vaccines equally distributed.

Moderna announced in August 2020 the cost per dose of its COVID-19 vaccine is USD32-37. It is worth noting the average monthly income in Indonesian is ~170 USD in 2020 and much lower in the eastern Indonesian provinces as well as in rural areas (Fox-Rushby *et al*, 2004). Some 20% of children globally each year do not complete the routine immunization schedule in their first year of life and 24 million unimmunized children live in developing countries where the price of normal childhood vaccines, let alone COVID-19 vaccine, still remain unaffordable (Wiseman *et al*, 2018). It is inevitable that provision of COVID-19 vaccines in the least developing countries must be subsidized by the respective government or provided free through international agencies if this disease is not to become a looming pandemic on the horizon going forward.

In conclusion, it is important to recognize vaccine provides a realizable goal of eradicating COVID-19 (and other future) pandemic, but each developing country must confront and overcome barriers both common and unique if vaccination against COVID-19 is to be successful in eliminating this disease, as has been achieved against other common diseases afflicting mankind in the past.

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CONFLICTS OF INTEREST DISCLOSURE

The authors declare no conflicts of interest.

REFERENCES

Anonymous. Pontifical Academy for Life Statement: moral reflections on vaccines prepared from cells derived from aborted human foetuses. *Linacre Q* 2019; 86: 182-7.

Ariawan I, Jusril H. COVID-19 in Indonesia: where are we? *Acta Med Indones* 2020; 52:193-5.

Chan JF, Yuan S, Kok KH, *et al.* A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *Lancet* 2020; 395: 514-23.

Fox-rushby JA, Kaddar M, Levine R, Brenzel L. The economics of vaccination in low- and middle-income countries. *Bull World Health Organ* 2004; 82: 640.

Ministry of Health Indonesia. Decree of the Minister of Health, Republic of Indonesia, No. HK.01.07/ MENKES/9860/2020. Determination of vaccine types for the implementation of vaccination against corona virus diseases 2019 (COVID-19), 2020a [cited 2020 Dec 13]. Available from: URL: https://covid19.go.id/storage/app/media/Regulasi/2020/Desember/KMK%209860%20Tahun%202020-salinan.pdf

Ministry of Health Indonesia. The Government ensures the safety and halalness of the COVID-19 vaccine, 2020b [cited 2020 Dec 13]. Available from: URL: https://www.kemkes.go.id/article/view/20101900004/pemerintah-pastikan-keamanan-dan-kehalalan-vaksin-covid-19.html

Phelan AL, Katz R, Gostin LO. The novel coronavirus originating in Wuhan, China: challenges for global health governance. *JAMA* 2020; 323: 709-10.

Ruijs WL, Hautvast JL, Kerrar S, van der Velden K, Hulscher ME. The role of religious leaders in promoting acceptance of vaccination within a minority group: a qualitative study. *BMC Public Health* 2013; 13: 511.

Ruijs WL, Hautvast JL, van IJzendoorn G, *et al*. How healthcare professionals respond to parents with religious objections to vaccination: a qualitative study. *BMC Health Serv Res* 2012; 12: 231.

Shelton RC, Snavely AC, De Jesus M, Othus MD, Allen JD. HPV vaccine decision-making and acceptance: does religion play a role? *J Relig Health* 2013; 52: 1120-30.

Sparrow R, Dartanto T, Hartwig R. Indonesia under the new normal: challenges and the way ahead. *Bull Indones Econ Stud* 2020; 56: 269-99.

Wiseman V, Thabrany H, Asante A, *et al*. An evaluation of health systems equity in Indonesia: study protocol. *Int J Equity Health* 2018; 17: 138.