WHO R&D Blueprint

novel Coronavirus (nCov)

Vaccine prioritization for clinical trials.

Appropriate WHO Confidentiality Undertakings were signed and submitted to WHO by all participating experts

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Table of Contents

TABLE OF CONTENTS .................................................................................................................. 2
INTRODUCTION .......................................................................................................................... 3
OBJECTIVES OF THE CONSULTATION .................................................................................. 3
EXPERT PANEL AND DECLARATION OF INTEREST ............................................................ 4
OVERVIEW OF THE DELIBERATIONS ................................................................................... 5
PROPOSED NEXT STEPS ....................................................................................................... 7
INTRODUCTION

The current global nCoV public health emergency underscores the need to accelerate the development of nCoV candidate vaccines. The Working Group for vaccine prioritization aims to provide aspirational guidance to vaccine developers from a public health perspective as well as to prioritize vaccine platform approaches and/or candidates to be considered for further development and potentially consider for late-stage evaluation in the context of the global nCoV outbreak.

OBJECTIVES OF THE CONSULTATION

The objectives of this consultation were:

1. To review the current pipeline of candidate vaccines for nCoV
2. To review the current pipeline of candidate vaccines for other coronaviruses and discuss their value in protecting against the nCoV.
3. To make preliminary recommendations on whether the development of nCoV candidate vaccines should be prioritized over the development of other coronaviruses candidate vaccines.

This Consultation presents an initial step towards the evaluation of candidate vaccines against this novel Coronavirus. There are ongoing efforts to identify additional candidate vaccines and to expand the body of evidence available on each of the candidates.
EXPERT PANEL AND DECLARATION OF INTEREST

WHO Declaration of Interest forms were completed and provided to WHO by all participating experts listed in the table below. Such DOIs were reviewed by the WHO Secretariat as par applicable WHO guidance. The following interests, if any, were declared:

Chairperson: Marco Cavaleri

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OVERVIEW OF THE DELIBERATIONS

Participants noted that there is no licensed vaccine for nCoV or for other coronaviruses and no established immunological correlates of protection. Several candidate vaccines have completed Phase 1 clinical trials against SARS-CoV and MERS-CoV. Participants noted however that the clinical development status of the various SARS-CoV vaccines and the potential availability of candidate vaccine stocks remains unclear and needs to be assessed. It was mentioned that active developers seem to be focusing on engineering and advancing vaccines that include antigens from the new nCoV strain, although it was noted that they might not currently have the capacity to produce large-scale GMP materials.

Participants noted that, although there is some level of homology between the nCoV and SARS-CoV, and to a lesser extent MERS-CoV, there is currently insufficient information of cross-reactivity between nCoV and other coronaviruses. However, it was agreed that it would not be expected that antibodies from MERS-CoV vaccines based on the spike protein would be significantly cross-reactive. It was also considered that SARS vaccines, that were under development some years ago, might result in inadequate levels of cross-neutralising antibodies.

Participants recommended that, given current knowledge and vaccine development status, vaccine approaches targeting the novel coronavirus should be prioritized for further development over vaccine approaches targeting other coronaviruses in the context of the nCoV global outbreak, noting that the development of vaccines for other coronaviruses remains a public health priority.

Among the nCoV candidate vaccines, the information available on possible candidate vaccines and the nCoV epidemiology is very preliminary and the group felt that it is not possible to perform a proper prioritisation at this stage. Among the various platform technologies in the pipeline, nucleic acids (both mRNA and DNA) and viral vectored vaccine (e.g. MVA, VSV, Ad/ChAd) would represent in principle valid options for vaccine development, noting that some of the platforms may be easier and faster to manufacture at scale while other platforms may elicit a more rapid and robust protection. Other approaches could be considered as well, such as subunit proteins, pending availability of more detailed information on the candidates. Platform technologies for which there are already clinical experience, safety data and demonstrated usability could allow a more rapid advancement into Phase I clinical trials. Finally, caution was expressed about using inactivated vaccine because of the immunopathology observed with SARS-CoV and MERS-CoV candidate vaccines.

Vaccines that could exert protective immunity after a single dose are to be preferred, but candidate vaccines that may require 2 doses for the primary series would still be of value.
Participants emphasized that vaccine antigens are expected to preferably target the nCoV Spike protein. The choice of a more focused target, such as the receptor-binding domain, can be motivated by safety reasons and should be further discussed in the light of safety, immunogenicity and manufacturing/stability data. Participants noted that the identification of the most appropriate vaccine antigen could be informed by the development of a range of monoclonal antibodies for nCoV.

Speed of manufacturing, size of batches, scale up options, GMP compliance and process validation for production of commercial batches are key aspects to be addressed throughout the development plan and in view of the need for likely large scale use. While it is agreed that to a large extent it would be difficult to precisely define all these aspects in the early phases of development, it would be important to consider adequate infrastructure and resources to secure that the long term public health goals are fulfilled. Clear (pre)clinical and regulatory pathways should be delineated to maintain vaccine development expectations and to accelerate the initiation of Phase 1 trials.
PROPOSED NEXT STEPS

The panel will be convened again on Tuesday 4 February to continue to discuss the various nCoV candidate vaccines platforms.

In the interim, WHO R&D Blueprint will continue to seek and gather additional evidence on all the candidates, including but not limited to additional data on safety of the nCoV candidate vaccines.

The panel was made aware that, in parallel, WHO R&D Blueprint is also convening an expert group to ascertain if there is cross protection of antibodies and antivirals.

WHO R&D Blueprint and partners will gather as soon as possible more information about availability, manufacturing capability and emerging data on the nCoV candidate vaccines from individual companies.

Note - the above prioritization decisions are preliminary and may change as further information is provided to WHO.