



Summary of CEPI Scientific Advisory Committee (SAC) meeting

Teleconference, 16.01.2020

Committee members

Present

- Daniel Brasseur
- James Robinson (Vice chair)
- John Edmunds
- Paula Bryant
- Stanley Plotkin
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Non-voting members

- Jean Lang
- Josie Golding (JG)

CEPI Secretariat

- Richard Hatchett
- Melanie Saville – Chaired the meeting
- Mike Whelan
- Bill Dowling
- Nicole Lurie
- Raimonda Viburiene
- Celine Gurry
- Raul Gomez Ramon
- Neil Cherian
- Stig Tollefsen

Invitees

- Ana-Maria Henao Restrepo WHO (AR)
- NN WHO
- Charlie Weller (CW)

Meeting minutes

A second ad-hoc SAC was convened to discuss the novel coronavirus (2019-nCoV) outbreak first identified in Wuhan, China. As the outbreak is evolving, CEPI would like to consult with SAC as to what R&D activities CEPI should support.

Please note, information provided within this meeting summary is correct as of 16 January 2020. Epidemiological information provided may change as the COVID-19 outbreak progresses.

Update on outbreak situation

The following section is the information gathered from different sources to give an overview correct as of 16 January:

- Global total of 43 laboratory-confirmed cases: China (41), Thailand (1), Japan (1)
- Epicentre in Wuhan, China (pop. 19 million)
- Heightened surveillance is in effect across Asia, WHO reports 123 alerts most of which have been discarded

Wuhan, China¹

- 59 probable cases, among which 41 confirmed by RT-PCR and sequencing
- 7 cases severe (17%) ; 1 death (2% CFR) with severe underlying conditions.
- The majority of cases reported exposure to Huanan South China Seafood Market
- Authorities report no H2H transmission documented
- Wuhan health authorities report 1 cluster, husband and wife. Husband is employed at HSC Seafood Market, and wife denies contact with market. No additional details.
- No additional cases reported since 3 January 2020.
- >700 contacts in follow-up

Thailand ex. China²

- Female of 61 years, resident and national of Wuhan, China, travelled to Bangkok, Thailand on 8 January and was detected by airport thermal screening (fever).
- Case had onset on 5 Jan in Wuhan, and travelled 8 Jan Wuhan to Bangkok, isolated same day.
- Fully recovered and discharged from hospital as of 15 Jan.
- Exposure: No reported contact with HSC Seafood market, but contact with other live/wet market in Wuhan.
- 12 alerts raised in Thailand, 8 still under investigation
- 182 contacts in follow-up

Japan ex. China³

- 30-year-old male, Chinese national from Wuhan, resident of Japan.
- Travelled to Wuhan to visit family 20 Dec – 6 Jan, accompanied by wife and two children.
- Symptom onset on 3 Jan
- Returned from Wuhan to Japan on 6 Jan, home then returned to work 9–10 Jan
- Hospitalised for pneumonia on 10 Jan.
- Laboratory confirmation late on 15 Jan, reported on 16 Jan.
First PCR result on 14 Jan was inconclusive. Second PCR on 15 Jan weakly positive for nCoV-2019 by PCR. Confirmed by sequencing.
- Recovered and discharged 16 Jan
- Possible exposures:

¹ Information correct as of 16 January 2020.

² World Health Organization “Novel Coronavirus – Thailand (ex-China)” Disease Outbreak News, 14 January 2020
www.who.int/csr/don/14-january-2020-novel-coronavirus-thailand/en/

³ World Health Organization “Novel Coronavirus – Japan (ex-China)” Disease Outbreak News, 16 January 2020
<https://www.who.int/csr/don/16-january-2020-novel-coronavirus-japan-ex-china/en/>

- Father, resident of Wuhan, developed symptoms and was hospitalised for pneumonia 7–12 Jan
- Brother, residence of Wuhan, experienced fever 3–9 Jan
- No visit to Seafood Market
- Visit to Wuhan Zoo
- Investigations suggest this case is part of a cluster of 6 family members, of which case's father is likely to be index. Report that H2H transmission is likely to have occurred.
- Case's spouse experience fever episode in Wuhan, resolved in 24h.

Comment from CEPI Vaccine Research & Development Epidemiology Team:

- *Information from Japan case suggests human-to-human transmission, as well as under-detection and under-reporting of cases in China*
- *New cases may be identified in Japan as a result of 4-day symptomatic period prior to isolation*

Source of infection investigation

- Environmental investigations ongoing in China. Authorities reported that nCoV was been detected at HSC Seafood Market, but not at other locations.
- Unclear what animal studies are underway. FAO/OIE have not received any information yet.

Update from WHO

Ana-Maria Henao-Restrepo gave the last updates of the outbreak epidemiology.

Enormous progress has been made since the last SAC meeting (Jan 10, 2020) – genomic sequences have been released and diagnostics improved.

There has been no official confirmation of human-to-human transmission although family clusters have been identified. There could still be further undetected cases in China and in other countries. As of now, WHO estimates global risk as moderate, and national (China) risk as high. Environmental samples have been collected and results are pending.

The market was closed on 01–02 January and disinfected. Approximately 800 contacts have been identified and were followed up; among these, no secondary transmission identified so far.

WHO is discussing a research agenda with Chinese health authorities. WHO reported that Chinese authorities have developed a diagnostic tool. WHO will make all information they receive from China public via their webpages.

So far, 6 viral genome sequences have been released and Chinese health authorities will upload more sequences as they appear. The comparison of sequences currently shows a 60–80 % homology with SARS virus.

Discussion

Viral cross protection

With the degree of homology with other known corona viruses there might be a chance for cross protection with the vaccines that are in development. One important point here is to compare the homology between the spike proteins of the different strains to gain a better understanding of potential cross protection.

Animal models

The search for the animal source of the virus is still being sought. This knowledge will be vital for developing relevant animal models and testing of vaccine candidates. WHO have been in consultation

with the Health and Human Services (HHS) in relation to developing animal models. It was also highlighted that there was a network available in Europe (ERINHA).

NIAID notified that they do not have animal programmes going on for this particular virus. However, they have animal models for SARS (marmosets, African green monkeys, rhesus monkeys). WHO pointed out there are other groups developing protocols for animal models.

It is critical that the preliminary steps are discussed to map the regulatory expectations. WHO will organise a consultation in a week with regulatory authorities to aid discussion.

Access to virus

At the moment the virus is not accessible outside China but there are negotiations ongoing to gain access to the virus. There are also attempts to get the virus isolated and to receive samples from Japan and Thailand. Based on the genomic sequence information some labs have started making recombinant virus.

WHO

WHO has already set up working groups on the following activities:

1. Development of diagnostics
2. Biological standards and assays.
3. Availability and distribution of virus and other relevant biological material.

CEPI should wait until process is completed to avoid duplication. When necessary, WHO will contact CEPI to get in touch with focal persons on the matter.

CEPI activities

CEPI has supported WHO efforts by providing vaccine pipeline overviews and supporting a vaccine platform analysis.

Since the genomic sequence has been uploaded, CEPI partners have shown great willingness to look at the genetic sequence. 4 developers have started developing vaccine constructs.

CEPI asked the SAC's advice as to what areas to work on. Vaccine development was highlighted as an immediate priority and advice was also sought on enabling sciences such as animal models, repositories for biological samples and characterising natural history of disease.

It was suggested that the University of Queensland could make recombinant protein through their molecular clamp technology for use in ELISA assays.

Recommendations from SAC:

- CEPI's role should be in supporting vaccine development. The priority should be in developing vaccine templates with the production of small batches of material for animal testing. A step-wise approach should be taken. If the situation evolves further development should be considered.
- RNA and DNA vaccine candidates should be prioritized as they can be rapidly generated.
- CEPI should evaluate what has been done on other coronaviruses and see which lessons can be translated.
- CEPI should work with Vaseeharan Sathiyamoorthy/WHO before taking any action in diagnostics/standards/biomaterial.

- CEPI could become involved in the animal model work which is addressing the following questions:
 - What is required to move any candidates forward?
 - How is the readiness to go into first in human studies?
 - What has to be constructed around animal models? I.e. regulatory discussions.

Although not able to attend the meeting, Helen Rees, Chair of the SAC, offered her support of a staged approach for vaccine development.

Conclusion:

- Invest in a step-wise manner.
- Move forward and reassess based on the situation.
- When needed, CEPI will come back to SAC and ask for more advice.
- Summarise the dialog and recommendations provided in the light of the evolving situation will be shared with the CEPI Executive and Investment Committee.

Next Steps

- CEPI to initiate vaccine development funding
- CEPI to work closely with WHO to support the global efforts

Updated information January 17:

- WHO Disease outbreak news:
 - <https://www.who.int/csr/don/17-january-2020-novel-coronavirus-japan-ex-china/en/>
 - <https://www.who.int/csr/don/16-january-2020-novel-coronavirus-japan-ex-china/en/>
 - <https://www.who.int/csr/don/14-january-2020-novel-coronavirus-thailand-ex-china/en/>
- Sequence of 2019-nCoV novel Coronavirus is published along with updates, here:
 - <http://virological.org/t/initial-genome-release-of-novel-coronavirus/319>