28. BARDA have also said they would be keen for PHE to develop a ferret animal model for WN-CoV infection (this animal model is also used for flu research). PHE colleagues are hoping to follow up with a call today but this will need to await either clinical isolate or recombinant virus for challenge.

29. Though not the focus of this paper, there are many areas of non-vaccine research that could warrant further investment. For example, research to better understand the severity of disease and risk factors relating to this, assessing the feasibility of developing monoclonal antibody treatments using blood taken from recovering patients, and development of rapid diagnostic tests.

Accelerating development and access

30. The speed of vaccine development is a science and technical issue rather than a money one at this stage. As described above, the traditional process from concept to a licensed vaccine takes a long time, with large scale production required for late stage development being 6-12 months away at best. Even if every shortcut is taken it is rarely less than years, and under one year is unheard of. It may be possible to get vaccines into humans (meaning the first few experimental doses) by mid-2020 if there is an especially promising candidate that passes proof-of-concept in an animal model. However, some of the timescales being talked about in the media, often from scientists with an interest in being funded, are unrealistic.

31. Shortcuts which were ethically appropriate for Ebola, a disease with (at that time) a 70% mortality would be less justifiable for one with a mortality that, at this early stage, may be around 2%. Lower levels of side effects would be tolerable for at-risk people but safety is very important.

32. Any initial supply of a vaccine product will also be very limited and so it will be important for countries to have clear guidelines on how use will be prioritised e.g. for healthcare workers.

33. If the successful vaccine is based on a novel vaccine platform technology, this may also present a risk to the UK, which does not currently have manufacturing capacity for this new generation of vaccines.

What could the UK do?

1. The UK has a very good regulatory environment and could take a leading role in preparing the regulatory system to respond quickly to new vaccine platforms and in particular, considering whether there is the possibility of a blanket technology license for vaccines produced on the same platforms. This would speed both the regulatory hurdles for the vaccines currently being developed for MN-CoV, and future rapid vaccine responses.

2. The UK also has very strong facilities for Phase 1 trials and could take a leading role in supporting phase 1 trials for WN-CoV vaccines to be done quickly and to a high quality.

3. Support the continued development of vaccine candidates currently not within CEPI's portfolio. These are vaccines that are not currently the most advanced. However, given the high rate of failure in vaccine development, having a healthy pipeline of potential vaccines could be important.

4. From a domestic health security angle, we should consider whether we should invest in nucleic acid manufacturing facilities for mRNA vaccines.