

**Written Evidence Submitted by  
The Future Vaccine Manufacturing Research Hub  
(C190106)**

**About the project**

**The Future Vaccine Manufacturing Research Hub (Vax-Hub)**

The Vax-Hub is designed to bring together academics, manufacturers and policy makers to consider and devise novel ways to develop new vaccines for pandemic diseases in low and middle-income countries (LMICs). Since many vaccine manufacturing processes are designed for developed, high income markets, they are ill-suited or too costly for use in LMICs. As such, the Vax-Hub is working directly with LMIC manufacturers to develop processes that improve the local response to serious diseases before they become global emergencies.

The Vax-Hub is addressing the following vaccine manufacturing challenges:

- Accelerating the time to market for vaccines;
- Guaranteeing the supply and improving the shelf-life of vaccines;
- Reducing risk of failure when different vaccine types are transferred from research labs to clinical development, and when scaling up manufacture;
- Mitigating cost as much as possible – which is essential for LMICs; and
- Providing better protection from pandemic threats through development of rapid response “make it when needed” vaccine manufacturing solutions.

The impact of this Hub will be felt internationally as the outputs of the Vax-Hub reach the most vulnerable populations in LMICs, especially children. Current Vax-Hub projects include:

- Development of a single dose rabies vaccine;
- Pioneering new thermostabilisation technologies to avoid the need for cold-storage;
- Development of an effective malaria vaccine, work being undertaken in collaboration with the Serum Institute of India; and
- Development of a low cost Dengue Fever vaccine, work being undertaken in collaboration with PT Biofarma Indonesia.

## Inquiry response

### 2. The capacity and capability of the UK research base in providing a response to the outbreak, in terms of:

- the development and testing of vaccines;

Due to its strong vaccine development research base, the UK has been a key player in efforts to secure an effective SARS-CoV-2 vaccine; an essential step to global recovery and to decreasing society's vulnerability to recurrent waves of the virus. The UK now has two leading vaccines in clinical trials:

- The University of Oxford's non-replicating viral vector vaccine, which is in phase 2/3 trials<sup>1</sup>; and
- Imperial College London's mRNA vaccine, which is in phase 1 trials<sup>2</sup>.

The groups have been able to progress their vaccines to clinical trials with great speed, (a matter of months compared to the multiple years which is standard for vaccine development). This is because both vaccines use a platform approach, whereby vaccines for different diseases can be delivered by a single system. As an example, Oxford's ChAdOx1 viral vector had already been used to develop vaccines against Rift Valley Fever, and the closely related Middle Eastern Respiratory Syndrome (MERS) coronavirus. The platform approach allows extensive safety and efficacy testing to be carried out on the delivery system before the emergence of a new disease and the genetic information for the new disease plugged-in at the time of an outbreak, drastically shortening development times.

Although vaccine platforms do enable a rapid response to new and emerging infectious diseases, it is important to note the years of research required to develop the delivery system itself and the ongoing funding required to do so.

An example of good practice for funding of research to bolster preparedness for future global health crises is the Department of Health and Social Care's UK Vaccine Network<sup>3</sup> (UKVN). Using ODA funding, the UKVN makes targeted investments in vaccines for infectious diseases that have the potential to cause an epidemic. Any project funded by the UKVN must have demonstrable benefit in low and middle income countries (LMICs) which are ODA eligible. Priority funding areas were identified by the UKVN's independent advisory group, made up of leading experts from academia, industry and policy who also advise on ways to address structural issues related to the UK's broader vaccine infrastructure.

Under this scheme, two "Future Manufacturing Research Hubs"<sup>4</sup> were funded related to the challenges in commercialising early stage vaccine research, one a joint Hub between University College London and the University of Oxford, the Vax-Hub,<sup>5</sup> and one based at Imperial College London, the Future Vaccine Manufacturing Research (FVMR) Hub.<sup>6</sup> Researchers from both Hubs have been instrumental in driving forward the UK's vaccine

---

<sup>1</sup> See: <https://www.research.ox.ac.uk/Article/2020-07-19-oxford-covid-19-vaccine-trials>

<sup>2</sup> See: <https://www.imperial.ac.uk/covid-19-vaccine-trial/>

<sup>3</sup> See: <https://www.gov.uk/government/groups/uk-vaccines-network>

<sup>4</sup> See: <https://epsrc.ukri.org/research/centres/manufacturinghubs/>

<sup>5</sup> See: <https://www.ucl.ac.uk/biochemical-engineering/research/research-and-training-centres/vax-hub>

<sup>6</sup> See: <https://www.imperial.ac.uk/future-vaccine-hub>

discovery efforts in the COVID-19 crisis, impact which will be felt both at the national and international level via knowledge transfer to the Hubs' partners in LMICs.

The UKVN funding cycle is scheduled for completion in 2021, unless further support can be found to extend it. We hope that the UKVN initiative will continue beyond its scheduled completion date in 2021 and that the partnerships between UK and LMIC institutions built during the project are provided the necessary support to continue. If the vaccines in clinical trial do prove effective, the process development research will be needed to optimise and drive down the cost for a second generation of COVID-19 vaccines to ensure that they are affordable and can be distributed equitably to LMIC countries. This is especially important in light of recent announcements to cut the UK's ODA spending to merge the Department for International Development with the Foreign and Commonwealth Office.

***(August 2020)***