HDR UK Pandemics and Outbreaks Driver Programme Delivery Plan

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1 Funding

This driver programme was reviewed as part of the HDR UK Quinquennial review. It scored 10/10. Activity has been paused because of an overall funding shortfall in the HDR UK bid, due to the withdrawal of the Wellcome from the pool of funders.

The total cost of the proposed work is £5M.

2 Background

Our approach is to optimise peacetime academic infrastructure to deliver fast, efficient delivery of answers to key clinical questions by improving, testing and, most importantly, actually *using* data and sampling capability across the four nations of the UK during the inter-pandemic period.

The design of the Pandemics and Outbreaks Driver Programme was based on the following core principles:

1. **Distributed data analysis** using secure multi-party compute can answer immediate questions in outbreaks
2. **Central data collation** will continue to be required for computationally intensive applications: host/pathogen genomics, deep phenotyping, data integration, machine learning/AI.
3. **Perennial problems** must be the focus in order to "keep the engine running": AMR, sepsis, research recruitment, sample acquisition and small-scale outbreaks.
4. **Critical care** exemplifies challenges and opportunities across secondary care.

5. **The academic sector** provides essential scalable resource and cutting edge technology to public health in emergencies.

3 Advancing sovereign data infrastructure during peacetime.

We will build the following key infrastructure capabilities:

- Establish internal software "pharmacies" within NHS systems (in collaboration with Microsoft). **Sustainability plan: commercialise**
- Demonstrate and deliver secure multi-party compute between exemplar NHS systems and the Outbreak Data Analysis Platform (ODAP) **Sustainability plan: open source/commercialise**
- Efficient transfer, where necessary, of clinical, microbiological and host genomic information to the ODAP **Sustainability plan: cost-recovery data access model**