

Jonathan Ashcroft\*, Benedict Gannon, Hilary Bower, Emilio Hornsey, Olivier Le Polain de Waroux, Matt Knight, Jimmy Whitworth, Daniel G. Bausch  
\*Contact Info: jonathan.ashcroft@phe.gov.uk

## UK-PHRST MANDATE

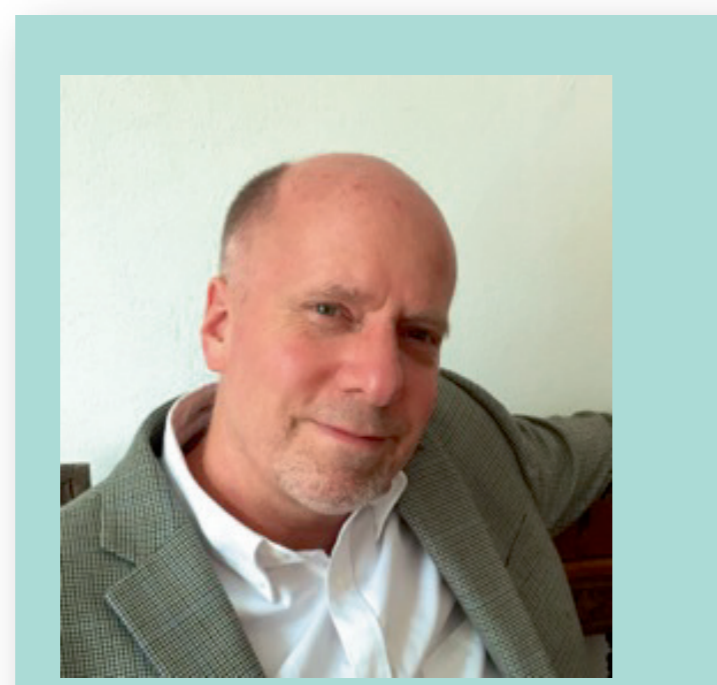
The 2013-16 epidemic of Ebola virus disease underscored the shortcomings of the international community to both respond to outbreaks and conduct critical research in complex humanitarian crises. To address these concerns the UK Public Health Rapid Support Team (UK-PHRST), funded by UK Aid from the Department of Health and Social Care, was formed. The UK-PHRST is a collaboration between Public Health England and the London School of Hygiene & Tropical Medicine with the University of Oxford and Kings College London as academic partners. The UK-PHRST has a novel triple mandate to work in low- and middle-income countries (LMICs) to:

- Respond to outbreaks
- Conduct innovative operational research during and between outbreaks to generate evidence on best practices
- Build Low-to-Middle Income Country (LMIC) and regional capacity for outbreak response

## MULTI-DISCIPLINARY DEPLOYABLE TEAM

The core deployable team consists of:

- Microbiologists
- Epidemiologists
- Clinical researchers
- Social scientists
- Data scientists
- Infection prevention & control experts
- Field logisticians

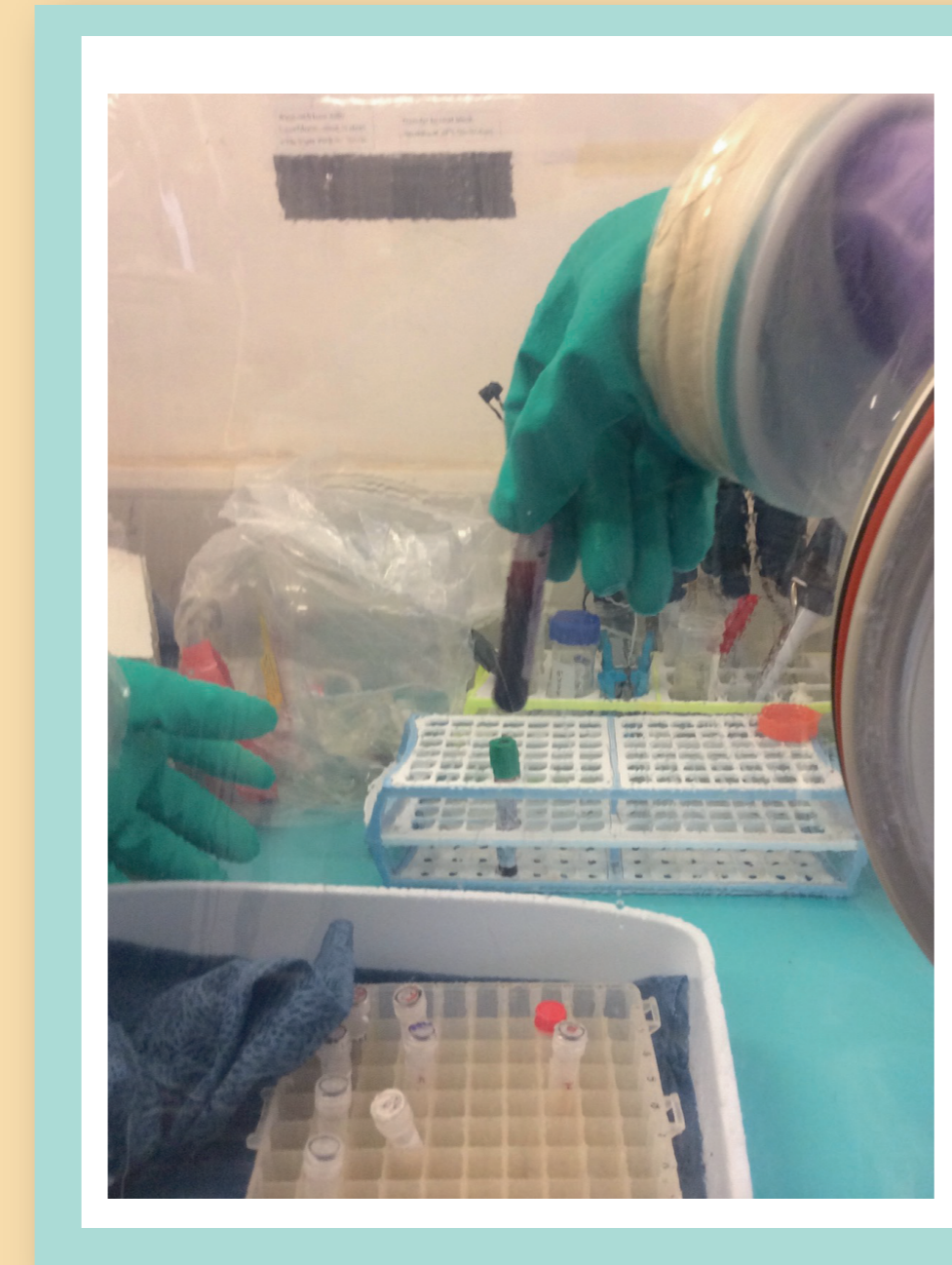


UK-PHRST Director,  
Prof. Daniel Bausch

## OPERATIONAL RESEARCH

The UK-PHRST Microbiology is committed to performing operational research to improve outbreak response in LMICs. These studies conducted in between outbreaks as well as rapid implementation of studies during deployment. A rapid ethical approval mechanism has been developed in collaboration with the London School of Hygiene & Tropical Medicine Ethics Committee to fast-track ethical review and approval to enable an agile in-field research response by the UK-PHRST.

UK-PHRST has regular open research calls to initiate and stimulate outbreak response-related research that supports work from within and external to the UK-PHRST. Currently this funding mechanism supports nine research projects spanning a comprehensive set of disciplines integral to effective outbreak response, including anthropology, clinical management, clinical research, epidemiology, microbiology, psychology, sociology and water, sanitation, and hygiene.



## UK-PHRST Microbiology Research Programmes 2018-19

**Study of the aetiology of severe undifferentiated febrile illness outbreaks in Sudan.**

**Effective diagnostics and laboratory outbreak capability for Gastrointestinal pathogens in West Africa.**

**Identification by TaqMan array card system and MinION sequencing of co-circulating pathogens that are clinically indistinguishable from Lassa Fever during seasonal Lassa virus outbreaks in Nigeria.**

**Phylogenetic and cluster analysis of human Monkeypox samples from the 2018-19 outbreak in Nigeria.**

**Pathogen discovery in non-dengue haemorrhagic patients in the Philippines.**

**Rapid response molecular diagnostics for Crimean-Congo Haemorrhagic Fever.**

**Translation of MinION sequencing from UK lab to field metagenomics laboratory.**

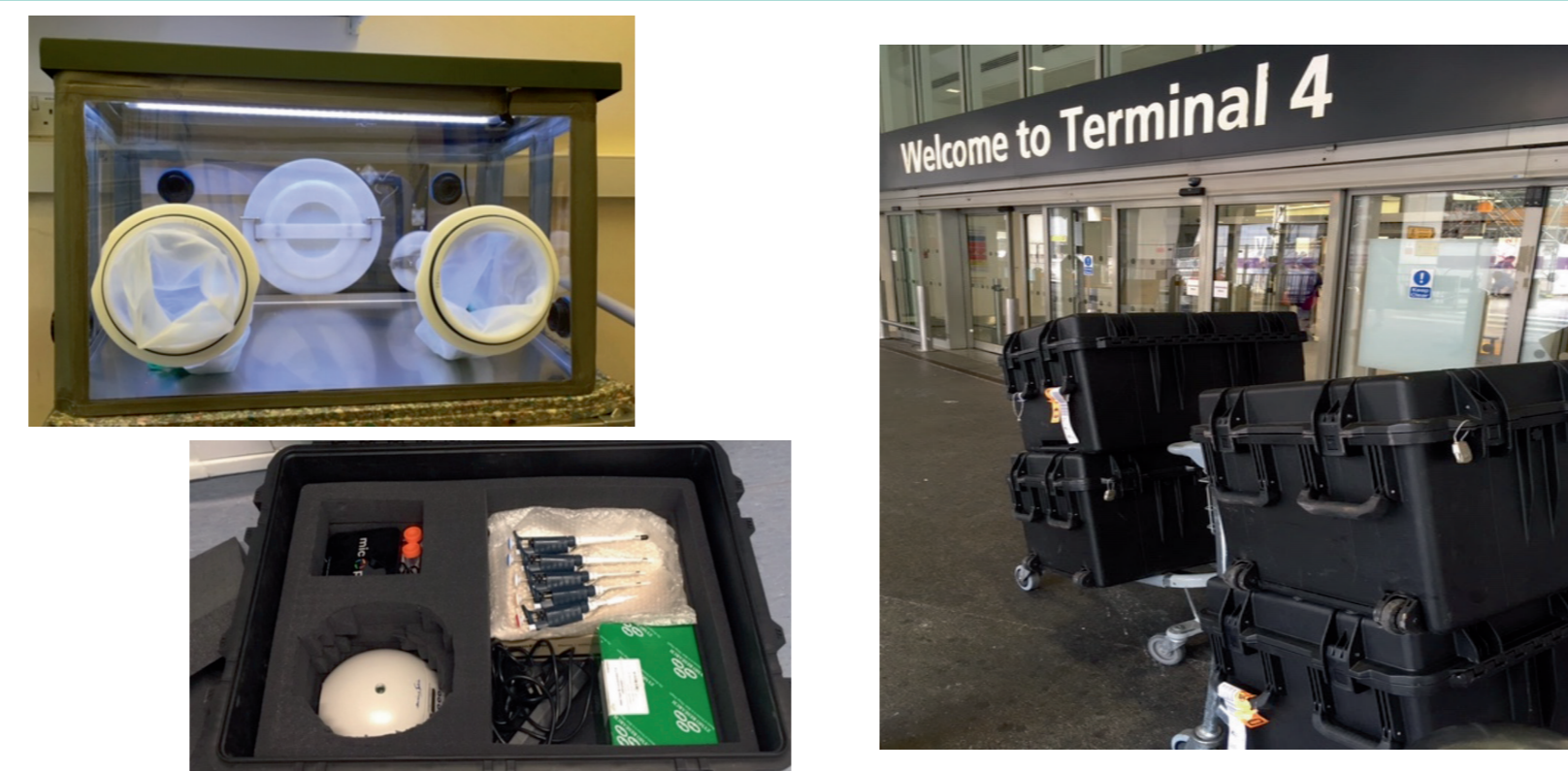
## UK-PHRST DEPLOYMENTS



## EXAMPLE: MICROBIOLOGY OUTBREAK RESPONSE IN 48 HOURS

**Rapid deployment is absolutely key to the successful management of disease outbreaks**

One of the primary bottlenecks in tackling outbreaks is logistical delays in deploying teams to the field. All of our core are deployment ready having undergone the requisite WHO training allowing their pre-approval and therefore rapid deployment into the field within 48 hours. This mechanism has been tested and thus far, all deployments of UK-PHRST members have been on a plane within the 48 hour target time.



UK-PHRST Microbiology - Flight Case Laboratory

To support the core team a reserve cadre is being formed to increase the operational surge capacity of the UK-PHRST. Through agreement with their current employers, these reserves will be on call for the UK-PHRST while maintaining their full-time jobs. Reserves complete the same core UK-PHRST training regime to ensure their operational readiness.

## UK-PHRST IN ACTION – SIERRA LEONE

The UK-PHRST can respond to humanitarian disasters where there is an increased risk of infectious disease outbreaks. The disastrous flooding and landslides in Freetown, Sierra Leone, in August 2017 resulted in over 800 deaths. The UK-PHRST was deployed after a direct request from the Government of Sierra Leone. A UK-PHRST team of epidemiologists, microbiologists and a field logistician supported extended surveillance and case investigation for water-borne disease.



Freetown, post-flooding



Enteric bacteriology lab set-up with UK-PHRST support at Connaught Hospital, Freetown

## EXAMPLES: MICROBIOLOGY CAPACITY BUILDING IN THE FIELD

### Nigeria

Integral to the two Nigeria-based research projects (Lassa-negatives & Monkeypox) is a strong capacity-building element.

Working with our local partners (Nigerian Center for Disease Control), UK-PHRST Microbiology is working to establish sequencing capacity in the National Reference Laboratory. This programme of work includes provision of key equipment and intense training (both theory & practical). Concurrent training by UK-PHRST Logistics is helping NCDC to properly manage equipment & stock – ensuring sustainability.



UK-PHRST Microbiology receiving the thanks from NCDC lab staff following the 1st workshop on Sequencing



Nigerian National Reference Laboratory – NCDC, Abuja.

### Sierra Leone

The UK-PHRST partners has a long-term relationship with Sierra Leone and maintain an in-country presence. Working with the Ministry of Health & Sanitation (MoHS) and the College of Medicine and Allied Health Sciences (COMAHS), UK-PHRST is focused on improving the public health infrastructure and diagnostic capacity of the country. In addition, UK-PHRST Microbiology are examining ways to involve BSc placement students in future research projects.



UK-PHRST Microbiology training COMAHS BSc students in diagnostic laboratory techniques.

The enteric research program (Left) has made good use of the Enteric Bacteriology Lab set-up by UK-PHRST during the landslide (2017) and is not only adding valuable information regarding pathogen prevalence in Sierra Leone but has also helped to solidify key skill sets of local laboratory staff at Connaught Hospital, Freetown.

## UK-PHRST RESERVISTS

The UK-PHRST reserve cadre will provide surge capacity and enhanced expertise to the core deployable team. Reservists will remain employed by their primary organization and be released only when required to deploy. Reservists are expected to deploy up to two times during an 18 month period and will hold PHE bank contracts. Deployments will be for four-to-six weeks.

UK-PHRST releases calls for reservists periodically and Microbiology is always interested in recruiting high calibre scientists, especially French speakers, with experience in diagnostics, high-containment microbiology and field work in LMICs.

Successful recruits from all disciplines will be invited to attend a week-long scenario-based pre-deployment course where realities and challenges associated with working in the field are presented and discussed. In addition, Microbiology reservists will be expected to undergo an additional laboratory-based training programme where familiarization with our equipment, assays and documentation (e.g. SOPs, Risk Assessments, Code of Practice, etc) is undertaken.

*Interested? Please discuss with the presenter of this poster or email the contact details listed at the top.*