UK Public Health Rapid Support Team

Business Justification for 12 month extension

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VERSION HISTORY

Version	**Date Issued**	**Brief Summary of Change**	**Owner's Name**
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Final V1	26/04/2021	Incorporating edits from and signed off by DHSC GHS Programme Team	UK-PHRST Director/SMT
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1. Purpose

This business justification is to seek approval and funding for extension of the UK Public Health Rapid Support Team (UK-PHRST) for 12 months (through March 2022). The Official Development Assistance (ODA) budget required to deliver the recommended option (flat funding, see below Option 2 below) is £4 million.

In 2015, in the wake of the large West Africa Ebola outbreak, the Department of Health and Social Care (DHSC) allocated £20 million of ODA funding to create the UK-PHRST, which launched in 2016 as the primary arm of the UK Government to prevent and control epidemics of infectious diseases in ODA-eligible countries. The UK-PHRST is comprised of a multidisciplinary team of public health professionals and researchers dedicated to a novel integrated triple remit of **outbreak response, research, and capacity development**, with the following specific objectives:

- Rapidly investigate and respond to disease outbreaks at the source, with the aim of stopping a public health threat from becoming a broader health emergency.
- Conduct research to generate an evidence base for best practice in disease outbreak interventions.
- Provide training to establish a cadre of personnel to rapidly deploy to respond to disease outbreaks.
- Assist in capacity development to enhance epidemic preparedness and response in low- and middle-income countries (LMICs) and contribute to supporting implementation of International Health Regulations.

The UK-PHRST is an innovative government-academic partnership co-led by Public Health England (PHE)[1] and the London School of Hygiene & Tropical Medicine (LSHTM). Each partner contributes essential and complementary elements: as a government agency, PHE fosters government-to-government collaboration and shapes the long-term engagement, while LSHTM contributes technical and academic expertise to build the evidence base. A consortium of other academic and implementing partners in the UK and internationally rounds out the UK-PHRST expertise and operationality.

This strategy aims to save lives from both direct prevention of infection and from averting the potentially devastating associated economic and social consequences.

2. Strategic Context

From pandemics like COVID-19 and HIV/AIDS to more regional threats such as Ebola and Zika virus diseases, the danger that infectious diseases outbreaks pose to our health and social, economic and political security could hardly be clearer.

While the toll of lives lost directly from the disease causing an outbreak or pandemic may be great, an even greater number may be impacted due to "collateral damage"—people who die because disrupted travel and trade prevent access to their vital treatments for diabetes, tuberculosis or malaria; whose heart attacks go untreated because healthcare centres and workers are overrun taking care of persons with the outbreak disease; children who do not receive, and thus fall prey to, vaccine-pre-

[1] Transferring to the UK Health Security Agency (UKHSA) from April 2021

ventable diseases such as measles and polio. Still many more are impacted by the effects of a pandemic on the global economy; COVID-19 has wiped billions of dollars off the global economy, destabilising communities around the world, creating long term economic uncertainty, disrupting social order and national security.

The vast majority of outbreaks are caused by zoonotic pathogens—those maintained in and introduced into humans from animals. Consequently, the burden of outbreak-prone diseases is highest in LMICs, where human contact with live domestic and wild animals is more common, health and surveillance systems may be too weak for rapid detection and control, access to quality care may be limited, and baseline health of the population may be compromised due to elevated frequency of comorbid conditions, food insecurity, and social and political insecurities.

Although the greatest burden is often felt in LMICs, the impacts may be felt across entire countries, regions and continents, either because the infection itself is widespread, or because our interconnectedness via trade, migration, business travel and tourism eventually propagate the economic and social shock across borders. The COVID-19 pandemic is a stark reminder of the connectivity of our modern world—**an epidemic risk anywhere in the world is a risk everywhere**. **UK Health Security is Global Health Security, and vice versa.**

The UK-PHRST human resources consist of a full-time multidisciplinary Core Deployable Team (CDT) and Research Fellows with supportive administrative, operational and training staff. This team is complemented by a cadre of trained Reservists recruited from across UK public health and academic institutions, as well as Field Epidemiology Training Programme Fellows whose inclusion also helps develop expertise and build robust systems to respond to outbreaks in the UK.

Outbreak response

The UK-PHRST has established processes to enable rapid deployments for response and research at the request of national governments or international stakeholders, such as the World Health Organization (WHO). To date the UK-PHRST have deployed personnel to 17 outbreaks in nine different countries, reflecting over 350 person-weeks spent in the field responding to outbreaks of nine epidemic-prone diseases threatening local, regional, and global health (Figure 1). During this time, only the US Centers for Disease Control and Prevention has responded more frequently or contributed more person-weeks in response to requests for outbreak support from the Global Outbreak Alert and Response Network (GOARN) on behalf of WHO and LMIC national governments. The in-person deployments are complemented by countless hours of remote support, especially since the onset of the COVID-19 pandemic. In addition, due to the extraordinary challenges of the COVID-19 pandemic, many UK-PHRST staff have been seconded or volunteered to response in the UK, demonstrating the versatility of this team. This reflects the UK's leading role in Global Health Security and the contribution of UK-PHRST to international and national readiness.

Research

The UK-PHRST, along with national and international collaborators, have developed and undertaken over 30 applied research studies across a range of disciplines and geographies to enhance knowledge of outbreak pathogens, diagnostics, clinical management, and epidemiology, as well as to improve mental health and guide infection prevention control measures (Annex 1). Work validating

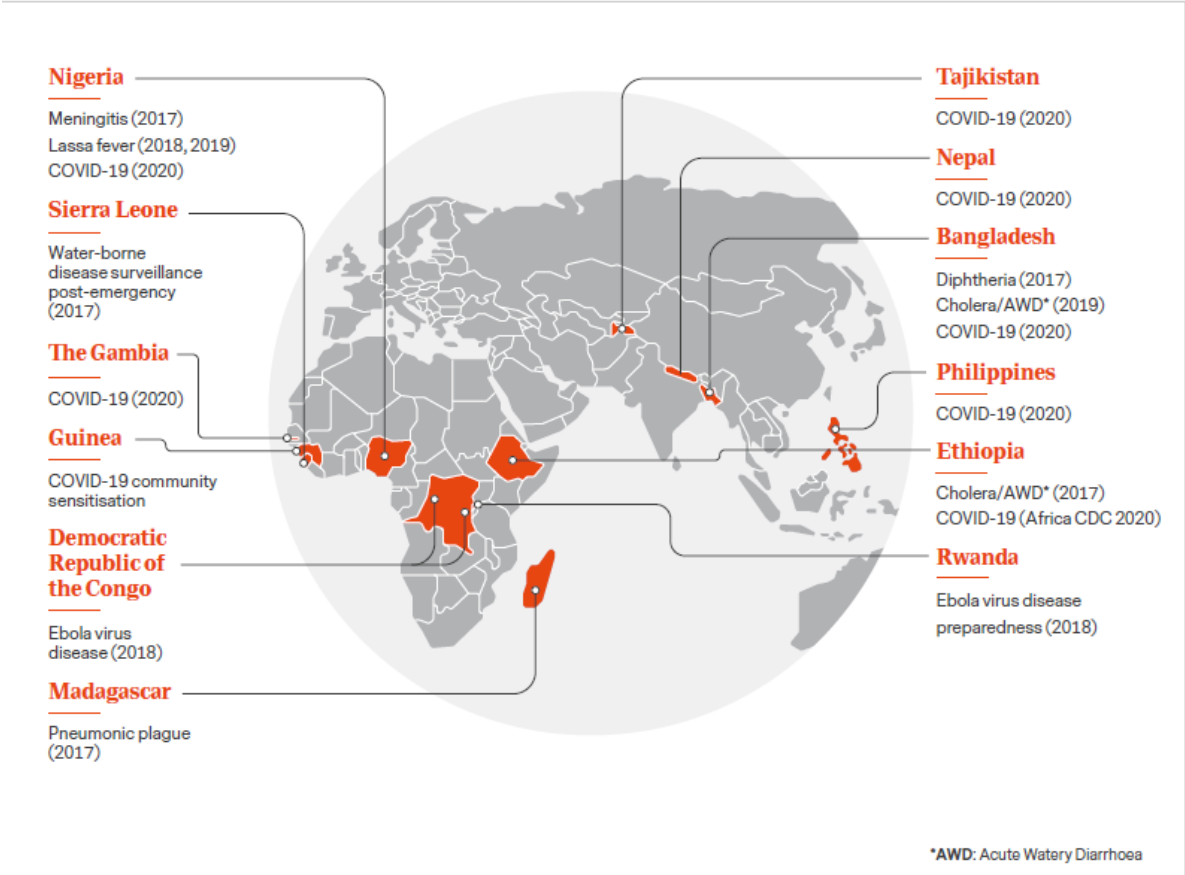

Figure 1. Sites of UK-PHRST outbreak deployments, 2016-present

cutting edge laboratory techniques such as MinIon sequencing and multi-pathogen diagnostics via the Film Array demonstrate the applicability of these powerful tools to low resources settings. Furthermore, the UK-PHRST's work in outbreak response research has led to subsequent major externally-funded research projects, for example a clinical trial of a vaccine for Ebola virus disease in the Democratic Republic of the Congo and a study of optimal case management for pneumonic plague in Madagascar. Despite COVID-19 pandemic restrictions, the UK-PHRST continues to establish new projects using innovative support and design (Annex 1).

Capacity Development

In addition to the informal capacity development that comes through shared experience in outbreak response operations and research collaborations, the UK-PHRST have developed specific areas of work designed to support capacity development in partnership with counterpart organisations in Africa and Asia. These include partners on international (e.g. WHO), regional (e.g. Africa Centres for Disease Control and Prevention) and national (e.g. Nigeria Centre for Disease Control, [Nigeria CDC]) levels, as well as academic institutions (e.g. Sierra Leone College of Medicine and Allied Health Sciences). For example, early in the COVID-19 pandemic, UK-PHRST microbiologists trained Nigeria CDC counterparts to conduct whole genome sequencing of COVID-19. Nigeria CDC subsequently sequenced one of the first SARS-CoV-2 genomes in Africa and have continued to provide this service independently. UK-PHRST also created the first Massive Open Online Course in COVID-19, which was completed by over 236,000 participants from 184 countries worldwide, 123,516 of whom were from LMICs.

3. Case for Change

A. Business needs

The UK-PHRST is at the forefront of the UK's efforts to secure global health security and prevent future pandemics, delivering on the Prime Minister's five-point-plan through the UK's G7 Presidency and working with key partners. In its first five years of existence, the UK-PHRST has created a trained experienced multidisciplinary public health team able to offer ODA-eligible countries flexible, embedded, support responsive to their needs. The ongoing COVID-19 pandemic and Ebola virus outbreaks underscore the importance of this work. Lauded by partners, the UK-PHRST fosters government-to-government collaboration, offers country-led field support, and brings academic rigour to opportunities to build the evidence base. A one-year extension will allow UK-PHRST to continue to meet key needs and support strategic objectives critical to global health security and Global Britain's leadership role therein, including to:

- Maintain and extend the innovative programme specifically established and designed by Her Majesty's Government (HMG) to build on the operational, academic and capacity development expertise of UK Public Health to support LMIC partners in preparing, detecting, responding and conducting research on outbreaks.
- Support partners with the technical aspects of COVID-19 response and be ready to support the overseas component of the New Variant Assessment Platform and other future global initiatives where requests are in line with the UK-PHRST objectives and are ODA-eligible.
- Provide effective surge capacity for outbreak response.
- Deliver timely relevant research prioritising outcomes that have a clear impact for outbreak response and outbreak-affected populations, focussing on co-creation and implementation of projects with LMIC partners to enhance uptake and integration of results.
- Extend country-led capacity development across all activities. Integrating learning from five years' experience combatting outbreaks, including the COVID-19 pandemic, the UK-PHRST is generating new opportunities, including capacity to support country requests for activities such as Simulation Exercises and Rapid Response Team Training and evaluation.
- Maintain and build on important strategic partnerships in outbreak response, strengthening the UK's voice and visibility through supporting partner capacity and influencing the global health security architecture.
- Contribute to a One HMG approach in the UK and abroad and support continued global health engagement beyond 2022, including through the transition from PHE to the new UKHSA.

The UK-PHRST co-ordinates closely across HMG, complementing other DHSC and Foreign Commonwealth and Development Office (FCDO) contributions, including institutional health partnerships (e.g. GPH International Health Regulations Strengthening Project) and regionally led health security programmes (e.g. the Tackling Deadly Disease in Africa Programme).

Despite its short history, the UK-PHRST has quickly built a global reputation as a leader in outbreak response, research and capacity development. The team has also caught the eye of many prominent figures in global health, including, for example, Bill Gates, who wrote about the UK-PHRST in his regular blog (*Meet the Virus Hunters*, GatesNotes: The Blog of Bill Gates: https://www.gatesnotes.com/Health/Meet-the-virus-hunters). Other government and academic institutions, such as the Robert Koch Institute Germany and Institute of Tropical Medicine in Belgium, have contacted the UK-PHRST for guidance and modelled their outbreak response capacities in part on the UK-PHRST.

B. Benefits

At the heart of the UK-PHRST's mission is the recognition that rapid action at the outbreak source stops infectious disease threats from becoming broader health emergencies. Each synergistic component of the UK-PHRST adds value; **outbreak response** (i.e. "putting out the fire") is at the core of our work. Through **research** conducted with LMIC partners before, during, and after outbreaks, the UK-PHRST works to fill the scientific and public health knowledge gaps that allowed "the fire" to grow in the first place. Then, through joint **capacity development**, the UK-PHRST supports local partners to achieve the appropriate conditions to keep "the fire" from restarting.

The past five years have seen the project realise the novel integrated approach conceived by the DHSC, building a team from nothing to a valued partner for which requests for support and collaboration often outstrip the team's current capacity. The extension and the requested increase in human resources will allow all aspects of the triple remit to be maintained, and create some space to extend response activities, generate opportunities for partnership in training and capacity development, and maintain delivery of well-focussed research. Although what can be achieved in 12 months is necessarily limited, the UK-PHRST has the advantage of starting the period from a firm base which, if the team can be retained, can be anticipated to warrant support into the future.

HMG allocated £20 million and 5 years to build a high-quality multidisciplinary team of public health professionals, trained and able to deploy at 48 hours' notice, who can function expertly in roles from hands-on field support to high-level strategic organisation and policy development. It is underpinned by an efficient operational cell and a cadre of outbreak-focused academic researchers. Although small and often over-stretched, the UK-PHRST has allowed HMG to practically, visibly and rapidly respond to requests from LMICs, to extend its networks and to contribute to providing flexible accessible public health support to its diplomatic stations.

The UK-PHRST materially extends the network of institutions and organisations funded by HMG that bring support to LMICs in their efforts to prevent, detect, prepare and control epidemic threats in country and internationally which, given the now painfully evident cost of internationally spreading outbreaks, warrants continued investment. Simply put, the UK-PHRST saves lives overseas and protects the UK population from dangerous imported outbreak-prone infectious diseases.

Flat funding for this 12 month extension will enable the UK-PHRST to maintain support to LMICs to combat outbreaks in a world where the need for preparedness and rapid intervention has never been clearer. It will enable the UK-PHRST to build the achievements of the past five years to maintain activity across the triple remit. Furthermore, though not the necessary human resources for a longer term commitment, by reconfiguring the flat funding budget to add more core deployable and flexible technical staff (see below and Annex 2), the UK-PHRST will be able to maintain and perhaps moderately increase its capacity to respond to country requests for outbreak response as well as pursue research and capacity development for which the previous 5 years have built demand.

The 12-month extension will also give the UK-PHRST team the opportunity to develop 'co-creation' approaches, including co-identification, co-design and co-implementation of research projects, that we began to explore with partners in Year 5. This aims to advance response to partner priorities, support deeper in-country engagement, and build research expertise throughout the research cycle. Using the experience gained throughout the first five years of applying and disseminating research, and understanding that operationalisation of research is both key and notoriously difficult, the team will also focus during the extension on exploring with partners the potential for more effective routes for promotion and use of research findings, in keeping with one of the recommendations of the recent ITAD external evaluation.

C. Risks

The main risks of reducing or halting funding of the UK-PHRST are the loss of this high profile, trained, professionally experienced, internationally recognised team that is acknowledged as an important UK asset. Without funding, the team would obviously cease to exist. With reduced funding, the team would have much reduced capacity to accomplish their mission. Flat funding and the 12 month extension offered will allow the team to continue to fight outbreaks and to make the world and UK a safer healthier place. Specific risks are considered below.

- **Delivery of an extremely ambitious remit with very limited staff (RAG rating-Amber)**. UK-PHRST staff are presently over-stretched and over-worked, posing a risk of "burn out" and loss of retention. While roughly double the number of present staff are needed to sustainably deliver the UK-PHRST programme over the long-term (see Option 1 below), the current economic impediments to such an approach are recognised. To mitigate this risk, the UK-PHRST has reworked its budget and strategy in order to augment human resources within the proposed flat-funding budget (see Option 2 below and Annex 2). In addition to providing the necessary human resources to keep the programme operating with acceptable efficiency and reach, this approach will help minimise risk of underspend.

- **Short time horizon of the 12-month funding extension and uncertainty of long-term vision (RAG rating-Amber)**. The uncertainty of long-term funding and vision for the UK-PHRST beyond March 2022 will unavoidably pose operational, strategic and human resources limitations, including:

  - Loss of experienced staff to more secure and long-term posts
  - Difficulty recruiting staff of appropriate technical expertise and seniority due to inability of guaranteeing employment beyond short-term contracts of more than 6-12 months
  - Difficulty planning effective, impactful activities and strategic developments where commitment cannot be given beyond the short term
  - Difficulty developing and implementing complex research projects within a year
  - Reduced benefit and opportunities arising from co-creating and implementing projects with partner countries
  - Difficulty establishing new partnerships beyond the short term and potential of being deprioritised in favour of partners who can offer longer term horizons

  Key mitigations for this risk include:

  - For senior members of UK-PHRST to support and encourage existing staff members to continue their commitment, assuring that there are strong signals that the UK-PHRST will be supported beyond March 2022.
  - Similar reassurances will be needed to recruit replacement and additional staff during 2021-22.
  - We will continue to develop and elucidate an effective and innovative longer term vision for UK-PHRST with the work of 2021-22 providing clear evidence of direction and capacity to take this vision forward if the opportunity and resources are provided.

4. Available Options

The updated UK-PHRST Theory of Change (Annex 3), which is based on the wider DHSC Global Health Security Programme Theory of Change, provides the basis for an options appraisal.

Option 1 – enhanced funding (Preferred Option)	Option 2 – flat funding (RECOMMENDED OPTION)	Option 3 – reduced funding	Option 4 – cease funding
Strengths and Opportunities			
Ability to expand the core team and range of technical expertise that Global Britain can offer to fully respond to requests for international support and meet expectations of partner countries and organisations. Ability to develop new networks and generate new partnership models that support capacity development and increase long-term sustainability. Ability to fully invest in innovating co-creation and implementation approaches across the remit.	Deployment capacity maintained but bilateral deployments (which are more expensive) and partnership opportunities will be restricted, primarily responding only to GOARN. Ability to broaden support in some disciplines (see Annex 2) through budget reconfiguration but still insufficient human resources to meet increasing partner demands, and for the desire to effectively interface more deeply with other HMG assets. Development of new research and capacity building activities maintained, but with some funding limitations due to need to maintain support for projects started in Year 5 but affected by COVID-19 delays.	Less financial risk to HMG and DHSC. Maintain a limited UK capacity to respond to and contain public health threats worldwide. Capacity to deploy will be limited; no regrets policy will not be possible; offer of reliable rapid support will be curtailed. Some research and capacity development activities can be maintained, but drastically curtailed, reducing support to LMIC partners and undermining Global Britain ambitions to be an influential actor in pandemic preparedness and response.	No financial risk to HMG and DHSC.

	Programme maintained for future development when financial situation stabilises.		
Weaknesses and Challenges			
On-going impacts of COVID-19, including travel restrictions, create operational challenges. Recruiting the diverse additional human resources needed to build the partnerships and projects and delivering the programme described within one year will be challenging.	Reduced benefit from previous 5 years of investment. Since staff presently over-stretched, risk of "burn out" and loss of staff if human resources not enhanced. Reduced capacity to deliver could potentially damage Global Britain reputation and standing. As with Option 1, one year funding will affect research and capacity development potential in the 2nd part of the year since research and capacity development projects will have to tailor activities to a hard cut-off in March 2022.	In addition to those cited in Option 2: Loss of staff, expertise and institutional memory. Limited UK's capacity to respond to and contain public health threats worldwide. Reduced key scientific outcomes relevant to outbreak-prone diseases and outbreak response. Potential damage to existing relationships and reputation at a time of heightened awareness of the impact of epidemic threats. Lose much of the benefit of 5 years of investment.	In addition to those cited in Option 3: Lose virtually all of the benefit of 5 years of investment. Loss of established team and structures; loss of investment value; loss of surge capacity; loss of contribution to HMG developments in pandemic response. UK not engaged globally, including not developing experience in outbreaks that has international and national relevance.

5. Recommended Option

Considering the current financial climate and the reductions to the ODA budget, the recommended option is Option 2 (flat funding), which is recognised as being more financially feasible. This option would ensure continued delivery of UK-PHRST at current activity levels, with retention of the current team and maintenance of a similar partner base. Although limited in scope, the UK-PHRST can nevertheless continue to develop relationships with key regional partners and academic collaborators to support greater co-ordination and collaboration across the remit. The UK-PHRST can continue to offer technical assistance to a range of emergency responses and lay the groundwork for development of wider and stronger partnership models in the future. The COVID-19 pandemic has prompted substantial learning around provision of remote support both in operations and capacity development, which will help UK-PHRST to provide support if limited funding restricts deployments. However, it must be noted that the COVID-19 experience also makes evident that previously developed face-to-face relationships are critical to maximal programme delivery and productive partnerships that go beyond simple task-focussed desk support.

Benchmarking analysis suggests that the model of hiring a full-time core deployable team is comparable to the cost of hiring short-term consultants or reservists but generates important benefits to the identity of the UK-PHRST project to improve the overall quality of services provided. Staff costs across the range of core deployable team positions (including provision for overheads) compared with the average price paid by PHE for reservists (which was translated into an annual cost for the same number of full-time equivalent positions) show a negligible difference in overall cost.

Value for money (VfM) will be realised through prevented or more rapidly controlled outbreaks. The UK-PHRST programme has well-established standard government and externally audited procurement policies and procedures that ensure that the delivery of the UK-PHRST will be cost effective and will deliver good VfM. The scrutiny and feedback of the UK-PHRST's governance structure (Project Board, Technical Steering Committee, Global Health Security Delivery Team) will help ensure a high-value output and VfM of the UK-PHRST. We will ask all bodies to consider VfM aspects across the UK-PHRST tripartite remit, looking both retrospectively (i.e. for concluded activities of the previous year or reporting period) and prospectively (i.e. for the proposed activities for the next year or reporting period). Regular review and comment from the GHS Programme Board will also help assure VfM.

VfM will also be enhanced by cross-government collaboration and synergy; the UK-PHRST will continue to collaborate closely with development-oriented components of HMG to ensure that the knowledge gained from the typically shorter-term technical support and research endeavours of the UK-PHRST translate to longer-term capacity development that is the primary purview of these HMG resources. This "hand-off" will not mean the end of UK-PHRST involvement, however; rather, we will continue to provide specialist support and expertise, for example, with technical advice to inform procurement.

Lastly, the UK-PHRST will implement a revised monitoring, evaluation and learning framework that will further strengthen the evidence of impact, inform the Theory of Change, and align, where appropriate, with other DHSC and FCDO programmes. This will be supported by the recruitment of an Assistant Professor in Monitoring and Evaluation who will work to monitor, capture and strengthen understanding of the impact of all aspects of the UK-PHRST's triple mandate.

6. Procurement Route

Existing contracts will be extended or adjusted to maintain arrangements and continue to meet project objectives. All new procurement will be carried out in accordance with PHE/UKHSA and LSHTM procurement policies, with the appropriate tender process undertaken for any services when the threshold outlined in these policies is reached. The programme's procurement strategy will continue to ensure procurement activities are VfM and compliant with all applicable legal, regulatory and policy requirements. Any procurement undertaken by sub-contractors, programme partners or collaborators will be in line with the programme policies of PHE and LSHTM.

7. Funding and Affordability

Budget envelope April 2021 to March 2022
For the recommended option, matched funding to 2020/21, the UK-PHRST requires **£4 million.**

UK-PHRST Summary breakdown from April 2021 - 31 March 2022 (Please note: These are indicative figures)

	LSHTM	PHE	Total
Operational Dep (including OH)	0	132,600	**132,600**
Research	370,000	0	**370,000**
FETP Fellows (until September 2021)	0	155,244	**155,244**
Staff Costs (Incl. core staff, deployable staff and research staff)	1,216,302	1,200,631	**2,416,933**
Partnership and Capacity Development	50,000	27,000	**77,000**
Training	0	40,000	**40,000**
Microbiology	0	19,000	**19,000**
Equipment + Consumables	0	0	**0**
Comms and Events	0	3,000	**3,000**
Programme M&E	0	26,485	**26,485**
Overheads	364,891	396,067	**760,958**
Total	**2,001,193**	**2,000,027**	**4,001,219**

Spend to date (April 2016 – March 2021)

From April 2016 to the present the UK-PHRST have spent approximately **£14,588,453** (subject to Q4 figures) of the £20 million allocation. Therefore, the total spend of the UK-PHRST from April 2016 to March 2022 will not exceed £20 million. The underspend during the UK-PHRST's first five years can largely be attributed to insufficient human resources to implement programmes and to the relative infrequency of calls for bilateral deployments, which are budgeted at a higher cost than deployments through GOARN (for which WHO funds the deployment). We have taken these factors into account moving forward, revising personnel and budget accordingly.

8. Management Arrangements

Existing management and governance arrangements will be maintained, including:

- **DHSC GHS Programme Board –** Oversight of the UK-PHRST project is through the GHS Programme Board, to which the UK-PHRST provides regular reports, include progress on deliverables, key achievements and risks.

- **UK-PHRST Project Board –** The purpose of the UK-PHRST Project Board is to advise and provide recommendations on the development and implementation of the UK-PHRST Strategic Framework that reflects its vision and objectives. It provides assurance across the UK-PHRST's triple remit of response, research and capacity building, delivered in the context of the agreed strategic goals. Membership includes senior UK-PHRST, HMG and NIHR representatives as well as international experts based across a wide range of organisations.
- **UK-PHRST Technical Steering Committee –** The Technical Steering Committee acts to support the UK-PHRST to develop and deliver the research and capacity building programme, providing subject matter expertise and strategic guidance. Committee members are drawn from integral UK-PHRST partners.
- **UK-PHRST Senior Management Team (SMT)** – Day-to-day governance is managed by the UK-PHRST SMT, comprised of a group of eight senior staff representing key work streams and led by the UK-PHRST Director. The SMT meets fortnightly to monitor progress, discuss challenges, agree actions, review financial position and manage risks to the programme.
- **Ethics Committees –** Assurance on ethics is delivered for all UK-PHRST research projects through approval via the ethics committees at PHE, LSHTM, and other academic partners as appropriate.
- **External Evaluation –** An external evaluation of the UK-PHRST Programme is presently being completed by the consultant group Itad, which is anticipated to help inform going forward.

The following structures will continue to be used to ensure strong project and risk management of all aspects of the programme:

- **Deployments –** Rigorous processes, reviewed and strengthened since the initiation of the programme, are in place to support all deployment travel. All deployments and travel involving logistics support are assessed through a semi-structured post-deployment debriefing session, with the aim of identifying areas to strengthen and inform future practice. End of Mission Reports summarise each deployment and is circulated to HMG partners. An annual After Action Review inviting external stakeholders takes place to assess and critically evaluate processes and gaps.
- **Lessons Log –** The UK-PHRST is committed to continual learning and reflection to ensure that processes are always strengthened as a result of capturing and acting on lessons systematically.
- **Research –** Strong research management processes are now well established, monitored and maintained, including careful budgeting and resourcing of research activities at the planning stage, regular monitoring of progress against research milestones, and end of project meetings with the Research Management Group to identify lessons learnt and potential next steps.
- **Risk Management –** The UK-PHRST is committed to managing key risks to delivery and has an operational risk register in place which is reviewed and updated quarterly. The UK-PHRST are represented on the PHE Health Protection and Medical Directorate Risk Leads group. The UK-PHRST risk register was independently audited in 2019 as part of programme management and improvement processes.
- **Audits –** Regular internal audits of systems and practices will take place, with lessons identified leading to appropriate updates to internal processes. This includes auditing a wide range of project management activities including finance, logistics and travel. The UK-PHRST management will actively support any requests from the Government Internal Audit Agency.

A new monitoring and evaluation framework will be developed with the assistance of the new staff in charge of Monitoring and Evaluation (Annex 2). Deliverables for 2021-22 will be detailed in a forthcoming implementation plan.

Annex 1. UK-PHRST research projects to date

Completed or ongoing
A mixed methods investigation of the training of Sierra Leonean responders to the Ebola Virus epidemic to provide Cognitive Behaviour Therapy to fellow health workers suffering from common mental health problems
The usefulness of pre-deployment psychological screening for humanitarian staff deployed to crisis situations: a systematic review
What works in response to psychosocial aspects of Ebola? A systematic review to inform collaborative research with Africa CDC in The Democratic Republic of Congo
Development of a protocol for Rapid Research Needs Appraisal in Outbreaks
Patient data quality improvement in epidemics: an audit of Ebola data
An evaluation of outbreak surveillance and of the feasibility of rapid clinical characterisation of an outbreak syndrome in refugee population
Clinical characterisation of patients admitted to pneumonic plague treatment centres during the 2017 Madagascar outbreak: a prospective cohort study
Rapid identification and characterisation of avian influenza viruses by direct Nanopore sequencing in Vietnam
How can we improve case management of Lassa Fever? A prospective study of cardiovascular function and ribavirin pharmacokinetics and pharmacodynamics, in Sierra Leone and Nigeria
Effect of acute illness on contact patterns in children, Malawi
Study of the Aetiology of Severe Undifferentiated Febrile Illness Outbreaks in Sudan
UK Public health Rapid Support Team: Development of a Social Research Component
Establishing real-time evaluations of WASH on disease outbreaks in emergency settings
Building readiness for real-time pathogen sequencing for surveillance and control of infectious disease outbreaks
Improving Social Science Preparedness: review of rapid qualitative tools for outbreak response
Aetiology, ~~and~~ clinical characterisation, and genetic sequencing of a severe undifferentiated febrile illness outbreak in Kassala, Sudan
Translation of MinION sequencing from UK lab to field metagenomics laboratory (Sierra Leone, Sudan, Nigeria)
Effective diagnostics and laboratory outbreak capability for gastrointestinal pathogens in West Africa: development of a new algorithm to assist laboratory resource deployment
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: a retrospective study
Rapid response molecular diagnostics for Crimean-Congo Haemorrhagic Fever: development and field testing of a rapid point-of-care test for low resource settings

A Mixed Methods Analysis of Personal Protective Equipment and Infection Prevention Control Policies for Lassa Fever in Nigeria
Promoting earlier presentation of patients with Lassa fever: Health seeking behaviour and Lassa fever admissions in Sierra Leone
Development and testing of an innovative oral fluid serology assay to identify past infection with Lassa Fever Virus in Sierra Leone
Tools used for data collection, management and analysis within outbreak response; a landscape analysis and evaluation
Pathogen discovery in non-dengue haemorrhagic patients in the Philippines
Strengthening viral haemorrhagic fever preparedness in Uganda by serosurveillance of healthcare workers
Strengthening public mental health capacity in Africa in response to the COVID-19 outbreak
How can massive open online courses (MOOCs) be used to support outbreak response? An action research approach
Feasibility assessment of a survey protocol using oral fluid-based anti-Ebola Virus (EBOV) immunoglobulin-G immunoassays to identify previously undetected EBOV infections in the high-risk N'Zérékoré prefecture of Guinea: searching for better alert methods
Interventions for COVID-19: A survey of public health and healthcare workers' assessment of current and future interventions, the practicality of, and barriers to, implementation in different contexts worldwide
Development and evaluation of resources to support caregiver engagement with Infection Prevention and Control in hospitals
Population-based seroprevalence survey for COVID-19, Cox's Bazar (CXB) Rohingya Camps, Bangladesh
COVID-19 vaccination strategies in low-resource settings: Lessons from vaccine implementation during recent epidemics
Telephone hotlines for outbreak/pandemic response in Africa: A review and evaluation of use, operational needs and sustainability, and the development of a manual/roadmap for best practices

In preparation for year 6
Investigation of COVID-19 excess mortality in the Gambia: a co-created research project piloting an innovate approach and generalisable tools and learning
Rumours: How do online and offline COVID-19 rumours and community narratives influence one another, and what effect does this have on community responses to epidemics?

Externally funded projects for which the UK-PHRST has provided support and implementation
Partnership for Evidence-Based Response to COVID-19 (PERC): Social, economic, epidemiological, population movement, and security data from 20 African Union Member States to help determine the acceptability, impact and effectiveness of public health and social measures for COVID-19
COVID-19 Droplet Protection Using Face Shields: Development of methods to measure effectiveness of face shields for local production and adoption in low resource settings. Funded by WHO

Independent Evaluation of Lassa Serology Assays. Funded by Foundation for Innovative New Diagnostics/Coalition for Epidemic Preparedness Innovations
Clinical trial of the vaccine for Ebola Virus Disease (Ad26.ZEBOV/MVA-BN-FILO) in Goma, DRC: conducted by consortium of Congolese National Institute for Biomedical Research, Ministry of Health, LSHTM/UKPHRST, Epicentre, and World Vision
Collaboration between UK-PHRST, Africa CDC, and Resolve to Save Lives: Vital Strategies, WHO, World Economic Forum, Ipsos and Novetta Mission Analytics. Funded by Resolve to Save Lives, Bloomberg Philanthropies and IPSOS.

Annex 2. New positions proposed for the UK-PHRST in the 2021-22 budget cycle

Role (New/Grade Change)	Justification
Risks Communications & Community Engagement	
Risks Communications & Community Engagement (new)	Gap identified in responding to requests for assistance and not currently available in the CDT or reserve cadre. Regular requests for this skill set have been received via GOARN and other institutions but UK-PHRST are unable to fill.
Microbiology/Laboratory Diagnostics	
Microbiology Trainer (new)	A discipline-specific gap has been identified during deployments that can be met by developing high quality technical laboratory training modules using a blended approach of virtual and face-to-face training. This will be a key part of capacity development support and will improve efficiency and impact during deployments. The virtual elements will provide an online training resource of laboratory capacity development tools to reach a much broader audience in LMICs.
Laboratory Manager (grade change)	Gap identified in human resources to lead, run and maintain operational preparedness activities, such as the introduction of new management systems or operational processes and leading on technical projects to improve or expand microbiology capacity, e.g. near offline bioinformatics.
Epidemiology and Data Science	
Field Epidemiologist (new)	Gap identified in human resources; Epidemiologic support is the most frequent request received by the UK-PHRST from GOARN and other partners. The UK-PHRST increasingly must turn down requests due to lack of human resources (e.g., support to the 2020 Ebola virus outbreak in the Democratic Republic of the Congo). In addition to responding to outbreaks, an increase in epidemiology expertise will augment the research and capacity development remits of the UK-PHRST.
Assistant Professor – Epidemiologist/Operational Learning (New)	Gap identified in human resources for post to generate, lead on and deliver wider spectrum of epidemiology activity which the UK-PHRST is often requested to do but often without sufficient capacity to undertake. This includes activities such as running Simulation Exercises, partnering in bespoke training of rapid response teams with National Public Health Institutes and national FETPs. The post-holder will be recruited for experience of operational outbreak response, emergency programming and training in LMIC settings.
Assistant Professor Data Science (grade change)	The current CDT Data Scientist is employed at a lower level that the level of work performed, and relative to all other CDT members. Retention of this vital skill will be difficult unless grade changed and avenue for professional development recognised.

Infection Prevention and Control	
Infection Prevention and Control Specialist (new)	Gap identified in responding to requests for assistance due to the specific skills and expertise required in those roles (e.g. additional languages or water, sanitation and hygiene engineering skills) but also due to commitments by the current IPC specialist. There have been important research needs identified by partners or members of the UK-PHRST that it has not been possible to meet due to the limits on capacity of the sole current IPC specialist.

Equity and Human Rights	
Equity and Human Rights Advisor (new)	Gap identified in Itad midpoint evaluation report. This will be both an Internal and external-facing role to ensure integration of equity and human rights concerns in all UK-PHRST activities and to support research into the effect of equity and human rights factors in outbreak prevention and control.
Monitoring and Evaluation	
Assistant Professor in Monitoring and Evaluation (new)	Gap identified in human resources. The post-holder will actively lead internal evaluation as well as enable the UK-PHRST to extend capacity externally into operational and interventional evaluations in line with all UK-PHRST research strategies to date, e.g. to support LMIC partners in evaluating outbreak interventions in-country, and research and capacity development activities which involve evaluation.
Administrative and Operational Support	
Business Support Coordinator (grade change)	The post-holder will work across Finance, human resources, business management and procurement, and is critical to ensuring that the UK-PHRST can meet its requirements around financial management, governance, recruitment, workforce and people management, tendering and management of contracts and business planning. This level of seniority (SEO) is essential to ensure that a strong finance and business support position is maintained throughout the programme.
Research Project Manager (grade change)	The post-holder will lead day-to-day project management for LSHTM-led research projects with more responsibility than the current G5 role, in line with growing research portfolio and staffing. and bigger/larger volume of projects.

Annex 3. The UK-PHRST Theory of Change