



Department
of Health

Government response to the
House of Commons Science
and Technology Committee
2nd Report of Session 2015-16:
Science in Emergencies:
UK lessons from Ebola



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Presented to Parliament
by the Secretary of State for Health
by Command of Her Majesty

April 2016



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Department of Health, 79 Whitehall, London SW1A 2NS

Print ISBN 9781474130097

Web ISBN 9781474130103

ID 2905174 04/16 2905174 19585

Printed on paper containing 75% recycled fibre content minimum

Printed in the UK by the Williams Lea Group on behalf of the Controller of Her Majesty's Stationery Office

Introduction

This document sets out the Government's response to the report on Science in Emergencies: UK lessons from Ebola by the House of Commons Science and Technology Committee chaired by Nicola Blackwood MP.

The Government welcomes the Committee's report and its focus on the importance of sharing information and expertise and having a coordinated research response.

The Ebola outbreak was one of the most devastating epidemics of our generation, but as a result of the efforts of the UK and other countries, many lives were saved and the outbreak was contained.

The Government continues to work with the World Health Organization (WHO) and the wider international community to ensure that we have in place the best possible information to be able to assess the onset and spread of diseases such as Ebola and more recently Zika.

In addition, in the field of research, the Government has set up the £1 billion Ross Fund which will enable us to encourage and coordinate action to tackle malaria and other infectious diseases.

Conclusions and recommendations

INCREASING THE UK'S PREPAREDNESS FOR MAJOR DISEASE OUTBREAKS

1. The rapid transmission of disease surveillance data to those with the ability to interpret and act upon it is a vital component of disease control. In its absence, we have seen, in the case of Ebola, how quickly an outbreak can spread and the devastation it can cause. The lines of reporting of surveillance data must, therefore, be clear and well-understood by those involved to ensure a co-ordinated and timely escalation. We are not convinced that the systems in place for interpreting, sharing and escalating disease surveillance data across the Government operated effectively during the early stages of the Ebola outbreak. (Paragraph 15)

2. We recommend that the Government sets out, in its response to this report, how surveillance data is escalated, both within Public Health England and across Government, and identify the triggers that would prompt warnings to reach ministers and senior officials with the capacity to act. We also ask for an update on the Chief Medical Officer's work with the World Health Organization to develop systems to share disease data. (Paragraph 16)

The UK is widely recognised as having one of the strongest systems for health

surveillance in the world. Surveillance data relating to emerging infectious diseases is overseen by Public Health England (PHE), the organisation responsible for assessing the risk that such diseases may pose. PHE has access to a very broad range of national data, including clinical case reports, which informs the assessment of the risk the UK faces from infectious diseases. This is supported by access and contribution to several international surveillance systems, including the WHO Global Outbreak Alert and Response Network. PHE synthesises this range of data to assess the threat from particular diseases, or related groups of pathogens.

PHE prepares a daily report that brings together all sources of international surveillance together with other sources of up to date information from other sectors. This report is shared across Government. In addition, on a weekly basis PHE holds an epidemic intelligence meeting which provides a routine forum for bringing together experts across PHE, Government and the Devolved Administrations to consider whether there is an issue that may require further action and escalation.

At any point, if PHE detects an issue of concern outside these routine arrangements, they will notify on an ad hoc basis and put in place appropriate response arrangements to protect the health of UK citizens.

In addition to the surveillance led by PHE, the Department for International Development (DFID) has improved its early warning system

and early action systems for public health and conflict-related emergencies. DFID now produces a monthly Humanitarian Early Warning Note which is widely disseminated.

The Government is also taking steps to bring together the various aspects of surveillance information to provide an overarching view and, where required, response. The Cabinet Office is working with a range of domestic and internationally facing Departments to ensure a broad view of international emerging diseases is taken on a regular basis and appropriate mitigation and response activities are undertaken across Government as a result.

To improve surveillance at a global level the Government is encouraging international data sharing during emergencies. The Government is in discussion with WHO to achieve this, including via the Chief Medical Officer as the UK representative on the WHO Executive Board. We are also working with the United Nations, the International Committee of the Red Cross and other non-governmental organisations to strengthen information exchange on humanitarian issues.

The UK's continuing leadership in this area is demonstrated by the recent Joint Declaration on the sharing of data related to the Zika Virus outbreak in South America, which was signed by DFID, the Medical Research Council (MRC) and the Biotechnology and Biological Services Research Council.

3. Part of the suffering seen throughout the Ebola outbreak resulted from a long-term market failure to invest in interventions for rare, but potentially catastrophic, disease epidemics. Through a combination of public and private investment, the UK now has the opportunity to capitalise on its world-class strengths in the field of tropical medicine, and reverse decades of underfunding in vaccine, treatment and

diagnostic R&D in emerging infectious diseases. We welcome the Government's recent announcements of much needed research funds in this area. (Paragraph 22)

4. To maximise the effectiveness of these funds, we recommend that the Government works with leading experts to publish an 'emerging infectious disease strategy'. This should set out a long-term plan identifying the 'priority threats' the UK wishes to address, how much funding will be directed to each threat, as well as how action will be delivered and outcomes evaluated. The strategy should outline how coordination across funding streams will be achieved, so that there is no unnecessary duplication of research. Open knowledge and data sharing should be set as default conditions for those receiving public funds. (Paragraph 23)

As the Committee acknowledges, the Government has announced new research funding for emerging infectious diseases. We agree with the Committee that through a combination of public and private investment, the UK now has the chance to build on its world-class strengths in the field of tropical medicine, as well as medical research.

The UK is playing a leading role in international discussions led by WHO to ensure there is focused and targeted research collaboration on emerging infectious diseases.

In addition, the Government is engaging closely with a wide variety of partners including the United States Government, the Wellcome Trust and Gates Foundation to ensure our investments in this broad area are targeted and coordinated.

Our investment in this area is coordinated and included within the £1 billion Ross Fund. The Ross Fund focuses on malaria and other infectious diseases and includes:

- £188 million to fight diseases with epidemic potential, such as Ebola;
- £430 million to continue the fight against drug resistant infectious diseases, such as malaria and TB;
- £200 million to tackle Neglected Tropical Diseases, which affect over a billion people internationally;
- £100 million for other further research and development for infectious diseases; and
- £90 million for malaria implementation, as part of the UK's investment towards reducing deaths from malaria by 90% by 2030.

A particularly noteworthy element of the Ross Fund is the UK Vaccine Network which brings together the best expertise across the country to make targeted investments in the most promising vaccines and vaccine technologies that will help combat a range of diseases including Ebola, Lassa fever, Marburg, Crimean-Congo fever and Zika. Announced as part of the funding for diseases of epidemic potential with an initial investment of £20 million, with up to a further £100 million available, the Network involves members with vaccine research and development expertise, Government Departments and research funders including the Research Councils.

The UK Vaccine Network has also convened an expert sub-group to prioritise known infectious diseases and ensure that funding is focused on the key risks.

As the Committee notes, vaccines are widely recognised as a key mechanism in controlling infectious disease outbreaks. However, outbreaks of some of the world's deadliest diseases only occur intermittently, and often in the world's poorest countries. There is, therefore, not a strong market incentive to develop vaccines for such diseases. That is

why the UK Government is taking concerted and coordinated action to address this.

The Network will also be able to provide expert advice to Government at short notice during future health emergencies involving new or re-emerging infectious diseases.

International emerging infectious disease strategy

We have considered the Committee's recommendation that the Government works with leading experts to publish an emerging infectious disease strategy. This would set out a long term plan to identify the 'priority threats' the UK wishes to address, how much research funding will be directed to each threat, as well as how action will be delivered and outcomes evaluated.

The UK Government has a National Risk Register of Civil Emergencies (NRR) which is the unclassified version of the National Risk Assessment (NRA). The NRR informs capability building at national and local levels. Each time it has been updated since 2008, the NRR has identified emerging infectious diseases as a significant risk to the UK.

The Ross Fund which brings together the Department of Health and DFID's spending on infectious diseases, will include appropriate governance and oversight mechanisms to ensure coordination of expenditure in this area.

At a strategic and operational level, NHS England and PHE with the Department of Health are taking forward work in a High Consequence Infectious Disease programme which includes surveillance to ensure that appropriate preparation and response arrangements are in place.

5. The rapid diagnostic antigen test is an example of the innovations that can be achieved in Government research and development facilities, working in

conjunction with private partners and clinicians. The UK should be proud of the efforts made by all of those involved. We were therefore disappointed to learn that, despite the promise shown by the test, and the production of 10,000 test kits, it has not been operationalised. The different explanations advanced for not deploying the test suggest a worrying lack of co-ordination across the key Government departments and agencies that were at the forefront of delivering the UK's response to Ebola. Along with other evidence we received, we are concerned that this is indicative of more systemic co-ordination problems, and an accountability deficit, for key aspects of the UK Ebola response. (Paragraph 29)

6. *The Government must clarify, in its response to this report, why the rapid diagnostic antigen test was not released for use during the Ebola outbreak, distinguishing any technical, commercial and budgetary factors involved. We ask that the Government also sets out what steps it will take to ensure a joined-up, cross-departmental approach, with clear lines of accountability, to address future outbreaks.* (Paragraph 30)

We echo the Committee's praise of what has been achieved in Government research and development facilities, working with private partners and clinicians. We recognise the need to clarify why we did not use the rapid diagnostic antigen test which was developed by Defence Science and Technology Laboratory (DSTL) at the request of PHE.

Underpinning our work in Sierra Leone and in the UK was a commitment to ensure that we reacted rapidly while using safe and effective interventions that were of the highest standard possible. In this context, the Government followed WHO advice on the most appropriate and effective testing methods throughout the outbreak.

WHO guidance stated that where laboratory testing was available (as was the case with the laboratories in Sierra Leone), rapid tests for detection of Ebola antigens should not be used in the routine diagnostic management of Ebola at that stage in the outbreak.

There are a number of practical issues to be considered:

- the need to maintain a robust diagnostic system during a life-threatening disease outbreak;
- the training capacity required additionally to the response to adjust to a new diagnostic system; and
- the real risks involved in trying to change a process system which was successful, including periods of mixed systems between old and new, in the midst of a critical response potentially leading to diagnostic failures and continuing of the outbreak.

Given that there was already sufficient laboratory capacity and established processes in place to deal with the number of tests required, rapid tests were not used.

It is important that rapid diagnostic tests are refined and improved in order to produce conclusive and accurate results. Rapid diagnostic tests could potentially be used for early investigations in new outbreaks, and where there is not an established laboratory system in place.

The Government will continue to seek WHO advice on how best to deploy any accurate rapid diagnostic tests in future. The Ross Fund will include funding to strengthen rapid trialling and accelerate regulation of diagnostics and other products in the future. It will also invest in the development of diagnostics for diseases of epidemic potential, such as Ebola.

7. The lack of capacity to manufacture vaccines places the UK in a vulnerable position when the next epidemic strikes, whether for use overseas or at home.

We urge the Government not simply to encourage private sector investment in vaccine manufacturing capacity, but to negotiate with vaccine manufacturers to establish pre-agreed access to capabilities that can be called upon quickly when the next epidemic emerges. In the longer-term, this may not be sufficient.

We recommend that the Government commissions the UK Vaccines Research and Development Network to:

- a. identify the actions required to address the UK's deficiency in manufacturing capacity; and***
- b. investigate the public health, economic and regulatory feasibility of establishing investigational stockpiles of vaccines that would be ready for Phase 2 trials during an outbreak.***
(Paragraph 34)

The UK Vaccine Network is working with the Office for Life Sciences to understand and address the challenges facing the UK in relation to vaccine manufacturing capacity in the UK. As part of this, expert groups are:

- mapping the vaccine development process from basic science through to delivery in the field to understand, at each stage of the process, what the key rate limiting steps are, and how these can be best addressed; and
- working with a wide range of partners in the pharmaceutical industry to understand how the UK could become a more attractive location in which to locate long-term vaccine manufacturing facilities, and how the UK Vaccine Network should invest some of its funding in world-leading, process re-defining manufacturing technology.

This work will help to ensure that the UK is viewed by industry as one of the best places in the world in which to locate major vaccine manufacturing facilities.

As far as establishing investigational stockpiles of vaccines ready for Phase 2 trials during an outbreak is concerned, the Government notes the important role that stockpiles can play in responding to small disease outbreaks, as has been done with Meningitis A in Africa in recent years.

Any decision about stockpiling needs to be informed by a detailed understanding of how specific diseases spread, and by the safety and efficacy profile of the vaccine that would be stockpiled. All stockpiling decisions also need to be made in collaboration with international partners such as WHO.

The UK is the largest funder to Gavi, the Vaccine Alliance, which acts to ensure that new and under-used vaccines are delivered to developing countries on a scale which saves the lives of millions of children. Gavi also creates incentives for the development and stock-piling of vaccines for emerging disease threats such as Ebola.

At the current time, the Government does not consider that there is a strong enough national or international consensus on the potential role and effectiveness of 'investigational stockpiles'. However, through the UK Vaccine Network, which includes experts from industry and academia, we will keep this decision under review.

RESPONDING TO MAJOR DISEASE OUTBREAKS

8. We agree with Sir Mark Walport that the Ebola Scientific Advisory Group for Emergencies (SAGE) should have been established earlier. Convening a SAGE, however, currently requires a request from COBR in the Cabinet Office. It is not clear how, and when, COBR makes an assessment of whether there is a need for a SAGE to assist its response.

We recommend that the trigger for the formation of a SAGE should be a formal recommendation from the Government Chief Scientific Adviser. This would ensure a more robust, evidential basis for convening a SAGE. (Paragraph 39)

As the Committee notes, a SAGE is requested by COBR (the Government's emergency committee).

It is important to recognise that the absence of SAGE does not mean that essential scientific advice was absent from the earlier decision making processes. Other sources of advice were used from when the outbreak was initially identified in Guinea in March 2014 through to the formation of SAGE.

These included advice provided by PHE's specialists in emerging and zoonotic infections, and through the Science in Humanitarian Emergencies and Disasters (SHED) mechanism from March 2014, as well as from a Health Advisory Committee and the Ebola Scientific Assessment and Response Group.

As the Government Chief Scientific Adviser noted, from a Government perspective, information sharing was well co-ordinated throughout. Key to this is clear communication between groups with no duplication. We are content that this was the case with Ebola.

However, we have listened to the concerns raised and the Government Chief Scientific Adviser and Chief Medical Officer, working with the Cabinet Office Civil Contingencies Secretariat have now amended procedures and, where appropriate, will call a pre-SAGE to assess emerging issues. This will involve convening an expert group to provide a scientific assessment of an evolving situation and has been deployed recently as the Government considers how to respond to the current spread of Zika.

9. *The Government should review its Enhanced SAGE Guidance to establish a clear mechanism for experts on the ground, in affected countries, to participate in a two-way exchange of information during a disease emergency originating overseas. (Paragraph 46)*

SAGE already gathers expertise from a wide range of sources, both in the UK and internationally and in-country for overseas emergencies. The sources will include:

- Government advisory and regulatory agencies;
- external experts (including academics, industry and international experts);
- existing advisory groups (including Departmental- and Devolved Administration-led groups, cross-Government Scientific Advisory Committees (SACs); and
- external advisory groups and networks.

SAGE advice in an overseas emergency is provided to all relevant Departments who work internationally, who are then responsible for cascading information to their staff and partner organisations in-country. The Government therefore does not consider that changes to guidance are necessary.

10. *If the Government sets up the new 'Research UK' body advocated by Sir Paul Nurse in his review of the research councils, it should include in its remit a responsibility to act as an evidence conduit between academia, industry and Government when a SAGE is established. This should provide a single point of entry for expert advice and evidence, beyond the SAGE membership, to feed into the Government's emergency response. (Paragraph 47)*

SAGE provides the forum where multiple experts come together and debate is able to take place to ensure that quality scientific advice is made available to decision makers.

The Government does not consider that there is a need to duplicate this role with another route. We do, however, propose to work closely with 'Research UK' to identify how they can work with SAGE. This will build on the work that SAGE already does with the Research Councils to locate suitably qualified experts.

11. *One of the strengths of the UK science advisory system is its depth and breadth, with over 70 standing scientific advisory committees and councils, tasked with helping Government departments interpret, understand and make judgements about scientific information. Exactly how these committees operate during an emergency situation, however, is currently covered by a single paragraph in the Code of Practice for Scientific Advisory Committees. Furthermore, despite the Enhanced SAGE Guidance encouraging such advisory committees to be utilised by a SAGE, there was no formal interaction between the Advisory Committee on Dangerous Pathogens and the SAGE during the Ebola outbreak. We are concerned that this may be indicative of a broader failure by the Government*

to access, and use, the range of high-quality scientific advice available to it. (Paragraph 51)

12. *To take full advantage of the work and knowledge of a scientific advisory committee during an emergency, we recommend that its chair is invited to sit on the SAGE as a full member. The Code of Practice for Scientific Advisory Committees should be expanded to provide guidance on the procedures that these bodies should put in place, so that they are in a position to provide advice rapidly in an emergency. (Paragraph 52)*

The UK arrangements for scientific advice to Government and for scientific advice in emergencies are well regarded internationally. When a SAGE is called, the Chair (or Chairs) of SAGE is responsible for ensuring that appropriate sources of scientific advice are channelled into timely handling of the emergency. Such sources of advice are outlined in the response to recommendation 9.

As identified in the enhanced SAGE guidance, existing Scientific Advisory Committees will be utilised by SAGE where appropriate. This was demonstrated in 2009 when the membership of SAGE was drawn from the pre-existing Scientific Pandemic Influenza Advisory Committee. This was also the case during Ebola, where the then Chair of the Advisory Committee on Dangerous Pathogens (ACDP) was invited to the first meeting of SAGE but was unable to attend.

In addition, the pre-SAGE that was convened to assess the MERS outbreak in South Korea in May 2015 was attended by the Chair of the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG).

13. We recognise the enormous efforts made by governments, universities, regulatory bodies, humanitarian agencies, pharmaceutical companies and others to ensure that clinical trials for Ebola vaccines, treatments and diagnostics were launched in record time. But such efforts do not obscure the fact that the UK and other countries were not 'research ready' when the outbreak began, prompting a less than optimal and uncoordinated research response. The failure to conduct therapeutic trials earlier in the outbreak was a serious missed opportunity that will not only have cost lives in this epidemic but will impact our ability to respond to similar events in the future. (Paragraph 67)

14. *Research during an outbreak must be initiated rapidly, while still being designed and conducted to the highest possible standards. While we recognise the difficulties that arose in this outbreak, they are inherent to all epidemics; therefore, if we want to improve our response, we must address the weaknesses in our research readiness that this epidemic exposed. We recommend that the Chief Medical Officer urgently takes forward the work of the UK Vaccine Research and Development Network to negotiate new processes for embedding research into the emergency response. This should establish protocols for facilitating research that positively contributes to the emergency response, and should address the following questions:*

a. *Where do the key gaps in our knowledge of emerging infectious diseases lie and what research questions or projects need to be prioritised before the next epidemic?*

- b. *What types of trial design can be readily used during an outbreak, and will be accepted by regulators as producing data that reliably demonstrates the efficacy of vaccines, treatments and diagnostics, thereby providing a pathway to licensing?*
- c. *What ethical and cultural issues need to be considered before going into the field? Discussions should include patient consent, the use of placebos, and equitable access to the outcomes of the research, such as new drugs or diagnostics. These matters will need to be revisited and adjusted at the start of an outbreak to take specific local circumstances into account.*
- d. *Who is best placed to coordinate the research effort, prioritise studies, and ensure that researchers are adhering to the agreed research plan during the outbreak?*
- e. *How can a mechanism be established that enables open data sharing in real-time during a disease emergency? (Paragraph 68)*

15. *Through the Chief Medical Officer's membership of the World Health Organization Global Advisory Committee on Health Research, this work package should feed in to, and learn from, discussions taking place at the international level about research governance during an outbreak. (Paragraph 69)*

The Government notes the Committee's recommendations in this important area.

On (a), an expert working group of the UK Vaccine Network has already identified a list of priority pathogens and is undertaking targeted work to understand where the key knowledge gaps are for each disease, and what vaccines and therapeutic treatments are

currently in development for each. This work will be complete by mid-April and be used to inform UK investments in this area.

On (b), the Ebola outbreak demonstrated that relatively unusual trial designs, such as Ring Vaccination, can be an effective way in which to trial a vaccine in an outbreak setting. The Government will work closely with WHO as it develops its Blueprint for Research and Development in Emergencies, and ensure that trial design is a key element of discussions, but clearly while some degree of planning is possible in advance, trial design will always need to be informed by the dynamics of a particular outbreak.

While establishing vaccine trials was a major challenge of the Ebola outbreak, the Government recognises that other emerging outbreaks present different challenges. A topical example is Zika, where a major challenge is for new research to help develop a better understanding of the risk and to provide the evidence base to inform policy decisions.

An example of the UK's leadership and ability to respond to emerging outbreaks is the Zika Rapid Response Initiative which was launched in February 2016, made funding decisions in March 2016 and draws on support from the MRC, the Newton Fund and the Wellcome Trust.

On (c), the Government agrees with the Committee that ethical and cultural issues need to be considered carefully in the response to any disease outbreak. During the response to Ebola, the Government established a sub-group of SAGE that focused on anthropology to ensure that such issues were considered in appropriate detail. The Government will ensure that any trials funded by the UK Vaccine Network, or the broader Ross Fund, will have the highest ethical standards.

On (d), the Government believes that WHO has the key role during emergencies in ensuring that the international research effort is effectively coordinated. That is why the Government supports the WHO's development of a Blueprint for Research and Development in Emergencies, which will help ensure that the international community is better prepared to research during future outbreaks.

On (e), the Government notes the importance of establishing systems that allow for the open sharing of data in during a disease outbreak. Through the development of the Blueprint for Research and Development in Emergencies, and the ongoing WHO Review of the International Health Regulations, the Government is continuing to take an international leadership role in the sharing of data.

A topical example of the UK's leadership in this area is the Joint Declaration on the sharing of data related to the Zika Virus outbreak in South America, which was signed by DFID, the Medical Research Council and the Biotechnology and Biological Services Research Council (BBSRC).

While the Chief Medical Officer is no longer a member of the WHO Global Advisory Committee on Health Research, the UK continues to work closely with international partners to feed into and learn from discussions taking place about research governance during outbreaks.

16. Communication with the public is one of the most important aspects of any emergency or crisis situation. The Government provided good quality, accessible and accurate health information on Ebola, and provided balanced communications of the risk of the outbreak to the UK. It is disappointing, however, that it failed to explain clearly its rationale for going against guidance

from both the World Health Organization and Public Health England by introducing entry screening for Ebola at UK ports. (Paragraph 78)

17. *When interventions are made during a future disease emergency that are intended to protect the UK, such as entry screening, we recommend that the evidential basis for—and purpose of—the intervention is made explicit. This information should be clearly communicated, especially if it goes against established guidance from trusted advisory bodies. (Paragraph 79)*

The Government welcomes the Committee's recognition that the health information on Ebola was of a good quality, accessible and accurate.

Throughout the outbreak, we aimed to reassure the public that the risk from Ebola was low and that the Government was prepared. Modelling suggested that we could expect a few cases in the UK, and we prepared the public for this well in advance of it happening.

The Government always recognised that there was a risk of an individual in the early stages of Ebola infection returning to the UK. The most important strategic objective in this respect was to ensure any such individual was identified as soon as possible, assessed in isolation and provided with early specialist treatment. This would avoid any secondary transmission of Ebola infection in the UK. We were successful in achieving this objective.

PHE introduced enhanced screening on 14 October 2014. At the time, the Department of Health and PHE communicated this in the press and provided information posters at airports. The screening roll out started at Heathrow, then Gatwick, Birmingham and Manchester and St Pancras (Eurostar). It was aimed at passengers, with the support of

Border Force, who had travelled from Sierra Leone, Guinea and Liberia.

From the outset, PHE advised that the screening process was a risk-based intervention, the primary purpose of which was to ensure that any potential cases arriving in the UK were identified as quickly as possible and to provide public reassurance. Enhanced screening in high volume ports of entry ensured that individuals at risk knew exactly what to do if they started feeling ill, could self-isolate safely and could access expert advice and any treatment they needed immediately.

With deployment of laboratory staff, PHE had commenced an early monitoring system for returning workers. In November 2014, PHE formalised and extended the returning workers scheme (RWS), and increased the coverage and flexibility of screening systems to proportionately manage risk across other access routes to support the process of screening at ports. The scheme strengthened arrangements to protect and monitor the health of those who travelled to Ebola-affected countries in West Africa for their work. This was part of a coordinated effort to protect the health of the wider public.

GOVERNANCE OF EMERGENCIES

18. *We recommend that the Government supports the reforms proposed in the Stocking Report and the Harvard-LSHTM Independent Panel, as well as the WHO 'Blueprint' initiative, to ensure that the World Health Organization is fit for purpose and equipped to deliver international leadership when the next major disease emergency strikes. (Paragraph 84)*

The Government, particularly through the UK Mission in Geneva, has played an active role in galvanising international support for WHO reform to enable the organisation to better respond to disease outbreaks and health emergencies. Led by the Chief Medical Officer as the UK Representative on the WHO Executive Board, the Government has been one of the most vocal and consistent supporters of the reform process. This work is ongoing. The Government supports the recommendations of the Ebola Interim Assessment Panel, chaired by Dame Barbara Stocking, and of the Advisory Group on reform of WHO's work in outbreaks and emergencies, chaired by Dr David Nabarro.

Following extensive negotiations in the run-up to the Executive Board (25-30 January 2016), the Director General of WHO and her six Regional Directors committed to the implementation of the Advisory Group's recommendations, in particular the creation of an independent oversight and advisory body to oversee WHO's new emergencies programme.

The Government continues to work closely with WHO through the development of the Blueprint for Research and Development in Emergencies, and the ongoing WHO Review of the International Health Regulations.

19. We appreciate the Chief Medical Officer's reassurance that protocols are in place to respond to different types of disease emergencies, according to their transmission mechanism. However, the groupings she described do not feature in the 2015 edition of the National Risk Register: Instead, the broad category of 'emerging infectious diseases' is used. This is the same broad category which has been in place since 2008, yet it did not prepare our research, science advice or political response systems for a public health crisis on the scale or

time-frame of the Ebola outbreak. We are not convinced that this wide-ranging category is sufficiently detailed to enable responders without clearance to view the National Risk Assessment to prepare adequately for the next disease outbreak. Furthermore, given the far reaching lessons learnt from the Ebola outbreak, it seems extraordinary that the Government does not appear to accept the case for refining its emerging infectious disease risk assessment and protocols. (Paragraph 88)

20. In its response to this report, we ask the Government to set out with which responders it shares its respiratory, blood-borne, vector-borne and food-borne emergency response protocols. These groupings should be used to structure the 'human diseases' section of the next edition of the National Risk Register. (Paragraph 89)

The Department of Health and PHE will work with the Cabinet Office to use these groupings to structure the 'human diseases' section of the next edition of the National Risk Register.

Part of the work is to ensure that every aspect of emergency response is addressed from international knowledge gathering through to treating patients with infectious diseases in the UK. The High Consequence Infectious Disease programme will support this.

21. The Government's 'Health is Global' plan states that the Government will "protect the health of the UK proactively by tackling health challenges that begin outside our borders". It is not clear, however, what would prompt the UK to intervene overseas, or what level of capability and capacity the UK should be able to deploy in such situations. (Paragraph 95)

22. We recommend that the forthcoming National Bio-security Strategy sets out what would trigger an in-theatre response by the UK to a disease outbreak overseas. In addition, the Strategy should make clear what level of capability and capacity the UK should be readily able to deploy overseas in the event of a disease epidemic or pandemic. This should include details of the roles and responsibilities of relevant Government departments and how they would deploy sufficient resources. (Paragraph 96)

As set out in the 2015 Security and Defence Spending Review, the Government intends to publish a National BioSecurity Strategy – addressing the threat of natural disease outbreaks, as well as the less likely threat of biological materials being used in deliberate attack.

Cross-Government work is currently underway to review the landscape that the strategy covers, and to set out what it should include – this work will include close consideration of the Committee's recommendation.

23. We can only admire the courageous and selfless actions of UK volunteers, and their West African counterparts, throughout the Ebola outbreak. However, some employers lacked the capacity to release their staff or to manage their return. Some individuals were left on their own to negotiate a leave of absence from full-time clinical roles and research to assist in West Africa. We are concerned that the ad hoc nature of these arrangements made our clinical response more fragile than it needed to be. This is a structural weakness that should be addressed. (Paragraph 98)

24. In some situations, Public Health England's capacity may need to be augmented by volunteers drawn from

across the NHS, public sector, universities and beyond. We recommend that a clear framework facilitating the timely deployment of volunteers overseas, in response to an epidemic, is agreed and put in place now, ready for use in the future. We encourage the Government to consider the model used by NHS Trusts when employing staff with Reserve Forces commitments who may be subject to short notice mobilisation in conflict zones. (Paragraph 99)

The Government shares the Committee's appreciation of all those who worked in Sierra Leone during the Ebola outbreak. From setting up Emergency Treatment Centres and rapid diagnostics labs, through to providing vital safety equipment training, ensuring burials happened safely, and safeguarding orphans, public health professionals, scientists, medical staff, military personnel, aid workers and volunteers worked tirelessly.

During the response, PHE and UK-Med (who lead the UK International Emergency Trauma Register (UKIETR) programme) ran separate exercises to recruit candidates to work in laboratories and treatment centres. Candidates came from a wide range of backgrounds including the NHS, public sector, universities and beyond.

The Ebola outbreak taught us that we have the capacity and capability to deploy people but that there is scope for us to potentially speed up processes by ensuring that candidates have been through the necessary recruitment in advance.

In response to these lessons, the Government has taken two clear steps to ensure there is both capacity for more rapid deployment and capacity to scale up the level of deployed resources available to support an international response.

To ensure UK experts are in the field as quickly as possible, the Prime Minister announced the development of a UK Rapid Support Team, which will be a small team of multidisciplinary experts able to deploy and investigate a disease outbreak in a developing country within 48 hours.

The team will be delivered by PHE and an academic partner, sourced through a competitive process led by the National Institute of Health Research. The team will:

- support low and middle-income countries to rapidly investigate and respond to disease outbreaks at the source, with the aim of stopping a public health threat becoming a health emergency;
- build capacity in-country for an improved and rapid national response to disease outbreaks within low and middle-income countries;
- undertake rigorous operational research in low and middle-income countries to develop an evidence base around best practice for outbreak interventions;
- develop and deliver public health pre-deployment training on outbreak response activities and public health emergency measures for the UK-Med public health register and other relevant professionals in preparation for an outbreak deployment; and
- directly complement the work of WHO on developing the Global Health Emergency Workforce and form part of the UK contribution to that.

In addition to developing a standing capacity, the UK recognises the need to scale up quickly the deployable resources available to support a response as was seen during the Ebola outbreak.

To this end, DFID are expanding the UKIETR programme to create additional capability.

UK-Med who run the programme and who recruited NHS volunteers to work in Sierra Leone are creating a UK International Emergency Medical Register and a UK International Emergency Public Health Register. Each will be capable of handling multiple deployments of expert teams and coordinating UK health and emergency responses. This may also include deployment of public health professionals alongside trauma and medical professionals during a humanitarian emergency, such as an earthquake where public health remains a paramount concern.

The UK-Med public health roster will receive pre-deployment training from the UK Rapid Support Team and ensure the UK has access to a wider and more diverse pool of experts, able to be agile and adapt to the skills requirements of the particular emergency.

ISBN 978-1-4741-3009-7



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