

GLOBAL HEALTH
SECURITY AGENDA
PILOT ASSESSMENT OF
THE UNITED KINGDOM

August 2015

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GLOBAL HEALTH SECURITY AGENDA PILOT ASSESSMENT OF THE UNITED KINGDOM

Prepared by The external mission team

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Global Health Security Agenda

Preamble

The Global Health Security Agenda (GHSA) is an effort by nations, international organizations, and civil society to accelerate progress toward a world safe and secure from infectious disease threats; to promote global health security as an international priority; and to spur progress toward full implementation of the World Health Organization (WHO) International Health Regulations 2005 (IHR), the World Organization for Animal Health (OIE) Performance of Veterinary Services (PVS) pathway, and other relevant global health security frameworks. Assessments will be performed of current arrangements in participating Global Health Security Agenda participating countries for the purpose of identifying the baseline situation and facilitating measuring progress of work implemented in the 11 Action Packages of the GHSA.

Background

Mission place and time

London, UK; 15 to 19 June 2015

Mission team members

- Simo Nikkari, Finland (team leader)
- Khalid Abuhaimed, Kingdom of Saudi Arabia
- Michael Bell, United States of America
- Karen Sliter, United States of America

Mission team external observers

- Hannah Burris, GHSA Working Level Support Team
- Thomas Hofman, WHO-EURO
- Julio Pinto, FAO

UK assessment team

- Tina Endericks, Public Health England (lead)
- Hilary Walker, Department of Health
- Kevin Blanchard, Public Health England

Information and discussions led by technical and policy experts from across the UK
Overseen by the Cross Government Global Health Security Steering Group

Structure of the Assessment

The assessment part of the report is organized by each of the 11 GHSA Action Packages, consisting of 1) key findings made in UK that are relevant for scoring the 'Level of capability' according to the Assessment tool criteria; 2) comments on the Assessment tool (version December 8, 2014) regarding its applicability or difficulties in applying it in the context of UK; and 3) comments on whether the GHSA Action Packages main document approved in September, 2014, contains components which could be introduced into the Assessment tool, when revisions are made.

The assessment and scoring by Assessment tool was based on the state of the structure or function at the time of the mission, regardless of possible plans or prospects of establishing the structure or function in the near future.

Documents and presentations acquired, as well notes from interactive sessions are separately provided as a collection of supporting documents, covering in more detail the UK functions relevant for the GHSA Action Packages.

Preparation and Implementation of the Mission

- Prior to the visit, teleconferences were held weekly with assessment team members and the UK host to review the agenda, responsibilities, and logistics.
- Before arrival in the UK, information packets were provided to the team that included the agenda for the week, the UK's self-assessment, the pilot assessment tool, and note-taking and report templates.
- The UK invested much time and effort in pulling together information about its system, engaging relevant experts from across the government and freely provided information and documents that supported their positions. They were well prepared and very helpful to the assessment team.
- The agenda, including representatives from across relevant parts of UK government, meeting space, organization, and logistics were pre-arranged by the UK.

Executive Summary – Findings from the External Assessment

The Global Health Security Agenda (GHSA) is an effort by nations, international organizations, and civil society to accelerate progress toward a world safe and secure from infectious disease threats; to promote global health security as an international priority; and to spur progress toward full implementation of the World Health Organization (WHO) International Health Regulations 2005 (IHR), the World Organization for Animal Health (OIE) Performance of Veterinary Services (PVS) pathway, and other relevant global health security frameworks. Assessments will be performed in Global Health Security Agenda participating countries for the purpose of identifying the baseline situation and facilitating measuring progress of work implemented in the 11 Action Packages of the GHSA.

During the GHSA Summit Next Steps meeting held in September 2014 in Washington DC, five countries, including the United Kingdom, volunteered to serve as pilot nations for external evaluation and assessment of GHSA capabilities. The self assessment report was submitted on June 2nd, and the external assessment of the United Kingdom took place from June 15th - 19th 2015 hosted by the Department of Health. In addition meetings were held across Whitehall (including the Foreign and Commonwealth Office and Department for Environment, Food and Rural Affairs). A site visit was made to Public Health England, Colindale, and a field trip to PHE facilities in Porton Down.

The GHSA Steering Group and Action Package Leaders, with the help of expert review, have developed draft targets and indicators for the GHSA Action Packages. These targets and indicators served as the basis for the pilot assessments for the five nations, including the United Kingdom.

The primary objective of the assessment was to assess the utility of the GHSA Assessment Tool, using information from the UK experience of applying the tool to make proposals for improving it.

The secondary objective was to use the assessment tool to describe and review structures and functions in the United Kingdom which are essential for preventing, detecting, and responding to infectious disease threats.

The results of the pilot assessment and observations on UK Health Security preparedness were presented by the assessment team experts and observers at the wrap up meeting to Director General Felicity Harvey at Whitehall, London on Friday June 19th.

The assessment was a highly collaborative process between UK and the assessment team. The assessment team appreciates all the work and effort of UK, its experts, leaders and various organizations involved.

In brief, from the assessment team's point of view the assessment tool, and the indicators proved very useful for identifying the Country's baseline situation. During the assessment some observations were made to improve the tool, and the indicators. These have been stated in the separate Assessment document.

Overall, following the self assessment and the external assessment process the UK has demonstrated a strong baseline position across all Action Packages. One of the key areas

of strength identified in the UK is the cross Government and organizational coordination and response. The UK will be a good resource for ideas on how to navigate some of the challenges to true implementation of the “One Health” concept in other countries. This was particularly well demonstrated within the AMR and Zoonotic disease Action Packages.

The UK has a well-practiced system of response to real outbreaks and testing the systems through simulation exercises. Few countries have this degree of experience and number of targeted exercises which serve to fine tune the system.

A significant observation has been that the level of political interest in public health and zoonotic disease is higher than in most countries. The recent UK response to the Ebola outbreak in West Africa is a model for how to respond globally to high priority infectious diseases. However, this has also highlighted the complexity of this area of work and the need to meet these challenges better in the future, such as the coordination between teams of volunteers from different countries and NGOs.

The importance of the inclusion of behavioral studies is recognized and increasingly applied effectively in the UK. The GHSA could consider if every package of interventions should include a human behavior component and/or a human behavior expert should be included on every assessment team.

During the assessment the UK also took the opportunity to identify areas of best practice and resources which could be useful to support other GHSA countries.

An additional benefit was recognized during the visit; that being a member of the external assessment team was a great opportunity for learning, both from the host country and other team members.

Revising the Assessment Tool – High Level Recommendations and Cross-Cutting Themes

Overall the host country and the assessment team agreed that the tool does what it needs to – it provides a rough measure to identify gaps and demonstrate progress. The periodicity with which it should be applied in order to track progress is dependent on the level of sustainable capability in a country.

In addition, as good practices are identified, especially those that could be applied fairly easily in a low-resource setting or without additional funding, there needs to be a feedback loop to share the information with all GHSA countries in a proactive way.

Recommendations for strengthening the tool:

1. Cross cutting / country context issues. Could consider holistically how to address issues relevant to every action package, such as workforce development, financing, etc and how we can use the tool to help foster critical linkages among the work being undertaken under each of the action packages. There could be an opportunity to address cross cutting issues separately and also include a country context aspect / risk assessment at the front end. This could include:
 - an introductory “checklist” which covers overarching issues:
 - Has the country accessed the free resources, e.g. PVS (veterinary infrastructure), GAP analysis (veterinary infrastructure needs) etc
 - an introductory review which indicates level of government and political commitment of resources and personnel to e.g. Public health laboratories, veterinary laboratories, public health service/surveillance, veterinary service/surveillance, AMR
 - Review of how centralized the health system is for policy setting, funding and standardization
 - Suggest: Is the Health care system centralized/nationalized or is it a multiple payer/provider system?
 - an idea of political support for public health/global health security. If support is low an engagement plan with high level officials could be developed and implemented with the assistance of foreign partners to raise awareness. Suggest: What is the level of government involvement for each of the action packages?
 - a review of the legislative basis for public health and animal health. Suggest: What legislation exists for each action package?
 - Background / risk assessment of country (epidemiology, hazards)
2. Tracking progress. There is an opportunity to consider whether the tool, as it stands currently, is able to effectively track progress toward an agreed endpoint based on the progressive succession of the criteria in the rating table. Additional attention should also be given to ensuring consistency across the endpoints and the standard that we are moving toward (what it means to be a 4 out of 4 in terms of sustainable capability).
3. Behavior and behavioral assessment. This is recognized and applied effectively in the UK and could be a model for other countries and the GHSA. For example the need for a physician or veterinarian to hand something to a patient/owner is very real for AMR as are the anthropological elements of Ebola spread. GHSA investments could include targeting community integration efforts-possibly through paying for local health care workers and/or Animal Health Technicians in “peacetime” to gain confidence of local communities. GHSA should consider if every package of interventions should include

a human behavior component and/or a human behavior expert should be included on every assessment team.

4. One Health. This is a key overarching concept. The OH-SMART training could be a good first training for all recipient countries to begin with a “One Health” approach and get all the relevant parties to the table right at the beginning. This could make future work in country more effective.
5. IHR. More overt links in the Action Packages to the IHR would help the assessing country understand how this assessment supports compliance with this
6. Simulation exercises. Opportunity to use these as a mechanism for getting different experts to work together in a country and could be an overall GHSA “treatment” or “intervention” strategy. Suggest: Can the country please provide a list of tabletop/simulation exercises as well as major outbreaks or incidents which have occurred in the past 5 years.

GHSA Antimicrobial Resistance

(GHSA Action Package Prevent-1)

Introduction

Bacteria and other microbes evolve in response to their environment and inevitably develop mechanisms to resist being killed by antimicrobial agents. For many decades, the problem was manageable as the growth of resistance was slow and the pharmaceutical industry continued to create new antibiotics.

Over the past decade, however, this problem has become a crisis. The evolution of antimicrobial resistance (AMR) is occurring at an alarming rate and is outpacing the development of new countermeasures capable of thwarting infections in humans. This situation threatens patient care, economic growth, public health, agriculture, economic security, and national security.

UK Level of Capabilities

- UK has a high level of capability for surveillance of AMR with very strong links between Public Health England (PHE), NHS England and the Department of Health which provides for the efficient exchange of surveillance information.
- The UK was one of the first countries to have a fully developed AMR national strategy, which was published in September 2013 . The UK's strategy is a One Health approach which covers human, animal and environmental sectors.
- Department of Health, Department for Environment, Food and Rural Affairs (Defra) and PHE, are leading the implementation of the UK 5 year Antimicrobial Resistance strategy. A High Level Steering Group is overseeing the implementation of that strategy and this group works with a range of partners across the human and animal health, research, industry and academic sectors.
- The Strategy, and its implementation, is a UK-wide initiative and involves the Devolved Administrations – Scotland, Wales and Northern Ireland.
- The UK has one of the most comprehensive surveillance systems in place to identify and measure antibiotic resistance in bacteria across the country. This

includes the collection of data on resistance from hospitals and targeted surveillance of resistance in specific types of infection such as blood poisoning (bacteraemia) and gonorrhoea.

- The UK has an Antimicrobial resistance and healthcare associated infections (AMRHAI) reference unit, which is the national reference laboratory for investigating antibiotic resistance in healthcare associated bacterial pathogens . AMRHAI provides national reference facilities for many healthcare associated bacteria.
- A national AMR surveillance programme, the English Surveillance Programme for Antimicrobial Utilization and Resistance (ESPAUR) is in operation under PHE supervision. This programme monitors the way antibiotics are used by patients and prescribed by doctors across the NHS in England. The first report from ESPAUR was published in October 2014.
- A new system has recently been developed that enables hospital laboratories that submit data on resistance to PHE to interrogate their own local data, allowing hospitals to directly assess trends and benchmark their rates of resistance against the national picture. The system is currently being further developed to allow analysis of data on prescribing of antibiotics, which can be correlated with trends in resistance.
- The UK – through Public Health England - has been engaged in action to strengthen public health laboratories in low and middle-income Commonwealth countries through a twinning and partnership initiative to share expertise and knowledge .
- The UK has also announced the creation of a Fleming Fund to support low-income countries to improve surveillance and laboratory capacity to tackle antimicrobial resistance and infectious diseases in general.
- In addition to specific initiatives, such as “twinning”, a key part of the UK’s broad approach to addressing AMR has been to work closely with international partners, to ensure a coordinated global initiative on AMR. To this end, the UK has been a leading player in the preparatory work on the WHO Global Action Plan on AMR. The Global Action Plan is a “one health” approach, which involves FAO and OIE, and therefore covers human, animal and environmental sectors.
- This country already contributes data to pan-European surveillance of both antibiotic resistance and prescribing, coordinated by the European Centre for Disease Prevention and Control, and is now working with the WHO to support development and implementation of the Global Action Plan to tackle antibiotic resistance. The UK also participates in all European public health infectious disease networks supported by the European Commission, and EU-funded research networks like the European Centre for Disease Prevention and Control (ECDC). ECDC conducts surveillance through networks such as the European Antimicrobial Resistance Surveillance

Network (EARS-Net) , the largest publically-funded system in Europe. PHE also houses several WHO collaborating centres and laboratories.

External Review – Key Observations

- Clear the UK is a global leader.
- UK has a strong data sharing capability and practice across labs and sectors.
- The UK is still working on getting prescription level and antimicrobial usage data on animals.
- Behaviour change is critical to stemming AMR, including among prescribers, patients, pharmacists, veterinarians, general public and there should be a greater focus on this element. This also ties into basic infection prevention and control and the need for strong IPC practices is one of the central lessons learned in the Ebola epidemic.
- The UK's practice of piloting and testing interventions to develop an evidence base for broader action is highly commendable and some of the lessons learned (such as letting prescribers know when they are prescribing antibiotics more frequently than their peers in order to change prescribing behavior) may also work in other countries and so should be shared.
- In order to effectively address questions on IPC, the UK would have had to invite an entirely separate set of experts. The way the action package is drafted currently did not trigger their engagement, which is a strong signal of the lack of emphasis on this issue within the tool.
- UK continues to demonstrate global leadership in systematically assessing and improving AMR monitoring and reduction.
- UK clearly benefits from the integrated data and actions DH/NHS/ PHE.
- The UK has a model approach to working with private sector in developing novel drugs.

Scoring for UK Using the Assessment Tool

- Surveillance plan implementation: **Level 4**
- Laboratory testing: **Level 4**

Assessment Tool

Based on UK internal assessment:

- The assessment tool does not give sufficient weight to assessing the one health approach within national plans (although the GHSA Action Package does stress it).
- The assessment tool does not seek to establish how antimicrobials are prescribed and/or used in pilot assessment countries. As it stands, the assessment only records whether or not a country has the capability to conduct surveillance.
- The assessment tool does not (but should) assess how antibiotic use in the animal health sector is reduced – not just monitored.
- Consider assessment of actions taken/in place to improve prevention and control to reduce reliance on antibiotics, and
- assessment of the antimicrobial production – how are they produced, where, what controls in place, how are counterfeit AM controlled, how distributed

To provide a good overview of the whole cycle could use:

- Prevention of disease (no need to use AM)
- Production & distribution of AM (if you do need AM, then production is controlled)
- Measure usage
- Assess Impact through surveillance systems
- One of the key requirements is management support. There may be little strategic direction in low income countries and this will need to change to make progress, hence the need to establish an infrastructure.
- Consider at a national level to set up a central committee with an associated website that refers clinicians to key WHO and other international documents that would support local infection prevention and control (IPC) teams.
- include an IPC programme which has a particular focus on hand hygiene as this has been shown to reduce infections in all types of country, unsafe, unnecessary and ineffective infection control practices, and target preventable healthcare associated infections (HCAIs) in high priority areas.
- Establish a mandatory strategic infection prevention and control infrastructure at a national and local level. A national body will provide clinical leadership and signpost local teams to relevant guidance and tools. Local institutions should establish local committees that include appropriately trained staff and report IPC results to the governing board.
- Establish local infection prevention and control programmes that include implementation and audit of hand hygiene policies.
- Good practical training on techniques such as hand hygiene, use of personal protective equipment and aseptic technique to support education programmes on these issues and maximise reductions in infections.

Online sources of guidance

- “Start Smart then Focus” guidance available at:
<https://www.gov.uk/government/publications/antimicrobial-stewardship-start-smart-then-focus>
- EPIC3 guidance - Evidence-Based Guidelines for Preventing Healthcare-Associated Infections, accessed at:
http://www.his.org.uk/files/3113/8693/4808/epic3_National_Evidence-Based_Guidelines_for_Preventing_HCAI_in_NHSE.pdf
- TARGET Antibiotics Toolkit guidelines available at:
<http://www.rcgp.org.uk/clinical-and-research/target-antibiotics-toolkit.aspx>
- International Federation of Infection Control – basic concepts resource at:
http://theifc.org/?page_id=207

Based on external assessment discussions:

- Overall the UK found the measures to be quite appropriate for assessing AMR.
- Suggest adding questions and measures on IPC
- Suggest adding the element of behavior change

Add under measures:

1. Is a prescription required for Antibiotic use in humans?
2. Is a prescription required for Antibiotic use in animals? (or: when is a prescription not required?)
3. Prescription rates for humans per 100 humans, decrease antibiotic consumption in secondary care by 1%.
4. Is there a national AMR lab in the country?
5. Infection prevention and control is critical to prevention and yet the tool does not address it. Recommend this element be better integrated into the AMR action package, recognizing that it is much broader than AMR.

GHSA Action Packages Main Document

GHSA Zoonotic Disease

(GHSA Action Package Prevent-2)

Introduction

Zoonotic diseases are communicable diseases and microbes spreading between animals and humans. These diseases are caused by bacteria, viruses, parasites, and fungi that are carried by animals and insect or inanimate vectors may be needed to transfer the microbe. Approximately 75% of recently emerging infectious diseases affecting humans are diseases of animal origin; approximately 60% of all human pathogens are zoonotic.

UK level of capabilities

What zoonotic diseases are of greatest concern within the country?

The zoonotic diseases of greatest current concern are a mix of those currently present (1), several of which have active control programmes in place, and those which are exotic to the UK but would have severe repercussions if they occurred (2). In addition a constant concern is the emergence of new zoonoses (3). This is reflected in the list below

1. Salmonella, campylobacter, E.coli VTEC, Hepatitis E, Mycobacterium bovis,
2. pandemic influenza, rabies
3. novel or emerging zoonoses

Please describe partnerships between Ministries of Health and Agriculture as it relates to zoonotic disease detection and response

Public and animal health, including zoonoses, is a devolved issue in the UK with independent government departments within England, Scotland, Wales and Northern Ireland. There are strong partnerships between public and animal health bodies within each country and also across the four nations.

HAIRS (Human Animal Infections and Risk Surveillance Group) is a multi-agency and cross-disciplinary horizon scanning group, chaired by the PHE Department of Gastrointestinal, Emerging and Zoonotic Infections and it is the main forum for member organisations to identify and discuss infections with potential for interspecies transfer. The group meets formally monthly with regular contact on an ad hoc basis at all times. A system of horizon scanning is used to identify emerging and potentially zoonotic infections which may pose a threat to UK public health. The multidisciplinary nature of the HAIRS group enables it to assess horizon scanning reports in an objective and scientific manner.

If infections are thought to be of potential significance, they are included in the "Infectious Disease Surveillance and Monitoring System for Animal and Human Health: Summary of notable events/incidents of public health significance", which is produced monthly.

Members include representatives from: Public Health England, Department for Environment, Food and Rural Affairs, Animal and Plant Health Agency (an Executive Agency of Defra), Department of Health, Public Health Wales, Welsh Government, Health Protection Scotland, Scottish Government, Public Health Agency of Northern Ireland, Department of Agriculture and Rural Development Northern Ireland, Food Standards Agency.

The HAIRS group produces a number of reports and risk assessments – see below. More information is available here [HAIRS](#)

UKZADI (UK Zoonoses, Animal Diseases and Infections Group) advises on important trends and observations which impact on animal and public health, including where necessary preventative and remedial action. It is an independent committee made up of experts from across the agricultural and public health departments.

The group advises, as appropriate, the Chief Medical Officer, the Chief Veterinary Officer, the Department of Health (DH) in England, the Welsh Government, Scottish Government (SG), Department for Agricultural and Rural Development Northern Ireland (DARDNI) and Food Standards Agency (FSA) on important trends and observations which impact on animal and public health, including where necessary preventative and remedial action.

Its role is also to provide a strategic overview to ensure overall co-ordination of public health action at the UK, national and local level with regard to existing and emerging zoonotic infections and trends in antimicrobial resistance. The Terms of Reference of UKZADI, full details of the membership and minutes from meetings can be found here [UKZADI](#)

In addition to these cross cutting groups there are a number of focused cross Government and cross departmental groups, specialising in particular areas such as campylobacter, Mycobacterium bovis, influenza and emerging viruses among others.

The number of groups working in the zoonoses area in the UK and the strong and well established links between them is illustrated by the 'Virtual Surveillance Diagram' attached below. The diagram includes EU and international links in addition to national ones and

demonstrates the partnerships between human and animal surveillance systems and how this translates into hazard identification, risk assessment and risk management.

Describe reports produced from animal zoonotic disease surveillance systems

A number of reports and surveys are available, covering zoonotic pathogens in the UK, with examples of the main ones below

UK Zoonoses Report: The annual UK Zoonoses Report is produced by a cross-Governmental Working Group consisting of representatives from Public Health England (lead), Defra, the Department of Health, the Food Standards Agency, the Devolved Administrations, Animal and Plant Health Agency (APHA), Scotland's Rural College (SRUC), Health Protection Scotland, Public Health Agency Northern Ireland and Public Health Wales. The report draws together information on animal and human health issues from a number of sources on zoonoses in man, food and animals, where appropriate, providing comparable data from previous years. The reports are published here [UKZR](#)

UK Trends and Sources Report: This report is produced under the requirements of EU Directive 2003/99/EC and focuses on the zoonoses specified in the Directive. The data is submitted to EFSA in May every year and contributes to the European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks. The reports are published here [Zoonoses Trends and Sources](#)

Annual report on Salmonella in livestock production in Great Britain: This annual publication presents data on Salmonella reports from livestock species in Great Britain and also provides data from previous years for comparative purposes. The report includes chapters on each main livestock species, on Salmonella in wildlife, Salmonella in animal feed stuffs and on antimicrobial susceptibility of Salmonella. Information on the number of laboratory reports of human isolations of Salmonella reported in GB during the year is also included for comparison purposes. The reports are published here [Salmonella Book](#)

Emerging Infections Monthly Summaries: The Public Health England (PHE) Emerging Infections and Zoonoses Section uses an integrated horizon scanning approach which combines information on both human and animal health, in order to identify and assess outbreaks and incidents of new and emerging infectious diseases reported nationally and internationally. The information gathered is logged daily and then used, in collaboration with Defra and APHA, to produce a monthly summary of those incidents or events which might pose a public health threat to the UK population. The summary is widely circulated within PHE, to the Department of Health, to colleagues working in animal health, and internationally. They are published here [Emerging Infections Monthly Summaries](#)

HAIRS Risk Assessments: Potential hazards to the UK population, such as a novel infectious agent or a new disease observed in animals, are identified by group members through horizon scanning activities or from laboratory reports. If a risk assessment is deemed necessary, a formal assessment is carried out by the group, in consultation with recognised experts if appropriate. The risk assessment procedure is chosen depending on the issue under consideration; either a zoonotic potential assessment (1) or an emerging infection assessment (2). Recent risk assessments include TB in cats, Brucella in marine mammals, hantavirus and West Nile Fever and are published here [HAIRS Risk Assessments](#)

Non-statutory zoonoses: These are quarterly reports on the disease surveillance of non-statutory zoonoses and infections shared between humans and animals. The reports are published here [Quarterly non statutory zoonoses surveillance](#)

Other reports and surveys carried out, both on an annual or ad hoc basis include; annual survey of B.melitensis in sheep and goats; campylobacter monitoring in broilers at slaughter and an abattoir based survey of pig zoonotic diseases (the latter report can be found here [Pig Abattoir Survey](#))

What Ministries receive reports produced from zoonotic surveillance systems?

As can be seen in the answer above, the majority of the reports and summaries are publically available. In addition an alert on publication is sent to interested parties both within and outside Government. Any reports not publically available (not a significant number) are distributed across various Government Departments such as Defra, Department of Health, Cabinet Office, Department for International Development, Government Office for Science, Food Standards Agency and the Devolved Administrations.

How are animal zoonotic disease surveillance systems linked to surveillance systems for human pathogens?

All routine surveillance data is shared between animal and public health departments and agencies. Any increase in the incidence or prevalence of zoonotic pathogens or zoonotic diseases is discussed immediately. Specific diseases/pathogens are referred back to specialist cross government groups. Animal and public health colleagues work together on incidents or outbreaks of zoonotic significance (for example salmonellosis, E.coli VTEC, Q fever).

There is routine sharing of samples, for example for E.coli VTEC, salmonella of public health significance, rabies, brucella and Mycobacterium bovis. Reports are exchanged and trends discussed. All animal and public surveillance reports are available to HAIRS and all significant incidents are discussed either at the regular monthly meetings or ad hoc.

Describe public health training offered to veterinary staff within the country

Examples of various training programmes and initiatives are given below;

- All vets undergo public health training as part of their basic curriculum at veterinary school
- The Animal and Plant Health Agency (APHA) has embarked on a programme of extending its pool of field epidemiologists. As part of this programme specific epidemiological training will be given to some staff in the areas of Salmonella, Antimicrobial resistance, Chemical and Toxic hazards (including via the food chain), and other (mainly non-statutory) zoonotic diseases such as VTEC E. coli, Q Fever, Toxoplasmosis, Cryptosporidiosis, Campylobacter, etc. It is anticipated that joint training may be held with PHE epidemiologists.
- APHA provide a full Salmonella training course at Weybridge every year to all veterinary staff required to implement and monitor the salmonella National Control Programmes for broilers, layers, breeding flocks and fattening turkeys.
- All abattoirs operate under the supervision of an official veterinarian. They are specially trained for this work, and their main role is the protection of public health, although they also have a role in surveillance for animal diseases.
- One Health associated M.Sc courses are available in the UK at a number of academic institutions. Both human and animal health professionals participate, contribute to and/or teach at these courses.
- Veterinary students have the opportunity to work with Public Health England during their studies.
- One or more joint APHA/Public Health England training courses in management and investigation of zoonotic incidents are held annually. In addition ad hoc training is held depending on need and circumstances.
- More than 10,000 private veterinarians are currently authorised to act on behalf of the government as Official Veterinarians (OVs) through a system of accredited training, assessment and re-validation. In many cases this role includes controls on zoonotic diseases (TB, Anthrax, Brucellosis) and so has a substantial public health component.

Are veterinarians included in country FETP?

Veterinarians are eligible to apply for the Field Epidemiology Training Programme and a number have attended the programme and developed the training and experience to develop the competences agreed for field epidemiologists in the European Union. More information is available here <https://www.gov.uk/field-epidemiology-training-programme-fetp>.

In addition vets can apply and participate in the European Programme for Intervention Epidemiology Training (Epiet). More information is available here [Epiet](#)

What is the current animal population for the country, including farm and agricultural animals?

The attached document provides data on the current animal population for the UK. It is a combination of information taken from official Government statistics and commercial sources depending on species.

Has the country implemented any policies with the purpose of reducing spillover of zoonotic disease into human populations?

Yes. A number of examples are given below

- A broad suite of specific zoonoses legislation, including a general Zoonoses Order and legislation on specific diseases including salmonella, brucella, bovine tuberculosis, transmissible spongiform encephalopathies and rabies. Further information on controlling disease in animals, including zoonotic diseases is available here [Controlling animal disease](#)
- Salmonella National Control Programmes in layers, broilers (meat chickens), breeding flocks and fattening turkeys, with an example of the guidance and codes of practice available here [NCP Meat chickens](#)
- A broad suite of specific Food Hygiene legislation under the responsibility of the Food Standards Agency, more information here [Food Standards Agency](#)
- Campaign on campylobacter Acting on Campylobacter Together, more information here <http://www.food.gov.uk/news-updates/campaigns/campylobacter/actnow>
- Requirement for tapeworm treatment of dogs under the Pet Travel Scheme in order to maintain country freedom for Echinococcus multilocularis, more information here [Pet Travel Scheme](#)
- Policies targeting advice and providing on specific non-statutory zoonotic diseases, for example on; [Q-fever-good-practice-for-farmers](#) ; [Pet-rats-mice-hamsters-reducing-the-risk-of-infection](#) ; [Reducing the risks of salmonella infection from reptiles](#) ; [Advice to pregnant women during the lambing season](#) [Avoiding infection on farm visits](#)
- Animal and public health colleagues joint production of investigation guidelines for zoonotic diseases, more information here [Investigation of zoonotic diseases](#)

Please describe the progress in implementing these policies

Progress in the trends and prevalence of a number of zoonotic infections can be monitored in the UK Zoonosis Report and the Trends and Sources information described and linked to above.

On specific diseases, a number of examples are given below;

- The incidence of salmonella infection in the human population has significantly reduced since the implementation of the salmonella National Control Programme
- Increased awareness of the potential risks of zoonotic infections from animal contact in visitors to Open Farms or similar animal-associated attractions by publication of a Code of Practice, available here [Industry Code of Practice](#) with a number of other precautionary guides available, for example information from the Scottish Government is available here [Reducing the risk of E.coli O157 infection](#)
- Increase in awareness of industry and public to potential risk of campylobacter infection from chicken. Guidance is available here [FSA campylobacter risk management](#). Industry fully engaged in implementation of controls on farm and at abattoir
- West Nile Virus disease in horses is now included in the list of notifiable diseases to enable early detection of infection using this sentinel animal

External Review – Key Observations

1. The outstanding collaboration between public health and veterinary officials is clear. The formalized multiagency groups like HAIRS, which also include wildlife and other specialists, are a “best practice” which help to move the idea of “One Health” from concept to reality. Recommend this approach could be used by other countries
2. Interoperability of systems is an ideal many countries working toward. , and most are currently concentrating on making sure the right people get the information they need. It is clear the UK is doing this.
3. The same things that benefit the entire UK system benefit this package. In particular the high level interest in all animal diseases, and the emphasis on human behavior I would like to highlight as particularly supportive of this package. Vets are also expected to “do something” for a sick pet.
4. The disease simulation exercises-not just in number (although that itself is impressive)-but also in their targeted nature and perhaps most importantly, in the way the UK then makes changes based on the findings is exemplary as another “best practice”.
5. The UK’s very honest assessment of the BSE crisis has been helpful to the global veterinary and public health communities.

Scoring for UK Using the Assessment Tool

Surveillance systems in place for priority zoonotic diseases/pathogens (in animals): **Level 4**

Veterinarians: **Level 4**

Notes on scoring:

- There has been some discussion of adding a question to the tool on use of existing tools and assessments (PVS, IHR, etc). PVS has not been formally used in the UK as the country is regularly audited by similar European processes so this element, if added, could lower the UK's score. The UK is, however, considering doing the PVS just to be able to compare its capacity with other countries globally.

Assessment tool:

Based on internal assessment:

Not always clear what the questions were referring to and how much detail was needed.

On the scoring – the criteria might not be quite correct. Requires thought on how to improve them.

Based on external assessment:

- Liked that the questions focus on multidisciplinary partnerships, which are not covered by the PVS or IHR tools
- The questions are not very specific, so would suggest adding “is there a one health or multidisciplinary group? How often does it meet? Do you produce reports, and if so, how often? Who receives those reports and what is done with the information?”
- Suggest including questions about local, national and regional links
- Suggest adding a question on how a country works with other countries to report and share information on diseases, whether there is a formal mechanism in place so have early warning of potential risks
- Add measure: are there plans in place for surge capacity for use of human labs when needed based on disease in animals

Suggestions of specific language and changes to the tool:

1. Under Measure 2 (partnerships) add: Is “integrated approach” or “one health” approach a formal, written policy priority in the country? How many real and simulated multi-agency zoonotic disease outbreaks/tabletop exercises have occurred in the past 5 years?

2. Under measure 4 (ministries) add: Is there a formal established mechanism for animal health information to be shared with public health and vice versa? (for zoonoses). Are the two systems interoperable? Is there a public communications plan in place which includes politicians' as well as local needs for information?
3. Measure 5: (links): add: Are the linkages electronic? How do these systems pick up emerging diseases versus endemic diseases?
4. Under measure 6 (public health training) add: Describe what training in controlling zoonotic disease in animal populations is offered to public health staff within the country.
5. Measure 8: (animal populations). Add: Specify species: cattle, horses, sheep, goats, pigs, poultry (turkeys and chickens), exotics, cats, dogs, pet birds. Add: what percentage of farm animals are on "backyard farms" and what percentage are in commercial farms? What percentage of animals receive veterinary care at least once a year?
6. Measure 9: (reduce spillover): Add: What motivations are in place to encourage reporting of animal disease (such as indemnities paid)? Which factors exist which might prevent farmers/owners from reporting animal disease (not knowing how, lack of indemnity, social stigma).

GHSA Biosafety and Biosecurity

(GHSA Action Package Prevent-3)

Introduction

Working with pathogens in the laboratory is vital to ensuring that the global community possess a robust set of tools—such as drugs, diagnostics, and vaccines—to counter the ever evolving threat of infectious diseases.

Research with infectious agents is critical for the development and availability of public health and medical tools that are needed to detect, diagnose, recognize, and respond to outbreaks of infectious disease of both natural and deliberate origin. At the same time, the expansion of infrastructure and resources dedicated to work with infectious agents have raised concerns regarding the need to ensure proper biosafety and biosecurity to protect researchers and the community. Biosecurity is important in order to secure infectious agents against those who would deliberately misuse them to harm people, animals, plants, or the environment.

UK Level of Capabilities

Measurement Notes

- The country has documented a listing of especially dangerous pathogens and toxins.
- The country has identified a small number of facilities to secure, monitor and maintain especially dangerous pathogens and toxins.
- The country has protocols in place for monitoring collections of especially dangerous pathogens and toxins.
- Laboratories have undergone biosafety and biosecurity evaluations conducted by a third party (WHO, US CDC, or other).

Biosecurity framework

Biosecurity and biosafety are dealt with separately in the UK, by two different government departments, and both aspects have their own control measures and action plan. For biosecurity, facilities have a legal obligation under the Anti-terrorism, Crime and Security Act (ATCSA) 2001 to notify the Home Office that they are holding Schedule 5 pathogens

and toxins. This is a notification rather than a licence-based system. The Schedule 5 list of pathogens and toxins is divided into 3 different categories of security. Material in Hazard Group 4 is looked at on a case by case basis rather than simply fitting into the requirements of the ATCSA legislation.

The National Counter-Terrorism Security Office (NaCTSO) and Counter Terrorism Security Advisers (CTSA) have the responsibility to review physical security measures relating to malicious breaches at laboratories holding Schedule 5 materials. CTSA's are specialist police officers trained in advising businesses and organisations that may be at risk from terrorism in safety and security of premises, personnel and assets. There is a classified guidance document available to CTSA's to maintain national consistency. For non-malicious breaches such as natural disasters or accidental release safety regulations apply and for major incidents, the Joint Emergency Services Interoperability Principles (JESIP) manual looks at coordinated emergency service/local authority responses. The transport of the most dangerous pathogens and toxins is covered by the UK's Carriage of Dangerous Goods (CDG) and the international Accord Dangereux Routier (ADR) regulations.

Each site must have a list of designated persons who have access to Schedule 5 materials. ATCSA gives powers for a chief officer of police to see a list of persons with access to Schedule 5 substances and access to the premises (Section 61), however the legislation is effectively enforced by CTSA's. ATCSA can also allow for a person to be denied access to substances or premises if they are of concern (Section 64). Minimum monitoring equates to an annual visit from the local CTSA.

Each institution/laboratory is responsible for training their biosecurity staff to meet the requirements of ATCSA with respect to personnel security. Training is not mandatory under ATCSA but the security procedures of each institution/laboratory are scrutinised by CTSA's when they are reviewed annually.

Relevant legislation for biosecurity can be found at:

[Anti-Terrorism, Crime and Security Act 2001 \(Part 7\)](#)

Biosafety framework

Work with pathogens is covered by three sets of regulations covering biosafety. These are the Genetically Modified Organisms (Contained Use) Regulations 2014, the Control of Substances Hazardous to Health Regulations 2002 (COSHH) and the Specified Animal Pathogens Order 2008 (SAPO). There is close scrutiny by the Health and Safety Executive (HSE) of all facilities working with pathogens, with particular focus on those

holding Hazard group 4 pathogens. This involves the appointment of a designated site inspector and regular visits (at least two per year) arranged according to an agreed intervention plan. In the case of facilities working with HG3 pathogens, routine visits take place every four or five years.

HSE has programme of proactive inspections and interventions in facilities undertaking work with the most hazardous pathogens. Moreover, all three pieces of biosafety legislation make it a legal requirement to notify HSE if there has been a breach of containment or a dangerous occurrence.

Any breaches of legislation are enforced and addressed by HSE to address any breaches of legislation that are identified.

Training:

There is overarching safety legislation covering the need for appropriate training of staff via Health and Safety at Work Act, Management of Health and Safety at Work Regulations and Control of Substances Hazardous to Health Regulations (COSHH). These Regulations cover work with genetically modified organisms, naturally occurring human pathogens and specific animal pathogens respectively. All these Regulations are fully implemented. This is interpreted in a proportionate way in the microbiology sector and HSE enforces high standards of training and competence management at facilities working at the highest levels of containment. There is no common standard on this but HSE would expect there to be a proportionate relationship between the level of hazard and the extent to which biosafety procedures are tested.

Guidance on the training of personnel for work with hazardous pathogens is available from various professional bodies and institutions but there is not one common standard across the UK. Any staff working with Hazard Group 4 material must go through a specific level of government vetting. There is no single and readily identifiable programme that is organised by HSE for the training of trainers. However, HSE has sought to act through professional bodies and other intermediaries to achieve such a goal. Examples of this are that HSE has contributed to level 3 training courses run by Public Health England and the Institute for Safety in Technology and Research (ISTR). HSE has also contributed to the training course for CTSA's.

Relevant legislation for biosafety can be found at:

Contained Use Regulations : <http://www.hse.gov.uk/pubns/priced/l29.pdf>

COSHH : <http://www.legislation.gov.uk/ukxi/2002/2677/contents/made>

SAPO : <http://www.legislation.gov.uk/ukxi/2008/944/contents/made>

Scoring for UK using the Assessment Tool

- Whole-of-government biosafety and biosecurity system is in place:
 - Biosecurity framework: Level of Capability 4
 - Biosafety: Level of Capability 4
- Biosafety and biosecurity training and practices: Level of Capability 4

Assessment Tool

Based on internal assessment:

- Overemphasis and detail in this action package compared to others – should be equitable focus
- Response reflects legislation in UK which is split between Biosecurity and Biosafety. Could consider identifying country legislation / approach in AP as this affects response

Based on external assessment:

- Combining Biosecurity and Biosafety was considered beneficial because it e.g. enhances scientific community outreach in a positive way. Tool is very much focused on biosecurity and not biosafety. Recommend adding more elements on biosafety.
- Need to ensure that staff having training necessary. Recommend adding an element of workforce development or figuring out how to address the critical workforce development needs consistently across action packages.
- Consider adding a question to the measures on how to address motivation and loyalty – loyalty to an employer, loyalty to science?
- Add a question around general education/ awareness of biosecurity issues.
- Can we add an element of consistency (SOPs, risk assessments)? For example, what mechanism do you have in place for staff to report anonymously on other staff that may not be demonstrating best practices (may be putting colleagues at risk).
- Should add a question on behavioral aspects of biosafety. For example:
 - Do the laboratories have a process in place for investigating biosafety/biosecurity incidents? Are there mechanisms for individuals to report concerns in a manner which encourages an open conversation? How many infectious of laboratory origin have lab workers experienced in the past year?
 - Do lab heads meet regularly to review laboratory acquired infections and come up with shared response plans? Do leaders focus on safety in the lab and reducing infections, and if so, what is their motivation to do so?
 - Is there a process in place for capturing events and ensuring that issues are identified and handled appropriately, with follow-up to ensure changes are made?

- Consider separating “biosecurity” and “biosafety” in laboratory
- Propose new measures:
 - are any special provisions in place to specially address biosecurity / intentional introduction?
 - Is there freely available non-punitive consultation with Biosecurity monitors?
 - Are biosafety risk assessments required for new protocols involving pathogen inactivations?
 - Is there documentation of biosafety competency for laboratory personnel working with higher risk pathogens?

GHSA Immunization

(GHSA Action Package Prevent-4)

Introduction

Immunization is one of the most successful global health interventions and one of the most cost-effective ways to save lives and prevent disease. Immunizations are estimated to prevent more than two-million deaths a year globally.

UK Level of Capabilities

- The UK's first national immunisation programme was introduced in the 1940's. The UK's routine immunisation schedule now includes vaccines to protect against 14 different preventable diseases, and vaccines are also offered on a selective basis to certain at-risk populations for a further two diseases together with a range of vaccines for travel purposes. Vaccines are offered over a whole life-span as clinically appropriate.
- The UK continues to be innovative in the use of vaccines and plans this year to be the first country in the world to introduce routine vaccination of infants against meningococcal B disease as well to introduce a new programme of immunisation for adolescents against meningococcal W disease.
- The UK's goal is for universal coverage, with targets of achieving at least 95% coverage in infants and young children, and at least 75% seasonal influenza coverage in people aged 65 years and over and in specified risk groups. These targets are in line with the European Region of the World Health Organization recommendations.
- In the UK, immunisation is voluntary and is a system built on informed consent and patient autonomy. With the exception of a small number of travel and occupational vaccines, all vaccines for eligible children and adults in the UK are available free to the patient via the National Health Service (NHS).
- Each of the four nations of the UK is responsible for the distribution of vaccines to their populations, reflecting variation in health infrastructure. The delivery of vaccines is achieved through NHS organisations in each region.
- In England, each of the partners of the national immunisation programme (Department of Health, NHS England, Local Government and Public Health England) has its own responsibilities for which it is accountable. The national delivery framework and local operating model sets out how effective co-

ordination for national screening and immunisation programmes should operate, addressing co-ordination at all stages along the delivery chain – formulation of policy, implementation, delivery, monitoring, reporting and review. DH is responsible for overall system stewardship, and for holding NHS England and PHE to account through their respective framework agreements, the Mandate to NHS England and the Section 7A agreement (the 7A agreement refers to the mechanism through which NHS England commissions national immunisation programmes). The devolved administrations have their own arrangements on how their immunisation programmes operate.

- The Joint Committee on Vaccination and Immunisation (JCVI) provides independent expert advice to UK Health Departments about all matters concerning vaccination and immunisation, including the introduction of new, and changes to existing, immunisation programmes.
- The JCVI has horizon scanning and forward look arrangements in order to anticipate developments to the immunisation programme, and it keeps epidemiology under review to advise on the appropriate response to developing incidence of vaccine-preventable disease.
- The JCVI is a statutory body in England and Wales. However, all UK governments take into account JCVI advice.
- The Health Protection (Vaccination) Regulations 2009 place a duty on the Secretary of State for Health in England to ensure, so far as is reasonably practicable, that the recommendations of JCVI are implemented, subject to certain conditions.. There is no legislative requirement on Ministers in Scotland, Wales or Northern Ireland.
- The Medicines and Healthcare products Regulatory Agency (MHRA) has a statutory responsibility for the safety of medicines and vaccines in the UK. The MHRA takes advice from the independent expert advisory body, the Commission on Human Medicines, when evaluating the risks and benefits of medicines and vaccines. It works closely with international bodies such as the European Medicines Agency.
- There is a legal requirement for companies to report suspected adverse drug reactions (ADRs) to their drugs. In addition, there is enhanced passive surveillance via the Yellow Card Scheme, which allows patients and healthcare professionals to report ADRs.
- Statistics for 2013/14 show that the general vaccination coverage for infants and young children in England as a whole for the routine childhood programme was approaching 95%; some UK nations and the North East region of England achieved over 95%. The coverage is similar to that for the 2012/13 year.

- The vaccination coverage for the first dose of the MMR vaccine in UK children aged 2 years is above 92%.
- From 2011 to early 2013, there was an increase in the number of confirmed cases and localised outbreaks of measles in England and Wales. In 2013, England carried out an MMR catch-up campaign in children aged between 10 to 16 years. The campaign reached 10.8% of the target previously unvaccinated children, achieving the target of ensuring that 95% of children in the age group had received at least one dose of MMR vaccine. In addition, following its outbreak, Wales introduced a measure in 2013 on the need for 95% of children to be fully up-to-date with all scheduled vaccinations by the age of 4 years, which ensured that uptake of both required doses of MMR reached the 95% target for achieving 'herd immunity'. Statistics for the 2013/14 year showed that annual uptake of the first dose of MMR in children in Wales aged 2 years had increased to 96.5%.
- UK nations have also conducted campaigns to encourage vaccination of pregnant women against pertussis because of a rise in the number of laboratory-confirmed cases and deaths in infants aged under 3 months.
- NHS England has established assurance mechanisms to improve the delivery of Section 7A which includes analysis of data and improving performance and reducing variation. NHS England is in the process of strengthening arrangements to identify issues and concerns with direct Regional reporting on risks and actions to the NHS England Public Health Oversight Group. Variations in uptake across both ethnic groups and regionally is an issue which the tripartite Immunisation Programme Board is giving attention to, with a view to there being a clear plan to address these variations.
- In the UK, vaccines for most of the routine programmes are centrally procured. These centrally procured vaccines are stored within the cold chain by a dedicated warehouse and delivery agent (Movianto). Vaccines are distributed to NHS organisations in the four nations of the UK by Movianto and all vaccines are delivered with the cold chain maintained, within temperature-controlled vehicles. Vaccine delivery has been thoroughly tested over many years of the nationwide vaccination campaigns.
- Procurement of vaccines and forecasting of stock requirements are undertaken centrally by a dedicated team, to reduce the risk of stock outs and manage stock effectively. Each country also reviews their vaccine requirements and usage regularly.

External review – Key Observations

- UK derives clear benefit from the integration of national immunization programs with NHS GP network (primary care).

- Current data likely underestimate the degree of coverage success.
- Appropriate attention being focused on the GP workforce as a sustainable and effective implementation force in the context of multiple demands on said force.

Scoring for UK Using the Assessment Tool

- Vaccine coverage (measles): **Level 3**

Note on scoring: If the UK with its robust and sustainable systems is not at a 4 on vaccination coverage, this calls into question whether MMR is the right proxy/ we measuring the right thing – see below for suggested changes to the target. It also reflects the country context at present and the ongoing successful catch-up MMR campaign post Wakefield.

- National vaccine access: **Level 4**

Assessment Tool

Based on internal assessment:

- No comments or recommendations.

Based on external assessment:

1. Add measure: Is immunization mandatory or voluntary?
2. Add measure: Which factors encourage/support vaccination? Which factors discourage/hinder vaccination?
3. Should the target be 95% coverage? It was noted almost all countries would fail this standard. It would be nice to align with public health standard but DPT or polio might be a better disease to pick versus MMR. Propose: change standard to 95% and change target disease to DPT or polio or just state “in at least one priority disease”.
4. Recommend a formal assessment of coverage as an assessment of delivery. Propose: How is immunization coverage measured? How often it is measured? Which systems you have in place to monitor data? What is the structure and mechanisms which are in place to ensure sustainable supply to enable a successful program.
5. Add measure:
 - is there specific support (monetary and staffing) for immunization delivery and data gathering / reporting?
 - Is the percentage coverage with MMR and DTP tracked for the population?

- Are public perception and awareness monitored and guided / influenced on the topic of immunization?

GHSA Action Packages Main Document

- No comments or recommendations.

GHSA National Laboratory System

(GHSA Action Package Detect-1)

Introduction

Public health laboratories provide essential services including disease and outbreak detection, emergency response, environmental monitoring, and disease surveillance. State and local public health laboratories can serve as a focal point for a national system, through their core functions for human, veterinary and food safety including disease prevention, control, and surveillance; integrated data management; reference and specialized testing; laboratory oversight; emergency response; public health research; training and education; and partnerships and communication.

UK Level of Capabilities

Measurement Notes

- The indicator refers to national laboratory capacity for the country.
- The national laboratory system should include:
 - ability to conduct at least five of the ten core tests identified by the International Health Regulations;
 - ability to transport specimens safely and quickly from 80% or more of districts to national laboratory facilities for advanced diagnostics;
 - ability to conduct higher level diagnostic testing at national laboratories or agreements with regional networks to ensure testing is available.
- Core tests can include local priority tests determined by country-selected indicator pathogens on the basis of major national public health concern

Measures:

Please briefly describe the tiered laboratory network.

Public health is a devolved matter in the UK, with independent government departments in England, Scotland, Wales and Northern Ireland. Each country has a national laboratory system with well-defined tiers, including national reference laboratories and regional laboratories, with some sharing of resources between countries. The laboratory system in England (population of more than 50 million) operates with >90% of routine clinical microbiology testing being done in clinical laboratories operated by National Health Service (~ 170 NHS trusts). Specialist clinical microbiology tests are provided by a

subset of 8 laboratories operated or commissioned by Public Health England (PHE), with 5 additional PHE laboratories providing Food and water microbiology. All of these are supported by PHE funded national reference laboratories covering most human pathogens. The majority are housed at PHE Colindale, the hub of the national reference laboratory centre, but there are a few reference laboratories e.g. malaria which are commissioned by PHE. The situation in Scotland, Wales and Northern Ireland is very similar with the national reference laboratory hub in England, acting as the IHR contact point for these devolved administrations.

What percentage of the population has access to laboratory services for the 10 priority diseases? 100%

Is there a set of national diagnostic algorithms for performance of core laboratory tests that has been aligned with international standards (i.e. WHO, CLSI, OIE)?

All laboratories providing clinical microbiology results which impact on patient management operating in the UK must be accredited to either Clinical Pathology Accreditation standards (CPA) or ISO15189. Details for each test are included in spread sheet

How many of the core tests for 10 priority diseases are implemented effectively across the tiered laboratory network?

All of these are implemented. The testing strategies for EV68 are under enhancement

Of the tests that cannot be conducted, are there plans and timelines in place to gain this capacity?

Are there official agreements with labs outside of the country for specialized testing not available in country?

No official agreements, but working arrangements with CDC, Pasteur and Erasmus University if needed

As well as Influenza virus, poliovirus, HIV, M. tuberculosis, Plasmodium and S. Typhi, the local priorities are carbapenemase-producing enterobacteriaceae (CPE), vero cytotoxin-producing E. coli (VTEC), measles and enterovirus 68. Core tests have been implemented effectively for all of these. For example, in England, the following core tests and turnaround times are in operation:

- Influenza: PCR, 24 hours
- Poliovirus: Culture, 14 days
- HIV: serology, same day testing widely available (confirmatory testing in 1-5 days depending on local capability)
- M. tuberculosis: microscopy, 3 days
- Plasmodium: microscopy, 1 hour; rapid diagnostic test, 1 hour
- S. Typhi: culture and serology, 3 days
- CPE: PCR sometimes in conjunction with phenotypic assays, most positive results are available within 24 hours but isolates that are negative in the first test require considerably more work.
- VTEC: E Coli

- Measles: PCR, 1 day; serology, 4 days
- Enterovirus 68: culture, 14 days
-

Is the specimen referral network documented for each of the tests necessary to detect and confirm etiologies of 10 priority diseases?

Yes.

Please describe the system for specimen transport from district levels to reference laboratories and national laboratories.

Are standardized SOPs in place for specimen collection, packaging, and transport?

Is the specimen transport, eg, courier contracts supported by MOH or partners?

Transport Mechanisms

Hospital Trusts are responsible for developing their own operating procedures to send specimens into these reference and national laboratories based on guidelines issued by PHE.

All hospitals can call upon the services of a number of national and local specialist healthcare couriers to transport urgent Category B samples to laboratories on an immediate collection basis.

PHE provides a national mechanism to transport Category B samples overnight to its laboratories via a contract with the healthcare division of the logistics company DX.

PHE provides a national mechanism to transport Category A VHF samples to the relevant laboratory within 7 hours via a contract with two specialist couriers, PDP and Topspeed. PHE national and regional laboratories also have access to Category A couriers to move other Category A specimens. All drivers and vehicles are ADR compliant.

All samples are tracked by couriers, and almost all vehicles are tracked by GPS.

All transport movements within England and Wales only take place by road.

Specimen Categorisation

Hospital consigning laboratories are responsible for specimen despatches, and from time to time may be advised of the appropriate UN classification of the specimen by PHE or other NHS consultants based on approved risk profiles.

Specimen Packaging and Labelling

Hospital consigning laboratories are responsible for ensuring that all samples are packaged and labelled according to the most appropriate and relevant UN classification such as UN2814, UN3373 and UN2900, and the packaging regulations P620.

Specimen Movement

All road couriers operating within England are subject to European Road Transport legislation which covers both the driver and their vehicles, and in some cases also the operator and the loads they carry. This legislation adopts guidance issued by the World Health Organisation.

Further clarification and guidance is routinely issued by the Department for Transport (DfT), the Health and Safety Executive (HSE) and the National Counter Terrorism Security Office (NaCTSO).

Have national laboratories been accredited?

If yes, to what standard?

See above - (CPA) or ISO15189. Accreditation is currently in transition from CPA to the internationally recognised standard ISO 15189:2012, Medical Laboratories – particular requirements for quality, competence and the transition of CPA accredited External Quality Assurance Providers (EQA) to ISO/IEC 17043:2010, Conformity Assessment – General requirements for proficiency testing.

CPA accredited laboratories will be assessed to ISO 15189 starting from the end of October 2013 dependent on their schedule of their next main visit. CPA will no longer accept any new applications for accreditation against the CPA Standards

Are guidelines and protocols for quality management system enforced and in use by public and animal health laboratories?

Yes for public health laboratories. Unable to answer for animal laboratories

Is there a national body that oversees Internal Quality Controls and External Quality Assessment schemes for public health laboratories at all levels?

Provision of internal quality controls and EQAs is directly dependent on the organism concerned. The requirement for IQC and EQA is covered in the Accreditation Standard.

PHE hosts the majority of UK National External Quality Assessment Scheme (UKNEQAS) for Microbiology EQA schemes. Customers for these schemes are within the UK and international.

<http://www.ukneqasmicro.org.uk/>

Are all laboratories enrolled in EQA program for the tests they perform to detect any of the 10 priority diseases?

All national laboratories have been accredited. The influenza, measles and poliovirus national laboratories are WHO-accredited.

Do labs have required equipment (based on the testing appropriate for the level in the tiered lab network) to support performance of core laboratory tests? Are maintenance contracts in place for key equipment?

Yes

Does the MoH/MoA have in-country production and/or procurement processes for acquiring necessary media and reagents for performance of core laboratory tests?

PHE has an internal media production capability for specialised media and framework contracts for standard/general use media

External review – Key Observations

- UK national laboratories form a well-integrated and efficiently tiered network of laboratory systems.
- Robust science and technology capabilities are in place with appropriate backstops and redundancies.
- UK continues to demonstrate global leadership in laboratory science and innovation.

Scoring for UK using the Assessment Tool

Laboratory testing capacity for 10 core tests for detection of 10 priority diseases: **Level 4**

Specimen referral and transport: **Level 4**

Effective modern point of care and laboratory based diagnostics: **Level 4**

NOTE: The UK rated themselves a “3” on point of care and laboratory diagnostics because they were not sure what was meant by point of care diagnostics. The team disagreed with the self assessment and explained the definition of the term and so all agreed the UK is a 4. This term should be clarified and/or added to a terms of reference for the tool.

Assessment Tool

Based on internal assessment

- Workforce element needs to be picked up here or in workforce AP to reflect recognition of scientists, technical and medical staff and training needed for medical microbiology/Health and Care Professionals Council registered scientists and higher degrees needed for scientific staff. Also need to consider sustainability of workforce.

Based on external assessment:

- Include in a measure: how quickly do the results get back to the clinicians
- Add element on workforce development
- Should add questions to the tool around financial (un)certainty/ sustainability of the processes reported
- Suggest combining measures 1, 2, 3, 4, and 5 into “Please describe structure of laboratory system, including number of labs, at local, district, and national

level. How many reference labs exist? Do local clinicians have the custom of using the laboratory system? What systems exist for getting laboratory results back to practitioners? How long does this take?

- On rating tool, “effective modern point of care and laboratory based diagnostics”: need to define. Propose: “Point of care” is the ability to diagnose either “pensive” (for animals” or “bedside” for humans.) This could be put under the above combined measures 1,2,3,4,5. This needs to include a range of diagnostics from “low tech” to “high tech”
- Add a measure: how is laboratory data on zoonotic diseases shared between human and animal health laboratories? Are the two data systems interoperable?
- Include in a measure: How does the country insure standardization of testing? Do national laboratories send out samples for testing validation of more local/regional labs?
- Include in a measure: What tests should country be able to perform? Are there any diseases for which it makes more sense to access a regional or reference laboratory for diagnosis?
- Include in a measure: Is PPE available? How many? Can additional be accessed? How?
- Include in a measure: What biosecurity/biosafety training is provided to laboratory workers and how is competency assessed?
- New measure: Do regional laboratory and epidemiology networks exist? Does the host country participate? How many meetings have been held in the past 2 years?

Example Documentation or Evidence for Level of Capability

- National Laboratory Strategic Plan defining tiered laboratory network
- National Laboratory Policy
- Documented list of top 10 priority diseases and 3 core syndromes for targeted improvement of prevention, detection and response.
- Certificates of accreditation for national laboratories and/or EQA results within previous 6 months for core tests
- Documented specimen referral routes for detection/confirmation of top 10 priority diseases
- Plan for transporting specimens safely throughout the country

References:

International Health Regulations: What Gets Measured Gets Done (includes listing of the 10 core tests) <http://wwwnc.cdc.gov/eid/article/18/7/12-0487-t2>

GHSA Real-Time Syndromic Surveillance

(GHSA Action Package Detect-2/3)

Introduction

The purpose of real-time surveillance to advance the safety, security, and resilience of the Nation by leading an integrated biosurveillance effort that facilitates early warning and situational awareness of biological events.

UK Level of Capabilities

Background

Syndromic surveillance has been in place in England for about 15 years, developed from pilot projects using telehealth data in the late 1990's, to the present day where PHE have a suite of national systems underpinning a real time syndromic surveillance service.

The systems are national and encompass data from general practice in hours and out of hours, telephone triage and emergency departments. These systems work continuously with data being analysed and interpreted each day and with underpinning statistical algorithms.

The systems are coordinated by the Public Health England (PHE) Real-time Syndromic Surveillance Team (ReSST), a multidisciplinary team with epidemiological, statistical and public health expertise. The ReSST is embedded within PHE and is able to link in with disease experts (e.g. influenza, gastrointestinal disease) and also with teams able to effect public health action at both national and local level. For relevant incidents, ReSST forms a key part of the incident team, providing surveillance support.

The real-time syndromic surveillance service has developed over the last few years and has been used for a variety of events encompassing pandemic influenza, flooding incidents, heat and cold weather impact, impact of air pollution, seasonal viruses such as influenza and norovirus, It has also been used in a number of mass gatherings including the 2012 Olympic and Paralympic Games – where a daily output was produced (as part of a situational report) for six months.

Describe the various syndromes and pathogens which are reported

The syndromes vary by system but encompass about 30 syndromes/ symptoms for the general practice systems (Appendix 1), for the telephone triage systems (Appendix 2) and for the emergency department system encompasses a wide range of conditions which can be expanded if needed (Appendix 3).

Although the syndromes which are routinely reported are presented here, there are several others 'in the background' and these syndromes can be expanded if needed in an emergency situation, or a new/emerging infection.

Describe how many sites participate in each surveillance system

PHE syndromic surveillance systems and associated reporting statistics.

Syndromic surveillance system	Reporting statistic	Population coverage
GP in hours (GPIH)	In hours (week days, daytime) GP consultation rates per 100,000 population	35 million (~65% England pop)
GP out of hours (GPOOH)	Out of hours and unscheduled care (weekends, evenings/nights, public holidays) GP consultations for syndrome as a % of total Read-coded consultations	~70% coverage of GP OOH activity across England
Emergency department (EDSSS)	Percentage of emergency department attendances coded to indicator.	36 EDs across England and Northern Ireland
NHS 111 (telehealth)	NHS 111 calls for a specific indicator as a % of total calls	100% coverage of England population

Describe how data is validated

The data are routinely validated including:

- Validation of data fields contained within each extract to ensure correct fields are present, and the data within the fields are of the correct structure and format;
- Where appropriate, that data from individual sites/providers have been received;
- Data files are not corrupt;

- Checks on system population coverage;
- Epidemiological plots are consistent with other sources of intelligence.
- In addition the ReSST perform regular validation of the systems by comparing with e.g. laboratory data and 'sense checking' with subject expert colleagues. A list of the key publications from the team is provided, including such validation studies (Appendix 4).

Describe any electronic surveillance systems which use electronic reporting

All of the surveillance systems use electronic data transfer, including secure File Transfer Protocol and secure email. All processes are automated to avoid data providers having to undertake additional tasks to transfer data. For all systems the ReSST collaborate with the data providers and have agreed information sharing agreements and, where appropriate, contracts.

Describe Reports which are produced by each system and how they are used by public health decision makers. Are the reports shared with any other Ministries within the Country?

If daily analyses suggest that an incident is emerging, or for an incident team, we are able to produce daily reports (an example of the daily Olympic syndromic surveillance report is illustrated in Appendix 5).

A weekly surveillance report for each individual system, and a summary report across all systems is published on a weekly basis (Appendix 5). These reports are circulated to a wide audience within PHE, and also externally to public health colleagues, and made available on a public facing website

<https://www.gov.uk/government/collections/syndromic-surveillance-systems-and-analyses>

For example during the 2009 pandemic and the 2012 Games, the outputs were used widely by NHS and DH colleagues, the Chief Medical Officer and the Lead for the 2012 Games.

The outputs are used by decision makers to give early warning (e.g. seasonal influenza and upsurge in norovirus infections) so that appropriate infection control and preparedness steps can be taken; to describe the extent of events, e.g. the early spread of the 2009 influenza pandemic and to aid decision making about mitigation vs control; in air pollution events / chemical fires to tailor public messages / media and communication messages; to provide reassurance that no increase in health care is occurring for specific problems (e.g. no major outbreaks during mass gatherings). The key advantage is that the interpreted outputs are available in near 'real time' – so the ReSST are able to report on data to midnight the previous day – which incident directors who are faced with rapidly evolving incidents find very helpful. The outputs (including SITREPS) are shared with

incident directors during an emergency and were used at a Local Authority level during the 2014 floods and other local incidents.

More recently the syndromic systems have been used as a part of the information gathered to look at vaccine impact – e.g. to demonstrate the impact of the childhood influenza vaccine on attendances to EDs, and early impact of the childhood rotavirus vaccine (with decreasing consultations/ attendances for gastroenteritis and a lack of the usual upsurge in rotavirus infections). Thus the syndromic surveillance systems have been a helpful adjunct to other data sources to assess the impact of new vaccination schedules (Appendix 4).

Describe any linkages between systems which occur at a national level

The ReSST regularly analyses and compares data to see if there have been simultaneous geographical alerts across similar syndromes or geographies. The team ensures that they consider each individual system as part of a wider suite of syndromic surveillance and do not consider the systems in isolation. The team similarly link in with colleagues who run non syndromic systems to ensure we advise each other of any emerging issues and often produce joint outputs (e.g. the PHE influenza weekly report contains syndromic surveillance outputs in addition to other surveillance such as laboratory surveillance).

The team is not able to link data at an individual patient level because the data are anonymised, forming part of the governance agreements with our data providers.

ReSST is further exploring (under an NIHR funded research project on Emergency Preparedness) whether statistical linkages between syndromes and grouping selected syndromes/ ages across systems gives any advantages in terms of detection (e.g. linkage of fever and cough in children aged 5 to 14 years old for early warning of influenza).

Additionally the team links with colleagues from the Devolved Administrations (Wales, Scotland and Northern Ireland) in the event of an incident / joint mass gathering so that they can share experience and harmonise syndromes monitored where possible and health care structures support. Similar collaborations have occurred with veterinary colleagues both within the UK and at a European level.

Describe event based surveillance in the Country

Event based surveillance is well developed in the Country, conducted by a network of health protection teams. Such event based surveillance is coordinated across the agency for all incidents (whether infectious or non- infectious), formed part of the enhanced surveillance for the 2012 Games and forms part of a daily situation report.

Does event based surveillance exist at a national level?

Yes, this surveillance is coordinated at a local health protection team level.

External review – Key Observations

The team is impressed by the continual exercises, assessing and reassessing capabilities and improving systems based on findings.

Scoring for UK Using the Assessment Tool

- Syndromic surveillance systems: **Level 4**
- Inter-operable, interconnected, electronic real-time reporting system: **Level 4**

Assessment Tool

Based on external assessment and discussion

- Need to define what is intended by “real-time” eg daily, weekly ...? Similarly “interoperable”(specifically IT interoperability with shared data architecture, naming conventions etc) and “interconnected e.g. via website vs analysis on a single platform vs just accessibility
- Could the assessment tool be developed to explore the basic components of real time surveillance
- Does surveillance cover more than just syndromic and real time, and if not, could additional elements be added
- There is a difference between doing syndromic surveillance for specific events and longterm, ongoing surveillance and this should be reflected in the tool
- Need to add questions to consider how animal health and human health surveillance systems relate
- Generally need to consider how to capture crosscutting issues like surveillance across all action packages in a consistent way
- UK systems could be considered as best practice and the knowledge and experience used to support other countries
- Discussion included the use, benefits and issues around including social media as a surveillance tool
- Inclusion of surveillance activities in other action packages to understand country context, epidemiological profile and monitor changes

GHSA Action Packages Main Document

Appendix 1

GP In Hours syndromic indicators	GP out of hours syndromic indicators
Upper respiratory tract infection	Acute respiratory infection
Influenza-like illness	Influenza-like illness
Pharyngitis	Bronchitis/bronchiolitis
Scarlet fever	Difficulty breathing/wheeze/asthma
Lower respiratory tract infection	Pharyngitis
Pneumonia	Gastroenteritis
Gastroenteritis	Diarrhoea
Vomiting	Vomiting
Diarrhoea	Myocardial infarction
Severe asthma	
Wheeze	
Allergic rhinitis	
Conjunctivitis	
Mumps	
Measles	
Rubella	
Pertussis	
Chickenpox	
Herpes zoster	
Cellulitis	

Appendix 2

NHS 111 syndromic indicators
Cold/flu
Fever
Cough
Difficulty breathing
Sore throat
Diarrhoea
Vomiting
Eye problems

Appendix 3

Emergency department syndromic indicators
Triage Severity
Respiratory
Acute Respiratory Infection
Bronchitis/ Bronchiolitis
Influenza-like Illness
Pneumonia
Asthma/ Wheeze/ Difficulty Breathing
Gastrointestinal
Gastroenteritis
Cardiac

Myocardial Ischaemia
Meningitis

Appendix 4: key PHE real-time syndromic surveillance publications

1. Smith GE, Bawa Z, Macklin Y, Morbey R, Dobney A, Vardoulakis S, Elliot AJ. Using real-time syndromic surveillance systems to help explore the acute impact of the air pollution incident of March/April 2014 in England. *Environ Res* 2015;136:500-4.
2. Elliot AJ, Bermingham A, Charlett A, Lackenby A, Ellis J, Sadler C, Sebastianpillai P, Powers C, Foord D, Povey E, Evans B, Durnall H, Fleming DM, Brown D, Smith GE, Zambon M. Self-sampling for community respiratory illness: a new tool for national virological surveillance. *Euro Surveill* 2015;20:pii=21058.
3. Bawa Z, Elliot AJ, Morbey RA, Ladhani S, Cunliffe NA, O'Brien SJ, Regan M, Smith GE. Assessing the likely impact of a rotavirus vaccination programme in England; the contribution of syndromic surveillance. *Clin Infect Dis* 2015: DOI: 10.1093/cid/civ264.
4. Pebody R, Green H, Andrews N, Zhao H, Boddington N, Bawa Z, Durnall H, Singh N, Sunderland A, Letley L, Ellis J, Elliot A, Donati M, Smith G, de Lusignan S, Zambon M. Uptake and impact of a new live attenuated influenza vaccine programme in England: early results of a pilot in primary school-age children, 2013/14 influenza season. *Euro Surveill* 2014;19:pii=20823.
5. Elliot AJ, Hughes HE, Hughes TC, Locker TE, Brown R, Sarran C, Clewlow Y, Murray V, Bone A, Catchpole M, McCloskey B, Smith GE. The impact of thunderstorm asthma on emergency department attendances across London during July 2013. *Emerg Med J* 2014;31:675-8.
6. Elliot AJ, Hughes HE, Hughes TC, Locker TE, Shannon T, Heyworth J, Wapling A, Catchpole M, Ibbotson S, McCloskey B, Smith GE. Establishing an emergency department syndromic surveillance system to support the London 2012 Olympic and Paralympic Games. *Emerg Med J* 2012;29:954-60.
7. Smith S, Elliot AJ, Mallaghan C, Modha D, Hippisley-Cox J, Large S, Regan M, Smith GE. Value of syndromic surveillance in monitoring a focal waterborne outbreak due to an unusual *Cryptosporidium* genotype in Northamptonshire, United Kingdom, June - July 2008. *Euro Surveill* 2010;15:19643. <http://www.ncbi.nlm.nih.gov/pubmed/20738999>.
8. Loveridge P, Cooper D, Elliot AJ, Harris J, Gray J, Large S, Regan M, Smith GE, Lopman B. Vomiting calls to NHS Direct provide an early warning of norovirus outbreaks in hospitals. *J Hosp Infect* 2010;74:385-93.
9. Elliot AJ, Powers C, Thornton A, Obi C, Hill C, Simms I, Waight P, Maguire H, Foord D, Povey E, Wreghitt T, Goddard N, Ellis J, Bermingham A, Sebastianpillai P, Lackenby A, Zambon M, Brown D, Smith GE, Gill ON. Monitoring the emergence of community transmission of influenza A/H1N1 2009 in England: a cross sectional

opportunistic survey of self sampled telephone callers to NHS Direct. *BMJ* 2009;339:b3403.

10. Cooper DL, Verlander NQ, Elliot AJ, Joseph CA, Smith GE. Can syndromic thresholds provide early warning of national influenza outbreaks? *Journal of Public Health (Oxford)* 2009;31:17-25.

11. Cooper DL, Smith GE, Chinemana F, Joseph C, Loveridge P, Sebastianpillai P, Gerard E, Zambon M. Linking syndromic surveillance with virological self-sampling. *Epidemiol Infect* 2008;136:222-4.

12. Cooper DL, Smith GE, Edmunds WJ, Joseph C, Gerard E, George RC. The contribution of respiratory pathogens to the seasonality of NHS Direct calls. *J Infect* 2007;55:240-8.

Appendix 5: key ReSST surveillance outputs including weekly surveillance report, weekly summary report and Olympic syndromic surveillance report.

GHSA Reporting

(GHSA Action Package Detect-4)

Introduction

Health threats at the human–animal–ecosystem interface have increased over the past decades, as pathogens continue to evolve and adapt to new hosts and environments, imposing a burden on human and animal health systems. Collaborative multidisciplinary reporting on the health of humans, animals, and ecosystems reduces the risk of diseases at the interfaces between them.

UK level of capability

- **System for efficient reporting to WHO, FAO, OIE: (4) Sustained capability** (Country has demonstrated ability to identify a potential PHEIC and file a report within 24 hours, and has a multi-sectoral process in place for assessing potential events for reporting)
- **Reporting networks and protocols in country: (4) Sustained capability** (Country demonstrates timely reporting of a potential PHEIC from district to international level (based on an exercise or real event); country has a sustainable process for maintaining and improving reporting and communication capabilities and communication mechanisms are backed by established documentation e.g. protocols, regulations, legislation)
- The UK National Focal Point (Public Health England) has been fully functional and operational as defined under the IHR since 2007 and the IHR Event Information website (EIS) is accessed by the NFP on a daily basis (Monday to Friday), with arrangements for accessing the EIS outside of normal working hours also put in place. Communication protocols cover both mainland UK and its Overseas Territories (OTs).
- Close liaison takes place between PHE, Department of Health and other government departments enabling coordination of reporting to WHO with other international bodies such as FAO and OIE.
- Mechanisms for co-ordination and communication between relevant sectors for the IHR were in existence in the UK prior to the implementation of the IHR and continue to function. These systems have been tested over

the years by both simulated exercises and by real events and are continuously refined through lessons learned.

- In 2013, the UK NFP made one notification to WHO under article 6 of the IHR and none under Article 9. The NFP also responded to two requests from WHO in relation to the text for EIS postings. In 2014, the UK NFP made seven notifications to WHO under article 6 of the IHR, including: four related to spread of chikungunya in four UK overseas territories (Jan, Feb, June, July), the Scottish Ebola case (December), Crimean Congo Haemorrhagic fever in UK Ex Bulgaria (July) and an outbreak of *Bacillus cereus* bacteraemia in neonatal units of nine hospitals in England (June). There were no notifications under Article 9. The NFP also responded to several requests from WHO in relation to the text for EIS postings for the Scottish Ebola case in December and a MERS CoV case diagnosed in Jordan that had spent time in UK during the incubation period (February). These communications with WHO have all been within the timeframe as set out in the IHR. The UK NFP always utilises annex 2 of the IHR in assessing any events with international implications.
- The UK NFP is also frequently involved in communications in relation to tracing of contacts of cases of illness or other exposures, either directly with the NFPs of other member states or via WHO.

Measures:

How many Ministries or offices within the country have been identified as IHR national focal points?

PHE is the designated IHR NFP for the UK (including Devolved Administrations, Overseas Territories and Crown Dependencies)

Please describe the training that the NFP responsible persons have undergone for this specific role

The IHR NFP function is provided by a consultant lead team of dedicated scientists. The lead scientist has undertaken IHR training through the WHO website and has trained other scientists taking part in the IHR rota. Consultants supporting the IHR NFP in and out of hours have attended IHR training at Colindale and training has been conducted specifically on IHR for overseas territories.

Since most of the core capacities required under IHR existed in mainland UK prior to IHR implementation, separate training on these issues as they specifically relate to IHR has not been conducted among wider stakeholders. Further training, especially with respect to 'all hazards', is required among some OTs.

Please list the ministries that these focal points represent (e.g. Ministry of Health, Ministry of Agriculture)

Department of Health, Department of Environment, Food and Rural Affairs, Food Standards Agency, Devolved Administrations.

Please describe most recent exercise (or event) that tested the country's systems to identify and report on a potential Public Health Emergency of International Concern (PHEIC).

How was the health event identified? What surveillance systems were linked?

A Scottish healthcare worker was diagnosed with Ebola Virus Disease (EVD) following her return from Sierra Leone in December 2014. The case presented to hospital in Scotland and clinicians undertook a risk assessment before contacting the Rare and Imported Pathogens laboratory at PHE Porton to request testing. The lab then notified the Ebola Incident Director.

How were public health decision makers and other leadership consulted in the decision making process?

As soon as the potential case was identified an incident control team was established. The need for reporting through IHR was identified at this incident control team (ICT) and a statement agreed with DH colleagues.

Which Ministries were engaged in the exercise or event? (Ministry of Health? Defense? Agriculture?)

Department of Health, Ministry of Defence, Cabinet Office, PHE, NHS England, Scottish Government, Health Protection Scotland

If the country has not yet exercised PHEIC reporting, please identify if there are any plans to do so in the future

N/A

Has the country passed legislation or other policies related to procedures and/or approvals for reporting PHEIC? If so, please describe the parties involved in approvals as well as the major steps in approvals. If possible, please provide a copy of relevant legislation or policies

The UK is signed up to the IHR and therefore the requirement to report is part of our international legal requirement and we follow the WHO IHR instrument. In addition legislation in the UK also empowers IHR activity e.g.

- Public Health (Ships) Regulations 1979
- The Public Health (Ships) (Amendment) (England) Regulations 2007
- Health Protection (Ships and Aircraft) Regulations 2013

- Public Health etc (Scotland) Act

How does the country utilize electronic reporting systems for notifiable diseases? If no electronic reporting system exists in country, are there plans to implement electronic reporting in the future?

- Mainland UK (E, W, S and NI) has well established disease surveillance structures and systems that predate the IHR and which are subject to regular review and improvement. These include surveillance systems for electronic reporting of notifiable diseases – both for clinical and laboratory diagnoses. Within the 4 countries of the UK reports are collated nationally and reviewed by both disease specific and local teams, thus allowing trends and exceedences to be detected. A weekly UK teleconference is held to report significant events, outbreaks and exceedences.
- A major evaluation of national systems in 2008 included assessment of compliance with IHR requirements – all systems were assessed as compliant. These systems publish regular data that is also shared with the international community via routine reporting to WHO and the public access HPA/PHE websites. Several new surveillance systems were also developed for the context of the London 2012 Olympics/Paralympics.
- Surveillance systems in UK OTs are more variable but all OT/CDs are able to detect, assess, notify and report events as mandated under Article 5 of the IHR.

External review – Key Observations

We received a strong overview on the system in the UK, with an explanation on the mature health response structures across all four countries and regular communications including the four country teleconferences and weekly health protection update teleconferences. However, further clarity was still sought on the data collection and sharing worked across England and the devolved administrations (Northern Ireland, Scotland, Wales), whilst recognizing that it works

Scoring for UK using the Assessment Tool

- System for efficient reporting to WHO, FAO and OIE: Level 4
- Reporting network and protocols in country: Level 4

Assessment Tool:

Based on external assessment and discussion

1. It is unclear how much detail is being requested or would be helpful for the purposes of the assessment

2. Would be useful to know/ add a question on how many people are part of a national focal point (NFP) function, and how often is it used/ activated
3. The question on whether a country has passed legislation, policies or procedures was unclear (Note: UK were unclear on whether it was meant to capture information on the legal frameworks around reporting or just indicate whether there is an SOP for reporting . This confusion highlighted the need for clarity but should encompass both the legal and operational aspects but with the emphasis on SOPs as key to the actions being undertaken
4. Suggest adding a question on the validation of reporting systems
5. Propose: Combine measures 1, 2 and 3. Add: How has the National IHR Focal Point been authorized as national communication hub with WHO, and on which level and with which sectors have the Terms of Reference been agreed? Has the country passed legislation or other policies related to procedures and/or approvals for the IHR in general and for reporting events to WHO? If possible, please list or provide a copy of relevant legislation or policies.
6. Add measure: What are the mechanisms through with the different sectors and levels work together, e.g. SOPs for information sharing, multi-sectoral committees, and how frequent are the interactions?
7. Propose: Combine measures 4, 5, 6, 7, 8
8. Delete measures related to PHEICs and add measure: Is there anything which limits the performance of the IHR NFP, e.g. quality and timeliness of information received, obstacles caused by coordination with other levels and sectors, etc.? In general, does the IHR NFP make use of:
 - The informal consultation mechanisms with WHO under Art. 8 of the IHR?
 - The bilateral exchange mechanisms with other IHR NFPs?
9. Under next to last measure “legislation” change to: Does country have regulations which require reporting of notifiable human health and animal health diseases? Is there a list of notifiable diseases for both human and animal health? When was this list last updated?
10. Under the last measure “electronic reporting systems”: change to: How does the country utilize electronic reporting systems for notifiable diseases for human health and animal health? Are these systems shared or fully operable? If no electronic reporting system exists in the country, are there plans to implement electronic reporting in the future?

Examples of Documentation:

- International Health Regulations 2005: UK National Focal Point communications protocol

- International Health Regulations National Focal Point: international communications for contact tracing and other public health responses
- UK State Party report on IHR implementation 2014

GHSA Workforce Development

(GHSA Action Package Detect-5)

Introduction

Workforce development is important in order to develop a sustainable public health system over time by developing and maintaining the highly qualified public health workforce with appropriate technical training, scientific skill, and subject-matter expertise.

The UK system is well developed though complex, involving many organisations and multi-disciplinary teams. An initial attempt to map the system is provided in the table below which describes a workforce engaged in protecting human and animal health across all UK nations from local to national level.

Table: Mapping workforce engaged in response to communicable and non-communicable incidents

NATIONAL/SUBNATIONAL	LOCAL
DEPARTMENTS OF HEALTH (UK)	NHS Primary care: General practitioners Primary care and public health nurses Immunisers Secondary care: Laboratory services Microbiologists, virologists, biomedical scientists Emergency departments and minor injuries Infectious disease units Intensive care units Infection prevention and control Wards and departments
PUBLIC HEALTH ENGLAND Reference laboratories	PHE Centres Health protection teams

National surveillance Field epidemiology service Syndromic surveillance CRCE Emergency response department Extreme events	Network of PHE public health microbiology labs (x8) Network of PHE Food Water and Environmental labs (x5)
DeFRA APHA (including their regional network of labs https://www.gov.uk/government/organisations/animal-and-plant-health-agency	LOCAL GOVERNMENT Public health consultants and team Environmental health (infectious disease, pollution, environment)
NHS ENGLAND	ANIMAL HEALTH Vets and veterinary nurses
ENVIRONMENT AGENCY	SERVICES (WATER, ENERGY)
HEALTH EDUCATION ENGLAND Workforce planning and training	ACADEMIC INSTITUTIONS Research Academics

For example, Public Health England delivers local health protection through eight PHE Centres across England, working closely with Local Authority Directors of Public Health, the NHS and others to detect, prevent and respond to all health protection hazards and incidents, including outbreaks of infection.

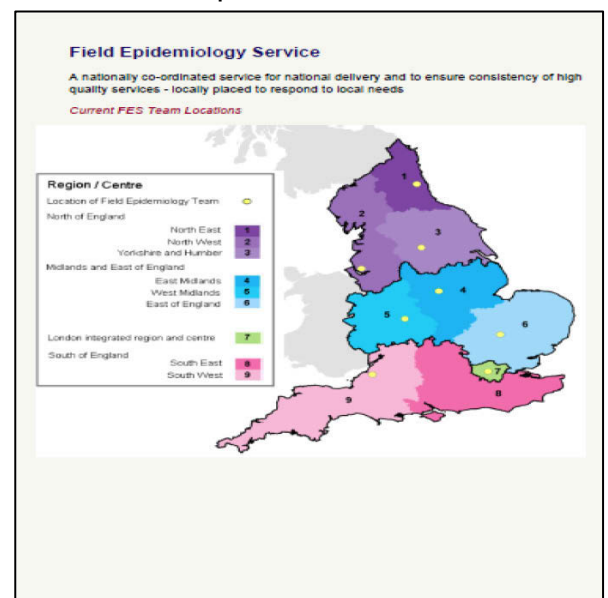
The NHS (primary and secondary care) and other health and social care providers play key roles in incidents, e.g. laboratory services, augmented care, and delivery of immunization, prophylaxis or treatment. The workforce and training issues have not been described here.

The system has been challenged on several occasions in recent to respond to threats to human and animal health, for example the pandemic influenza, Middle Eastern respiratory syndrome coronavirus and the outbreak of hand, foot and mouth disease.

UK level capabilities

Each of the UK countries has a national public health body responsible for protecting the health of the population. England is used as an example here:

- PHE health protection teams comprise of consultants in communicable disease control, or health protection, and health protection nurses/practitioners. On average each team has about 4 consultants and 6 nurses/practitioners who undertake epidemiological work as part of daily outbreak investigations and response.
- PHE is establishing a national infection service (NIS), which comprises the field epidemiology service and specialist microbiology services, with a network of 8 public health labs and 5 food, water and environmental laboratories and reference laboratories.
- The NIS workforce includes: consultant epidemiologists, microbiologists, virologists, biomedical and epidemiology scientists, information analysts and statisticians. Laboratory services are described elsewhere.
- PHE's field epidemiology service (FES) is a nationally coordinated but geographically dispersed service which comprises about 100 staff. Core functions of FES are surveillance and intelligence, incident and outbreak investigation and control, translation of evidence and best practice to improve health protection and reduce inequalities, and application of epidemiological methods to inform public health policy and action (see ref 5.2). FES works closely with the local and national PHE Centres in delivering these core functions.
- Field epidemiology teams are led by Consultant Field Epidemiologists and are co-located with PHE Centres in the South West, London & South East, West Midlands, East Midlands, East of England, Yorkshire & Humber, North East and North West of England (see below).
- Field epidemiology teams are involved in outbreak investigations from a local to national level e.g. the UK wide response to H1N1 in 2009 and are regularly involved in international work, such as the ongoing Ebola crises through organisations such as the WHO Global Outbreak and Response Network and DfID.



- FES employs 22.3 WTE Consultant Field Epidemiologists and senior epidemiology scientists at Agenda for Change band G7 across a population in England of around 54 million (Office of National Statistics - 2013 estimates).
- Other PHE departments involved in health protection include:
- Syndromic surveillance team provides real-time surveillance and works closely with FES and others to ensure epidemiological interpretation of data to support public health action. The team comprises: 7.6 WTEs, including epidemiological scientist, consultant in medical epidemiology/ public health, statistical and administrative support.
- Centre for Radiation, Chemical and Environmental Hazards (CRCE), which provides advice, research and services to protect the public from hazards resulting from exposure to chemicals and poisons, ionising and non-ionising radiations, ultrasound and infrasound and some aspects of noise. This includes epidemiologists
- Emergency Response Department, which works with national and international partners to ensure that healthcare professionals are able to respond to emergencies, including the deliberate or accidental release of chemical, biological, radiological or nuclear substances. The team plays an important role in training and exercising the healthcare community.
- Global Health team, which coordinates opportunities for international collaboration, provides expertise on health protection issues globally
- PHE is currently considering the development of a UK Centre for Outbreak Response and Analysis, which is a rapid response workforce, including epidemiologists and scientists, who are able to deploy at short notice for 3-6 week deployments in response to infectious disease outbreaks
- Veterinary services: this section can be developed if required.
<https://www.gov.uk/government/organisations/animal-and-plant-health-agency>

Training

- Public health consultants, including consultants in health protection, field epidemiology and Directors of Public Health are usually trained through the public health specialty training programme or equivalent
http://www.fph.org.uk/specialty_training
- Consultants are registered with the General Medical Council or UK Public Health Register and maintain competence through a programme of continuous professional development to support professional revalidation.
- An alternative route to registration for consultants in public health has been through submission of a retrospective portfolio of competence to the UK

Public Health Register. This latter route is closing at the end of 2015 and it is not clear if an alternative portfolio route will be available to senior public health practitioners.

- FES Consultant Field Epidemiologists will have undertaken specific training in epidemiology through a public health specialist pathway or epidemiology training programme such as the UK Field Epidemiology Training Programme (FETP) or European Programme for Intervention Epidemiology Training (EPIET) <http://ecdc.europa.eu/en/epiet/Pages/HomeEpiet.aspx>
- Field epidemiology scientists at G7 level will have undertaken epidemiology training at masters or PhD level and may have completed FETP training plus on the job training and experience.
- PHE delivers the two year full time UK Field Epidemiology Training Programme, which was established in 2011. It provides training and experience to develop the competencies agreed for field epidemiologists in the European Union. FETP is open to FES staff, medical, nursing, scientific, and veterinary staff. <https://www.gov.uk/field-epidemiology-training-programme-fetp>
- FETP recruits 4-5 Fellows per year and has trained, or is training, 22 fellows to date.
- There is no formal training programme for health protection nurses/practitioners though most will have specialist qualifications or experience e.g. in public health, environmental health or infection control.
- PHE trains many trainees including those on the Public Health Specialty Training Programme, including: academic fellows, EPIET, FETP, medical trainees in microbiology, virology and toxicology, and biomedical and clinical scientists at undergraduate, post graduate and PhD level.
- Local authorities also employ environmental health practitioners (EHPs) who have key roles in inspection of premises, including food premises, and enforcements of standards. EHPs can become registered with the Chartered Institute of Environmental Health: http://www.cieh.org/professional_development/becoming_an_ehp.html

Workforce plans

- A Public Health Workforce Plan was published in 2013 by DH. It continues to be implemented and new governance arrangements are being put in place to ensure regular review as well (an oversight group linked to the People in UK Public Health strategy group was established last year). This proposed the development of the public health nursing and healthcare scientific workforce.

- **Public Health Workforce Strategy** . There are plans to revise the PH workforce strategy in 2015.
- Modernising Scientific Careers (MSC) was published in 2010. It has been used to develop curricula and training programmes for several strands of the healthcare scientist workforce.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/138326/dh_113990.pdf. There is currently work in progress to explore the application of MSC to the PHE scientific workforce.
- PHE is developing workforce strategies, for example FES is currently developing a workforce plan to provide career pathways for FES staff across FES, PHE and wider public health. The workforce plan will inform professional development plans for its staff.
- At least one key performance indicator is being monitored re capacity and capability eg Director of Public Health vacancies , and also key organisations have received regular updates on work commissioned eg skills passport, skills framework, talent management pilots, minimum data set development , and baseline surveys and reports have been commissioned from the Centre for Workforce Intelligence.

Veterinary Workforce

Total (as at 31/03/14)

Practising vets registered in the UK: **19,692**

Registered veterinary nurses: **11,661**

A selection of facts and figures about veterinary surgeons and veterinary nurses in the UK can be found in RCVS Facts, an annual publication from the Royal College of Veterinary Surgeons, available below. This includes information on the geographical location of practising veterinary surgeons and premises.

A more detailed breakdown of employment and specialisms included within the total number of practising vets is given in the sections below. This mainly covers: Government employed vets; specialists in public health and/or epidemiology employed by Government or routinely carrying out Government work; and practising vets trained as Official Veterinarians for Government purposes.

Government employed veterinarians

Department for Environment, Food and Rural Affairs (6), Animal and Plant Health Agency (328 FTE), Centre for Environment, Fisheries and Aquaculture Science (3), Department for Agriculture and Rural Development, Northern Ireland (188), Food Standards Agency (45), Home Office (30), Ministry of Defence (29), Scottish Government (5), Welsh Government

(6), Veterinary Medicines Directorate (20), Defence Science and Technology Laboratories (3)

Total Government employed veterinarians - **663**

Relevant Specialists in RCVS register

Accredited RCVS specialists; veterinary epidemiology (3);

RCVS Diploma and certificate holders; Veterinary Public Health, meat hygiene (22);
Veterinary Public Health, food hygiene (5)

Numbers currently enrolled in certificates; Methods in surveillance and field investigations (3); quantitative methods (3); zoonoses and infectious diseases (4)

Summary of Animal and Plant health Agency (APHA) specialist epidemiologist and public health capability (England and Wales)

Members of European College of Veterinary Public Health: 4 diplomats, 2 registered as training

Post graduate trained quantitative veterinary epidemiologists - 8

Vets/scientists working in epidemiology or on specific development programme, (several with post-graduate qualifications of relevance to epidemiology): 11

Field epidemiology investigators: 34

In addition APHA has a part-time Professor of Epidemiological Sciences.

Summary of DARD (Northern Ireland) specialist epidemiology and public health capability

Holders of MSc post graduate qualification in epidemiology: 7

Holders of MSc (or above) post-graduate qualification in public health: 6

Field epidemiology investigators: 10

Veterinary Public Health Programme, official veterinarians: 33

Summary of SRUC (Scotland's Rural College) and SAC (Laboratories section) specialist epidemiology and public health capability

Vets with public health post graduate qualification – 6

Vets with epidemiology post graduate qualification – 9

Field epidemiologists and/or with field epi training- 7

Official veterinarians undertaking Animal and Plant Health Agency work: **10,000**.

These are veterinarians based in private practice and registered with Improve International, the independent training provider for state veterinary work on behalf of the Animal and Plant Health Agency. More information here <https://www.improve-ov.com/home/>

Official veterinarians undertaking Food Standards Agency meat and food hygiene work: **345.**

These veterinarians are based in abattoirs with their main focus on ensuring official controls for public health are in place and being implemented by Food Business Operators. They also have responsibilities for animal welfare

External review – Key Observations

- The link between public health and healthcare in the UK is strong and well defined through the role of GPs as the gatekeepers to the healthcare system.

Scoring Using the Assessment Tool

- Trained field epidemiologists – human: **Level 4**

Note on scoring: The UK gave themselves a score of 3 as it does not have one field epidemiologist per 200,000 (the criteria for a 4), when interpreting “field epidemiologist” in the strictest terms. The UK does, however, have systems in place, a trained workforce, and a pipeline to support sustained capacity to prevent and investigate suspected outbreaks. In the event of a large outbreak, the UK also has agreements in place with other countries for surge capacity, demonstrating the strong planning and resilience built into the public health workforce. For these reasons, the external team decided to give the UK a 4.

- Field Epidemiology Training program or other applied epidemiology training program in place: **Level 4**
- Workforce strategy: **Level 3**

Note on scoring: Based on the pilot tool, 3 is the highest possible score.

Assessment Tool

Based on internal assessment:

- It isn't clear at what level of workforce planning should be considered as part of this assessment, e.g. national, local, departmental, public health, epidemiology etc.
- The focus should be on proven capability to respond, not numbers or titles

Based on external assessment discussions:

- The type of staffing and relationships within each national system will reasonably vary according to needs and the nature of the public health programs.
- Consider adding a metric to document retention of expertise and personnel investments, e.g., “median number of years public health personnel have been on staff”

Based on external assessment discussion:

- The UK fulfills the function of field epidemiologists through the engagement of multiple levels and types of health professionals. For example, local outbreak investigations are done by a cadre of staff that are not technically considered “field epidemiologists” and veterinarians and environmental health experts are also not included in the narrow interpretation of the term. We should consider in the context of the tool framing it in terms of the desired outcome, rather than the narrow and quantitative measurement of “one advanced field epi per 200,000 population.”
- Related to the point above, additional consideration should be given to whether the tool and its measure capture the breadth of expertise required for a workforce fully prepared to support national and global health security. For example, One Health and the role of veterinarians is not incorporated into the tool. This was also explicitly raised for microbiological and scientific staff (ref lab AP)
- UK capacity building is based on existing multilinear professional pathways, reflecting a mature and evolving system.

GHSA Emergency Operations Centers

(GHSA Action Package Respond-1)

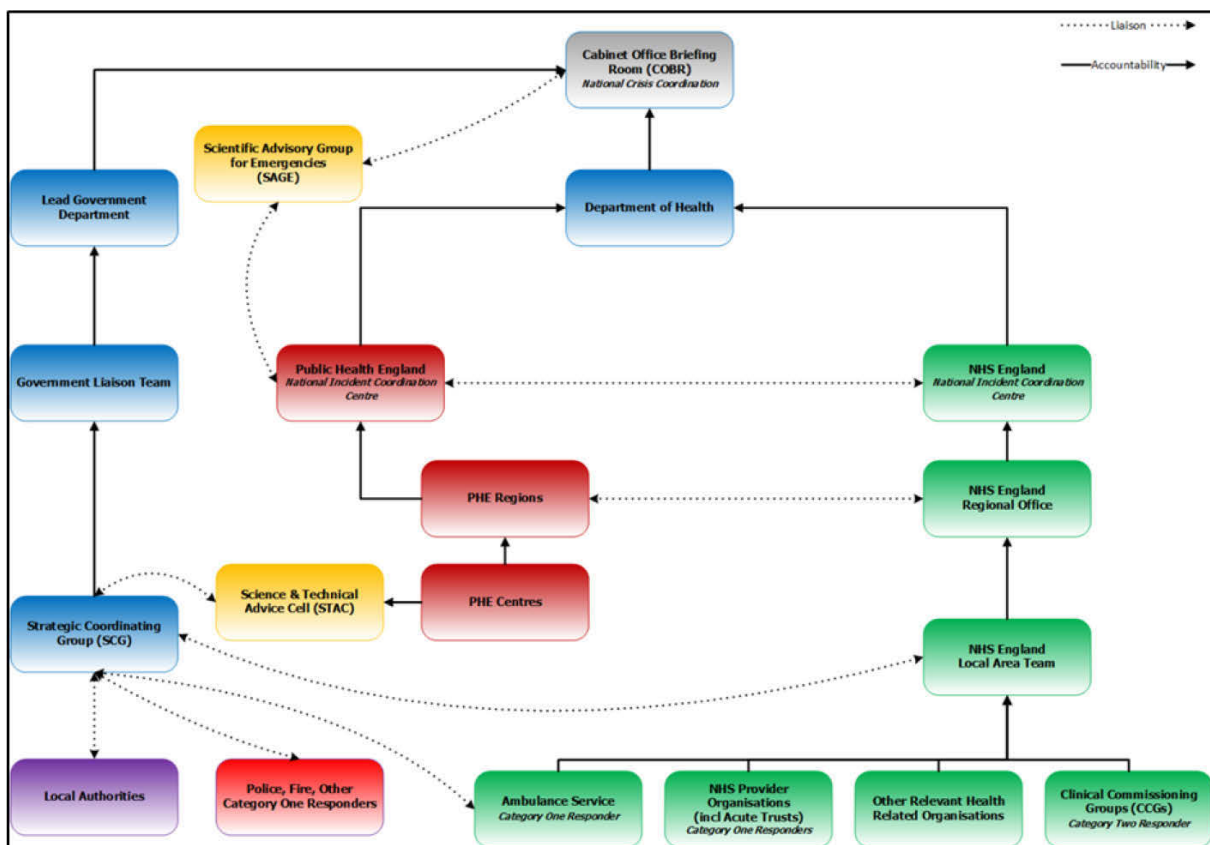
Introduction

A public health emergency operations centre (EOC) is a central location for coordinating operational information and resources for strategic management of public health emergencies and emergency exercises. EOCs provide communication and information tools and services and a management system during a response to an emergency or emergency exercise. They also provide other essential functions to support decision-making and implementation, coordination, and collaboration.

UK level of Capabilities

National Co-ordination

The national PHE emergency response is coordinated through the principal EOC, PHE's National Incident Co-ordination Centre, which has communication links with the Department of Health, NHS and other Government Departments and agencies at the local, regional and national levels. This is shown in the schematic below,



National coordination of emergencies with implications for health

However this only applies to England as in the UK health is devolved. All other administrations, Wales, Scotland and Northern Ireland therefore have their own public health equivalent to PHE, Public Health Wales, Health Protection Scotland and the Public Health Agency for Northern Ireland. In crisis situations contact is maintained at all levels through regular teleconferencing between public health bodies, between government health departments and at COBR (Cabinet Office Briefing Rooms) where, depending on the nature of the incident, devolved administrations have a seat around the table.

Measures

Public Health England EOCs

Public Health England has 4 facilities developed and having the capability to convert to EOCs in a crisis. Under normal working conditions these EOCs function as offices, meeting rooms or training facilities for day to day activities but can be rapidly converted with partial activation within minutes and complete activation within 120 minutes. However, the full response of which the EOC is an integral part, and effectively the hub, can take several days to assemble as emergencies are by nature rapidly evolving events. Because of this, the EOC has been developed around a flexible Concept of Operations (CONOPs) with respect to location, equipment and staffing and whilst generic in nature is always tailored to the specific requirements of the emergency being managed. The EOCs are at PHE offices in central London, at the Colindale site, outer London; at the Centre for Radiation, Chemicals and Environment in Oxfordshire and in the Emergency Response Department (ERD) at the Porton site in Wiltshire.

Current PH EOC at the national level

The principal EOC is at the PHE offices in Buckingham Palace Road (BPR), near Victoria Station in London. This is described as the principal EOC because it is the natural default EOC given it houses the Corporate Resilience Team (CRT), who are responsible for PHE Emergency Preparedness and Response at the national level, maintain the EOC at a state of operational readiness and prepare PHE to respond to emergencies; its proximity to central London and government; and the strong transport links which facilitate rapid activation, up-scaling and maintenance of the response. PHE occupies approximately half of the floor-plate on one floor at the BPR office. The CONOPs is flexible in terms of scalability of the EOC. The EOC occupies a single large room with smaller side room for secure communications. However, the response can flex to occupy up to an additional 6 rooms, to provide for an expanded EOC facility depending on the severity of the emergency and the scale of the PHE response. The total capacity of the EOC in a single room is therefore between 8 and 24 but additional activities can be co-located in neighbouring rooms if the capacity needs to be increased further. As an example about 60 people worked on the Ebola response in the National Incident Coordination Centre (NICC; collective name for the EOC and its associated cells) at BPR which was the national hub and nerve centre for the PHE response.

Equipment

All of PHE EOC facilities have EOC facilities and equipment in line with the national NICC CONOPS. Annex A provides an inventory of equipment for the EOC facility in London.

Staff roles

Incident Director	Task Manager
Deputy Incident Director	Logistics manager
Senior Public Health Advisor	Forward Look Manager
Incident Manager	Communications lead
Records Manager	Staffing manager
SitRep Manager	Operational support

These roles can be combined dependent on the scale of the incident and the impact on the organisation. All roles are described in the NICC Activation Plan with action cards for each role.

IT support is accessed through the normal remote IT helpdesk although at all EOC sites there are IT professionals available to support the EOC directly.

Estates support is accessed through the local estates manager

Other roles and teams which would be available to support the response as required but do not have permanent representation in the EOC include;-

Governance

Health and safety

Liaison officers

Specialist teams (which can be co-located or located remotely and report in).

Staffing Roster

There is no staffing roster in the initial stages of an emergency. It is the role of the Corporate Resilience Team together with available staff in the emergency response department to establish the response to any crisis and maintain that response in the first 48 hours. This gives time to put out the request across the organisation for others to support the response and from there, rosters can be established. This process is practised as part of PHE's involvement in exercises.

Escalation and De-escalation of the response

Escalation or de-escalation will be driven by the nature, scale and complexity of the emergency, coupled with the expectations of Public Health England's response. Any incident response can be changed following a review, including a risk assessment of the strategic direction and operational management of the emergency.

The level of Public Health England's response may need to be escalated or de-escalated for a number of reasons. These may include:

Criteria for Escalation

Criteria for Escalation	Criteria for De-escalation
the need for additional internal resources	reduction in internal resource requirements
increased severity of the incident	reduced severity of the incident
increased demands from partner agencies or other government departments	reduced demands from partner agencies or other government departments
heightened public or media interest	reduced public or media interest
increase in geographic area or population affected	decrease in geographic area or population affected

This will impact on whether the EOC is scaled up or down-sized in terms of size of facility used and the numbers of PHE staff involved.

Lessons Identified

All PHE responses to emergencies and exercises involve a lessons identified process and a report with recommendations for future actions.

Training programme

There are 2 training courses run for EOC training.

NICC training course: this is an e-learning course supported by the opportunity to join webinars, followed by a 1 day course (which includes a scenario driven exercise) designed to train all roles within the National Incident Coordination Centre (EOC) excluding the Incident Director. This course is designed for PHE staff and brings them up to a standard where they are competent to take one or a range of roles within the EOC.

Training

Incident Director training; this is a 1 day course for those who have been identified as suitable candidates as Incident Director. This course is for senior PHE staff that already has well-established competencies in leadership and management of complex problems.

Both of these courses are supported by e-learning with a range of courses about individual threats, a course specific to emergency preparedness resilience and response and a further course covering business continuity.

Exercises programme

CRT ensures that the EOC is tested in a full scale functional exercise annually. This can be as the nerve centre of a PHE internal exercise which may test elements of the PHE response but always the activation and coordination of the response by the EOC. Every 3 years there is also a health led cross government functional exercise where the PHE response is fully activated. The most recent was planned for October 2014 but was cancelled due to the Ebola outbreak; this was replaced by an ad hoc Ebola exercise which is described on page 72. There has not been a necessity to reschedule this exercise as the Ebola crisis is continuing 6 months later.

PHE also becomes involved in other government department's exercises on an ad hoc basis. This averages 1 per year

PHE also exercises locally, regionally and nationally as appropriate and there is a well-established annual exercise programme for England's health community run by the Emergency Response Department of PHE. This programme consists of a series of workshops and tabletop exercises.

The Corporate Resilience Team also run an annual internal communications exercise from the EOC to ensure that all communications channels are open, up-to-date and functioning as set out in the agreed criteria.

External review – Key Observations

Scoring for UK using the Assessment Tool

- Status of EOC (space) – **Level 4**

Note on scoring: UK originally scored themselves a 3 on “space” to reflect an ongoing reorganization (moving from 15 to 9 PHE centers) and some uncertainty in the location of the EOCs going forward. However, the team decided that since the UK is prepared to stage an EOC at this moment with impressive processes for decision-making, supportive technologies and data collection, and strong collaboration and systems in place, that they should be a 4.

- Status of EOC (staff) – **Level 4**

- Emergency operations programme – **Level 4**

Assessment Tool

Based on internal assessment:

- Considered that this was too focused on space and equipment rather than response capability and fit for purpose.

Based on external assessment and discussions

- Key outcomes from the tool may not be measured through concrete results such as changes in SOPs, but need to consider all the “soft” benefits such as relationship development that changes the way people and institutions behave moving forward
- Propose new measure: Is there a multisectoral commission or a multidisciplinary emergency response department for public health/animal health? Does this combine security, public health, veterinary, wildlife, and other experts? Has this team received public communication training? Do public health, veterinary, border, wildlife, and other key groups have each other’s cell phone numbers? How often do these groups meet to discuss cross cutting issues? Is there an established relationship between public health and law enforcement/security officials or offices. Are any cross border (international) simulation exercises done?
- Propose new measure: Is there a hotline people/clinicians can call for help on handling a fever of unknown origin? Is there a comparable system for animal disease support for those who might not have access to a veterinarian or the funds to pay for a visit?
- Propose new measure: What arrangements are in place for surge capacity? (for example, mechanisms to be able to engage military to aid in an outbreak situation).
- Propose combining measures 5 (training for staff), 6 (training for staff) and 7 (curriculum for support staff).
- Propose new measure: When there is a national emergency, who heads up the Incident Team
- Propose new measure: how many times has the emergency operations center been stood up in the past 5 years?
- Propose new measure: Does the country have a range of emergency capacity? Starting with local capability and then the ability to scale up to national or even international level with a scalable function for space, resources, data and criteria. Tool assumes a national level emergency. Escalation capability and planning is needed.
- Propose new measure: Is there an independent scientific body to provide unbiased scientific advice to politicians?

GHSA Action Packages Main Document

Current global health response efforts need to be better coordinated and standard triggers for response identified and agreed. Enhancing established mechanisms such as WHO GOARN could enable a faster and better coordinated approach to providing international response to health crises. The establishment of a pre-accredited and trained team that WHO GOARN can rapidly access and deploy would help facilitate this, such as is already done by FAO.

GHSA Linking Public Health with Law and Multisectoral Rapid Response

(GHSA Action Package Respond-2)

Introduction

The UK has a long history of public health legislation to enable public health and legal authorities to respond effectively to public health threats. Almost all aspects of health and healthcare are devolved to the constituent parts of the United Kingdom. This applies also to public health agencies and public health legislation. In what follows we focus on the position as applies to England. However, very similar legislation is in place in Northern Ireland, Scotland and Wales, and each has its own public health agency with professional staff trained to the same standards as in England.

UK Level of Capabilities

The relevant public health legislation applying to England is as follows:

At Port:

- Public Health (Control of Disease) Act 1984 (the “1984 Act”) - Aircraft / shipping regulations which permits a medical officer to examine any person on board or leaving an aircraft or ship, provided that there are reasonable grounds for suspecting that the person is suffering from an infectious disease or has been exposed to infection. This includes British nationals.
- Schedule 2 of the Immigration Act 1971 (the “1971 Act”) – can require persons arriving in the UK to submit to medical examination as a condition of entry. These powers do not extend to British nationals, but do extend to EEA nationals. The powers have to be exercised before the individual passes border control.
- Public Health (Aircraft) Regulations 1979 - under which the medical officer can place under surveillance for anyone disembarking from an aircraft that has come from an area infected with for example a “viral haemorrhagic fever”. Under reg 9(2), where Secretary of State is satisfied that a grave danger to public health exists by reason of infectious disease and notifies medical officers accordingly, the medical officer can require a person leaving an aircraft to state in writing his name and intended destination and address.

Community health:

- Health Protection (Part 2A Orders) Regulations 2010 (“the Part 2A Orders Regulations”), which supplement the provisions in Part 2A of the Public Health (Control of Disease) Act 1984 (“the 1984 Act”) - Local authorities have powers to apply to court for restrictions and requirements to be placed on individuals, following an individual risk assessment, if it is considered that they represent a risk to public health, and are not complying with public health advice. Failure to comply with such an order would be an offence.
- Data sharing at national level is well established under UK common law principles of Public Interest and the professional governance principles of the General Medical Council and Nursing and Midwifery Council. Individuals are still afforded a high level of protection in the way that any such data is handled by the Data Protection Act. Substantial examples of the need to interact can be provided by the UK in both directions :law enforcement bodies on occasion supply information for public health authorities to identify persons at risk and needing medical treatment; whilst public health authorities make risk assessments and provide advice and support on the exploitation of forensic evidence, including preparation of evidence for prosecution purposes.
- Links to Interpol have existed with the UK for many years and have taken the form of close involvement in developing models of law enforcement / public health interaction, support for programmes of training to EU Member States and close cooperation in the investigation of cross-border incidents.
- The UK has many examples of joint law enforcement / public health interactions that can be used to demonstrate the development of these relationships. They include headline cases such as the Polonium poisoning of Alexander Litvinenko, the London bombings, investigations into suspected individual and group poisonings with the national Counter-Terrorism Command and local police force; and a long relationship with the UK National Crime Agency on the assessment and management of extortion and product contamination threats to the food and pharmaceutical industries. These interactions are underpinned by Memorandums of Understanding, many years of joint working and organized formal training programmes for partner agencies.
- There are regular exercises to test capabilities. In October 2014 there was an exercise in England simulating two unrelated cases of Ebola Virus Disease

being identified in different parts of the country to test system readiness to an outbreak to Ebola in the UK. The aims of the exercise were to (a) test UK arrangements for identifying, isolating, assessing and moving a suspected Ebola case into treatment facilities (b) to review contact tracing arrangements, including resourcing, to include assurance for a non-compliant spouse (c) to test public communication processes including production, clearance and dissemination of messages. The exercises were successful; lessons were learnt and acted upon. Between October 2014 and December 2014 each local region (38) also undertook exercises locally to test readiness for Ebola.

External review – Key Observations

The inability to easily trace who was on airline flights could be an impediment to GHSA effectiveness in the face of a major global outbreak, and this applies to all countries, not just the UK. This should perhaps be concurrently addressed at higher levels as a support activity to effective GHSA implementation. (Reluctance of IATA to require airlines to make this information easily available to public health authorities). This was also raised during the reporting Action Package discussion.

Scoring for UK Using the Assessment Tool

- Linking Public Health and Law Enforcement : **Level 4**

Assessment Tool

Based on external assessment

- Overarching recommendation: Need to include other relevant sectors if want to measure multisectoral collaboration
- Add question on a country's ability to implement temporary recommendations of WHO under the IHR in the country, e.g. for travel and trade?
- Add element of Risk communication/National risk communication plan/multi-sectoral and multi-level communication coordination
- Propose new measure: Are there exercises to evaluate the response?
- Propose new measure: Do agencies from all relevant sectors carryout a post-event debrief to evaluate their process and make recommendations to improve? Is there a mechanism to ensure that lessons learned are addressed/ accountability for the process overall?
- See Respond 1, #1. Copied in here. Propose new measure: Is there a multisectoral commission or a multidisciplinary emergency response

department for public health/animal health? Does this combine security, public health, veterinary, wildlife, plant health and other experts? Food and pharmaceuticals are key target areas. Has this team received public communication training? Do public health, veterinary, border, wildlife, and other key groups have each other's cell phone numbers? How often do these groups meet to discuss cross cutting issues? Is there an established relationship between public health and law enforcement/security officials or offices. Are any cross border (international) simulation exercises done?

- Propose new measure: Is there legislation in place which allows the government to detain/quarantine an individual who presents a public health risk.
- Propose new measure: Is there joint training between the sectors? Is there a document that sets out responsibilities and relationships? Levels could be:
 - Do people know of each others' existence and capabilities
 - Is there an integrated command and control model
 - Joint training and exercising
 - Can they provide examples where that has been operationally effective
 - Has their concept of operations been demonstrated to be responsive to the lessons which have been learned in exercises? (UK stressed, need to be honest about mistakes).
- Propose new measure: what is the level of experience key people have? Are workforce development needs being addressed and how?
- Propose new measure: does country have legislation in place that allows public health professions to detain an individual at Points of Entry (POE)?
- Suggest elements from note taking tool be transposed into measures to be ranked

GHSA Medical Countermeasures and Personnel Deployment

(GHSA Action Package Respond-3)

Introduction

Medical Countermeasures (MCM) are vital to national security and protect nations from potentially catastrophic infectious disease threats. Investments in MCM create opportunities to improve overall public health. In addition, it is important to have trained personnel who can deploy in case of a public health emergency for response.

UK Level of Capabilities

Countermeasures

- The UK maintains national stockpiles of medical countermeasures as part of its preparedness planning for an influenza pandemic and for chemical, biological, radiological and nuclear threats
- Cross Government working is integral to establishing and maintaining this capability. Governance and legislative arrangements are in place to enable the procurements to be completed on behalf of England and the Devolved Administrations to ensure consistency across the UK.
- Cross Government working is also critical in assessing any changes in the threat levels or the response requirements to inform future countermeasure requirements and to confirm what stocks are available where.
- The UK has an Advanced Purchase Agreement for pandemic specific vaccine and a number of “just in time” contracts with suppliers for the procurement of additional medical consumables to supplement stockpiles in the event of a pandemic. Assurances about the ability to supply and business continuity arrangements are included as part of the contract agreements.
- The UK has storage and distribution agreements in place so that the medical countermeasures can be made available within the country at the time of a response. Suppliers have run tests and exercises on the mobilisation of these stocks in the last year. Updated guidance for the NHS on accessing stocks has been issued. Table top exercises have also been used to confirm the decisions required in relation to triggering the mobilisation of the medical countermeasures.
- The UK has engaged with the Medicines and Healthcare Products Regulatory Agency (MHRA) where medical countermeasures from abroad

are being considered but the UK policy of stockpiling is based on ensuring that licensed products are available at the time of a response, wherever possible.

- The UK has experience of making medical countermeasures from its national stockpiles available to other countries and to the WHO, particularly during the H1N1 swine flu pandemic in 2009/10. Other Government Departments such as DFID and FCO were closely involved in these arrangements. The response to Ebola in 2014-15 also required the movement of medical supplies.
- The UK has experience of sending health personnel to other countries including during the response to Ebola in 2014-15.

Deployment of health personnel during a public health emergency

- The UK has a long history of providing public health experts. Public Health England regularly deploys experts in response to a number of triggers:
 - Any infectious disease concern which poses a demonstrable threat to the UK. This will be determined by national security and intelligence assessments, including that provided by the PHE National Situation Awareness Cell. Previous requests have included;
 - Human avian influenza in the Far East (various)
 - MERS-CoV Kingdom of Saudi Arabia & Qatar
 - Where invited by relevant international bodies, including but not restricted to WHO, through the Global Outbreak and Response Network and the global workforce. This is currently one of the main routes for requests for UK expertise [in general there are 3 – 5 requests per year for these low level responses eg
 - Eastern Mediterranean MERS-CoV
 - South Sudan Cholera
 - Solomon Islands Diarrhoeal disease
 - Bilateral requests from the affected country's MoH for UK public health experts
 - A major outbreak of infection in a DfID priority country. If this is identified as a health emergency it may be coordinated through UKMed with public health being part of the larger health response
- During the ongoing Ebola crises the UK provided a significant number of health experts, including clinicians, nurses, epidemiologists, microbiologists, including laboratory staff, and infection prevention and control specialists from across UK health services and through the military to West Africa, and in particular Sierra Leone. In addition PHE provided training to those deploying through WHO, and outbreak prevention and control measures to

other countries in West Africa who had not been affected but were deemed at risk.

- The UK is also developing plans to establish a more robust UK rapid response workforce for public health emergencies as the response to Ebola highlighted the need to strengthen the global capacity and capability to respond rapidly to outbreaks of infectious disease, and more specifically, the UK's own ability to provide this and improve national security.

- a) The plans include a small, standing public health rapid response capability to assess and tackle emerging health threats and to lead on training of a wider cadre of reservist specialists in surveillance, outbreak response, epidemiology, diagnostics, infection prevention and control, relevant social sciences and clinical and applied research, and when required to be deployed as part of a larger scale response. This will include individuals trained in infectious diseases, field epidemiology and outbreak control, microbiology and other specialists including veterinary, animal health and social sciences.
- b) Development of the capability to co-ordinate the readiness and deployment of a wide range of health professionals for major health emergencies of all types, including the deployment of the public health 'reservists' in the event of a major outbreak.

This work will be linked to the WHO proposals for a global health emergency workforce, and other initiatives from EU and other international partners (notably US) in expanding response capability.

Scoring for UK Using the Assessment Tool

- Demonstrated capability for sending and receiving medical countermeasures during a public health emergency: **Level 3**

Note on scoring: External assessment team agreed with the UK self assessment of "3" due to inefficiencies and room for improvement; working to get better agreements in place to avoid difficulty at time of crisis and it requires bilateral and multilateral agreement which can be slow moving, so not necessarily a reflection on the UK specifically, but on the status of global health security globally. This reflects the international, not national, complexities and administration and legal barriers.

- Demonstrated capability for sending and receiving health personnel during a public health emergency: **Level 3**

Note on scoring: External assessment team agreed with the UK self assessment of "3" due to UK as while the UK can make deployments happen, it is ad hoc, based on a small cadre of people, and there are many pain points and inefficiencies:

- need measures to help ensure continuity of efforts at home,
- in the UK, practitioners can't volunteer across Trusts, let alone the four devolved administrations;
- have agreements btw the four administrations to exchange healthcare workers, but don't have clear arrangements internationally as a single UK entity;
- Ebola was the first time DH, PHE, Defra and DFID worked together, but there isn't a formal mechanism – need to be predictable, available, and have the right staff, and be able to better handle crises that then present a public health risk at home upon the re-entry of deployed staff; and
- need more focus on training new people to replace senior people; developing a sustainable workforce.

Assessment tool

- A score of 4 for sustainable capability includes the requirement for regional partnerships and formal agreements. The UK would consider its capability to be sustainable and the arrangements with the Devolved Administrations ensure that there is partnership working across the UK but further clarification is required on what is expected for a score of 4.
- Not necessarily a good fit to have the deployment of medical countermeasures and personnel grouped together
- AP focuses very closely on the transfer arrangements, so could be broader to include other types of international collaboration including R&D
- The requirement of having done a response or exercise in the last year is very restrictive
- Need to be clear within the language in the tool on whether by “exercise” we mean the component parts of the systems or the entirety of a multisectoral deployment chain
- Suggest adding measures:
 - could use number of deployments, through recognised routes such as GOARN, as a measure. –
 - are dedicated resources / staff planned for logistics related to delivery and receipt of material and accountancy thereof?