

London 2012 Olympic and Paralympic Games

Summary Report of the Health Protection Agency's Games Time Activities



Report prepared by the London 2012 Olympic and Paralympic Office,
Health Protection Agency
www.hpa.org.uk/2012Games

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We would also like to recognise the significant contribution of all those involved, across the agency, in planning and delivering the HPA's Games time commitments

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This report and the supporting documents can be found at:
<http://www.hpa.org.uk/Publications/EmergencyPreparationAndResponse/0113London2012report>

List of supporting documents:

1. London 2012 Olympic and Paralympic Games: HPA Testing and Exercising Summary Report
2. Full operational cell reports
 - 2.1 Significant events reported by the Event Based Surveillance - London 2012 Olympic and Paralympic Games
 - 2.2 Regional reports
 - a. London regional report - London 2012 Olympic and Paralympic Games
 - b. South West regional report - London 2012 Olympic and Paralympic Games
 - c. South East regional report - London 2012 Olympic and Paralympic Games
 - 2.3 LOCOG Polyclinic - London 2012 Olympic and Paralympic Games
 - 2.4 Health Protection Services, Colindale: preparedness and response - London 2012 Olympic and Paralympic Games
 - 2.5 International Infectious Disease Surveillance - London 2012 Olympic and Paralympic Games
 - 2.6 Syndromic Surveillance - London 2012 Olympic and Paralympic Games
 - 2.7 Microbiology Services: preparedness and response - London 2012 Olympic and Paralympic Games
 - 2.8 Centre for Radiation, Chemical and Environmental hazards, Games time planning and delivery - London 2012 Olympic and Paralympic Games
 - 2.9 Communications Division report - London 2012 Olympic and Paralympic Games
3. London 2012 Olympic Games, HPA Debrief Session Report
4. London 2012 Olympic and Paralympic Games, HPA Games Time Working Evaluation Report
5. London 2012 Olympic and Paralympic Games, UK Health / WHO International Mass Gatherings Observer Programme



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Executive Summary

The key objective of the Health Protection Agency (HPA) during the London 2012 Olympic and Paralympic Games was to contribute to a safe and healthy Olympiad by ensuring potential health protection threats were identified and prevented or effectively managed.

The focus of this report, and the supporting papers, is to summarise the HPA's Games time activities from July to September 2012. It discusses the key legacy and recommendations for HPA, its successor organisation Public Health England, and other stakeholders across the globe who are tasked with delivering mass gatherings.

The HPA successfully delivered its Games time commitments. The extensive planning carried out across the agency and the excellent relationships developed with partner organisations in preparation were crucial to this. An evaluation was carried out with both internal and external stakeholders and feedback was consistently positive, though areas for improvement were identified and these can be of long-term benefit to the agency. Stakeholders said that they were impressed with the level of assurance which the HPA was able to provide, particularly in relation to the assessment of risk to the Games for any given health protection scenario.

Across the 1996 Olympic Games in Atlanta and the 2000 Games in Sydney, infectious diseases accounted for less than 1% of healthcare visits. The evidence provided within this report suggests a similar trend; "the numbers and pattern of illness were comparable with normal business and that seen in other mass gatherings."

As no major public health incidents occurred during the Games the HPA's working arrangements were not stress tested. As expected, however, the high profile nature of London 2012 meant a huge thirst for information from both stakeholders and media in relation to health protection topics and the HPA's work, which kept the agency busy.

Over the 73 days of daily reporting, the HPA included 59 new events in the daily public health situation report (SitRep) to the Games Chief Medical Officer. There were an additional 12 exception reports. No events were assessed as serious enough to be included on the front page high level summary report of significant events. This SitRep information provided assurance to partners and internally within the HPA that there were no significant public health issues requiring escalation. The fact that the HPA was being informed of any relevant

incidents through the agreed surveillance and reporting systems provided assurance that the information given to the Games' organisers and health partners was accurate. This enabled a robust response when queries were received, in particular from Government and the Organising Committee (LOCOG) as well as media.

The majority of incidents identified by HPA were those routinely seen during summer and, as expected, related mainly to gastroenteritis (possible food poisoning) and vaccine preventable diseases. These posed no risk to the Games and were all managed through standard public health measures. There were, however, some events reported that were associated with athletes, and the HPA managed these appropriately through the provision of expert advice and close working with LOCOG.

There is already a significant legacy for the HPA as a result of the Games including enhanced public health systems and stakeholder relationships, and increased expertise in planning and delivering mass gatherings. The agency has a commitment to learn from major events such as the Games and will be continuing this work in future through its WHO Collaborating Centre for Mass Gatherings and High Visibility/High Consequence Events.



‘The HPA have set a new benchmark for comprehensive surveillance and reporting. ... Their calm and efficient management of (thankfully relatively minor) issues was a great reassurance to both us and the IOC (and IPC).’

DR RICHARD BUDGETT,
CHIEF MEDICAL OFFICER, LONDON 2012 OLYMPIC
AND PARALYMPIC GAMES

Context

In the summer of 2012, London hosted the Olympic and Paralympic Games – respectively the largest and second largest international sporting mass gatherings in the world. The Olympics took place from 27 July to 12 August, and the Paralympics from 29 August to 9 September.

BACKGROUND FACTS

- Olympic Games: 10,500 competitors from 205 nations in 26 sports
- Paralympic Games: 4,200 competitors from 147 nations in 21 sports
- 30 days of competition and 805 medal events
- Over nine million tickets sold for the Olympic and Paralympic Games
- Estimated 11 million spectators across all venues
- Global audience of four billion
- On the busiest day, about 800,000 people used public transport to travel to Games events
- More than 150 million tweets were sent about the Olympics, making it one of the most talked about events in Twitter's history (Huffington Post).

Mass gatherings, including large international sports events, are recognised as presenting a range of complex challenges to host countries, including public health risks. These events can create ideal circumstances for the spread of infectious diseases, due to large numbers of visitors from different geographic regions and cultures, who are often in close proximity to one another. Evidence suggests that the main areas of risk are respiratory and food-related or water-borne diseases, which have been documented as occurring during mass gatherings; however, infectious diseases have not been a major cause of morbidity during recent major international sporting mass gatherings, such as previous Olympic Games.

During mass gatherings it is important to address public health issues with urgency. Considerable effort must be directed towards early identification of potential public health threats associated with the events, including those that may arise outside the host country, so that appropriate responses may mitigate any significant risk detected. Systems and capacity must be in place to receive, rapidly analyse and react to surveillance, reporting and intelligence systems information, in order to identify and respond to any potential health protection threat. Due to the increased risk of the spread of communicable disease associated with mass gatherings, early identification of risk is important to help reduce the danger of widespread exposure and minimise impact both on visitors and on the local community.

In London, considerable concern was generated by the potential impact of public health incidents on the Games, the host population, and the countries to which athletes and visitors would return. Given the intensity of this government, public and media scrutiny during the Games, the threshold for responding to any acute public health incidents during Games time was lower than usual.



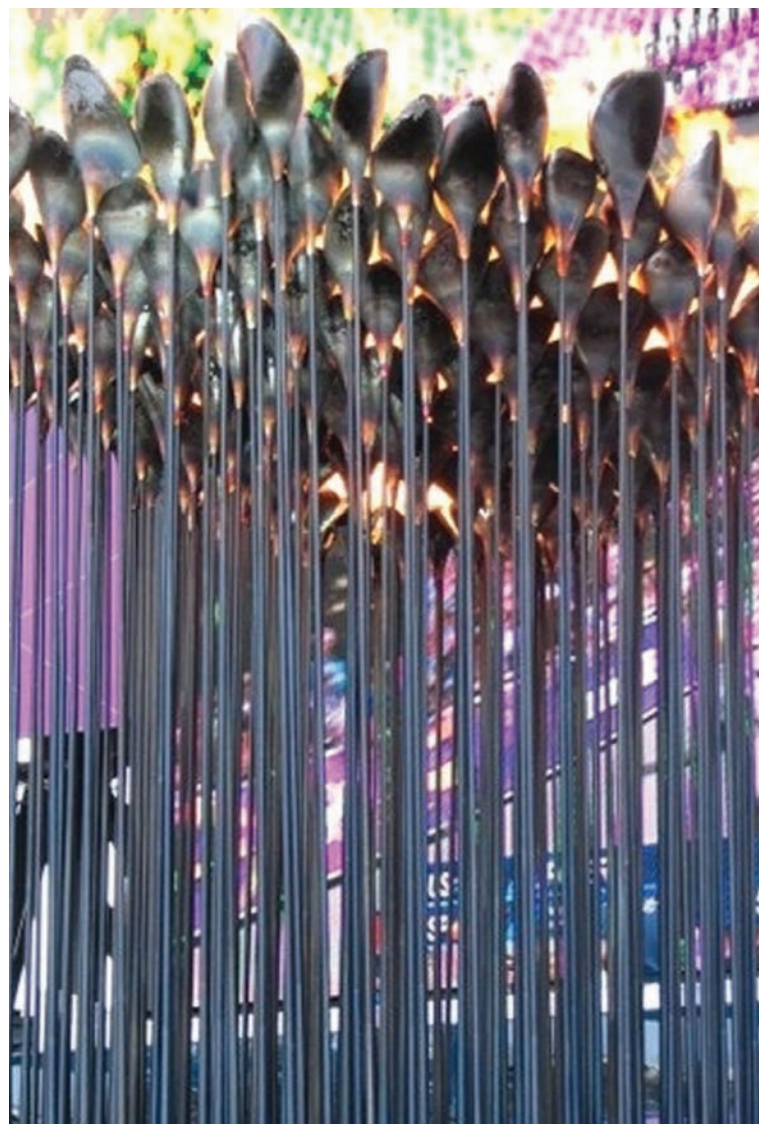
The HPA's role during the London 2012 Olympic and Paralympic Games

The HPA had lead responsibility for delivering public health information, risk assessment, diagnostic testing and disease control measures throughout the Games – all key aspects of preparedness and response. To meet this requirement, work was undertaken to enhance current systems; access additional surveillance data; gain a better understanding of the public health impact of the Games; and raise awareness and understanding of public health concerns.

The HPA had a commitment to LOCOG to deliver a daily public health Situation Report (SitRep) to the Games Chief Medical Officer (CMO) for the duration of the Games. This report was also provided to other key stakeholders, such as the Department of Health (DH), in the run up to and throughout Games time. The agency used surveillance, reporting and intelligence data to inform this daily SitRep, which included information on public health threats, incidents and trends in disease incidence across the UK, and information on any significant international event that might pose a threat. It also provided assurance that the appropriate public health response was being undertaken.

The HPA worked across England and nationally with Devolved Administrations to deliver its Games time commitments and to ensure that any health protection issues across the venues, training camps and public ('live site') events were covered.

The agency was involved in health sector and emergency response planning for the Games. This involved working closely with many partners, including the CMO for the Games, the National Health Service (NHS), and security services. The Games were largely London-based but also had a national focus because there were Games venues outside of London, pre-games training camps around the country, and various public events associated with the Games.



Planning

Planning started over seven years prior to the Games, when the agency was involved in London's bid. Momentum built gradually over the following years, and a programme was established in February 2009 with workstreams to deliver across all areas of the HPA. The Games were an unusual event in that they required collaboration across the whole agency.

The HPA Programme was established with a formal Board to oversee preparations for the Games. This superseded the previous HPA Olympic Coordination Group and the joint HPA/NHS London Public Health Steering Group. The Board included representatives from across the HPA, DH, NHS, LOCOG, the Joint Local Authority Regulatory Service (JLARS) of the London Boroughs responsible for the Olympic Park and London venues, and the WHO. Alongside this, the HPA was represented on the DH Olympic and Paralympic Health Programme Board (OPHP) and on the NHS London 2012 Programme Board.

An early decision was taken to manage the Games as an event rather than as an emergency (most other health organisations followed their emergency response processes). One key rationale for this was that with seven years to plan for them, the Games should not be considered an emergency. This approach also enabled greater resilience in the event of any potential significant incident during Games time, whether Games-related or not. A series of specific Games delivery plans were developed across the agency, from the national Concept of Operations (ConOps) to detailed operational plans.

Process

The process followed the WHO principles of planning for Mass Gatherings:

| | |
|--------------------------------|-----------------------------------|
| i. Risk analysis | What might happen? |
| ii. Surveillance and reporting | How will we know when it happens? |
| iii. Response | What will we do when it happens? |

i. Risk analysis

A public health risk analysis was an early part of the planning. This was carried out in February 2009 in collaboration with key experts from across the HPA, and WHO colleagues from Geneva and China (the latter with experience running the 2008 Beijing Olympics). This process identified the key areas of public health risk for the Games, and was used as a driver to address any gaps and issues identified. This was also linked in with risk assessments from DH, the Department for Culture, Media and Sport (DCMS) Government Olympic Executive (GOE), the Cabinet Office (CO), LOCOG, and the UK Civil Contingency Secretariat (CCS).

In addition, a risk assessment was undertaken on the programme deliverables, which was monitored and reviewed by the Programme Board; and the programme workstreams also each reported their risks. Any issues were escalated and resolved through the Programme Board.

ii. Surveillance and reporting systems

The HPA's surveillance, reporting and intelligence systems are well established and effective; however they were enhanced during the Games to provide additional information, facilitate real-time reporting and allow enhanced follow up of signals. Data included clinical notifications, laboratory reporting, syndromic surveillance, monitoring of environmental and chemical hazards, and data collected from Games venue medical facilities. Enhanced systems included:

- An Emergency Department Syndromic Surveillance System (EDSSS) developed to complement existing syndromic surveillance systems by capturing data on unscheduled, emergency care undertaken in hospital Emergency Departments
- A primary care (General Practitioner) out-of-hours syndromic surveillance system (GPOOHSSS) to collect data from walk-in centres and out-of-hours services for the duration of Games time

- A new surveillance system for undiagnosed serious infectious illness (USII), to ensure early detection and response to new and emerging infectious disease threats using sentinel hospitals in the London and South East Regions of England
- Addition of extra fields in data collection forms/systems such as HPZone (the HPA database that enables local Health Protection Units to record and manage outbreaks) and the Notification of Infectious Disease Surveillance (NOIDS) form, to enable practitioners to identify links to Games events
- Development of more rapid tests for the organisms (pathogens) causing more common illnesses, such as influenza and food poisoning (gastrointestinal infections), and those which have significant public health impact as they cause serious illness and/or spread quickly
- An enhanced test for leptospirosis, developed because a specific risk had been identified for those involved in water sports
- Enhancements to the international surveillance function through strengthened collaboration with ECDC.

iii. Response

When events related or potentially related (including through political or media interest) to the Games were reported, the business-as-usual response was enhanced to enable quicker investigation, using standard processes but with smarter and lower thresholds. This included:

- Expert risk assessments: all reported incidents initiated a request to provide a risk assessment identifying additional Games risk
- Provision of expert advice and information with consideration of the Games context
- Sharing of information across key partners
 - Development and agreement of a media-handling strategy, including for the management of rumours
- Establishment of resilient systems, including mutual support for Health Protection Units (HPUs) and arrangements for surge capacity and robust out-of-hours functions.

FEEDBACK ON PLANNING:

What went well:

- The system for the event - not the emergency - was excellent: 'that we can do this every day suggests that in any future crisis we should be working to this standard' (HPA staff member)
- There was clear scheduling, reporting, and roles and responsibilities with agreed staff rota
- A flexible approach was enabled in different areas of the agency and regions, as long as daily commitments were met
- 'The planning was well done' (WHO).

Suggestions for improvement:

- Better and earlier engagement with Human Resources (HR) issues
- Realistic planning with the ability to scale up and down
- Better clarity on defining reporting for event-based surveillance
- Process for risk assessments set up, agreed and tested prior to event
- Provision of accreditation for unescorted access to sites
- More engagement during development of the Polyclinic syndromic surveillance system for LOCOG to ensure its value (recognising limitations of the Games' IT system), and better provision of operational guidance
- Clarity of rationale for daily surveillance, reporting and risk assessments.

Communications

Communications planning and delivery was essential to successful Games time work – it was crucial to raising key stakeholders' awareness of the HPA's business and additional Games activities. This was achieved through meetings, provision of documents, and contributions to documents produced by partner organisations such as NHS London, the Chartered Institute of Environmental Health (CIEH), Local Authorities, the Food Standards Agency (FSA) and LOCOG.

Key HPA documents were shared with partners, including international organisations such as the European Centre for Disease Prevention and Control (ECDC), WHO, and the US Centers for Disease Control and Prevention (CDC). Additionally, a weekly newsletter was produced with international partners during the Games and posted on the HPA website; and a number of key documents were produced and put on the HPA's internal intranet to ensure everyone across the agency understood the HPA's work for the Games. During Games time a redacted version of the HPA SitRep was posted daily on the intranet.

A media briefing was held on 3 July 2012 to announce that the HPA was 'Games ready'. This was also in response to information requests from the media (national and international) in the weeks preceding the Game – the decision was taken that a face-to-face briefing with HPA experts was the best way to cater for the needs of the media and make the best use of experts' time.

Experts across the HPA produced a 'baseline document' for stakeholders who were not public health experts. This set out what the agency would expect to see and respond to in a normal summer period so that partners had a clear understanding of the agency's 'business as usual' and the current state of health protection issues in the UK.

During Games time it was also important to ensure 'one version of the truth' in any communication involving a number of organisations to reduce the likelihood of miscommunication. Considerable time was spent with partner organisations, such as the DH and LOCOG, in order to agree how to manage this, including meetings to agree who would be the spokesperson for different scenarios (e.g. LOCOG would lead if an athlete was involved).

FEEDBACK ON COMMUNICATIONS:

What went well:

- Sharing information and agreeing messages with external partners
- Provision of documents such as the baseline document prior to the Games
- Location of the communications team in the OCC.

Suggestions for improvement:

- More required to ensure awareness and understanding of expectations within the HPA
- Increase communications with internal staff to ensure better engagement
- Stronger agreement across government and stakeholders on responsibility for putting messages out, and sign-off procedures.

Stakeholder engagement

Early and successful engagement with stakeholders was key to delivery of the agency's Games time commitments (see Figure 1). Many of these stakeholders already worked closely with the HPA but there was also a considerable number of new organisations set up specifically for the Games – relationships had to be established and managed between parties unused to working closely together. Significant time was spent engaging with these stakeholders and ensuring that roles, responsibilities and working arrangements were understood. The inclusion of these partners in the exercises led by the Cabinet Office enabled working relationships to be tested, reviewed and improved. Key documents such as the 'Concept

of Operations' (ConOps) and baseline document were shared with health partners to ensure understanding and awareness of the HPA's work.

Working across the health sector was excellently managed by all partners, including the DH, NHS, London Ambulance Service (LAS), Devolved Administrations and other departments across government. Key to this was the establishment of a number of steering and working groups to agree working arrangements, and the testing of these arrangements during exercises. The agency also set up the working groups on public health issues including food, water and air quality.

A close working relationship with LOCOG Medical Services was also vital to ensuring a high degree of trust and openness during the Games when sharing information and providing expert advice. To facilitate this, both parties signed a Service Level Agreement outlining delivery commitments, and a number of policies were agreed between the two organisations.

FEEDBACK ON STAKEHOLDER ENGAGEMENT:

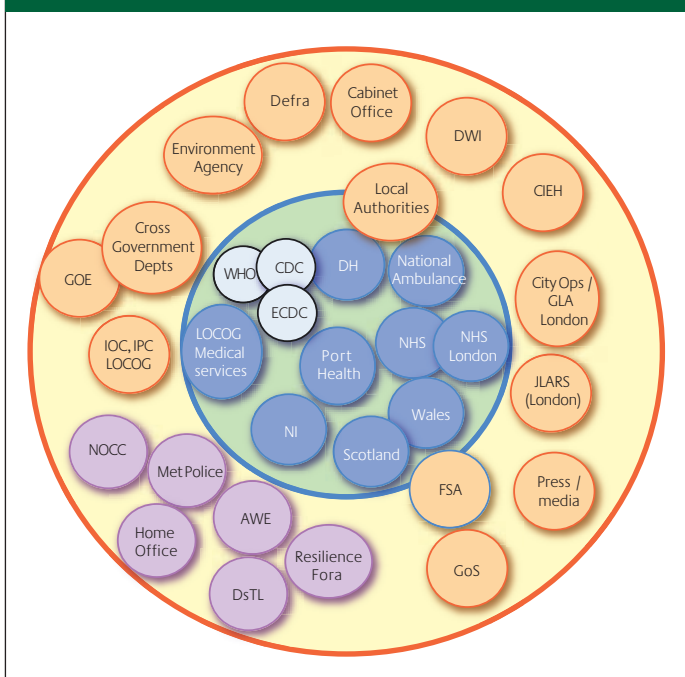
What went well:

- Good collaboration at international level (ECDC/WHO/HPA)
- 'Close cooperation and sharing of information was critical to the [Games time] process and...this was carried out in an exceptionally professional manner' (FSA)
- Excellent collaborative organisation working across health service and government partners.

Suggestions for improvement:

- Earlier discussion for content and structure for public bulletins (during the Games) (ECDC).
- The criteria/rationale for the assessment of 'no impact on the Games' were not self-explanatory to a non-public health specialist.

FIGURE 1: STAKEHOLDER MAP



Examples of improved stakeholder working

Air quality: the enhancements to the air quality forecasts and the development of smart phone applications will provide a long-term legacy and improve the public's access to air quality information.

Water: water meetings brought key partners into the same room, and sharing the lead with the Drinking Water Inspectorate (DWI) gave the group the credibility and association required to perform its function. The combined knowledge and expertise in the group allowed us to plan for and respond to issues on the Olympic Park and in other venues.

London: all the work put in to preparing for the Games paid off – our joint responses with Environmental Health Officers (EHOs) across London meant the HPA was able to offer a seamless public health response.

Testing and exercising

The full report can be found at:
www.hpa.org.uk/Publications/EmergencyPreparationAndResponse/0113London2012report

One of the key elements in the planning process, which was crucial to providing assurance that the agency was fit to manage the pressures of Games time, was the testing and exercising programme. This covered a range of situations from steady state to major events, and was designed to address identified risks internally and across organisations/stakeholders. This programme included internal exercises and those planned across government by the Cabinet Office (CO)/GOE.

Through this process the agency was able to ensure that public health data and information flows would be timely and accurate during Games time, and that the agency would deliver appropriate public health responses, advice and information in the event of a public health incident. The programme of testing and exercising enabled the agency and its stakeholders to learn and improve their reporting and response arrangements – a critical element of the HPA's Games

time readiness, and crucial to cross-organisational working. As a result of the exercises the agency was in a position to deliver its Games time commitments successfully, and data, responses, information and advice were provided as agreed.

INTERNAL FEEDBACK ON TESTING AND EXERCISING:

What went well:

- Sufficient lead-in time enabled significant testing and exercising and training of staff across the agency
- Lessons were identified and learnt and operational documents reviewed and revised accordingly
- Staff became comfortable with their roles and responsibilities and the ConOps 'almost became routine' (HPA staff member)
- Arrangements with partner organisations were understood.

Suggestions for improvement:

- Earlier consideration of the HPU role and their involvement in the pre-Games Exercises.



London 2012



Games time operations

The HPA Olympic and Paralympic 2012 Concept of Operations (ConOps) used during Games time was initially developed in November 2010, was tested in various exercises, and was then revised following the recommendations and actions generated by these exercises. The final version was approved in June 2012 following a last round of test exercises in April 2012, and was used to inform operational plans across all areas of the agency.

During Games time, the HPA Olympics Coordinating Centre (OCC) produced the daily public health Situation Report (SitRep); the primary audience consisted of LOCOG and the Department of Health. Information provided in this report came from across the agency, Devolved Administrations, LOCOG, and organisations such as the Food Standards Agency (FSA). There was an agreed process of assessment for inclusion in the reports submitted to the OCC and then a further review to identify what would be included in the SitRep. This report was attached to the overarching DH summary of all health activities that went to CO/GOE during Games time, and its key points were included in a daily ministerial briefing for the DH. The SitRep was further distributed as follows:

Full version:

- LOCOG
- DH, NHS Operations, Scotland, Wales, Northern Ireland
- HPA Olympics Operations Centres/Cells, Executive Group and Chairman.

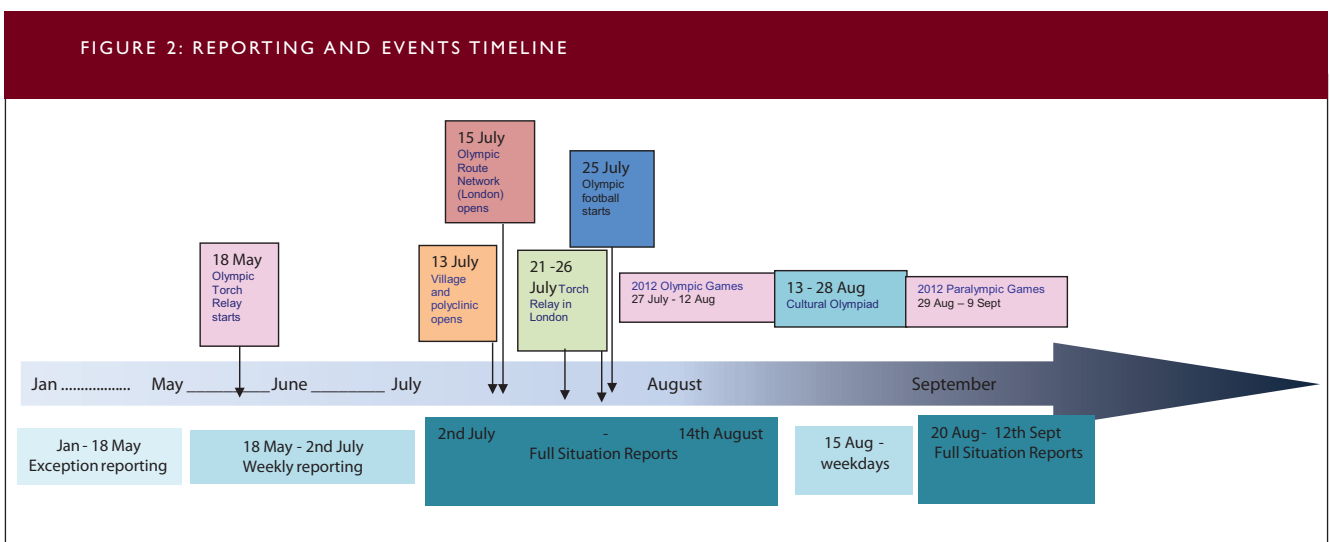
Redacted version (without LOCOG-owned Polyclinic data):

- FSA, Department for the Environment, Food and Rural Affairs (DEFRA), the Government Office for Science (GO-Science)
- WHO, ECDC, US CDC, and the National Travel Health Network and Centre (NaTHNaC)
- HPA Intranet (via the HPA communications team).

Figure 2 below outlines the timeline for reporting requirements:

- 1 January – 22 May 2012: from January 2012 there was a requirement for exception reporting so any significant issues that might affect the delivery of the Games would be reported. In addition the HPA was looking at information received from athletes’ training camps. The HPA had a nil return during this time
- 23 May – 1 July 2012: weekly reporting to identify health protection issues with potential to impact the Torch relay around the UK or athletes’ training camps; for example, the reporting and risk assessment of the legionella incident in Edinburgh by Scotland just prior to the Torch relay reaching the City
- 2 July – 12 September 2012: daily reporting
- 13 September – end of Games time: information continued to be submitted into the Olympic Coordination Centre (OCC) and exception reporting was set up. There was a nil return from the HPA during this time.

FIGURE 2: REPORTING AND EVENTS TIMELINE





FEEDBACK ON OPERATIONS AND SITUATION REPORTS:

What went well:

- ConOps arrangements: effective daily rhythm; teleconferences as a forum for reporting (not discussion); smooth reporting and production of SitReps
- Quick decision making
- Confidence that staff knew what was going on
- Internal cross-organisational and departmental working
- 'Excellent to have the key information at the beginning – we then could decide whether we needed to read the detail (this was important given the volume of various sit reps we received)' (DEFRA).

Suggestions for improvement:

- Logistics and access to athletes' village and Polyclinic should have been arranged and set up earlier
- Corporate Information Response Administration System (CIRAS) should have been set up and tested, and staff trained, earlier
- Clarity on SitRep content: the criteria/rationale for the risk assessment of 'no impact on the Games' were not self-explanatory to a non-public health specialist (DH)
- With regard to the daily teleconferences, some felt that SitRep and exception reporting would have sufficed, and that there could have been less process and more discussion of potential issues
- 'Had good understanding of what was going on within my immediate area, but not necessarily a sense of the overall' (HPA staff member).



What did happen? National perspective from the HPA Olympics Coordination Centre

Summary

Across the 73 days of the HPA's daily Games time reporting (2 July – 12 September) the HPA included 59 new events (not including the routine environment information from the Centre for Radiation, Chemical and Environmental Hazards (CRCE)) in its daily public health SitRep, and 94 updates on these events. Of these, none were highlighted on the front-page summary or escalated up beyond DH within government. In the run up to and during the Games, the most commonly used phrase in the HPA's SitRep was 'nothing of significance to report'. Those events included in the report had risk assessments undertaken to evaluate their potential impact on the Games, and this information was included in the SitRep, largely to provide assurance that the assessed risks were low.

The events reported were those that met the criteria set for inclusion, 'any event in the UK or internationally related to either an infectious or non-infectious agent affecting an individual or a group of individuals, which could have put the health of those participating, visiting or working at the Olympics at significant risk; or which was likely to be/had been the subject of media scrutiny which would harm the perception of the Games; or which may have resulted in widespread public concern, which needed to be addressed'.

In total the OCC received reports on 158 events that were evaluated by the OCC director and relevant experts to determine relevance to the Games. The reporting of additional events enabled the HPA to have confidence that it was aware of anything that might be pertinent to the Games.

Of the reports included in the SitRep, the initial reports and updates came from:

| | | |
|--------------------------------|----|-----------------------------------|
| Event-based Surveillance (EBS) | 24 | plus 41 updates |
| Media/Communications | 14 | plus 37 updates |
| International | 4 | plus 4 updates |
| CRCE | 1 | plus 0 updates |
| Devolved Administrations | 3 | plus 2 updates |
| Colindale Ops Centre | 2 | plus 1 update |
| Microbiology Services Division | 0 | updated on events reported by EBS |
| Syndromic Surveillance | 2 | plus 5 updates |
| Exception reports | 7 | plus 5 updates. |

The majority of incidents were those routinely seen during summer time and as expected related mainly to gastroenteritis (possible food poisoning) and vaccine preventable diseases. These posed no risk to the Games and were all managed through standard public health measures. However, there were some events reported that were associated with athletes, and the HPA managed these appropriately through the provision of expert advice and close working with LOCOG.

Nothing unusual was reported, but the speed with which the HPA was informed, the response undertaken and information shared across partners was far quicker than normal and reflected the thirst for information during Games time. Rumour management took up considerable time; this was predicted and managed well due to the assurance provided by daily reporting.

A Games-specific risk assessment process was put in place for those reporting incidents, focused on the context of Games-relevant risk. Unfortunately this was not established prior to the start of Games time reporting and, therefore, users were not familiar with it and it was not tested during the exercise programme. It was, however, found to be fit for purpose.

In the lead up to the Games (2–27 June) a number of reports were received of routine infections, such as norovirus in several athletic teams, which took place before they arrived at the athletes' village; and of chickenpox among crew on a floating hotel for Games-related staff. These were all managed by following routine public health measures, such as isolating

those who were ill and advising people of signs and symptoms. The main risk was that of the athletes with norovirus transferring into the athletes' village – a close community – while infectious, and, therefore, action was taken by LOCOG, on HPA's advice, to delay and manage their move.

During this time the media were actively looking for stories. This became one of the key driving forces, encouraged both by the speed at which people now become aware of issues through social media, and by the way media linked events to the Games in the quest for a good story. A prime example of this was the story on 'killer caterpillars' (referring to the caterpillar stage of the Oak Processionary Moth), which were linked to the main Olympic Park despite not being found there, or anywhere in East London. The stories implied that

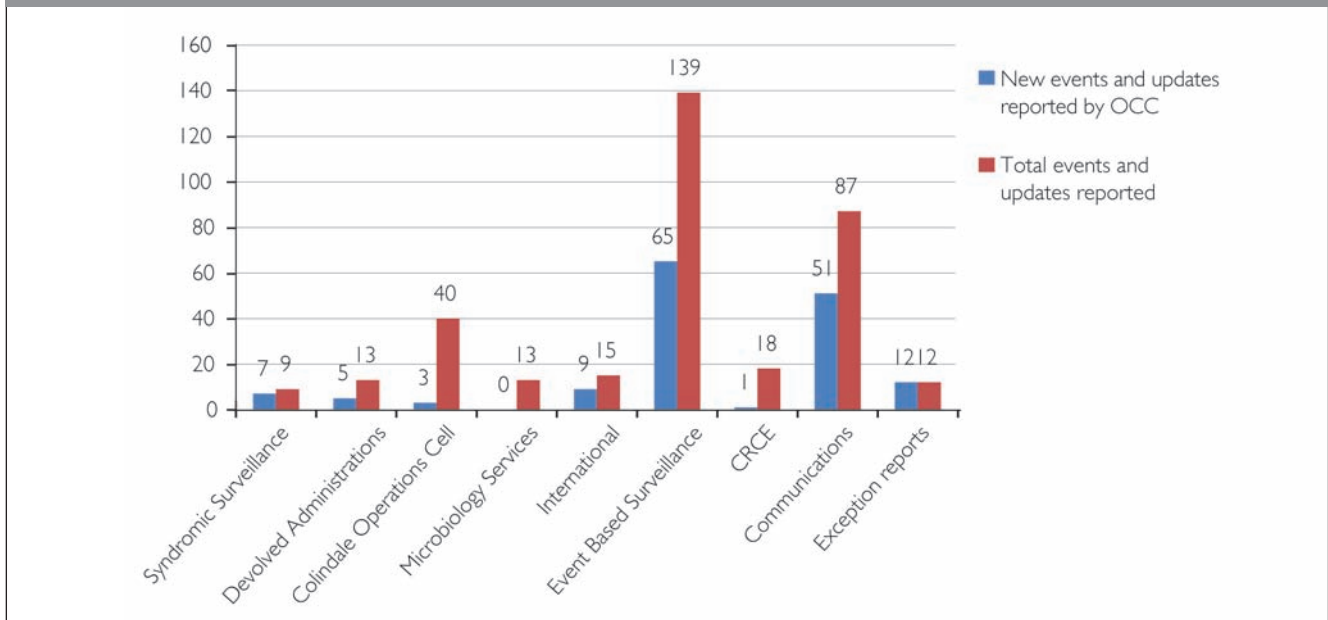
these moths are linked to asthma, and even deaths, while the evidence shows no such risk.

During the Games, reported incidents included:

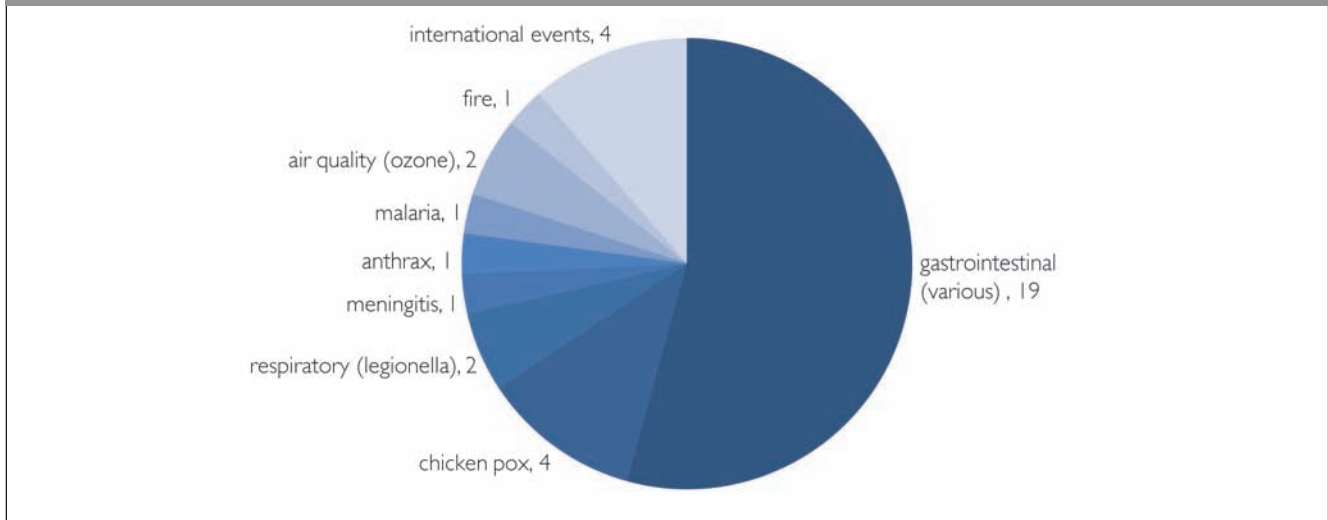
• **Gastroenteritis reports:**

- Involving visitors, security staff and team members: none of these were more than isolated cases of presumptive food poisoning with different causative agents. The number of cases seen was representative of what would normally be seen in the UK during the summer
- Associated with venues: the HPA worked closely with the FSA and LOCOG's Catering, Cleaning and Waste team to investigate any potential food-related cases. None of the investigations identified a food source at

GRAPH 1: NUMBER OF EVENTS REPORTED IN THE DAILY HPA SITUATION REPORT, BY SOURCE



GRAPH 2: TYPES OF EVENTS REPORTED IN THE DAILY HPA SITUATION REPORT



a Games venue. Significant work was undertaken prior to the Games to enhance surveillance, reporting and food safety systems.

• **International reports:**

- An unknown acute respiratory syndrome that was also associated with neurological symptoms in young children in Cambodia. Work was undertaken to model the potential risk of this being transmitted to the UK; this could have been a considerable risk as people fly to the UK indirectly, so it would be difficult to identify passenger movements. However, this infection was identified as an Enterovirus, very unlikely to spread outside the country, and with no relevance to the Games. Nevertheless this did generate some media interest and concern that it might affect the Games
- An ebola outbreak in Uganda generated some media and public interest, with questions raised on whether this might affect the Games. The cases were isolated to Uganda with no evidence of any spread internationally, so this was not considered a risk to the Games.

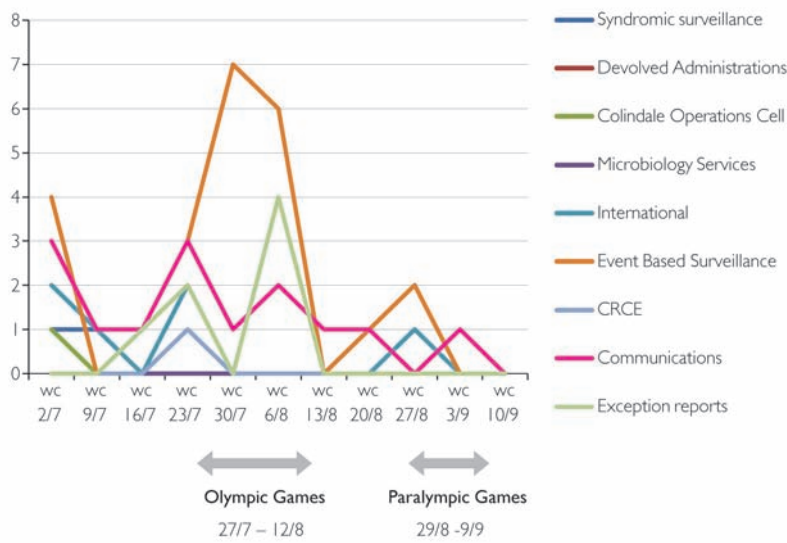
- Reports from the UK Devolved Administrations included two incidents of gastroenteritis, one of which was in a team training in Northern Ireland. There was also a case of anthrax (related to drug use) in Scotland that had no risk to the Games but which again generated media interest and assurance was provided
- The Food Standards Agency worked very closely with the OCC and provided a number of reports of issues related to food products so the HPA could be aware of these when investigating gastroenteritis cases to identify any links. There were also a number of clinical cases self-reported to the FSA, which the HPA then investigated with Environmental Health Officers (EHOs). There was no significant food-related incident during the Games
- Information on air quality and the accompanying public health impact assessment was provided to LOCOG when ozone levels heightened across London and the South East. Air quality can impact on an athlete's performance, especially during endurance events

- There was also ongoing interest in legionella following an outbreak in Edinburgh in June and an outbreak in Stoke-on-Trent in July. Neither of these represented any significant threat to the Games and no cases occurred in anyone connected to the Games
- Assurance from the national surveillance centre that the ongoing measles and pertussis outbreaks were not posing a risk to the Games.

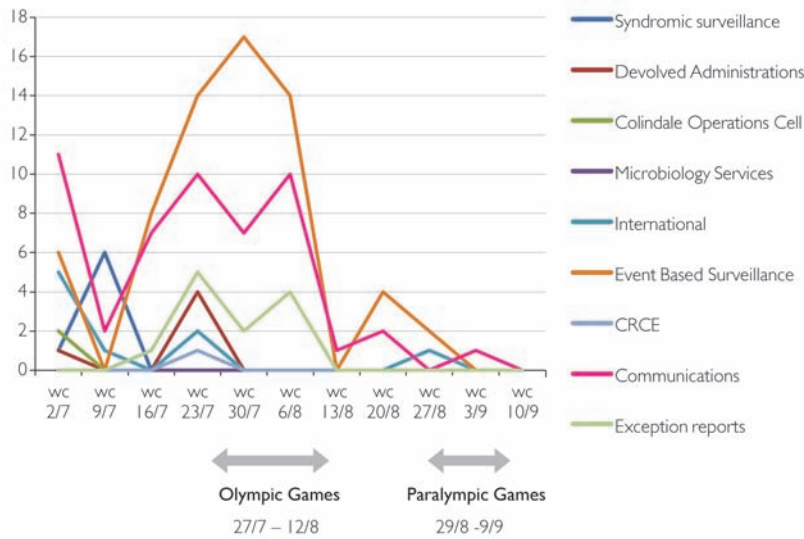
Some very low-risk issues raised questions and rumours. For example, the provision of health information to those living on a floating hotel in which legionella bacteria were detected in the water system led to some confusion when a small number of people presented to health services feeling unwell. This information led to an assumption that they had legionnaires' disease despite the symptoms; microbiological testing confirmed that none did. This followed heightened interest after two outbreaks of legionnaires' disease in the UK – in Edinburgh and Stoke-on-Trent – and highlighted that the mention of legionella can be alarming even when there is no real risk.

Sporadic cases of gastrointestinal illness occurred and were to be expected. It is not always possible to identify a cause or source of infection, and not all gastrointestinal illness is food-related, even if people often attribute illness to a recent meal. The numbers and pattern of illness seen during the Games were not unusual, and were comparable with events across other similar mass gatherings. There were no indications of a common food source linked to failures in food safety management controls; however, despite considerable planning, there was still some slight confusion around the investigation of food-related incidents and who was responsible inside venues. Some of this may have been caused by the involvement of various organisations nationally, and of new organisations such as LOCOG, in lieu of the standard investigation and response being undertaken by local authorities and HPUs. This level of involvement was driven by the political sensitivity of the Games and potential reputational issues.

GRAPH 3: NUMBER OF NEW REPORTS SUBMITTED TO THE OCC WHICH WERE INCLUDED IN THE DAILY HPA SITUATION REPORT OVER GAMES TIME



GRAPH 4: TOTAL NUMBER OF REPORTS SUBMITTED TO THE OCC (INCLUDED AND NOT INCLUDED IN THE DAILY HPA SITUATION REPORT)



HPS Colindale provided a summary of the national situation at the start of Games time to ensure all involved were aware of those infectious diseases, which were present above normal baseline numbers in the UK:

| Outbreak | Location | Included in HPA SitRep |
|-------------------------------|---|--|
| <i>Salmonella</i> typhimurium | National | Yes 02/07/12 |
| Measles | North West | No |
| Pertussis | National, various cases reported during Games time but no impact on Games Risk Assessment very low | Yes (06/07/12) and after press statement (27/07) Response to inaccurate media article linking increase to Games (06/09) |

Significant events reported due to potential political and/or media interest:

| Outbreak | Location | Inc in HPA SitRep |
|-------------------|----------------|--|
| <i>Legionella</i> | Stoke-on-Trent | 23/07 Updates: 4 x media, 2 x EBS, 5 x Colindale |
| Cutaneous anthrax | Scotland (x2) | 24/07 confirmed case 28/07 case not confirmed |
| Seals with flu | USA | Reactive media line prepared |
| Ebola | Uganda | Reactive media line prepared |

Summary of events reported in the HPA daily Situation Report (Games related)

| Outbreak | Location | Included in HPA SitRep (not all updates were included) |
|---|---|---|
| Norovirus | Derby | 19/07 EBS Updates: 6x EBS, 3 x Media Exception report LOCOG / DH |
| Chicken pox | London (cruise ship floatel) | 19/07 EBS Updates: 3 x EBS, 3 x Media |
| <i>Legionella</i> in water supply | London (cruise ship floatel) | 25/07 EBS Updates: 7 x Media, 3 x MSD, 6 x EBS Exception report 26/07 Plus 30/07 non associated illness in resident |
| D&V / food poisoning (alleged) | Olympic Park – self-reporting from visitor to FSA (not diagnosed) | 27/07 EBS Updates: 3 x EBS |
| | Eton Dorney | 05/08 EBS Updates: 2 x EBS, 1 x Media |
| | Olympic park – media centre | 09/08 EBS Updates: 3 x EBS, 2 x media |
| | Olympic Park volunteers | 10/08 EBS Updates: 2 x EBS, 1 x media |
| <i>Escherichia coli</i> O157 | Cumbria – visitor to Eton Dorney | 10/08 EBS Updates: 3x EBS, 1 x MSD, 1 x media |
| GI (various causes in different groups) | Weymouth | 01/08 EBS Updates: 5 x EBS 3 x Media 5 x MSD 2 x exception to LOCOG / DH |
| Chicken pox - test results negative | Eton Dorney | 01/08 EBS Updates: 1 x media, 2 x EBS |
| | Athletes | 23/8 EBS Updates: 6 x EBS 1 x media, 1 x Colindale |
| Air pollution – high ozone levels | London | 25/07 CRCE, media |

Review of Games time working

The HPA successfully delivered its Games time commitments. However, there were no major public health incidents and so the Games time working arrangements were not stress-tested. As expected, the high profile of the Olympics resulted in a huge thirst for information, which meant in turn that a large proportion of time was spent managing queries from stakeholders and media along with the anticipated enhanced and rapid response of routine incidents – especially those linked to athletes. There were some interesting and, at times, challenging issues that arose, which were unexpected or which caused more concern than they should have done, and at times the response to incidents was disproportionate to the public health benefit.

Some issues that came to light during the Games are highlighted below.

Do not underestimate the power of assurance

One of the reasons stakeholders were impressed by the HPA's Games time delivery was the level of assurance with which they were provided. The daily reporting often included statements that there was nothing to report or that a reported incident was of low risk to the Games. Extensive work with stakeholders beforehand and the provision of baseline data raised the level of confidence in these statements. For example, the fire which occurred nearby at the time of the closing ceremony was the largest fire in London for several years but aroused less interest than would normally be the case, and the HPA's assurance that there was no public health risk was accepted.

Due to the robustness of the reporting systems, the HPA was also able to provide quick, accurate and robust assurance when questions were received from stakeholders such as DH, LOCOG and the media. This prevented the escalation of rumours.

Expect the unexpected

There were a number of incidents that arose that could not have been predicted, or which the HPA would not normally be informed about:

- The request to provide an assessment of the health risk from animals in the opening ceremony and the potential for

zoonoses. A review of the risk assessment from the organisers was sufficient to reassure that there were no significant public health risks

- Rumours, such as an article in a tabloid paper linking an increase in measles, starting in January 2012, to the Games
- One of the unexpected problems was that there were times when there were very few public health issues and so there was the potential to overreact to what should have been routine. Also the involvement of organisations at a national level can cause multiple requests for information and confusion on the ground
- Some cases will be identified through social media such as Twitter but not through the formal LOCOG reporting processes (e.g. some athletes used Twitter to discuss their experience of illnesses such as diarrhoea and vomiting).

Political and media scrutiny (politics can drive decision making faster than science drives answers)

Experience has shown that in the run up to the Games there can be considerable interest from political organisations seeking assurance and from the media searching for stories. In July 2012 there were a couple of major non-health-related Games issues, which significantly reduced interest in health issues. However, the agency also ensured it was in a strong position to address any concerns that could arise through:

- Engagement in the extensive Government assurance process and successful participation in exercises
- Developing a media strategy and running a proactive media briefing prior to the Games
- Implementing processes with key partners to avoid parallel and mixed messages. Minor issues around this were rapidly worked through during the Games.

A positive approach was taken in the development of a media-handling plan to engage thoroughly with media during the Games. Key messages were developed for incidents included in the SitRep to provide to media if required. However, most were not required as there was no interest from media. For example:

- Reactive media lines were developed for a case of viral meningitis at a Surrey school that had minor connections to the Olympics
- Australian flu season: media lines were drafted on the early flu season in Australia, which did not pose any additional risk to public health during the Games
- A meningitis charity issued letters/press releases to a range of media outlets to raise awareness of the symptoms of meningitis during the Games period. The HPA's own risk assessment was that there was no additional risk to the Olympics as a result of meningitis and the HPA had a position statement on this to provide to media
- Queries were received from media who were searching for stories, or linking routine information with the Olympics to embellish a story, for instance, there was a query on Lyme disease associated with attending live sites at central London parks. No increased risk from Lyme disease was associated with the Games and no cases were reported.

Close working relationships with stakeholders and partners

Excellent working relationships with stakeholders meant that some potential issues were addressed rapidly and easily, e.g. concerns about food products were reported to the HPA by the FSA and, although no clinical cases were associated with these, it was very useful to be aware of them. The information reported by the HPA and FSA was also agreed between the organisations before being included in the SitRep; this helped avoid the potential problems of different information reported from parallel systems.

The close working with international partners generally went well, in particular with ECDC. However, there were some sensitivities around sharing information across all partners, which was resolved during the first couple of weeks of collaborative working. It would have been useful to have Terms of Reference (TOR) for all parties set up earlier and an agreed process to meet the (at times challenging) requests for information. However, having international colleagues embedded in the operations rooms (WHO in the OCC and ECDC at Colindale) was incredibly useful and enabled any issues to be resolved easily. There were still some issues that arose between all organisations and internally (in particular around the arrangements for producing the WHO/HPA/ECDC bulletin). These were resolved but considerable time was required to do this. Production of the report was, however, considered beneficial by all parties.

Working with the Games time organisers

Working with a commercial organisation set up specifically to deliver the Games (LOCOG) raised a number of issues. Considerable time was spent agreeing how public health incidents would be managed, including media handling and

proactively engaging with the media to provide factual and accurate information on health protection incidents. However, there was some discord during one incident when, while agreeing a media strategy with LOCOG, it was discovered that the incident had already been independently reported by the media.

LOCOG's timescales were often very short, and on occasions this impacted on the HPA's planning: delays in the Polyclinic becoming operational meant HPA staff had no time to test systems and get people familiar with their working environment. The HPA staff working at the Polyclinic had to engage actively with staff there, and did an excellent job of this.

There were also considerable issues with the accreditation system during the Olympics. HPA staff had to be escorted as visitors, which limited their flexibility and caused some disquiet around being considered not fully part of the Polyclinic team. This was resolved for the Paralympics.

Staffing issues

There were challenges in being able to scale staff and activity up and down as the Games progressed. For example, despite agreeing in advance that, after the Olympics, work was likely to be scaled down for the Paralympics, staff still had an expectation that their Games commitment would continue fully through September. The key requirement was to ensure that even if the resource was scaled back, it could be reactivated immediately if needed. This made it difficult for staff to plan their time.

There were periods during Games time when it was very quiet, and so it was important to keep staff engaged and motivated.

The 'soft start' to Games working before Games time meant there was an opportunity for training and learning; but it was difficult for staff to move completely from their day job (which they were still expected to do) to the core Olympics team.

There were also a lot of internal requests for information, which required responses outside Games time hours. The OCC was dealing with information it would not normally receive, as people occasionally developed a tendency to resort to asking 'Can OCC sort this out?' as a default response to problems.

It also proved hard for senior staff in particular to take 'time off' effectively, as key staff were often contacted as individuals when not in the OCC, This was because they were known to be the Olympic leads by stakeholders and were perceived as the 'few who knew everything'. There was an expectation that they would always be available.

Key highlights from HPA operational cell reports

All the full reports for these summaries can be found at: www.hpa.org.uk/Publications/EmergencyPreparationAndResponse/0113London2012report

Event-based Surveillance

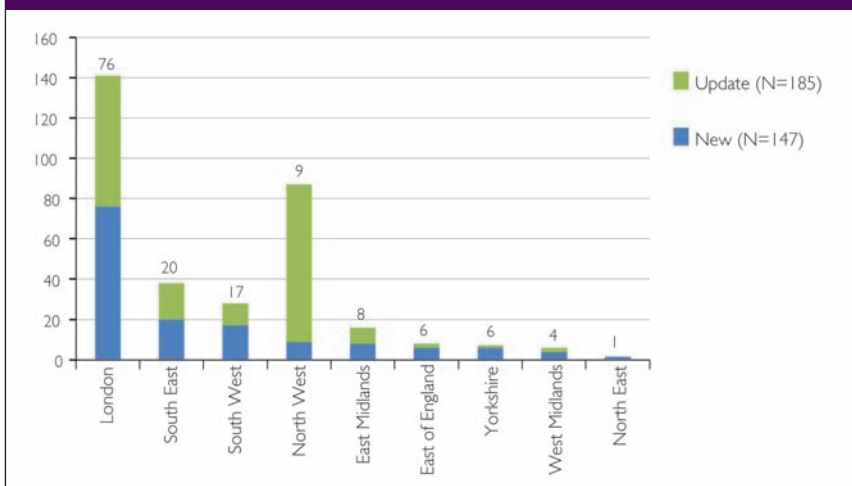
Event-based Surveillance (EBS) was specifically enhanced for the Games and a dedicated team set up to collate and review information from across the HPA regions during Games time in order to meet the criteria for being relevant to the Games:

‘...any event in England related to an infectious agent affecting an individual or a group of individuals which could have put the health of those participating, visiting or working at the Olympics at significant risk; or which was likely to be/has been the subject of media scrutiny which would harm

the perception of the Games; or may have resulted in widespread public concern which needs to be addressed’. These events were reported to EBS through a Regional Operation Cell (ROC) report or identified in the HPZone Dashboard (DB) by the EBS team.

The majority of the information provided in the national SitRep was provided through this pathway. During Games time there were 332 infectious disease events reported into EBS (see Graph 5) – 147 (44.3%) of these were new and 185 (55.7%) were updates. Of these updates, 64 were measles in the North West region, and not Games-related (see below). These reports were assessed against the criteria above by the EBS team to decide which would be escalated to the OCC; of the 147 reports submitted to EBS, only 21 confirmed infections were evaluated as being of relevance to the Games and so escalated to the OCC with an additional three probable but unconfirmed cases. Reports covered all regions, but the majority of events (76 events) were in London. Most reports were received during and immediately after the Olympics.

GRAPH 5: EBS EVENTS BY HPA REGION BY NEW OR UPDATE REPORTS



// KEY LESSONS:

- EBS was an effective way of meeting the needs of the OCC for timely information on significant events
- Produce early protocols, providing examples of what needs to be reported and importantly, what does not
- Test protocols; this is helpful in identifying issues and familiarising stakeholders
- Do not underestimate the amount of training needed to implement a change in surveillance systems
- Do not rely on stakeholders reading protocols or individuals relaying information to colleagues; training needs to be direct to those undertaking the surveillance
- Establish a system for deciding which events merit full risk assessments.

Regions

All the regions submitted reports through the EBS system and provided additional information and risk assessments as required by the OCC. The majority of reporting of relevance to the Games was from those regions with major Games venues: London, South West, and South East.

London

In the London region a total of 21 cases and incidents were detected and managed by the London team that were connected to the Games (e.g. in athletes, visitors, team officials, media, volunteers and workers associated with the Games). The majority of these were gastroenteritis and were followed up through clinical and food outlet investigations; these were done more frequently and rapidly during the Games, and assurance was given that the cases were sporadic.

Cases included:

- Chicken pox cases on a cruise ship (see case study below)
- Drinking water quality and gastrointestinal disease associated with drinking water fountains in the Olympic Park: low levels of coliforms were found in six water fountains, but there was no breach of water quality standards and no grounds to suspect this water caused any gastrointestinal illness. The water quality and cases of gastroenteritis were monitored
- Athletes reporting infectious illnesses: London received information directly from the main Polyclinic on athletes reporting infectious illnesses, and provided expert advice and information to the Polyclinic (e.g. chicken pox in the Paralympic athletes' village). The majority of cases, as would be expected, were gastrointestinal disease. There were no outbreaks or incidents that were a risk to the Games reported to the Polyclinic.

// KEY LESSONS:

- Personal mobile phone numbers of key members of staff were sometimes used rather than the published official telephone numbers of relevant offices. This had the potential to create problems as staff managing an incident may not have had access to relevant local information or intelligence.

// Case study 1: chicken pox cases in London

Background

During the Games, LOCOG employed approximately 900 bus drivers to transport athletes and support staff between their accommodation and various training venues and sports arenas. The bus drivers were recruited from across the UK and accommodated on a cruise ship on the River Thames.

In the UK, 90% of people reaching adulthood are immune to chicken pox as a result of previous childhood infection. In tropical countries more infection is seen in the adult population.

Notification of chicken pox case

Port Health Officers from London Port Health Authority visited the cruise ship on 18 July 2012 to carry out a routine inspection as the vessel was being used as a floating hotel. During the course of the inspection, the Port Health Officers were informed that there had been three recent cases of chicken pox among crew members on the vessel. Port Health reported the information to the North East and North Central London Health Protection Unit.

Investigation and timeline of cases

Index case: the first case was in a crew member who had returned to the vessel following a visit home to South East Asia and who developed a rash. This crew member was isolated then later resumed duties. The second case developed a rash in the time period consistent with an incubation period of 14–21 days following exposure to the index case. This person was also a crew member from South East Asia and was also isolated from onset of symptoms. The third case, in another member of the South East Asian crew, developed symptoms, again consistent with an exposure to the index case.

The cruise ship had sailed from Rotterdam to London and docked in the Thames on 12 July 2012. Bus drivers using the vessel as accommodation started arriving on 13 July, and may possibly have had contact with the third case while they were infectious before rash onset.

Risk assessment

The potential threat to athletes was considered carefully in the assessment of whether public health action was required. The following points were considered:

- The bus drivers were UK nationals and therefore 90% were likely to have immunity
- The third case was a crew member responsible for cleaning rooms when unoccupied, and was, therefore, unlikely to have had much direct contact with the drivers

- Any susceptible driver who did develop the illness would not be in direct contact with athletes, but driving behind a plexiglass screen
- Susceptible drivers who were possibly infected could have been expected to develop symptoms between 30 July and 6 August 2012 (i.e. during the Olympic Games)
- Susceptible athletes exposed to these drivers could then be expected to develop symptoms between 13 and 27 August (i.e. after the Olympic Games had finished)
- There had been transmission of chickenpox among adult crewmembers who were all from South East Asia, and, therefore, less likely to have immunity from childhood infection. Further cases might have been expected to occur among members of the crew from 1 August 2012.

Public health impact

The risk to general public health was minimal, so there was no recommendation to do anything in respect of cases of chicken pox among adult crew members.

Business continuity for the vessel

Given the incubation period it was possible that further cases among crew members would arise from around 30 July 2012. A recommendation was made to the shipping line company that use of varicella vaccine among the non-immune crew might reduce the number of future cases. This advice was given for occupational health reasons to improve business continuity for the shipping line, rather than for public health impact.

Outcome

No further cases of chickenpox were reported among crew members during the Olympic and Paralympic Games. There were no reports of chickenpox in any of the bus drivers residing on the vessel.

There were three cases of chickenpox reported from a single Paralympic team during the Paralympic Games. Investigation of these cases suggested that the index case had an exposure while at a training camp outside London, then transmitted the infection to the other two team members.

South West

Several events took place that were linked to the sailing venue in Weymouth, none of which caused significant issues. There were a number of cases reported of diarrhoea and vomiting (D&V) linked to athletes, but when these were investigated no links were found (see case study below). No athletes were prevented from training or racing by illness.

// KEY LESSONS:

- Rumour management took up more time than response to any of the issues dealt with over the period of the Games. Factoring this in to any plans and guidelines may help reduce the impact of this phenomenon
- There was an ‘Olympic Factor’ to the cases of D&V that were reported to HPA services; athletes did not stop preparing for major events if they were unwell.

// Case study 2: diarrhoea and vomiting relating to the Olympic sailing venue

Time

14 cases of diarrhoea and/or vomiting were reported between 27 July and 9 August 2012, with the highest number of cases reported on 5 July.

People

Nine of the presentations were reported among sailing team members from five countries: Great Britain; Trinidad and Tobago; USA; Norway; and Denmark. The five remaining presentations were military personnel on security duty at the Weymouth Olympic Village, but billeted at a site some distance from the sailing venue.

All cases reported that symptoms resolved within 48 hours, with symptoms resolving within one day for 10 cases. Twelve cases reported diarrhoea and/or vomiting, while two cases from the military reported symptoms of nausea and abdominal pain only.

| Symptoms | Number of cases |
|--------------------------------|-----------------|
| Diarrhoea and vomiting | 7 |
| Vomiting only | 3 |
| Diarrhoea only | 2 |
| Other (nausea, abdominal pain) | 2 |

Stool samples were obtained from six of the 12 cases. Of these, three were negative and three were positive, as below:

- (1) Salmonella Sp 1
- (2) Norovirus type 1
- (3) Norovirus type 2, Enterobacter, Citrobacter.

Place

All but one case became unwell during Games time. The case with an onset date of 27 July reported symptoms prior to arriving at the Olympic Village.

All sailing team cases stayed in the Weymouth Olympic Village, while the military personnel were based at Chickerell Camp, Weymouth.

The on-site catering in the Olympic Village was available to members of the sailing team, military and police personnel. Many sailing teams had their own catering facilities but were also able to eat off site, while military personnel would also have main meals provided by the canteen at Chickerell Camp.

The Olympic teams had access to shared spaces where there was mixing between the teams, but there was no information on whether cases used these spaces or had direct contact with cases from other teams.

South East

There were a number of reported incidents associated with the rowing venue at Eton Dorney. The most significant was that of chicken pox in an athlete where appropriate expert advice on infection control, exclusion and immunisation was provided by the HPU but this was not followed by the non clinical polyclinic manager at the small polyclinic. See case study below.

// KEY LESSONS:

- Working with the team at the Olympic Rowing Village could have been better; links with clinically trained staff was important
- Clinical samples were sent to private laboratories and were difficult to trace.

// Case study 3: Chickenpox infection in athlete at the Olympic Rowing Village

Background

On 1 August the agency was informed of an athlete with suspected chickenpox. The athlete arrived in the UK from Cuba via Ukraine and Paris. The rash onset was seven days after arriving at the Olympic Rowing Village (ORV). There were nine other athletes in the team. The doctor in the ORV had decided to treat the athlete with antivirals and a sample was taken to confirm the clinical diagnosis.

Disease

Chickenpox is usually a benign childhood illness caused by the Varicella virus. The incubation period is usually 14-16 days. In the UK, 90% of adults are immune to chickenpox. In tropical countries more infection is seen in the adult population.

Risk assessment

The disease was unlikely to be UK-acquired. Given the incubation, period it was possible that further cases might arise among the team. The team were warned and informed.

The HPU advised on isolation for the athlete in the ORV and transportation to Eton Dorney, where the athlete wanted to train in isolation. The HPU advised that a close watch should be kept on the athlete's fluid-filled blisters, as there was a small infection risk via contact with water in the lake. Information was received from the ORV doctor that the

canoeing partner had a history of previous chickenpox infection. If further cases arose in the team, there was a possibility that infection could happen after the Olympics finished, due to the incubation period.

By the time the athlete concerned was due to race the lesions were likely to be crusted over, leaving the athlete able to compete.

An HPU member of staff spoke via an interpreter to the Cuban team doctor who said that the team had received chickenpox vaccine 1-2 years ago. Therefore, the Cuban team was not going to give chickenpox vaccinations.

Health protection advice

Isolation was advised. Information on chicken pox was provided to the team, and vigilance was recommended regarding the athlete concerned. The canoeing partner had a history of previous chickenpox infection. Following discussion with HPA experts, a decision was taken to offer post-exposure chickenpox vaccine to nine team members if there was no previous clinical history of chickenpox. However, the HPU was subsequently informed by the Cuban team that the team had previously received chickenpox vaccine.

LOCOG Polyclinic

The main point of access to medical services for athletes and others was via the Polyclinic in the main Olympic/Paralympic Village. In addition, there were medical facilities in every sporting venue as well as in one of the hotels housing the Olympic/Paralympic family. Each time a medical service was used, the doctor, first aider, physiotherapist, dentist, or other provider recorded details of the consultation and treatment using a Medical Encounter Form (MEF).

These forms provided an electronic record of the signs and symptoms of the presenting illness or injury. LOCOG wished to gain some understanding of the incidence and pattern of infectious disease during Games time, and so, for the first time, an additional field was added to reporting forms to enable this. This field was obligatory for care providers to complete, and asked whether the encounter was:

- Fever
- Rash
- Diarrhoea or vomiting
- Respiratory symptoms
- Jaundice
- Meningitis/encephalitis
- None of the above.

As this was the first time this reporting was undertaken, there

was no background data available for the usual level of illness or syndromes expected in the population accessing the Polyclinic. If this had been available it would have made it easier to interpret the observed numbers with each syndrome, by comparison with expected numbers. In addition, many countries brought their own team doctors, who saw athletes and officials outside the Polyclinic; some cases would therefore not have been reported through this system.

The syndromic surveillance conducted via the Polyclinic did not detect any significant outbreak that could have been of significance for the Games. The data received enabled the HPA to feel assured that there was not an outbreak of illness that needed investigation or control measures instigated. The data were reported daily in the OCC SitRep.

// KEY LESSONS:

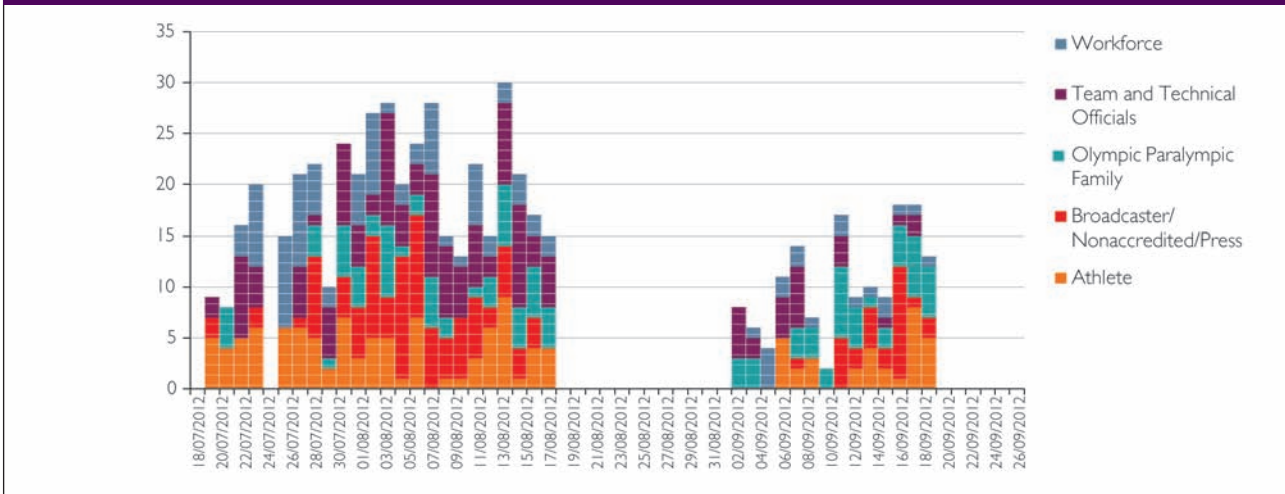
- Early engagement with the development of the Medical Reporting Forms and Syndromic surveillance system would help ensure information added value
- If baseline data had been available it would have made it easier to interpret the observed numbers with each syndrome by comparison with expected numbers.

Health Protection Services (HPS) Colindale

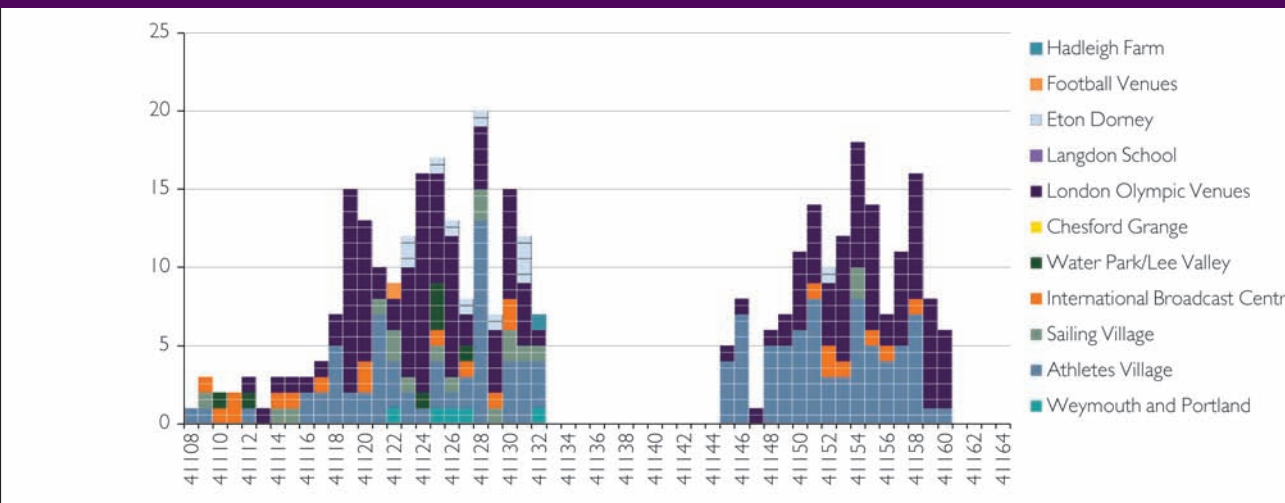
The Colindale Operations Cell coordinated the compilation of the daily surveillance reports and risk assessments from the national surveillance centre. This included reporting from routine surveillance systems for gastrointestinal, respiratory and vaccine-preventable infections and both the new and enhanced surveillance systems such as USII and the daily mortality monitoring system. The Cell also coordinated tasking and communications between the OCC and HPS Colindale and the Microbiology Services Division (MSD). Experts were available and provided specialist advice, information and risk assessments when required, such as for the evaluation of the risk of zoonoses from the animals involved in the opening ceremony.

Prior to the Games it was important to have an accurate picture of the current infectious disease profile in the UK and experts at Colindale provided this.

GRAPH 6: REPORTED RESPIRATORY SYMPTOMS BY CATEGORY OF PERSON, OLYMPIC/PARALYMPIC GAMES 2012



GRAPH 7: REPORTED DIARRHOEA AND VOMITING SYMPTOMS AT OLYMPIC/PARALYMPIC VENUES 2012



// KEY LESSONS:

- The Colindale Operations Cell, in particular, was underused – it was over-rostered and scaled back after the Olympics
- Production of a weekly bulletin for Colindale staff (usually a single page) during the period from July to September kept staff informed and was widely appreciated.

// Case study 4: pertussis and measles

As a major international hub and large multinational city, London often sees infectious diseases imported from around the globe. Most of these are diagnosed in small numbers, and usually do not give rise to major outbreaks. At the time of the Games, however, England was experiencing two large outbreaks of infectious disease. Both were vaccine-preventable, and both had the potential to cause problems for athletes and visitors. The first was high levels of measles cases that had been reported from around the UK (including London); measles was also causing outbreaks in some European countries. The second was pertussis, with whooping cough notifications in England at levels not seen for over 20 years. Recent resurgences had been reported in many developed countries; in common with many other such countries, the UK outbreak was affecting older children and young adults, who were exposing vulnerable neonates too young to be vaccinated. As an illustration of the potential significance of pertussis, the Australian swimming team cancelled their final pre-Olympic event in Australia after several team members became ill.

International Surveillance

Enhanced international infectious disease surveillance was set up to identify and assess overseas threats to human health (including potential threats) in the UK, and threats to London 2012 in particular. The model used for this relied on international collaboration, with ECDC having lead responsibility for identification of potential incidents through its expert epidemic intelligence function, and the HPA leading on joint risk assessment.

None of the international infectious disease incidents that were identified and considered by the international team during the monitoring period were assessed as potential threats to London 2012. Information was provided to the daily situation reports about six international infectious disease incidents that were not a threat to the Games, but which had attracted or might attract media, political, or public attention. These six incidents (with the initial source of the information) were:

1. Acute respiratory syndrome in Cambodia, later confirmed as hand, foot and mouth disease caused by Enterovirus-71 (International Health Regulations/IHR)
2. Acute watery diarrhoea in Cuba, later confirmed as cholera (Cuban Ministry of Health)
3. Swine origin H3N2v influenza A in the USA (IHR)
4. Ebola in Uganda (WHO and Ugandan Government)
5. Cholera in Nepal (media report)
6. Hantavirus pulmonary syndrome in Yosemite National Park, USA (US CDC).

Of these, incidents 1, 2, 4 and 6 (plus four updates to these incidents) were included in the respective final HPA daily SitReps.

// KEY LESSONS:

- It was labour-intensive to produce daily international situation reports; the vast majority of these were nil returns and an 'exception' reporting system may have been more appropriate
- The working arrangements, and appropriate division of labour between national and international partners such as ECDC were key to enabling this to be delivered
- The approach should be proportionate to the country's resources and an evaluation of the risks.

Syndromic Surveillance

Enhanced systems for syndromic surveillance were put in place for the Games, with the addition of the Emergency Department Syndromic Surveillance System (EDSSS) and GP Out of Hours Service (GPOOHS) data and daily reporting. Nearly 4,000 signals were analysed daily to see if there was any rise in activity against baseline data where available, and against recent activity where baseline data were not available. A robust risk assessment process was put in place to ensure that only significant statistical alarms were identified. This system provided assurance to key stakeholders: it was sensitive (for example, it picked up the impact of mild increases in temperature using heat indicators) and it did pick up some unusual activity, but it registered nothing that would affect the Games.

// KEY LESSONS:

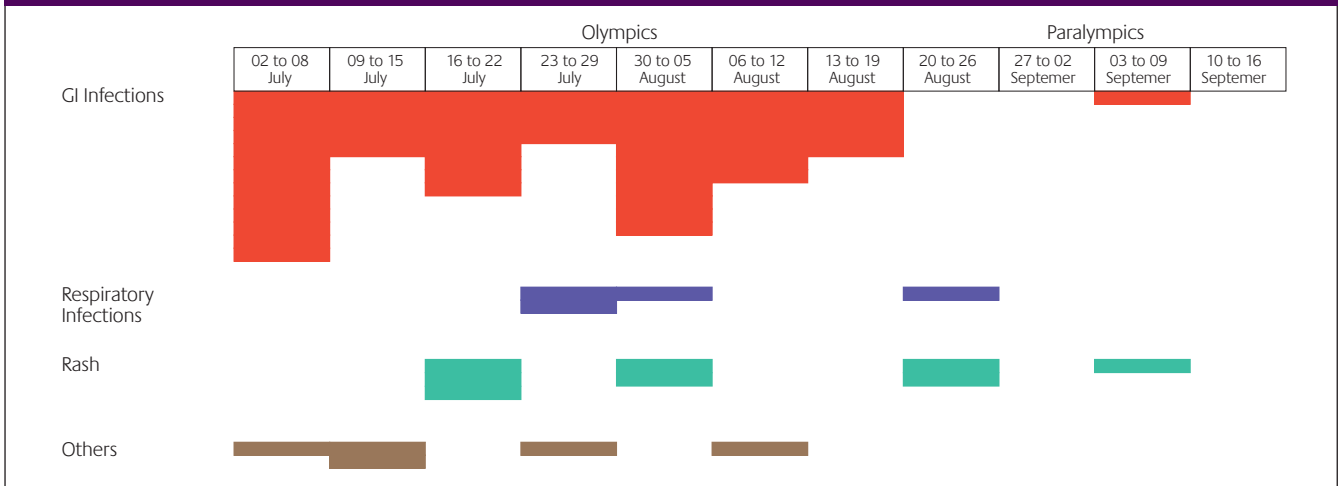
- Use existing systems where possible – ideally a year's data is needed to enable historical comparisons
- Focus on a syndromic 'service' linked to public health response – not a 'stand-alone' system
- Public health input is needed for interpretation
- Outputs should be simplified for the end users.

Microbiology Services Division (MSD)

The number of samples tested by the Microbiology Services Specialist and Network Laboratories reinforces the message that there were no major outbreaks during Games time. There were, however, a number of incidents that microbiologists and scientists were involved in investigating. Figure 3 illustrates the clinical and microbiological input into different infectious disease syndromes: the volume of work (on the Y axis) is weighted by the number of episodes/incidents that required either



FIGURE 3 SCHEMATIC REPRESENTATION OF CLINICAL AND MICROBIOLOGY INPUT INTO SPECIFIC CLINICAL SYNDROMES DURING GAMES TIME



clinical or microbiological input. Gastro-intestinal infections accounted for the majority of work, followed by rashes related to cases and contacts of chicken pox, and one case of Parvovirus B infection. The infections under ‘other’ included cases of viral meningitis, and one case each of mumps and malaria.

Food, Water and Environment (FW&E)

The majority of the FW&E Microbiology Laboratories work was done in London; between April and September 2012, approximately 10% of the workload was devoted to Games activities. Most of this was monitoring (particularly water) to assist Joint Local Authorities Regulatory Services (JLARS) in verifying outlets to allow them to be commissioned. Results from these laboratory tests informed public health interventions including relaying water pipe runs, assurance of cleaning for drinking water fountains and provision of evidence for public information on suitability of sources for human consumption.

Water, food and environmental monitoring was also carried out to assist Local Authorities (LAs) as part of inspections of marinas, hotels, training camps and ships used by competitors and Games staff. Samples from swimming pools, spa pools, water systems, food services, and mobile food vendors along the torch, cycling and running routes were also tested. Monitoring was also carried out to assess the quality of seawater at Weymouth, and to assess the water quality of water features on the Olympic Park.

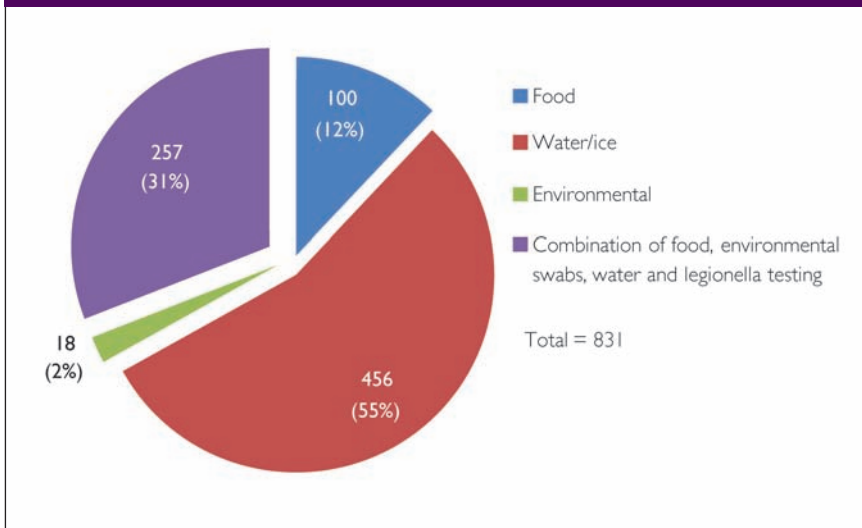
Support was provided to LAs dealing with hygiene problems associated with food manufacturers in the Games food chain (providers of sandwiches, meat pies and sliced meat products). Advice was also given to Outbreak Control Teams on:

- Norovirus outbreaks among athletes
- Sampling results to assess food hygiene in a hotel
- Detection of Legionella pneumophila in the water system of a ship providing accommodation to Olympic Park staff and volunteers.

// KEY LESSONS:

- Strengthen IT links within the network especially out of hours and with other parts of the Agency and the DAs
- Begin revalidation of new tests early to ensure standardisation and clinical and public health interpretation
- Discourage use of private labs as opted for by LOCOG and clarify who does the public health testing and on what specimens early on.

GRAPH 8: VOLUME OF TESTING UNDERTAKEN BY THE FW&E LABORATORIES EITHER RELATED TO CLINICAL INCIDENTS OR INDEPENDENTLY AS A MEASURE OF SAFETY AND QUALITY.



Centre for Radiation, Chemical and Environmental Hazards (CRCE)

CRCE produced an environmental hazards situation report on a daily basis for inclusion within the overall HPA SitRep. This required the collection and analysis of incident data for both chemical and radiological incidents, along with any necessary expert public health advice. Additionally, the environmental hazards situation report included a range of environmental quality indicators, including those for air quality, temperature, ultraviolet radiation and pollen levels, as well as information on risks from river and surface water flooding. Air quality was identified as a concern by the International Olympic Committee (IOC), campaign groups and the media, and so air quality impacts on health were included as part of the public health risk assessment.

During the Games, there were two episodes where air quality in the South East of England was poor, with ozone levels recorded as being moderate to high, due to the warm and sunny weather. The prepared information sources and agreed procedures enabled the HPA to inform the Olympic Chief Medical Officer (CMO) and LOCOG in a timely and consistent manner, as well as

to assist with additional questions generated by the episodes, such as enquiries regarding the potential for moderate-to-high ozone levels just before the opening ceremony.

Recognising that the expectations of stakeholders were likely to be heightened in relation to any chemical or radiological incidents during the Games reporting period, CRCE operated enhanced arrangements to ensure the rapid provision of advice at all levels (local, regional, national) on a 24/7 basis, in the event such incidents occurred. During the reporting period, CRCE responded to a total of 168 incidents across the UK. A critical aspect of the CRCE operations was to identify any incidents that could have implications for the Games. All incidents were triaged against a range of criteria to assess the necessity for reporting. The main criteria were any incidents that directly affected a Games venue; however, incidents that might affect transport infrastructure, require large evacuations, cause suspicion or undue alarm or generate significant media attention were also highlighted.

There were 15 incidents, representing 9% of the total number of incidents reported to CRCE, that were risk-assessed as having the potential to impact the Games. The majority of these incidents were not included within the final HPA SitRep as the events were generally short-lived, and no significant public health threats were identified. There were two serious fires during the Games, which had the potential to impact the Games directly, as well as to impact the health of the local community. Fortunately, the incidents did not escalate as first anticipated; but CRCE was required to deliver the HPA response.

// Case study 5: major fire

The Olympic Games Closing Ceremony was due to take place at 9pm on 12 August 2012, at the Olympic Stadium in Stratford. That afternoon at around 14.20hrs a very large fire broke out at a waste recycling plant in Dagenham, north east London, around 7km from the Olympic Park. Over 200 firefighters and 40 fire engines fought the blaze, London's biggest for several years. Initial reports from the scene suggested that the fire was generating a significant smoke plume that was being carried by a south easterly wind across central London. Due to the size and nature of the fire, it clearly had the potential to impact on public health: exposure to the smoke from the plume could potentially have led to acute health effects in the local population, and the location of the fire led to initial concerns about potential impacts on the closing ceremony of the Olympic Games.

CRCE worked with partners by obtaining modelling from the Met Office to confirm that the smoke plume would be carried to the north of the Olympic site; geographic information systems were used to characterise the locality of the fire and to identify local sensitive receptors that could be adversely affected by the smoke plume. The London air quality network website was reviewed for any measured air quality impacts from the smoke plume. The data available did not indicate that air quality across east London was being adversely affected by smoke from the plume.

The use of these multiple data sources ensured that a rapid public health risk assessment could be undertaken. This risk assessment indicated that the risk to the local population was unlikely to be significant as the smoke plume was buoyant and being carried away from London. No impacts on the Olympics closing ceremony were identified.

// KEY LESSONS:

- The requirement for exception reporting of incidents was not immediately clear to all staff and the requirement to provide briefings for incidents which were considered to be of relatively minor public health importance was unexpected
- The generation of the CRCE situation report was occasionally challenging, especially as it was necessary to provide a concise summary of the environmental conditions across geographically distributed areas.

Communications Division

HPA Communications provided 30 SitReps and 43 nil returns over Games time. Within these SitReps, 83 items were reported, the majority of which were reactive issues (47%). The top two topic areas reported in the communications SitReps were gastrointestinal infections (26%) and legionella (12%) (see graph 9).

The proactive media briefing held on 3 July before the Games began generated 20 media articles, which was 15% of the total media coverage related to HPA topics and the Games from January 2012 onwards.

Between 1 January 2012 and 12 September 2012, 135 media articles were identified, which referred to HPA topic areas in relation to the Games, see Graph 10. The majority (61) were published in July before the Games started. The top three topic areas covered by these articles were:

1. Syndromic surveillance (18%)
2. Coverage of the HPA's 'Games-ready' media briefing (15%)
3. Gastrointestinal illness in athletes (13%).

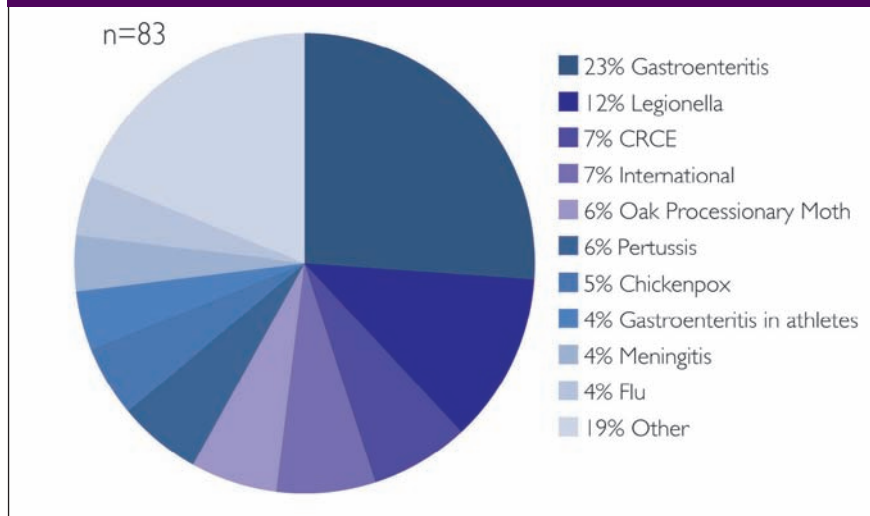
Between 13 January 2012 and 17 September 2012, 72 Olympics-related media enquiries were received by the HPA press office, see Graph 11. The majority of media enquiries were received in July (20), which was expected in the run up to the opening ceremony on 27 July, followed by April (14) and May (9). International media accounted for 35% of the media enquiries received, which correlates with the Olympics being a global sporting event.

From 1 January 2012 to 31 October 2012 there were 13,004 views of the HPA's Olympics section of the website (0.14% of the total views of the HPA website for the same period), the majority of which (4,289) were in July.

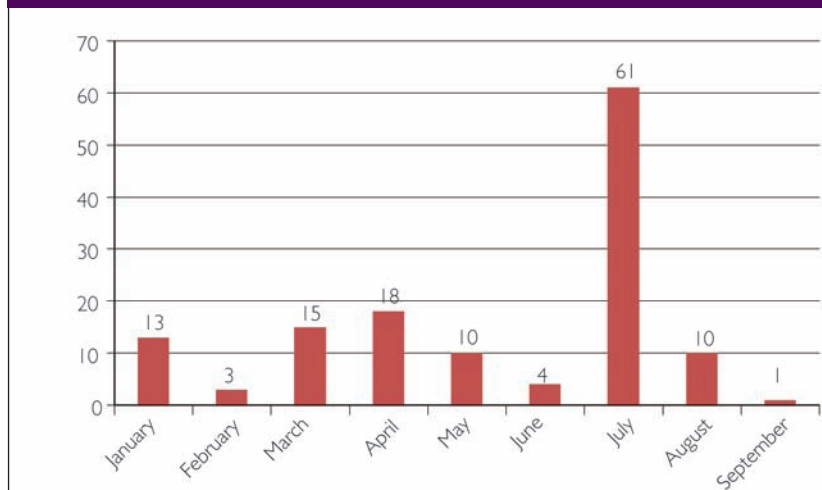
Internal communications to HPA staff included a redacted version of the HPA SitRep posted daily on the intranet plus news updates and staff profiles, which also featured on the intranet (33 articles were produced in total during Games time).



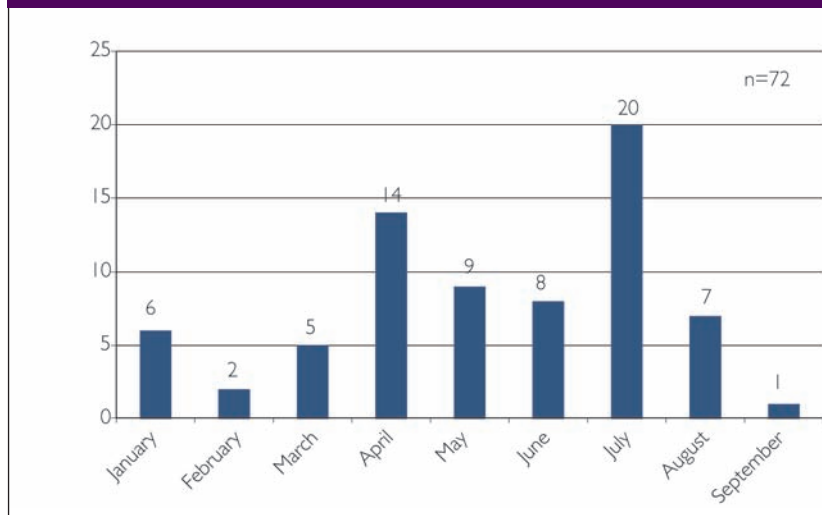
GRAPH 9: COMMUNICATIONS SITUATION REPORTS TO OCC BY TOPIC



GRAPH 10: MEDIA ARTICLES BY MONTH



GRAPH 11: MEDIA ENQUIRIES BY MONTH



// KEY LESSONS:

- An HPA-only communications exercise might have been useful to work through the protocol for producing and clearing regional lines with the OCC team
- Different approaches should be considered for keeping staff up to date as statistics on the intranet news items published during the Games indicated limited interest
- On occasion Government departments misunderstood information provided to them. Routes and methods of communication should be examined for future events and incidents.



Games time working evaluation

As part of the process of learning from the HPA's involvement in significant events, the agency undertook an evaluation process of Games time working with key stakeholders both internally and externally. This built on the lessons identified and actions taken forward following the testing and exercise programme. This information was used to improve the delivery of Games time work, but will also be of long-term benefit to the agency.

The evaluations undertaken were as follows:

- Internal debrief (between Olympic and Paralympic Games)
- Stakeholders surveys
 - Internal
 - External
- System evaluations:
 - Overall evaluation of surveillance systems (report due spring 2013)
 - EBS survey
 - Syndromic Surveillance survey
 - Communications – internal debrief
 - MSD – internal debrief
- Verbal and written feedback from stakeholders, including FSA, NHS London, the DH, LOCOG, DAs.

Internal debrief, 22 August 2012

The full report can be found at:
www.hpa.org.uk/Publications/EmergencyPreparationAndResponse/0113London2012report

An internal Olympic debrief session was held with those significantly involved in delivering HPA's Games time commitments, with the following objectives:

1. To review the HPA's Olympic plans, to acknowledge what worked well, and to distil any lessons to be learnt and implemented for the Paralympics
2. To gather data for inclusion in this report and the planned book on guidance for future mass gathering planners as part of the Games legacy project
3. To identify learning from the planning and processes put in

place for the 2012 Games, and to analyse where this could be applied to the HPA's business-as-usual emergency response processes.

There was an overall feeling that to date the delivery of the HPA's Games time commitments had been very successful, though not significantly tested.

During the day, three key areas were identified for improvement, and proposals were put forward on how these could be addressed:

- The first two, HR and surveillance, were identified as areas where HPA ways of working could be improved when planning for future mass gatherings
- The third area, working in the Polyclinic, was specific to reviewing working during the Paralympics and to supporting those countries involved in future Games (such as Rio 2016) that could learn from this experience.

Three key debrief recommendations:

1. For HPA/PHE's involvement in future mass gatherings

- Ensure realistic and flexible staff planning with improved HR engagement and support, including for succession planning
- Enhance clarity of rationale for daily surveillance reporting and risk assessments
- Increase communications with internal staff to ensure improved engagement.

2. For HPA/PHE to take forward in Emergency Response Planning (ERP)

- Consider running Games ConOps as a sleeping resource: the system of set up, daily rhythm, reporting, teleconference, technology and Single Point of Contact (SPOC) with 'one version of the truth' has been tested and endorsed and would be a useful tool
- There is a requirement for a task management/incident management system: at the start of Games time the Corporate Information Response Administration System (CIRAS) was still not used/tested across the agency or during a significant incident
- Be able to switch back on enhanced surveillance systems at will (Syndromic, USII and enhanced EBS), and run them daily.

3. For other organisations planning mass gatherings

- Ensure excellent stakeholder engagement – build relationships and trust
- Set up, evaluate and become familiar with new systems early
- Test, test, test – from steady state to major incident.

Stakeholders' survey

The full report can be found at:

<http://www.hpa.org.uk/Publications/EmergencyPreparationAndResponse/0113London2012report>

External stakeholders

Responses from external stakeholders indicated a very high level of satisfaction with the HPA's preparations and delivery of Games time commitments. The daily SitReps were considered very useful and were appreciated for providing a good overview, and for their timeliness. The HPA was also praised for close cooperation and sharing of information.

There were limited comments on potential for improvement, but elements identified included the need for a clearer definition of 'no impact on the Games' in the risk assessments, and the provision of more information on planning communication messages. Main recommendations for future mass gatherings included tailoring planning information to include low-resource countries, and providing good documentation on what was done during the Games.

- Provide comprehensive reporting and good documentation on what was prepared and how; and on what was done and how effective/cost effective it was. Include useful information for low-resource countries to help them plan: provision of direct support by HPA/PHE to future host countries will be appreciated. Let partners observe the process (WHO)
- Set up external bulletin processes (HPA/WHO/ECDC) earlier
- Ensure the criteria and rationale for the assessment of 'no impact on the Games' are self-explanatory to non-public health specialists (DH).

Three key recommendations for planning mass gatherings

- There is value in having a liaison officer/embedded person from international organisations (e.g. ECDC and WHO) on respective sites
- Plan well ahead, including embedding 'extra' measures for things like surveillance into routine systems, so that they become normalised and baselines can be established (WHO)
- Plan early for legacy and take an all/cross-government approach.

EXAMPLE COMMENTS:

- 'SitRep – excellent to have the key information at the beginning – we could then decide whether we needed to read the detail' [DH]
- 'Good collaboration at International level between ECDC/WHO/HPA' (ECDC)
- 'Close cooperation and sharing on information was critical to the [Games time] process and... this was carried out in an exceptionally professional manner' (FSA).

Internal stakeholders

There was a very good understanding from respondents of what the expectations were for the agency during Games time and a number of positive comments, which demonstrated that the agency had proved it could deliver national assurance around a major event. Daily teleconferences were seen as a good way of keeping people informed, and daily SitReps were regarded as a good summary and central source of information.

Some things could have been improved – for example, HR arrangements and the earlier delivery and training for the Corporate Information Response Administration System (CIRAS). There were recommendations to consider having systems that can be easily scaled up and down dependent on the response required; and to enhance existing arrangements rather than developing new ones.

EXAMPLE COMMENTS:

- 'The system for the event – not the emergency – was excellent. That we can do this every day suggests that in any future crisis we should be working to this standard'
- 'With good communication, people to focus on the project to get us prepared as their day job, and effective national leadership we can pull off hugely complex delivery'
- 'Planning: over the top for what is business as usual (but essential in case of incident)'

KEY RECOMMENDATIONS FOR HPA / PHE

- Improve HR arrangements: ensure adequacy for rosters, clarity, prompt circulation of information for staff, and establishment of all arrangements and SOPs before issuing to staff
- CIRAS should have been rolled out earlier and was not used to full effect during the Games
- Identify critical roles and skill-up more people to share these roles (or aspects of them), to ensure resilience and to make sure that the benefits of this expertise can be shared more widely in the organisation
- Ensure that multiagency and internal escalation arrangements are thoroughly rehearsed / exercised in advance of events
- Ensure earlier consideration of the HPU role and the involvement of HPUs in the pre-Games exercises
- Provide the OCC risk assessment framework to SitRep contributors prior to the reporting period, and ensure sufficient exercising to test this
- Trainees should be an invaluable resource for both planning and delivery.

KEY RECOMMENDATIONS FOR PLANNING MASS GATHERINGS

- Use existing arrangements and then enhance them rather than instituting new arrangements – including for communications
- Agree reporting/liason lines and processes with all relevant agencies well in advance of the event. Involve those with the specialist expertise in meetings where this is required
- Consider prioritisation of surveillance systems
- Consider demands of managing political expectations
- Ensure transparency of all preparations
- Inclusion of assurances in reporting that ongoing events are of low risk to the mass gathering will be appreciated, alongside timely and accurate reporting of exceedances etc.
- Keep the number of people involved to a minimum: it is easy to spend too much time communicating with lots of different people in order to collate information.

Systems / Operation Centres

A number of the operations centres and workstreams involved in the Games undertook their own evaluations. These included a debrief by the communications team and microbiology services and surveys undertaken by the event-based surveillance and Syndromic surveillance teams. The outcomes from these are reported in more detail in the individual reports.



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Legacy and summary of recommendations

One of the key components of working on major mass gatherings such as the Games is the capturing and passing on of lessons and experiences for those delivering future Games, and those planning future mass gatherings, in order to improve health protection aspects of events to come. The HPA has a strong commitment to this work, and is taking it forward through the WHO Collaborating Centre for Mass Gatherings and High Visibility/High Consequence Events. This will facilitate the sharing of good practice and lessons identified from planning and delivering the HPA's Olympics commitments across the international community. This will be particularly important for the 2016 Games in Rio de Janeiro.

The legacy of involvement in mass gatherings such as the Olympic and Paralympic Games is an area that is often difficult to capture and quantify within the organisations involved. This summary identifies the key legacies that have already manifested within the agency, and a number of opportunities that could be considered for Public Health England (PHE). Existing legacy benefits include enhanced public health systems and stakeholder relationships, and opportunities presented by increased expertise in planning and delivering mass gatherings.

Leveraging the Olympic factor

The legacy for health of the London 2012 Olympic and Paralympic Games can cover a number of aspects, from improved public health services to better cross-organisational working. It has been recognised that one of the real legacies from previous Games has been improved public health services in host countries. This will also be the case for the UK, and will be taken forward into Public Health England. Working on such a large and high profile event has enabled the HPA to strengthen coordination and collaborative working with partner organisations, including the NHS, FSA and local authorities, and has helped to raise the profile and understanding of public health across Government departments. An improved understanding of the complexities of public health and better working relationships across the health community will be two significant legacies of the Games.

An improved public health service to be taken into Public Health England

The Games have been an excellent driver to improve some of the systems, processes and working arrangements within the agency and with key partners. There continues to be a number of opportunities for the agency to build on this experience.

There is already a significant legacy for the HPA, with many of the enhanced systems and processes put in place for the Games being maintained and further developed as the HPA moves into PHE. Together with these, there are a number of opportunities that have been identified through planning and delivery that could be considered as potential future legacy.

The opportunities identified below reflect the key recommendations identified throughout planning, delivery and evaluation.

SYSTEMS/PROCESSES

Enhancements:

- Improved surveillance systems, including the extension of syndromic surveillance systems to include Emergency Departments and out-of-hours GP services and the newly established Undiagnosed Serious Infectious Illness surveillance
- Improved microbiological detection systems: more rapid testing for infectious illnesses such as influenza and those caused by food poisoning, and orphan diagnostics such as leptospirosis, and a better understanding of the risk assessment and well-controlled quality assurance of new tests to be applied to all new diagnostics
- Improved working across the organisation, and overall a better understanding of the work that is done across the agency. Health Protection Services and Microbiology Services Divisions in particular have better mutual understanding and sharing information as a result of the Games.

Opportunities:

- Embed, and continue to improve on, internal cross-organisational working, in particular between local and regional HPS and MSD. This could be facilitated through internal exercises.

STAKEHOLDER RELATIONSHIPS/WORKING

Enhancements:

- Better collaborative working across London through development of documents such as the Pan London Outbreak Plan, and cross-organisational exercises
- Enhanced working with partner organisations, e.g. Devolved Administrations, FSA, across health, government, and expert groups, such as the air quality group containing representatives from the Environment Agency, DEFRA, Met Office and King's College London
- Additional information developed for stakeholders, such as a handbook for Local Authorities, NHS clinicians and GPs on public health microbiology testing and sampling protocols
- Enhanced international networks – covering WHO, ECDC, CDC, as well as an existing, newly organised network of WHO Collaborating Centres for Mass Gatherings.

Opportunities:

- Consolidate working relationships: one of the key elements of success was the time spent building excellent working relationships and trust (openness) between organisations, from national to local level. It is recognized that this was partly due to everyone working to the same agenda and the pressure imposed by major reputational issues; however, good communication and clear, well-understood roles and responsibilities also helped
- Build on the excellent engagement with Devolved Administrations and in particular provide advice and support for mass gatherings – e.g. Commonwealth Games in Glasgow; the G8 Summit; World Police and Fire Games; and the All Ireland Fleadh in Northern Ireland
- Improving collaboration and links with WHO: building on the requests for support and advice as a result of the Games, e.g. involvement in the Public Health Emergency Operations Centre Network Consultation and additional requests for support and training
- Strengthen the national working relationship with the FSA and develop ways of ensuring this is worked through to the operational levels.

RESPONSE ARRANGEMENTS

Enhancements:

- Increased resilience through improved reporting, data and analysis systems and processes and the ability to move from weekly to daily reporting in the event of a significant incident
- Enhanced awareness and reporting of infectious diseases through promoting the public health benefit from this
- Broader cadre of staff experienced in managing event-based response and more staff trained through the Cabinet Office Central Government Emergency Response Training courses
- Management of short, succinct reporting teleconferences
- Risk assessment framework created for a major event.

Opportunities:

- Adopt some elements of Olympic ConOps into ERP arrangements (such as the teleconference principles, single point of contact approach, and reporting arrangements). A significant cadre of HPA staff now have experience of working in this environment (proposal to Emergency Response Development Group)
 - In particular this could be used to facilitate a coordinated response to global health threats, such as the recent novel Coronavirus event
- Exercises – build on cross-organisational exercises such as Apollo. Recognise and encourage the delivery of cross-government and health exercises. This approach should also be adapted for use in other mass gatherings
- Network and expertise improved for response to global health issues, in particular if related to mass gatherings.

AWARENESS OF PUBLIC HEALTH

Enhancements:

- Raised awareness and understanding of public health issues by the public and across government – for example, through health promotion work with NHS regarding water, sunscreen, hygiene, etc. Pro-active communications and information sharing with key stakeholders and the public was shown to be successful
- Staff working in the LOCOG Polyclinic raised public health issues and discussed these with the General Practitioners and medical services teams; this will be taken back to their 'day jobs'
- Better understanding of the HPA's business as usual and the current state of health protection issues in the UK; a background document was produced for DH and LOCOG by experts from across the agency.

Opportunities:

- A significant number of publications will be produced on the HPA's Games time work that will raise the profile of the organisation (e.g. a forthcoming series on mass gatherings in the Lancet). There have also been a number of invitations from around the world to present, and to provide expert advice on planning mass gatherings. A number of HPA reports and publications have already been produced, and more will be published.

A global legacy for mass gatherings

The HPA has successfully built on its knowledge and expertise in the planning and delivery of public health for a major mass gathering. Within the UK there are a significant number of mass gatherings annually for which the agency provides expert advice and support on public health issues. The HPA has developed global recognition for its expertise in this area, and has worked regularly in collaboration with WHO in preparing for the public health impact of mass gatherings, natural disasters and other high visibility/high consequence events. There is a significant opportunity to use the experience from the Games to continue to develop the international capacity of HPA/PHE to support countries hosting these events.

This work led to the establishment of HPS London as a WHO Collaborating Centre on Mass Gatherings and High Visibility/High Consequence Events in August 2011 – the first WHO Collaborating Centre for mass gatherings. Over the past year there has been expanding interest in this relatively newly recognised field, and there is now a growing network of Collaborating Centres for mass gatherings, to which the HPA is a major contributor. A significant programme of work has been identified for the next few years in this area across this global network, much of which the agency will lead or participate in.

Enhancements:

- The HPA is recognised as global experts in the planning and delivery of mass gatherings; calls for advice and support have already been received by the Collaborating Centre.
- The running of an international observer programme for mass gatherings during the Paralympics (more details below).
- Publication of peer-reviewed articles in high-profile publications, such as the forthcoming Lancet series on mass gatherings.

Opportunities:

- Sharing knowledge and experience through production of a book following on from the Games legacy (more details below)
- Provision of testing and exercising tools for those planning mass gatherings
- Adapting work into toolkits/resources
- Provision of expertise to those planning Mass Gatherings: experts from the HPA are increasingly being invited to provide advice, experience and evaluation for those planning mass gatherings (for example, 2016 Rio Olympics; Arba'een in Iraq; Hajj; the 2014 Sochi Winter Olympics; the 2013 Africa Cup of Nations), as well as building on previous links
- HPA now has the expertise to review/evaluate others' plans for mass gatherings, and to provide expert advice and assurance on demand.

The Legacy Book

The HPA has committed to produce a book on the legacy of the London 2012 Olympic and Paralympic Games (the Legacy Book), led by the HPA and the WHO Collaborating Centre. The Legacy Book will use the Games as a case study to interpret the mass gatherings guidance of WHO and others, identifying what systems and processes are required to assure (public) health services that they can respond to any issues and questions raised from public health, political or media perspectives. This will link to the WHO Key Considerations for Mass Gatherings document and web-based toolkit. It is planned to publish the Legacy Book in March 2013. This will be done as part of the WHO Collaborating Centre on Mass Gatherings' remit to ensure the sharing of knowledge and experience by those who did the planning and delivery for the Games.

The hosts of previous Games in Athens and Beijing have produced books, which focussed on the way they delivered their Games commitments. It can be challenging to transfer and apply this experience and knowledge to other planners, due to differences in country/city context (i.e. what is in place, such as surveillance systems; epidemiology; the structure of health organisations; political context; financial context; etc). The HPA Legacy Book will, therefore, focus on translating the knowledge and experience of the 2012 Games (and other mass gatherings) into advice and recommendations for those planning any type of mass gathering that could have public health issues/concerns.

Observer Programme

The full report can be found at:
www.hpa.org.uk/Publications/EmergencyPreparationAndResponse/0113London2012report

To facilitate the sharing of Games time knowledge and expertise, the WHO runs Observer Programmes with key partners. This is a regular process run alongside major mass gathering events, through which the experience gained in preparing and running one event can be transferred to others. The HPA and many other organisations attended the 2008 Olympic Games in Beijing and the 2010 Winter Olympics in Vancouver and the knowledge gained helped inform the planning for London 2012, and will be passed in turn on to the 2016 Olympic and Paralympic Games in Rio de Janeiro.

The London 2012 Health Observer Programme provided a unique opportunity to share learning from the delivery of the UK's health commitments during the Games. The programme was aimed at delegates involved in the planning and delivery of future mass gatherings and was delivered by the HPA and WHO, in partnership with the Department of Health, NHS London, and the London Ambulance Service NHS Trust. This enabled the sharing of the cross-health experience.

Observers were invited through the WHO Virtual Interdisciplinary Advisory Group on mass gatherings (VIAG), the HPA International Office, organisational links and the Foreign and Commonwealth Office (FCO). Delegates came from Brazil and across the globe, with priority awarded to those involved in planning or bidding for future mass gatherings, including the Olympic Games, World Youth Day, the FIFA World Cup, the African Cup of Nations, etc.

Observers on the Programme heard about the experience across health during the Games, and learned about the significant health aspects and planning that need to be considered when hosting or bidding for an international mass gathering. In addition to learning from the host of the particular Observer Programme, participants are encouraged to share experiences from their own countries, to enhance relations and to build a network of mass gathering planning colleagues.

There was excellent feedback and a number of recommendations from both delegates and participants:

- The professionalism, organisation and hospitality of the Programme was good
- Learning about the planning, including for legacy, was of great interest
- Breaking up the agenda with site visits was highly regarded
- The delivery of presentations was in plain English and clearly comprehensible
- Message sticks containing presentations and supporting documentation were well received
- Some days, the agenda was very full with presentations, leaving little time for discussion.

Further information, and recommendations for those planning and delivering Observer Programmes during future mass gatherings, will be included in the Legacy Book.

Summary of recommendations

One of the fundamental areas of legacy for those involved in the delivery of a major planned mass gathering should be to identify key learning for themselves and others. This section identifies some of the key recommendations from the planning, delivery and evaluation of the London 2012 Games, both for consideration by HPA/PHE and for others delivering mass gatherings.

Recommendations have also been included in more detail in the evaluation section of this report. The generic recommendations for mass gatherings will be used to inform the HPA Legacy Book.

HPA/PHE OPERATIONAL ISSUES

Recommendations identified specifically for the HPA/PHE are summarised below. These are largely areas that the agency could consider taking forward into its future planning for major events and emergency response. However, the majority of these are also transferable to those planning for future mass gatherings, both internally and globally.

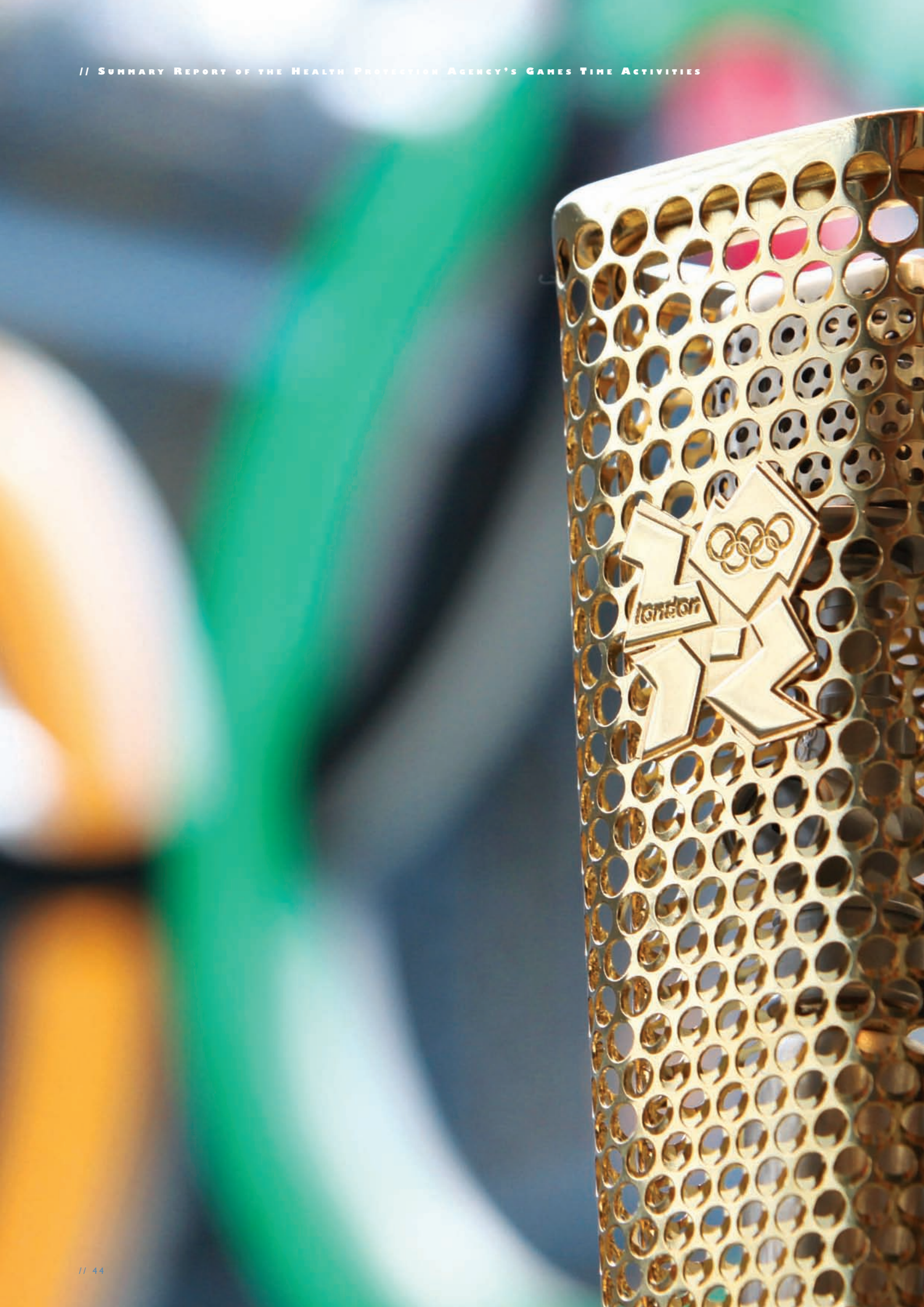
- Consider running Games ConOps as a sleeping resource: the system of set up, daily rhythm, reporting, teleconference, technology and Single Point of Contact (SPOC/ 'one version of the truth') has been endorsed and would be a useful tool
- Embed a national information system such as CIRAS, which is set up, tested and with staff trained. CIRAS was not used to full-effect during the Games, as it should have been rolled out earlier to ensure adequate training and testing
- Be able to switch back on, or maintain, enhanced surveillance systems such as the USII and augmented Event-based Surveillance systems; and be able to run all systems daily
- Ensure realistic, flexible and scalable staff planning with better HR engagement and support and communication; include succession planning
- Identify critical roles and skill-up more people to share these roles (or aspects of them) to ensure resilience and to make sure that the benefits of this expertise can be shared more widely throughout the organisation
- Ensure that multiagency and internal escalation arrangements are thoroughly rehearsed/exercised, and cover all aspects of the HPA/PHE
- Ensure that risk assessment frameworks are agreed, available and tested
- Implement standardised contact information: the 'single point of contact' approach
- Establish systems to ensure a rapid response to information requests/requirements from external stakeholders such as LOCOG, recognising that these may not always be evidence-led
- Clarify, and if possible pre-agree, arrangements for formulating, agreeing and disseminating public health advice across partners
- Don't reinvent the wheel – maintain normal practice as much as possible.
- Ensure early stakeholder engagement with agreed and tested working arrangements
- Undertake appropriate testing and exercising: this was very useful during the lead up to the Games and highlighted gaps in planning that were addressed, improving the overall state of readiness
- Test and agree staff and operational logistics early, in steady state situations and in anger, including: room set up; reporting arrangements; contact points (SPOCs); teleconference protocols; and SitRep production
- Ensure robust, resilient IT systems and support arrangements
- Undertake regular briefings and teleconferences internally to keep staff informed/updated and engaged
- Ensure that systems are in place for appropriate submission of samples (e.g. faecal) for microbiological/ virology testing
- Ensure clarity in SitReps for non public health experts. Include clear information on any incident, the public health risks, response and management of the incident, and communications activities.

RECOMMENDATIONS FOR THOSE PLANNING MASS GATHERINGS

- Ensure understanding of the public health background of the host country's population so an exception situation that relates to the mass gathering can be easily identified. Have a baseline of evidence against which to quantify
- Ensure the ability to step up and step down easily, to avoid a sense of overkill (e.g. weekend rotas on a call-down basis etc)
- Plan a flexible response. Start at a smaller scale but develop contingency plans to scale up response rapidly if needed
- Ensure excellent and early stakeholder engagement – build relationships and trust
- Set up, test, evaluate and become familiar with new systems early
- Test, test, test from steady state to major incident – this is a critical part of ensuring readiness to deliver. Testing needs to start early and be carried out across all areas of organisation, and with all key stakeholders
- Learn from others (e.g. attend Observer Programmes and study legacy reports)
- Ensure internal engagement with, and understanding of, roles and responsibilities
- Ensure clear ConOps (C3), daily rhythm and reporting requirements
- Ensure robust and tested systems provide assurance that anything is reported: nil returns are fine
- Ensure trust and openness with stakeholders, both internal and external; understand and agree a single version of the truth through excellent cross-organisation working
- Use existing systems wherever possible and enhance them if required
- There is great value in liaison officers/embedded persons on respective sites from international organisations (ECDC and WHO)
- Plan well ahead, including embedding 'extra' measures for things like surveillance into routine systems so that they become normalised and baselines can be established (WHO)
- Plan early for legacy and take an all/cross-government approach
- Use existing arrangements and then enhance them rather than creating new arrangements – including for communications
- Agree reporting/liaison lines and processes with all relevant agencies well in advance. Involve those with actual specialist expertise in meetings where this is required
- Undertake a review of current surveillance systems, identify gaps, and prioritise any enhancements
- Consider demands of managing political expectations
- Ensure transparency of all preparations
- Inclusion of assurances in reporting that ongoing events are of low risk to the mass gathering will be appreciated, alongside timely and accurate reporting of exceedances etc
- Keep the number of people involved to a minimum: it is easy to spend too much time communicating with lots of different people in order to collate information.

There were also some specific areas identified for future Olympic and Paralympic Games:

- Having a public health expert present in the Polyclinic, and set up and agree reporting from venues
- Accreditation for venue access should be sorted out well in advance
- Ensure that all reporting adds value
- Embed someone within the organising committee as early as possible.



Testing and Exercising: Tina Endericks, 2012 Programme Director

Event Based Surveillance report: Ettore Severi, Paul Crook, London Region Epidemiology

Regional Reports:

London region: Deborah Turbitt, 2012 London Region Lead

South West region: Paul Bolton, South West (South) Health Protection Unit

South East region: Lisa Harvey-Vince, Margot Nicholls, Surrey and Sussex Health Protection Unit

LOCOG Polyclinic: Deborah Turbitt, 2012 London Region Lead

Health Protection Services, Colindale: Barry Evans, Mike Catchpole

International Infectious Disease Surveillance: Jane Jones, Head of Travel and Migrant Health Section

Syndromic Surveillance: Gillian Smith, Alex Elliott, Real Time Syndromic Surveillance Team

Microbiology Services: Nandini Shetty, Maria Zambon, Eric Bolton

Centre for Radiation, Chemical and Environmental Hazards: Robie Kamanyire, Naima Bradley, Mary Morrey

Communications: Tycie West, Liz Morgan-Lewis,

Debrief report: Tina Endericks, 2012 Programme Director

Games time working evaluation report, Susie Berns, 2012 Programme Officer

Health Observer Programme report, Victoria Cornell, Flinders University, Nicolas Isla, WHO and Mark Keilthy, HPA

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