Syndromic surveillance: a public health legacy of the London 2012 Olympic and Paralympic Games

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I hold no conflicts of interest with respect to:

- Any direct financial interest in or personal relationship with a commercial entity ("the Organization")
- Share ownership or investments held in the Organization
- Membership in the Organization’s advisory board or other committees
- Member of a speakers’ bureau
Syndromic surveillance during the London 2012 Olympic and Paralympic Games
• Real-time Syndromic Surveillance Team (ReSST)
• “Information for public health action”
  • early warning
  • ‘situational awareness’
  • reassurance
• Based in Birmingham but delivering a national service
• Gaining national and international reputation
Winter chunderland
Vomit bug hits 150,000 Brits every week
Norovirus strikes 1.1m and cases to soar even higher
General features of syndromic surveillance systems

- No additional requirements for clinicians
- Automated data capture/transfer
- Data available near real-time
- Provide early warning
- Statistical alarms to alert to unusual activity
- Population-based
Current PHE syndromic system data sources

- Sentinel GP (RCGP)
- Social media (Twitter)
- GP in hours
- HCW absenteeism
- OTC sales
- Web activity
- ReSST
- Tele-health (NHS 111)
- Emergency department
- Ambulance
- GP out of hours
"The International Olympic Committee has the honour of announcing the games of the 30th Olympiad in 2012 are awarded to the city of London."
Pre-Olympics

Preparing for the Olympics

Participating in the Olympics

Post-Olympic legacy
NHS Direct
‘Tele-health system’

QSurveillance
‘General practitioner (GP) system’
Respiratory infections: seasonal surveillance

![Graph showing respiratory infections surveillance data with various trends for cold/flu and cough from June 21 to February 28, 2014.]
Influenza and norovirus threshold key:
GREEN: Call numbers are within baseline levels
YELLOW: Call numbers are approaching early warning thresholds suggesting increasing community activity
ORANGE: Early warning thresholds have been breached indicating increased community activity
Influenza-like illness rate per 100,000 population in the UK

All patients all ages

Week

UK 2009-10
UK 2010-11

(Database version 1)
Copyright QRESEARCH 2011
Data source: QSurveillance (weekly data) - 28 Feb 2011

+ regional
+ age group
Syndromic Surveillance is the real-time (or near real-time) collection, analysis, interpretation and dissemination of health-related data to enable the early identification of the impact (or absence of impact) of potential human or veterinary public-health threats which require effective public health action.

The Public Health England (PHE) Real-time Syndromic Surveillance Team (ReSCT) operates a surveillance national syndromic systems and

Twitter

HPA @HPAuk

New @HPAuk paper in @EmergencyMedBMJ - Establishing an ED syndromic surveillance system to support the #Olympics t.co/r15rlX3q

Latest Syndromic Surveillance Bulletins - 29 August 2013

- PHE NHS Direct Weekly Bulletin 2013 Week 34 (PDF, 307 KB)
- PHE GP In Hours Weekly Bulletin 2013 Week 34 (PDF, 320 KB)
- PHE GP Out of Hours Weekly Bulletin 2013 Week 34 (PDF, 282 KB)
- PHE Emergency Department Weekly Bulletin 2013 Week 34 (PDF, 456 KB)
- RCGP Communicable and Respiratory Disease Report 2013 Week 34 (PDF, 456 KB)

Latest Real-time Syndromic Surveillance Team Publications

Syndromic surveillance: our national insurance

Alex Elliot, 6 March 2014 — Health Protection, Protecting the country’s health, Real-time syndromic surveillance

Syndromic surveillance is an innovative way of collecting and analysing health surveillance data and is becoming an increasingly popular way of monitoring public health across the world. Syndromic surveillance complements existing programmes, which are usually based upon traditional laboratory reporting, providing additional information about infectious disease outbreaks or other public health incidents that can affect the health of the population.

In this blog we’ll unravel what syndromic surveillance is and why we undertake this form of surveillance.

What is syndromic surveillance?

Syndromic surveillance is a tool we use to collect information about the general public’s health and to see, in real-time, whether there are any diseases which are following an unusual trend, like a sudden increase at an unexpected time of year. Syndromic surveillance primarily measures the reporting of symptoms caused by anything from flu to norovirus. It’s not simply bugs we look at, either. This surveillance can also measure things like hayfever and eye problems caused by summer pollens. Using the symptoms associated with different illnesses provides a way of detecting problems early and allows us to follow the size, spread, and tempo of the outbreaks and to monitor seasonal patterns in disease activity.
8 million – Olympics tickets available
2 million – Paralympics tickets
900,000 – daily spectators & volunteers
400,000 – (Para)Olympians, teams, workers, officials, volunteers, media
250,000 – accredited people
20,000 – accredited media
128 – heads of state, royalty, VIPs etc
0.9M – 2.8M overnight visitors to London
88% - Olympic ‘traffic’ will arrive via Heathrow
Enhanced syndromic surveillance

• New syndromic surveillance systems
• New statistical monitoring systems
• Strengthen interpretation and analysis of positive signals
• Standardise the reporting of alarms
• Assess the limitations of the systems
• Changes in population dynamics during Games
• Overseas visitors (limited access to NHSD + GP)
• Ability to monitor more severe infection e.g. SARS
• Changes in UK health care usage

“Emergency Department Syndromic Surveillance System (EDSSS)”
ED daily ARI attendances
Injury data through EDSSS

‘Cold weather surveillance’
(forearm/wrist/femur fractures in females)
• Different ‘case mix’ to in hours GPs
• More acute rather than chronic management
• Routine daily
• Weekend/bank holiday coverage
GP out-of-hours

[Map of England with coverage areas]

[Graph showing number of contacts]

[Graph showing percentage of read ambulance contacts]
Olympic countdown: Day 0…
The Olympic difference

- ‘Enhanced’ business as normal
- Fine tooth comb/no stone left unturned
- Reassurance of lack of impact of incidents on health
- ReSST Olympic commitments:
  - Provision of an enhanced daily service
  - Daily Olympic bulletin
  - Providing large part of national SitRep
  - Cabinet Office/COBRA
- Improved statistics for each system
- World media spotlight on the UK/PHE
Daily Olympics reporting

- Daily reporting April to June (weekdays)
- Daily reporting July to Sept
- ReSST working shifts to cover 7 day/week reporting
- Messages/data inserted into HPA national daily SitRep
- LOCOG/DH/COBRA
- Tight deadlines each day
## Daily Olympics reporting: summary statistics

### All areas

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Syndromic Surveillance of Health and Climate-Related Impacts: Ontario, 17 March 2014
‘Alarms to alerts’

• Standardising the response to alarms
• Risk assessment process for prioritising statistical alarms
• Definitions:
  • Signal – a test statistic, e.g. number of cold/flu calls to NHS Direct in London, with an associated alarm
  • Alarm – when a test statistic significantly exceeds its expected value
  • Investigation – the process by which the ReSST investigate the alarm to determine whether it has the characteristics that would warrant further public health action
  • Alert – notification of unusual activity from the ReSST team to the rest of HPA or externally
• Improves the public health action
• Provides an audit trail of decisions
## Risk assessment of syndromic alarms

1. **Size of the excess?**
   - 1/2/3

2. **Is the alarm a repeat?**
   - 1/2

3. **Is the rise unusual for time of year?**
   - 1/2

4. **Multi-system alarm?**
   - 1/3

5. **Score (total)**
   - >7  <7

6. **Syndrome?**
   - 1/2

7. **Geography?**
   - 1/2

8. **Severity?**
   - 1/2

9. **Final Score (total)**
   - >12  <12

### Alert and document actions

- Document and review next day

- Document and review next day

- Alert and document actions
## Olympic results

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Olympic results

National increase in asthma – reassurance

Heat wave surveillance

Syndromic Surveillance of Health and Climate-Related Impacts: Ontario, 17 March 2014
• Syndromic surveillance growing in stature internationally
• Systems more flexible and able to respond to a variety of public health incidents
• Able to provide reassurance during Olympics
• PHE syndromic surveillance service and links with PH action unique
• ReSST developing forward 3 year PHE strategy including supporting other mass gatherings
• 2012 Olympics provided a huge challenge, but also a massive opportunity to enhance existing programme
• Legacy, legacy, legacy…
New systems continue to support routine surveillance (ED & OOH)

Improved statistics

Alarm risk assessment

Expanded team

Experience to share with other nations hosting mass gatherings
PHE Real-time Syndromic Surveillance Team:

- Amardeep Bains, Leandro Carrhilo, Obaghe Edeghere, Sue Ibbotson, Sally Harcourt, Helen Hughes, Paul Loveridge, Roger Morbey, Steve Raven, Gillian Smith, Sue Smith, Trudy Stirzaker

Syndromic surveillance data providers:

- NHS Direct
- College of Emergency Medicine; Ascribe Ltd; L2S2 Ltd
- Advanced Health and Care
- TPP, ResearchOne and the SystmOne GP practices; University of Nottingham, ClinRisk®, EMIS and EMIS practices
Thank you

Questions?