



Examples of syndromic surveillance uses in Europe

Early warning of onset and real-time monitoring of infectious diseases: the A(H1N1) influenza pandemic

Syndromic surveillance (SyS) systems based on various data sources contributed to timely surveillance of the spread of the A(H1N1) influenza pandemic:

- Emergency care patient records in Austria, Belgium and Spain¹
- Primary care patient records in the United Kingdom² and Denmark³
- School absenteeism in the United Kingdom⁴
- Telephone helpline calls in the United Kingdom^{5,6}
- Web queries on a medical website in Sweden⁷
- Google Flu Trends for 13 countries in Europe⁸

Early detection of communicable and non-communicable disease outbreaks during mass gatherings: the 2012 Olympic Games in London

During the London Olympic Games 2012, syndromic surveillance based on four data sources provided early warning of smaller communicable disease outbreaks, a rise in asthma and heat-related illness cases as well as real-time reassurance that no other public health threat was occurring⁹. SyS was also used for the health surveillance of the Athens Olympic Games in 2004¹⁰.

Situational awareness during rare environmental events: the volcanic ash cloud

Syndromic surveillance provided (near) real-time reassurance that the volcanic ash cloud covering Europe in April 2010 was not affecting the health of populations in the United Kingdom¹¹ and regions in Austria, Germany and Spain¹².

Detection of a new virus: the Schmallenberg virus

Syndromic surveillance identified a cluster of atypical symptoms in cattle in the Netherlands, complementing traditional case-based animal surveillance in Germany that had also identified occurrences^{13,14}.

Timely reassurance of absence of threat to public health: refugee influx in Italy

Timely, *ad hoc* surveillance of migrants coming from North Africa to Italy in 2011 confirmed that an influx of refugees posed no increased risk to the health of the Italian population¹⁵.



The SurSaUD® syndromic surveillance system:

An example from France

In France, the SurSaUD® syndromic surveillance system was set up in 2004, following the heat wave the previous year, which had a huge impact on public health with over 15,000 excess deaths^{16,17}. Since then, SurSaUD® has demonstrated its value on numerous and varied occasions, including surveillance of seasonal^{18,19} and pandemic flu, the chikungunya virus²⁰, measles, asthma, mushroom poisoning, melamine-contaminated milk, industrial accidents, and storms and floods.

SurSaUD® was implemented by the French National Institute for Public Health Surveillance (InVS, www.invs.sante.fr/Dossiers-thematiques/Veille-et-alerte/Surveillance-syndromique-SurSaUD-R). The initial aim was to build a non-specific and reactive surveillance system in close cooperation with emergency health services. The system also included mortality surveillance in order to be able to detect new public health threats that had identified or potential health impact.

The objectives were soon extended to:

- Detection and monitoring of expected or unexpected outbreaks and seasonal or emerging events
- Health impact assessment of expected or unexpected events, in the fields of infectious diseases, environmental health, mass gatherings, exceptional events, and intentional threats
- Enabling public health authorities to give reassurance through the timely communication of objective, evidence-based information

SurSaUD® draws on four data sources:

- Emergency departments
- General Practitioners' emergency services
- All causes mortality
- Mortality by cause

The strengths of the SurSaUD® system are: *timeliness* with data collected and analysed daily; *flexibility* as syndromic indicators, age groups and geographical level of analysis can be adapted to the event; *access* at both national and regional levels, numerous *historical data*, and close *collaboration* with data providers and specific surveillance systems.

For more information and references on syndromic surveillance systems in Europe, please visit our website. Here you can also find a list of human and animal health systems in Europe, and the Triple-S guidelines on syndromic surveillance implementation and data analyses.

Web: www.syndromicsurveillance.eu | **Email:** info@syndromicsurveillance.eu

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References

1. Rosenkötter N et al. Validity and timeliness of syndromic influenza surveillance during the autumn/winter wave of A(H1N1) influenza 2009: results of emergency medical dispatch, ambulance and emergency department data from three European regions. *BMC Public Health* 2013;13(1):905.
2. Harcourt S et al. Use of a large general practice syndromic surveillance system to monitor the progress of the influenza A(H1N1) pandemic 2009 in the UK. *Epidemiology & Infection* 2012;140(1):100–5.
3. Harder KM et al. Electronic real-time surveillance for influenza-like illness: experience from the 2009 influenza A(H1N1) pandemic in Denmark. *Eurosurveillance* 2011;16(3):2–7.
4. Kara EO et al. Absenteeism in schools during the 2009 influenza A(H1N1) pandemic: a useful tool for early detection of influenza activity in the community? *Epidemiology & Infection* 2012;140(7):1328–36.
5. Smith S et al. Early spread of the 2009 influenza A(H1N1) pandemic in the United Kingdom – use of local syndromic data, May–August 2009. *Eurosurveillance* 2011;16(3):8–16.
6. Kavanagh K et al. Syndromic surveillance of influenza-like illness in Scotland during the influenza A H1N1v pandemic and beyond. *Journal of the Royal Statistical Society Series A (Statistics in Society)* 2012;175(4):939–58.
7. Hulth A, Rydevik G. Web query-based surveillance in Sweden during the influenza A(H1N1)2009 pandemic, April 2009 to February 2010. *Eurosurveillance* 2011;16(18):4–14.
8. Valdivia A et al. Monitoring influenza activity in Europe with Google Flu Trends: comparison with the findings of sentinel physician networks – results for 2009–10. *Eurosurveillance* 2010;15(29):2–7.
9. Elliot AJ et al. Syndromic surveillance – a public health legacy of the London 2012 Olympic and Paralympic Games. *Public Health* 2013;127(8):777–81.
10. Dafni UG et al. Algorithm for statistical detection of peaks--syndromic surveillance system for the Athens 2004 Olympic Games. *MMWR. Morbidity and Mortality Weekly Report* 2004;53 Suppl:86–94.
11. Elliot AJ et al. Syndromic surveillance to assess the potential public health impact of the Icelandic volcanic ash plume across the United Kingdom, *Eurosurveillance* 2010;15(23):6–9.
12. Rosenkötter N et al, on behalf of the SIDARTHa project group. *SIDARTHa Volcanic Ash Cloud Rapid Public Health Impact Assessment. Regional public health impact of volcanic ash cloud covering Europe after eruption of Eyjafjallajökull, Iceland starting April 14th, 2010. Results as of May 15th, 2010.* Bad Honnef, 2010.
13. Calavas D et al. Quelle est la valeur ajoutée de la surveillance syndromique pour la détection de phénomènes pathologiques nouveaux? *Épidémiologie et Santé Animale* 2012;61:161–69.
14. Hoffmann B et al. Novel orthobunyavirus in cattle, Europe, 2011. *Emerging Infectious Diseases* 2012;18(3):469–72.
15. Riccardo F et al. Syndromic surveillance of epidemic-prone diseases in response to an influx of migrants from North Africa to Italy, May to October 2011. *Eurosurveillance* 2011;16(46):2–6.
16. Josseran L et al. Syndromic surveillance based on emergency department activity and crude mortality: two examples. *Eurosurveillance* 2006;11:225–29.
17. Josseran L et al. Assessment of a syndromic surveillance system based on morbidity data: results from the OSCOUR® network during a heat wave. *PLoS One* 2010;5(8):e11984.
18. Gault G et al. Performance of a syndromic system for influenza based on the activity of general practitioners, France *Journal of Public Health* 2009;31(2):286–92.
19. Che D et al. Burden of infant bronchiolitis: data from a hospital network. *Epidemiology and Infection* 2010;138(4):573–75.
20. Josseran L et al. Chikungunya disease outbreak, Reunion Island. *Emerging Infectious Disease* 2006;12:12.