The Icelandic ash cloud and other erupting health threats: what role for syndromic surveillance?

Helmut Brand¹, Thomas Krafft²*

1 Department of International Health, Faculty of Health, Medicine and Life Sciences, Research School Primary Care and Public Health (CAPHRI), Maastricht University, The Netherlands
2 SIDARTHa Scientific/Technical Coordination Office, c/o GEOMED Research Forschungsgesellschaft mbH, Bad Honnef, Germany

Correspondence: Helmut Brand, Department of International Health, FHML/CAPHRI, Maastricht University, Universiteitsingel 40, 6229 ER Maastricht, The Netherlands, tel: +31 43 38 84006, fax: +31 43 38 84172, e-mail: helmut.brand@inthealth.unimaas.nl

While the severe impacts of the recent eruption of Iceland’s Eyjafjallajökull on transportation and economy became quite obvious even in an early stage, the consequences for the public’s health remained rather cloudy throughout. Contradictory messages to the public resulted from the lack of experience and even more so from the lack of reliable and recent data to assess the situation: On April 15th, the UK Health Protection Agency announced, according to BBC News, that ‘the ash from the Eyjafjallajökull eruption did not pose a significant risk to public health because of its high altitude’, on April 16th UK health experts advised people to return indoors if they start to get respiratory symptoms after the first ash particles were falling on the ground, and later on the same day British health officials said the effects of the ash on people with existing respiratory conditions were ‘likely to be short term’.¹ It does not come as a surprise that these contradictory messages cause irritations among the public.

The European scope of this event posed questions that needed approaches on a European scale. One promising new approach came from the consortium of the European Commission (DG Sanco) co-funded research project SIDARTHa. The SIDARTHa project is the first attempt to explore the potential of setting up a European syndromic surveillance approach for earlier detection of communicable and non-communicable health threats at the local/regional level. The system continuously analyses routinely collected electronic data from three different sources of emergency medical services (Emergency Dispatch Centres, Ambulance Services and Emergency Departments) applying multiple spatial–temporal detection algorithms. Aiming at supporting and enhancing existing early warning and surveillance structures, the system has shown its potential to reduce detection time. In the week after the first eruption, the group undertook a rapid assessment of any detectable public health impact at the regional level in the State of Tyrol in Austria, the County of Goeppingen in South-Western Germany, and the Autonomous Region of Cantabria in Spain.² The rapid assessment identified one aberration from the expected emergency medical services demand for respiratory distress in the State of Tyrol in Austria. However, a direct link to the volcanic ash cloud could not be established. But the rapid assessment proved the potential to easily adjust the SIDARTHa pilot syndromic surveillance system to new syndromes and emerging health threats.

Syndromic surveillance is a valuable but still underestimated tool for early detecting and assessing suddenly occurring events, such as the volcanic ash cloud, or (re-)emerging infectious diseases travelling the world or the impacts of extreme weather events such as flooding or heat waves. Syndromic surveillance uses routinely collected pre-diagnostic data, e.g. from emergency departments, or information from media reports or internet search results and applies statistical analyses to detect aberrations from the expected number of visits, reports, hits, etc. earlier than traditional surveillance systems. It is easy to criticize the limited efficiency of syndromic surveillance because of too many false alerts, a low specificity or unclear representativeness. But its advantages in terms of high flexibility, timeliness, sensitivity, simplicity and cost-effectiveness seems to outweigh by far the limitations. Earlier studies in different settings showed the main asset of applying syndromic surveillance in the sense of situational awareness with the aim of confirming the presence or absence of health effects. Examples comprise Hurricane Katrina in the USA³ or the terrorist attacks in London in 2005, where the telephone helpline-based syndromic surveillance system of the NHS Direct was used to reassure that no further health impact was following the disastrous events.⁴

References


doi:10.1093/eurpub/ckq091

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With the increasing likelihood of new and unexpected health threats, real or media driven, further needs of systems like syndromic surveillance are indeed needed. The applicability of syndromic surveillance was shown for example during the heat wave in 2006 in France by highly improved and timelier monitoring of the burden of special heat-related disease symptoms as compared to the failures of public health system during the 2003 heat wave.\(^5\) Especially for influenza-like illness including A/H1N1 syndromic surveillance has shown good results that have been already described as a ‘common extension’ of the approach.\(^6\) But the strength of syndromic surveillance mainly lies in its flexibility and broad approach in being able to detect unknown or undefined health threats.

The International Health Regulations 2005 revision, the Parma Declaration on Environment and Health, and the European Commission Whitepaper on adaptation to climate change call for improved monitoring and surveillance and syndromic surveillance can make a substantial contribution. The goal should be a Europe-wide applicable, flexible, easy to use and broad approach of ad hoc surveillance. Emergency medical professionals have a key position during health crises and often have a direct administrative link to civil protection and disaster management. Public health has the chance of using a systematic syndromic surveillance approach for crisis preparedness at local and regional level to foster cooperation among all relevant stakeholders.

**Acknowledgements**

The authors would like to thank the SIDARTHa project consortium members for their valuable contributions.

**Funding**

The project ‘European Emergency Data-based System for Information on, Analysis and Detection of Risks and Threats to Health – SIDARTHa’ is co-funded by the European Commission under the Programme of Community Action in the Field of Public Health 2003–2008 (Grant Agreement-No.: 2007208).

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\(^{10.1093/eurpub/ckq088}\)