

# Real Time Syndromic Surveillance Response to UK Flooding Incident 2007

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## OBJECTIVE

This paper describes the results of prospective real time syndromic surveillance conducted during a national flooding incident during 2007 in the UK.

## BACKGROUND

Wetter and stormier weather is predicted in the UK as global temperatures rise. It is likely there will be increases in river and coastal flooding. The known short and medium term health effects of flooding are drowning, injury, acute asthma, skin rashes and outbreaks of gastrointestinal and respiratory disease. Longer term health effects of flooding are thought to be psychological stress and increased rates of mental illness. Reacher *et al.* conducted a retrospective study of illness in a population affected by flooding in Lewes, South-East England during 2000 [1]. They found a significant raised risk of earache (RR=2.2) and gastroenteritis (RR=1.7) for flooded households. More striking was the higher level of psychological distress experienced by these residents (RR=4.1), which may have also explained some of the excess physical illness.

## METHODS

During June to August 2007 there was widespread flooding across England. This occurred in two distinct phases: in the East Midlands and Yorkshire during mid June and in the Midlands and South West England from 20<sup>th</sup> July to August 3<sup>rd</sup>. The UK Health Protection Agency (HPA) was involved in responding to the incident by disseminating information to the government and public, and providing disease surveillance in affected areas. The HPA Real Time Syndromic Surveillance Team co-ordinated prospective surveillance during both phases of flooding as general practitioner (GP) and NHS Direct (telephone health service) surveillance systems were already in place and had previously been used to monitor illness to a local level.

## RESULTS

During the incident, daily call numbers/proportions made to NHS Direct were monitored for diarrhoea, vomiting, asthma, earache/discharge, injuries, cough, skin irritations, chest pain/palpitations/

difficulty breathing and psychological problems. Daily calls were monitored in specific local postal districts around flood-affected regions (fig). Weekly GP consultation rates for gastrointestinal complaints, asthma, wheeze, otitis media and insect bites were monitored at national and local level.

Daily situation reports (SitReps) were produced, combining syndromic and clinical surveillance data with laboratory and chemical incident data from other sources. NHS Direct calls were analysed by calculating observed/expected call numbers for each day: exceedances (observed calls > expected calls) were further investigated for significance. GP incidence data were analysed by calculating standardised incidence ratios for each local area, using the UK rates as the standard population.

During the 23<sup>rd</sup> - 26<sup>th</sup> July the total number of calls made in the postal districts of Gloucestershire affected by flooding was above expected levels. This was caused by an increase in the number of NHS Direct "health information" calls and not "health problem" calls. During 16<sup>th</sup> - 22<sup>nd</sup> July there were rises in the number of gastrointestinal GP consultations in South Yorkshire, however these were not considered significant or associated with the flooding incident.

## CONCLUSIONS

Real time prospective syndromic surveillance provides an invaluable tool to monitor the potential public health impact of local and national incidents. In response to the floods in England during 2007, we were able to collate, analyse and interpret complex surveillance data from multiple sources to provide timely (daily) SitReps as the incident progressed. This provided real time monitoring of potential health impacts, and reassurance to local authorities that there were no significant adverse outcomes associated with the floods.

## REFERENCES

- [1] Reacher M, McKenzie K, Lane C, Nichols T, Kedge I, Iversen A, et al. Health impacts of flooding in Lewes: a comparison of reported gastrointestinal and other illness and mental health in flooded and non-flooded households. *Commun Dis Public Health* 2004;7(1):39-46.