Health surge: thunderstorm asthma

Dr Amee Morgans, Emergency Services Telecommunications Authority

On 21 November 2016, the largest recorded global epidemic of thunderstorm asthma occurred in Victoria. Its scale was unprecedented with public calls for assistance well beyond normal volumes during high-demand events.

The maximum daytime temperature was 35 degrees Celsius, the daily pollen count in Melbourne was high, but had been higher in previous weeks. Wind gusts were up to 83 km/h. Soon after 6.00pm, an active storm cell hit north-west Melbourne and the sudden downpour caused airborne pollen to burst into tiny, allergenic particles and create a high-allergic asthma case load. This caused a mass allergic reaction and caused asthma in people who had not had asthma before.

Emergency communications centres are prone to surge activity. However, most demand is predictable such as heatwaves, public and weather-related events. Thunderstorm asthma presented as a watermark surge where unplanned demand continued to rise beyond forecast volumes.

Emergency operations call teams quickly realised that a state-level health emergency was taking place. There was a clear pattern of respiratory cases, spreading across the state. The cause was unknown. Over the next 12 hours, more than 9000 people arrived in hospital emergency departments across Victoria and 2666 calls presented to Triple Zero for emergency ambulance assistance. Between 6:00pm and midnight, the state-wide emergency management services case volume was 1.93 times greater than the two prior years 2014 and 2015.[1]

There are lessons to be learnt from this event about overwhelming demand, preparedness and sector integration. An event overview is available at www.bmj.com/content/bmj/359/bmj.j5636.full.pdf.

Sentinel surveillance

Demand forecasting is the cornerstone of how the Emergency Services Telecommunications Authority (ESTA) manages its average of 7000 calls a day for five emergency services. We have developed sentinel surveillance analytics based on actual demand proportionally above forecast. This allows early detection, evaluation and decision-making and supports timely community and sector advice.

Optimisation of consequence estimation is an emerging opportunity. The data used to predict surge, such as weather warnings, are generic and do not easily translate into information to guide forecast of relevant consequences to emergency services. Analytics underway with partner agencies, including the Bureau of Meteorology, are translating generic weather information into geospatial and event type demand consequences to better predict impacts and enhance preparedness for surge.

Instant surge workforce

The Victorian ESTA model centralises dispatch and call-taking functions across all emergency services at state level. There is greater opportunity to leverage multi-agency, skilled staff and dynamic Triple Zero call routing to allow agency specific demand surge to be met. Optimisation of off-shift workforce could ensure sufficient resources when major or ongoing demand requires.

The ESTA model of centralised services allows for alignment of emergency response and disaster management protocols. In the wake of the thunderstorm asthma event it became clear that differences in nomenclature and definitions relating to disasters, incidents and event type classifications limited the ability to align community messaging and response. Interagency work since this event has ensured a mutual understanding of event size, impact and consequence.

1 At: www.igem.vic.gov.au/sites/default/files/embridge_cache/emshare/original/public/2017/07/80/c414fe2ba/ReviewofemergencyresponsetoNovember2016thunderstormasthmaeventfinalreport.pdf