

Heatwave in France, July 2006: 112 excess deaths so far attributed to the heat

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Increased temperatures in Europe and their effects on morbidity and mortality came to widespread public attention in summer 2003, when much of Europe was affected by unusually high temperatures. Eurosurveillance published a special issue of the monthly release in 2005 [1-8], on the impact of the heat wave in several European countries. France was the first country to estimate the extent of the excess deaths due to the heat wave in 2003, and in 2004, the Plan National Canicule (national heatwave response plan) was launched, to deal with future extremes of temperature [9].

Climate change worldwide has a potential effect on a range of human diseases, including infectious disease [10], but another aspect of unusually high temperatures for the field of infectious disease is that during heat waves, public health effort is frequently diverted to deal with monitoring the situation and managing associated crises.

Since 2004, the Institut de Veille Sanitaire (French National Institute of Public Health Surveillance, InVS) has been working with the French meteorological office, Météo France, to produce daily analyses of the meteorological and public health risks during summer months, and results from morbidity and mortality surveillance are being released on a weekly basis [11,12].

France has recently experienced a heatwave lasting 19 days (10-28 July 2006) in most of the country. This has been the longest and most intense period of hot weather seen in France since the national heatwave plan was published in 2004. Compared with the 2003, when the French heatwave lasted for 13 days (2-14 August), the 2006 heat wave has covered a smaller geographical area than 2003, and has been less intense. The highest temperatures recorded so far during the 2006 heatwave have been 39° (with very short periods of temperature reaching 40°), compared with temperatures of 40°-44° in 2003. The lowest nighttime temperatures during the heatwave of 2006 have been between 19°-23°, compared with 23°-25° in 2003.

Heatwave and health alert framework

Daily teleconferences are held to evaluate the situation, and a meteorological surveillance map is issued at 4 pm each day.

To release an alert, InVS uses biometeorological indicators of the level of health risk foreseen. These are average minimal and maximal temperatures for three day periods, and InVS receives forecasts for these indexes over the next three days daily from Météo France. Alert thresholds, tailored to each department, are defined based on an analysis of historic temperature and mortality data. Other elements contributing to the decision include:

- Information from Météo France on the foreseen duration of the heatwave, its geographical spread, humidity levels, the type of weather, probable evolution of the situation, wind speed and direction;
- Air quality forecasts, particularly ozone levels;
- Certain social criteria: times when many people begin their holidays, traffic forecasts, festivals and other mass gatherings.

To monitor the possible health impact of the heatwave, and to suggest adoption of measures laid out in the national plan, the InVS uses morbidity and mortality indicators.

Daily morbidity data analysed include the numbers of emergency service call-outs and interventions each day, and admissions to hospital emergency and other departments. The data is rapidly transmitted by computerised systems. All emergency medical services and fire brigades send their data, as well as at least one sentinel hospital for each department.

Daily and weekly mortality data include daily numbers of deaths recorded, weekly and/or daily data from undertakers and funeral directors, and deaths considered by healthcare and emergency service professionals to be due to heat.

Results

Morbidity

The following findings have been made:

- Limited increases in trips to hospital were recorded in some regions, although some of this can be explained by increased tourist activity, particularly in coastal areas
- Treatment for general alteration in health state (illness and/or dehydration) of elderly recorded in hospitals, particularly in Ile-de-France between 25-28 July, have since returned to pre-heatwave levels (illness and/or dehydration) recorded in hospitals, particularly in Ile-de-France between 25-28 July, have since returned to pre-heatwave levels
- Emergency service activity related to heat-related illnesses increased in several regions, and in the number of heat stroke-type incidents which led to admission to emergency departments. This indications have now returned to normal levels for this time of year.

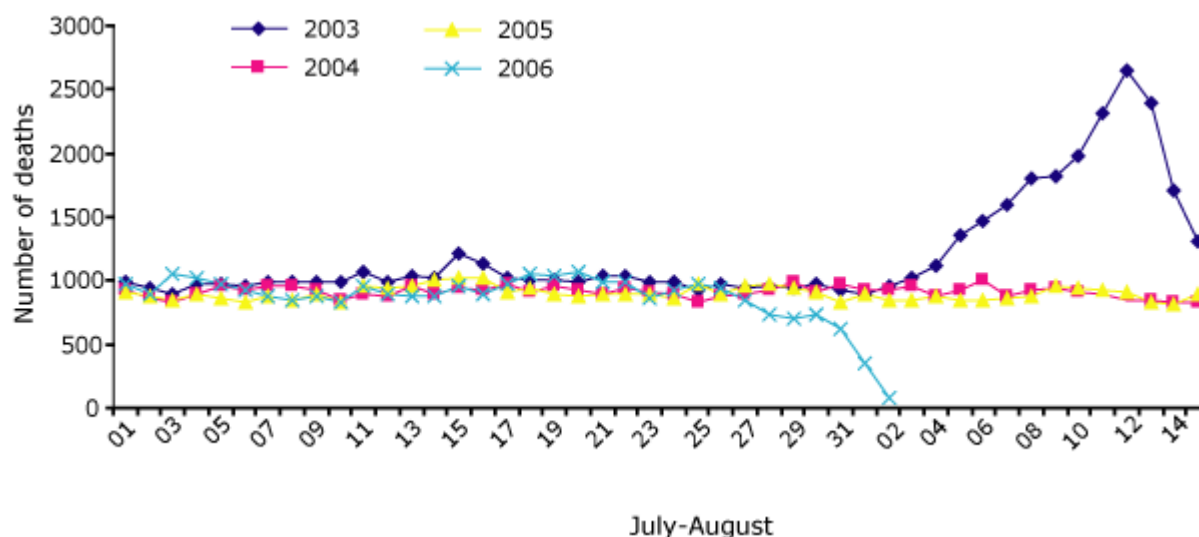
Emergency services activity was stable between 10-27 July, with a level of activity of around 3500 trips per day. Activity has decreased since 27 July, compared with the previous four weeks (around 9%). There was a marked increase up to 27 July of around 15% in illness in older people that required the emergency services and/or hospitalisation.

Between 10-28 July, there was an increase of between 25% and 50% in reports of illness, dehydration and altered state in older people, compared with the preceding weeks. However, since the weekend of 29 July, the number of these diagnoses has decreased, returning to levels seen before 10 July. For adults aged between 15 and 75 years, there was a 35% increase in illness until around 26 July, and a 20% increase in renal colic, but dehydration remained rare. A decrease in the number of illnesses has been seen since 27 July.

Mortality

The figure below compares daily mortality data in the areas with computerised death data in 2003, 2004, 2005 and 2006. Since the beginning of July 2006, the number of deaths has been stable and comparable to the numbers in the three preceding years.

Figure. Comparison of numbers of deaths in summer, 2003-2006, data from 1152 communes



Independent of overall mortality, however, 112 deaths between 13 July and 1 August 2006 that are attributable to the heatwave have been reported to InVS by the local health authorities, and validated by the interregional epidemiology cells.

Table. 112 deaths attributable to the heatwave between 13 July -1 August 2006, reported to InVS

Category	Number	Comments
Older people	66	Aged between 75-99 years
Workers	12	Construction workers, carpenters, roofers, cablemen
Children	1	
Homeless people	3	
Athletes and hikers	4	
Co-morbidity	24	Obesity, bedridden, chronic alcoholism, psychiatric pathologies
Adults without co-morbidity	2	
Total	112	

Health consequences of heatwaves in Europe

The current heatwave is not limited to France; much of Europe is experiencing very hot weather. The health consequences of this heatwave at the European are very difficult to evaluate at this stage. Not every country has a health surveillance system dedicated to heatwaves, and even for those systems that are active, data are mostly not yet available.

This article was adapted from references 11 and 12 by the authors

Note

InVS participates in EuroHEAT, the European network coordinated by WHO, made up of 10 countries (Greece, Italy, France, Hungary, the United Kingdom, Luxembourg, Germany, Israel, Saudi Arabia and Finland). The network's aim is to improve public health strategies to deal with extreme temperatures, particularly heatwaves.

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