MASS PSYCHOGENIC ILLNESS AND HOW TO RESPOND TO INCIDENTS

It is important for public health practitioners to familiarise themselves with mass psychogenic illness to reduce the psychological and financial burden of these incidents says Catherine Keshishian, an Environmental Public Health Scientist with the Health Protection Agency (HPA).

Mass psychogenic illness (MPI), also known as epidemic hysteria, mass hysteria and mass sociogenic illness, has been reported for centuries and from all corners of the world, and is not uncommon in the UK. Whereas in the past, episodes were attributed to witchcraft, possession and malicious poisoning, today they are often attributed to perceived exposure to chemicals or radiation, and can thus present a challenge for public health response.

What is mass psychogenic illness?

MPI can be defined as 'widespread, subjective symptoms thought to be associated with environmental exposure to a toxic substance, in the absence of objective evidence of an environmental cause' (Jones *et al.*, 2000). In other words, incidents involve two or more people who share beliefs as to the cause of their symptoms, although no source can be found that adequately explains the symptoms reported.

As there is no biological basis for the symptoms experienced, symptoms reported vary between incidents, but can also vary within the epidemic, making it hard to develop a case definition. Two syndromes have been described: motor variant, where motor effects such as hysterical dancing, laughing, convulsions, pseudoseizures are more common, and anxiety variant, where symptoms may include nausea, vomiting, headaches, shortness of breath and confusion (Wessely, 1987).

The latter is more commonplace in the UK and Europe, associated with perceived toxic exposure. Two examples of mass psychogenic incidents are described in the boxes.

What causes mass psychogenic illness?

MPI incidents are by their very nature diverse, with triggers and spreading mechanisms varying between incidents. Boss (1997) reviewed reports of MPI and found the following themes to be common:

- incidents may be triggered by events, such as a real chemical exposure, but the health response to these events goes beyond what can be toxicologically explained
- the presence of an odour, real or perceived, can trigger incidents
- the affected group is often already under psychological stress, such as poor work conditions, exam stress or concern about a nearby chemical company or mobile phone mast
- incidents are more common in 'closed' communities such as schools, workplaces, factories and hospitals
- there is often an 'index case' from which the 'contagion' spreads, and spread is by 'line of sight', e.g. from friend to friend
- symptoms often spread from older or authoritative individuals to younger and lower-status individuals
- females are at a greater risk than males
- most incidents are short-lived, especially if in a school or workplace, but episodes in the community and family may last longer.

How common is mass psychogenic illness?

It is widely recognised that episodes of MPI are grossly underreported (Bartholomew, 2001) and there are no existing data on their frequency. This is due in part to the difficulties in recognising that an outbreak may be mass psychogenic, compounded by the

BOX 1

Coca Cola incident, Belgium 1999 (Nemery *et al.*, 2002)

In June 1999, 10 secondary school children were taken to hospital complaining of nausea, respiratory problems and dizziness in a town in Belgium. Concerned teachers established that the only feature these children had in common was drinking Coca Cola earlier in the day, which the children described as having had a strange odour and taste. Teachers asked other children if they had drunk Coca Cola and felt ill, and a further 27 pupils went to hospital over the next two days. The incident was covered in the national press and on television, and Coca Cola issued a press release recalling the implicated product and stating that some people may experience mild symptoms but there was no health risk.

Over the next few days, four more schools across Belgium had outbreaks of poisoning associated with soft drinks and 75 children attended hospital; the majority of affected pupils were female. Each incident received extensive media attention. The national poisons centre received nearly 800 calls from symptomatic members of the public, and illness was also reported in France.

All of the patients examined were found to be clinically well and biological samples were negative. None of the patients experienced severe or long-lasting symptoms. The implicated beverages included Coca Cola from two different bottling plants, other Coca Cola-produced drinks and even drinks produced by other companies.

Tests by independent laboratories on the Coca Cola products could find no toxicological cause for the symptoms, however Coca Cola suggested that the batch associated with the first outbreak may have contained some hydrogen sulphide at levels detectable as an odour, but below the threshold for associated health effects.

At the time of the Coca Cola outbreaks, another food scandal was occurring in Belgium involving dioxin contamination of meat and dairy products. The Belgian public were therefore very anxious about chemical adulteration of their food; these concerns were reflected and amplified by the media.

Considering the lack of evidence of a cause and the circumstances of the epidemic, the health authorities concluded that the outbreaks were most likely to have been psychogenic in origin.

BOX 2

Warehouse workers, England 2007

Six warehouse staff opened a container of furniture from the Far East and smelt 'chillies'. Believing themselves exposed to chemical fumes, they self-presented to their local Emergency Department with shortness of breath. The Emergency Department was temporarily shut down to prevent further chemical contamination. All of the warehouse staff were observed and sent home well. The Health and Safety Executive were informed and contractors were called in to identify the chemical in the container.

Nine days later, three workers at the warehouse opened a container, noted a chemical odour and presented to the same Emergency Department with headaches, stinging eyes, tight chest and breathing problems.

After investigation, it was found that the source of the odour reported in the first incident was chillies, which had been the container's previous cargo. In the second incident, it is likely that the container had not been ventilated sufficiently following standard fumigation, leading to a lingering chemical odour; levels would have been insufficient to be associated with health effects.

The workers in this second wave would have been concerned about what had occurred previously to their colleagues. In addition, the index case (the first person to experience symptoms) in this incident was diabetic and the other two workers are thought to have had psychogenic symptoms after witnessing the reaction of the index case.

minimal training in mass psychosis received by clinicians and health professionals. In addition, incidents go un-reported as they often spontaneously resolve with no ongoing health effects.

As part of a study between Chemical Hazards and Poisons Division (CHaPD) and the Institute of Psychiatry (Page and Wessely, 2005), a random selection of incidents reported routinely to CHaPD were analysed and 4.6 per cent (13/280) were classified as 'probably mass psychogenic'. Most of these 13 incidents involved considerable input from CHaPD and the local Health Protection Unit, the involvement of numerous emergency services and extensive sampling and monitoring, all at great cost. One case resulted in the closure of a school for three weeks, another the closure of a hospital Emergency Department, another the closure and evacuation of a town centre, and in others, people were decontaminated unnecessarily. The full analysis of these data is ongoing.

Most incidents of MPI are short-lived with transient symptoms; however CHaPD has been involved in longer-lasting episodes.

Recent reports of incidents involving the Health Protection Agency (HPA) have been reported in the *Chemical Hazards and Poisons Report* (issues 9 and 13).

How can incidents of MPI be managed?

It is worth remembering that everyone - young or old, male or female, educated or uneducated, healthy or unhealthy - can experience psychogenic illness and that although there may not be a physically measurable cause, the symptoms experienced are real.

Although there is little evidence for the treatment of MPI, the following ways to manage incidents should be considered:

- MPI is difficult to differentiate from illness caused by chemicals or rapidly spreading infection, and is often a diagnosis of exclusion; however, quick recognition of an incident as mass psychogenic will prevent further spread, reduce anxiety and protect resources
- consider involving a behavioural scientist, psychologist or psychiatrist, with experience in this area, if possible
- if you do not think that this is a toxicological incident, say so as clearly as you can; people need simple, accurate information as soon as possible; saying, however, that this is mass psychogenic illness is likely to be counter-productive – better to say 'unexplained', or 'stress-related'
- remove patients from the scene and separate the ill from not ill to prevent further spread
- minimise unnecessary medical attention and stress, and the presence of emergency services; these can all enhance the problem by adding to anxiety and confirming suspicions that the situation is dangerous; observe patients using a calm and authoritative approach
- encourage return to normal activity
- try to minimise the persistence of rumours and media reports, which can trigger relapses or new cases, by giving out clear health messages; relapses may occur, especially if the episode lasts a long time.

Conclusions

Nearly five per cent of the chemical incidents reported to CHaPD are potentially psychogenic in origin. MPI incidents have the potential to be extremely resource and time-intensive. In order to reduce the psychological and financial burden of these incidents, it is important for public health practitioners to familiarise themselves with MPI.

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REFERENCES

Bartholomew RE. Little green men, meowing nuns and head-hunting panics. A study of mass psychogenic illness and social delusion. 2001; McFarland and Company Inc, North Carolina.

Boss LP. Epidemic hysteria: a review of the literature. Epidemiol Rev 1997; 19(2): 233-243.

Jones TF, Craig AS *et al.* Mass psychogenic illness attributed to toxic exposure at a high school. NEJM 2000; 342(2): 96-100.

Nemery B, Fischler B, Boogaerts M, Lison D, Willems J. The Coca-Cola incident in Belgium, June 1999. Food Chem Toxicol (2002); 40(11): 1657-1667.

Perrett K, Illing P, Clay J. An unusual problem in a primary school: a case of idiopathic environmental illness? Chemical Hazards and Poisons Report 2007; 9:9-10.

Page L, Wessely S. Health and social impacts of chemical incidents. Chemical Hazards and Poisons Report 2005; 5:36-37.

Wessely S. Mass hysteria: Two syndromes? Psychol Med 1987; 17: 109-120.