

complex feature most strongly associated with later epilepsy, particularly with complex partial seizures, was a focal febrile convulsion, which seems most likely to reflect a pre-existing focal abnormality.

Three practical messages emerge. Parents should be reassured about the generally excellent prognosis of febrile convulsions. Prolonged convulsions should still be prevented,¹⁵ and to this end parents may give rectal diazepam, though the working party did not resolve whether this should be done as soon as a convulsion begins or only after five minutes.¹¹ Prophylactic anticonvulsants are rarely needed, and there is no evidence that they have any long term benefit in febrile convulsions.

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Rescuers' psychological responses to disasters

Rescuers need support as well as victims

Many people other than the primary victims may be affected psychologically after a major disaster.¹ Despite their training, emergency workers may fall victim to stressors created by the work they have to do. The findings of an early study after a rail crash in Sydney have been confirmed many times—that over 70% of rescuers may experience transient symptoms of post-traumatic stress: nightmares, anxiety, and flashbacks.² In most cases these settle, and indeed in 35% of the workers in Sydney more positive feelings about the value of life emerged. Nevertheless, in some the distress does not settle and severe morbidity develops. Valuable research has been done to clarify the impact of disasters on rescue workers and suggest ways of preventing long term morbidity.

During rescue operations workers may confront scenes that bring physical revulsion, even vomiting; transient physical, emotional, and behavioural reactions are common. Sometimes when confronted with overwhelming trauma or the strangeness of foreign cultures rescuers may feel helpless and retreat from or misinterpret what they find. On the other hand, the excitement of involvement may generate a “high,” which may extend to overinvolvement and a sense of omnipotence—the counterdisaster syndrome.

The most sensitive indicators of continuing impairment are cognitive impairment and disturbed interpersonal relationships as well as increased arousal, irritability, and loss of interest or withdrawal. Workers may resort to excessive drinking in an effort to forget or dampen distress or to sleep. Marital and family relationships often suffer, and families, especially spouses, may also need support, particularly if the worker remains locked into his or her experience.

Characteristics of the disaster, the rescue operation, and the rescuer himself may all affect the degree of stress experienced. For example, gruesome tasks, particularly when there are multiple deaths, mutilated bodies, or the deaths of children, are stressful for most workers. Even trained body handlers were stressed by recovering bodies after the Mount Erebus air disaster, with a quarter still showing stress 20 months later.³ Similarly, after the mass suicide in Jonestown experienced servicemen were distressed by the large numbers of dead, the rotting bodies, and the futile deaths of children.⁴

Emergency workers are as susceptible as any others to ordinary work related stress arising out of organisational or management issues.⁵ A massive disaster is likely to aggravate many of these and provide an additional psychological burden.

Conversely, careful organisation and management may be powerful antidotes to stressor effects.⁶ The police who helped retrieve bodies after the explosion on the Piper Alpha oil rig were provided with detailed induction to their tasks, explaining the importance of what they were doing, their possible reactions, and the need to attend to their own welfare. They worked in pairs with an older, experienced officer in each, their shifts were limited, they were debriefed each day, and informal support was available from a psychiatrist. They showed no long term effects from their stress. Even when stress is experienced at “caseness” levels by disaster workers, as in the fire at Bradford football stadium, brief counselling sessions can facilitate recovery.⁷

From their extensive experience with disasters in the United Kingdom, Hodgkinson and Stewart have identified personal loss or injury, encounters with death, and “mission failure” as the primary stressors for rescue workers.⁸ Frustration at lives that cannot be saved, failure of equipment, delays, and overwhelming demands all contribute to psychological distress. Symptoms may reflect this conflict, with guilt, reconstruction anxiety, general irritability, focused resentment, and loss of interest in work.⁷

Personality characteristics also affect rescue workers' vulnerability to stress. Simply being older and more experienced in itself is protective. “Hardiness”—a sense of commitment, challenge, and control—is a protective personality style for many workers.⁸ Coping styles that emphasise sharing problems, constructive use of humour, and the use of social support also seem to be helpful.⁸ Conversely, those who are drawn to action but deny their vulnerability will find it difficult to admit to stress or seek help. Fear that workmates will think them inadequate or that their career prospects will be damaged are the commonest reasons for distressed workers not taking advantage of stress counselling. Among volunteer bushfire fighters in Australia neuroticism and past psychiatric

disorder have been found to contribute to the development of post-traumatic disorder, particularly at lower levels of stress.⁹

Like the police, medical and hospital workers are often seen as immune to stress because of their training. In fact, they are equally likely to be affected but may not have access to support programmes. Studies of debriefing programmes provided after the Hillsborough disaster, where 95 people were crushed to death, showed that hospital staff could benefit: 139 out of 205 people attending debriefing programmes found them helpful, though some did not. Those who remained distressed six to nine months later had had higher levels of exposure, showed more distress symptoms on systematic measures, and were concerned about personal and organisational performance. Nevertheless, as with other rescuers, an appreciable minority found the experience positive, with a renewed appraisal of the value of life.¹⁰

The increased interest in the reactions of rescue workers has been accompanied by the development of programmes such as critical incident (or stress) debriefing. This is usually provided in groups by mental health professionals and peer support workers in the first 24-72 hours after the disaster.¹¹ Anecdotal evidence suggests that it is effective, though no controlled trials have been performed. Clearly also it should be only one part of a range of organisational, educational, and support responses.

Emergency organisations need policies that identify stressful circumstances and teach their staff to cope with them. They should also provide an effective safety net of debriefing and counselling when disasters occur. The support should be based on the expectation that workers will master their own stress. The aim is to help the worker through his or her

experience to a "good enough" retrospective integration of it. When this policy fails workplace and health services must be aware of the potential impact on health, the nature of post-traumatic morbidity, and effective rehabilitation. Such policies of understanding and support also provide a positive environment for the smaller disasters that confront such workers every day.

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Lessons of Chernobyl

Psychological problems seem to be the major health effect at present

The accident at Chernobyl resulted in the largest short term release of radioactive materials to the atmosphere ever recorded from a single source. The major radionuclides released to the environment included isotopes of iodine, caesium, strontium, and plutonium and also highly radioactive fuel fragments or hot particles. The human impact of the accident has been immense. Hundreds of thousands of rescue workers took part in the clean up operation, more than 100 000 people were evacuated, and for many more restrictions on activities and foodstuffs have had a major impact on everyday life in three Soviet republics.

One legacy of Chernobyl is that surface contamination with caesium-137 in about 25 000 km² of land and about 2225 settlements is now at least 185 kBq/m² (5 Ci/km²), with smaller areas having much higher levels or appreciable levels of strontium or plutonium. Minimising the effects of such massive contamination will pose challenging problems to Soviet scientists for many years. Technical problems, however, are not the only ones troubling the affected areas. Social tensions are also rife. Clearly perestroika, food shortages, and ethnic unrest all play their part, and these have been fuelled by inappropriate official secrecy: the first maps summarising environmental contamination were drafted in July 1986, three months after the accident, but they were not published until March 1989. Furthermore, ignorance about the likely effects of exposure to radiation has resulted in even local doctors attributing to the accident a wide variety of diseases never

previously associated with radiation. Such was the atmosphere of mistrust directed at the authorities and at many Soviet scientists and doctors that the Soviet government asked the International Atomic Energy Agency (IAEA) to evaluate the consequences of the accident and the measures taken to protect the population that continue to live in the afflicted areas. These events led to the establishment of the International Chernobyl Project, whose final report was published last month.¹

Much of the project was concerned with the health of people living in villages 30-300 km from Chernobyl that have appreciable caesium contamination. The report's major conclusion was that the largest effects on health currently attributable to the accident are psychological. For example, 45% of people in the surveyed villages agreed with the statement, "I think I have an illness due to radiation." These beliefs were not, however, substantiated by the IAEA team, who found no differences between the contaminated villages and nearby uncontaminated control villages in a wide variety of clinical observations and laboratory measurements, including the prevalence of thyroid abnormalities and haemoglobin concentrations. Additionally, people are concerned about continuing to live in areas with radiation because they feel trapped and their children's future seems uncertain. These fears are reinforced by the many restrictions on eating foodstuffs and on other activities which, ironically, the IAEA judged to have been too extensive. Many of the measures