Psychosocial Response to Mass Casualty Terrorism: Guidelines for Physicians

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Background: All physicians would need to address the psychosocial consequences of a mass casualty terrorist attack should it occur.

Method: A review of evidence and expert opinion regarding psychosocial response to mass casualty incidents was performed. Data were obtained via the PubMed database in an English-language search using the terms *PTSD secondary prevention*, *psychological first aid*, and *disaster psychiatry* and the dates 1995 through 2004.

Results: There is a National Institute of Mental Health consensus statement on the psychiatric response to mass violence, but sparse psychopharmacologic literature. Psychotherapeutic interventions are well studied in posttraumatic settings.

Conclusions: The physician's response to mass casualty terrorism must address the high volume of patients with anxiety reactions and somatic symptoms likely to present for care. Supportive interventions include fostering a sense of safety and efficacy, connecting patients with communities and services, and helping parents talk about the trauma with their children. In the future, early pharmacologic interventions may be proven effective.

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After the terrorist attacks of September 11, 2001, there was renewed interest in defining the optimum psychiatric care for victims of mass casualty incidents. Terrorism is psychological warfare, often utilizing tactics designed to create mass casualties with maximum psychological impact.[1] This article will provide an overview of the issues involved in the psychosocial care of mass casualty victims from the standpoint of medical professionals. Literature pertinent to the normal psychological response to mass violence was reviewed, as well as expert opinion on recommended psychiatric interventions.

EXPECTED PSYCHOLOGICAL CONSEQUENCES OF MASS CASUALTY INCIDENTS

Likely venues for physicians to encounter psychosocial problems immediately following a mass casualty incident include the emergency department as casualties arrive in the hospital, shelters where displaced persons are beginning to reestablish contact with medical care, and in wards among hospitalized patients whose psychiatric needs are not yet addressed.

In the initial phase during which danger is still perceived, only 12% to 25% of civilians are able to analyze danger, form a plan, and act, and there may be competition for perceived (or truly) scarce medical resources. This degree of mass confusion has clear implications for the need for supportive interventions.[2]

Once the danger is removed, other specific psychological responses develop. Anxiety is the most salient, but others may include survivor guilt, scapegoating, grief, withdrawal, magical thinking about microbes (in biological or chemical attacks), and loss of faith in social institutions.[3] A study[4] of the Tokyo sarin gas attack revealed that a broad variety of psychiatric symptoms commonly develop in survivors.

Somatization is a prominent feature of the anxiety reaction to chemical attacks. Almost 40% of civilians near Scud missile attacks in Israel during the first Gulf War reported dyspnea, tremor, sweating, anxiety, and mood lability.[2] Somatization symptoms may resemble symptoms a patient expects exposure to have caused.

Physicians may also face the social ramifications of quarantine, which may be required in suspected biological attacks. The risk of exposure should be weighed carefully in deciding whether it is appropriate for unexposed parents to join their children in quarantine.[2]

MENTAL STATUS CHANGES IN BIOLOGICAL/CHEMICAL ATTACKS

Mass casualties due to biological or chemical agent attack carry a special set of challenges for the clinician. Biological attack is likely to present as a gradually increasing population of patients with similar complaints, whereas

chemical attacks would be expected to produce a sudden rush of patients, likely in conjunction with a known explosion. Most health care professionals will have had little experience diagnosing and treating exposure to these biological or chemical weapons, several of which can directly cause mental status changes resembling normal reactions to stress, further hindering diagnosis and treatment.

Nerve agents such as the organophosphates VX and sarin are likely to cause intellectual impairment, anxiety, psychomotor retardation, disturbed sleep, unpleasant dreams, slow speech, and aphasia. Most neuropsychiatric effects resolve over several weeks to 6 months. However, the treatment of organophosphate poisoning may require as much as 60 to 100 mg of atropine, which can cause anticholinergic side effects mimicking the mental status changes caused primarily by the toxin.[2]

Dissociation due to anxiety in mass casualty incidents may be difficult to differentiate from delirium. Dissociating patients may be easier to reorient, and their mental status will steadily improve over time, while delirium is associated with fluctuating levels of consciousness.[5]

Blister agents such as chlorine gas can cause delirium due to intense pain from skin lesions, which must be treated adequately. Biological agents may cause delirium as a general effect of severe fever or sepsis. However, specific agents to keep on the differential include anthrax spores, which may cause progressive meningitis, and viral agents, which can be associated with encephalitis.[2]

EARLY PSYCHIATRIC INTERVENTIONS IN MASS VIOLENCE

Two psychiatric goals in a disaster situation are to mitigate the effect of the incident on the mental health of patients in the acute period and to prevent long-term sequelae of the incident, such as posttraumatic stress disorder (PTSD). The first priority in dealing with the psychological consequences of a biological or chemical attack is addressing normal mass anxiety through "psychological first aid" and psychoeducation through the media or institutions such as schools and churches. It should be emphasized that it would be difficult to distinguish between a normal stress reaction and acute stress disorder (with the increased risk of developing PTSD) until 10 to 14 days after the incident.

Since mass casualty incidents occur infrequently and without warning, most PTSD prophylaxis studies involve other types of trauma. There are more data on psychotherapeutic strategies than on pharmacologic prophylaxis.

Psychosocial Interventions

The National Institute of Mental Health (NIMH) sponsored a workshop in 2001 to develop a consensus on early interventions for mass violence.[6] The NIMH workshop concluded that there is reasonably convincing evidence for the effectiveness of early brief focused psychotherapeutic intervention for reducing distress in high-risk populations, including widows and bereaved family members. There is also convincing evidence that selected cognitive-behavioral approaches may reduce incidence, duration, and severity of acute stress disorder, PTSD, and depression in trauma survivors. However, the NIMH workshop consensus states that critical incident stress debriefings (one-to-one recitals of events and expression of emotions evoked by recent traumatic event) do not consistently reduce risks of PTSD, and may heighten adverse outcomes among those with high arousal symptoms. Furthermore, there is no evidence that eye movement desensitization retraining provides an advantage over other early interventions.[6]

There is evidence that excessive media exposure to images of trauma is a risk factor for later PTSD and depression, both in those directly exposed to trauma[7] and in those who were not personally involved.[8] Early psychosocial intervention should seek to minimize such media exposure, especially in those with risk factors for psychological complications.

Pharmacologic Interventions

There is some data on early PTSD prophylaxis with β-blockers, corticosteroids, and benzodiazepines. A pilot study[9] of propranolol for 10 days at a dose of 160 mg per day given to motor vehicle accident victims identified in the emergency department demonstrated no benefit on the Clinician-Administered PTSD Scale at 1 month, but physiologic responses were significantly greater among patients taking placebo when challenged with scripted imagery at 3 months. One case report[10] suggests that propranolol may benefit retraumatized PTSD patients acutely. Another study[11] gave 11 subjects propranolol 40 mg t.i.d. for 1 week (followed by a taper) after a motor vehicle accident or physical assault and compared them with 8 subjects who refused propranolol. Though not randomized, the groups had no significant differences, and at 2 months, there were significantly lower rates of patients meeting DSM-IV criteria for PTSD, and mean PTSD symptom scores on the Treatment Outcome PTSD Scale were significantly lower in those who received propranolol.[11]

Hydrocortisone has been studied[12] in intensive care unit patients with septic shock. Hydrocortisone lowered the PTSD risk among patients randomized to receive steroids at 31 months.[12] In cardiac surgery patients, stress-dose hydrocortisone also significantly reduced the intensity of chronic stress symptoms at 6-month follow-up.[13] A trial[14] of imipramine with pediatric burn patients was also promising. These studies were relatively small, and their results need to be replicated on a larger scale

before pharmacologic prophylaxis of PTSD can be recommended routinely.

Early use of benzodiazepines should be avoided, as they appeared to increase rates of depression and PTSD if given within 1 week of trauma in 2 studies.[15,16]

TIMING

The timing of interventions is critical. The NIMH workshop consensus[6] delineates several phases of the response to a mass casualty incident. In the initial Impact Phase (0–48 hours), the mode of psychosocial interventions is "psychological first aid," much of which will be performed by nonphysician clinicians working with medical doctors. Physicians may be asked to consult with situation commanders regarding public mental health considerations. They should encourage policymakers to establish a sense of safety, reduce population exposure to trauma, strengthen natural communities, understand and use symbols for community cohesion, establish early crisis intervention services, and utilize rituals to honor survivors, rescuers, and victims.[1]

The Rescue Phase (up to 1 week) is characterized by ongoing recovery, safety, and medical operations. Health care providers must triage the symptomatic, identify the vulnerable, and connect patients to services. While supporting medical efforts, it is important to minimize the time patients spend in the patient role.

Recovery may take as long as 1 to 4 weeks. Health care providers should monitor the recovery environment for unmet physical needs, support grieving, and encourage a move to normal life as quickly as possible.

The Return-to-Life Phase (2 weeks–2 years) involves identifying at-risk individuals for continued follow-up. There is no clear evidence indicating which specific groups are at higher risk, but some follow-up is likely appropriate for patients with acute stress disorder, medical/surgical problems, wounds, intense exposure, substance abuse, a preexisting psychiatric disorder, or a prior history of trauma—especially if meaningfully related to the disaster. In addition, first responders and the bereaved may be at risk.[6,17]

PSYCHOSOCIAL FIRST AID

The outline below summarizes suggestions for supportive interventions from the Red Cross, the Centers for Disease Control and Prevention, and the American Psychoanalytic Association.[5,18–20]

Safety

Take care of patients' physical well-being.
- Hydration
- Food
- Sleep hygiene education

Avoid avoidance of nontraumatic stressful stimuli.

Avoid excessive traumatic exposure including media coverage, especially for children.

Social Support

Connect patients to natural communities: schools, religious institutions, friends, family (reunite parents with children as quickly as possible).

Help patients and families understand their emotions as normal reactions to stress.

Efficacy

Encourage patients to find constructive activities—volunteer time, give blood, take a cardiopulmonary resuscitation class, etc.

Encourage a return to routines.

Help patients prioritize problems; break them into tasks, and address them one at a time.

Advise waiting a few months to make major decisions.

Educate patients about self-care strategies for stress such as relaxation techniques.

Talking to Children About Trauma

See if children have questions about the event every so often.

Ask the child to explain what happened, being attentive to an inappropriate attribution of responsibility the child may take for some part of the event.

Reestablish children's daily routines as soon as possible.

Tailor responses to age level.
- All ages: Regression to earlier patterns of behavior (e.g., bedwetting) is normal.
- Two to 7 years: Expect somatic symptoms; focus on reassuring children that they are safe.
- Seven to 11 years: It is normal for children in this age group to ask questions often and repeatedly, which should be tolerated.
- Teenagers: Adolescents need peer support and normalization. They may increase risky behaviors or acting out and be less willing to seek help for depression.

Parents should monitor their own anxiety—children internalize parents' emotions.

Let children know that they are safe now and that adults are working to keep them safe.

SUMMARY

The medical and psychological sequelae of a mass casualty terrorist attack will occur together. Physicians will care for patients with acute stress in a community or shelter setting, as well as those with mental status changes in a hospital setting. They will confront psychosocial challenges such as somatization, anxiety symptoms, mental

status changes, and poor coping skills in those patients presenting with injuries related to the attack. Physicians of all specialties may have the first opportunity to offer brief supportive interventions in the framework described above, and to make referrals to mental health clinicians.

Physicians should help minimize victims' exposure to traumatic stimuli both in providing direct patient care and in advising policymakers. Current evidence supports early short-term cognitive-behavioral therapy and supportive counseling for survivors, but critical incident stress debriefings and early benzodiazepine use may cause harm. Psychiatrists and other physicians will supervise the provision of supportive interventions, which include creating a sense of safety and efficacy, connecting patients with natural communities and services, and helping parents to talk about the disaster with their children.

Drug names: atropine (Atropen), hydrocortisone (Cortef and others), imipramine (Tofranil and others), propranolol (Inderal, Innopran, and others).

REFERENCES

1. Everly GS Jr, Mitchell JT. America under attack: the "10 commandments" of responding to mass terrorist attacks. Int J Emerg Ment Health 2001;3:133–135
2. DiGiovanni C Jr. Domestic terrorism with chemical or biological agents: psychiatric aspects. Am J Psychiatry 1999;156:1500–1505
3. Holloway HC, Norwood AE, Fullerton CS, et al. The threat of biological weapons: prophylaxis and mitigation of psychological and social consequences. JAMA 1997;278:425–427
4. Okumura T, Takasu N, Ishimatsu S, et al. Report on 640 victims of the Tokyo subway sarin attack. Ann Emerg Med 1996;28:129–135
5. Cloak NL. Psychological first aid: emergency care for terrorism and disaster survivors. Curr Psychiatry 2004;3:12–23
6. National Institute of Mental Health. Mental Health and Mass Violence: Evidence-Based Early Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practice. Washington, DC: US Government Printing Office; 2002. National Institutes of Health publication 02-5138
7. Ahern J, Galea S, Resnick H, et al. Television images and psychological symptoms after the September 11 terrorist attacks. Psychiatry 2002;65:289–300
8. Pfefferbaum B, Seale TW, Brandt EN Jr, et al. Media exposure in children 100 miles from a terrorist bombing. Ann Clin Psychiatry 2003;15:1–8
9. Pitman RK, Sanders KM, Zusman RM, et al. Pilot study of secondary prevention of posttraumatic stress disorder with propranolol. Biol Psychiatry 2002;51:189–192
10. Taylor F, Cahill L. Propranolol for reemergent posttraumatic stress disorder following an event of retraumatization: a case study. J Trauma Stress 2002;15:433–437
11. Vaiva G, Ducrocq F, Jezequel K, et al. Immediate treatment with propranolol decreases posttraumatic stress disorder 2 months after trauma. Biol Psychiatry 2003;54:947–949
12. Schelling G, Briegel J, Roozendaal B, et al. The effect of stress doses of hydrocortisone during septic shock on posttraumatic stress disorder in survivors. Biol Psychiatry 2001;50:978–985
13. Schelling G, Kilger E, Roozendaal B, et al. Stress doses of hydrocortisone, traumatic memories, and symptoms of posttraumatic stress disorder in patients after cardiac surgery: a randomized study. Biol Psychiatry 2004;55:627–633
14. Robert R, Blakeney PE, Villarreal C, et al. Imipramine treatment in pediatric burn patients with symptoms of acute stress disorder: a pilot study. J Am Acad Child Adolesc Psychiatry 1999;38:873–882
15. Gelpin E, Bonne O, Peri T, et al. Treatment of recent trauma survivors with benzodiazepines: a prospective study. J Clin Psychiatry 1996;57:390–394
16. Davidson JRT. Long-term treatment and prevention of posttraumatic stress disorder. J Clin Psychiatry 2004;65(suppl 1):44–48
17. Ritchie EC. Mass violence and early intervention: best practice guidelines. Prim Psychiatry 2003;10:43–48
18. Brinich P. Psychoanalysts offer their expertise for helping children and adults deal with the trauma of the attack on America. Available at: http://www.apsa.org/ctf/pubinfo/NewsRoom/newsreleases/traumarelease.html. Accessed July 2004
19. Centers for Disease Control and Prevention. Coping with a traumatic event: information for the public. Available at: http://www.bt.cdc.gov/masstrauma/copingpub.asp. Accessed July 2004
20. American Red Cross. Picking up the pieces after a disaster. Available at: http://www.redcross.org/services/disaster/0,1082,0_23_,00.html. Accessed July 2004