February 2002

Preventing Traumatic Stress: Public Health Approaches

Susan B. Sorenson
University of Pennsylvania, sorenson@sp2.upenn.edu

Postprint version. Published in *Journal of Traumatic Stress*, Volume 15, Issue 1, February 2002, pages 3-7.
Publisher URL: http://dx.doi.org/10.1023/A:1014381925423

NOTE: At the time of publication, author Susan B. Sorenson was affiliated with the University of California. Currently (August 2007), she is a faculty member in the School of Social Policy and Practice at the University of Pennsylvania.

Preventing Traumatic Stress: Public Health Approaches

Abstract
Population-based approaches to the primary prevention of posttraumatic stress disorder (PTSD) focus on the prevention of the stressor itself. Policy decisions also consider ways to allocate resources to best reduce potential damage from traumatic stressors and to ameliorate any resulting harm. A balance between broad risk prevention approaches and narrower treatment and recovery strategies can redistribute the risk of exposure and lead to fewer cases. Understanding that PTSD and its costs affect not only individuals who seek care, but also many others whose lives overlap with these individuals as well as society as a whole, further informs and shapes prevention decisions.

Keywords
policy, population, prevention, PTSD, risk, stressor, trauma

Comments
Postprint version. Published in *Journal of Traumatic Stress*, Volume 15, Issue 1, February 2002, pages 3-7.
Publisher URL: http://dx.doi.org/10.1023/A:1014381925423

NOTE: At the time of publication, author Susan B. Sorenson was affiliated with the University of California. Currently (August 2007), she is a faculty member in the School of Social Policy and Practice at the University of Pennsylvania.

Running Head: PREVENTING TRAUMATIC STRESS

Preventing Traumatic Stress: Public Health Approaches

Susan B. Sorenson, Ph.D.

School of Public Health

University of California, Los Angeles

Number of words: 2711

Number of tables: 1

Number of figures: 1

Keywords: policy, population, prevention, PTSD, risk, stressor, trauma

Journal of Traumatic Stress Studies, 2002, 2002;15:3-8.

Abstract

Population-based approaches to the primary prevention of posttraumatic stress disorder (PTSD) focus on the prevention of the stressor itself. Policy decisions also consider ways to allocate resources to best reduce potential damage from traumatic stressors and to ameliorate any resulting harm. A balance between broad risk prevention approaches and narrower treatment and recovery strategies can redistribute the risk of exposure and lead to fewer cases. Understanding that PTSD and its costs affect not only individuals who seek care, but also many others whose lives overlap with these individuals as well as society as a whole, further informs and shapes prevention decisions.

Preventing Traumatic Stress: Public Health Approaches

The numerous negative sequelae of exposure to severe trauma affect the individual, his or her family, and the community at large. To explore public policy responses to the problem of traumatic stress, it is useful to shift the emphasis from posttraumatic stress disorder (PTSD) itself to a focus on the stressors and exposures that give rise to the disorder. This perspective is based on the recognition that population-level decisions are central to creating exposure (e.g., whether to send troops into war), reducing exposure (e.g., by developing "gun free" zones around schools), providing preventive care to individuals after exposure to traumatic events (e.g., critical incident debriefings after officer-involved shootings), and treating affected individuals (e.g., the length and type of treatment allowed under managed care). In addition, a broad definition of who constitutes an affected individual needs to be considered. In interpersonal violence, for example, perpetrators, bystander witnesses, and direct victims of traumatic events--along with family members and other members of collateral support systems--are key players in prevention and treatment strategies. With this perspective, we may begin to frame the policy debate to include not only treatment of PTSD, but also primary prevention strategies that may actually lower its occurrence in the population.

Traumatic stressors, a necessary but not sufficient etiologic factor in PTSD, are relatively common in the United States (e.g., Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Norris, 1992). Mutilating car crashes, drownings, and other unintentional injuries are the single leading cause of death of all persons under age 45 (see Table 1). Intentional traumatic deaths, that is, homicide and suicide, rank high among the causes of death as well. Given that if a young adult dies, it is likely to be a traumatic mutilating death, we can expect that substantial numbers of parents, spouses, and children are all potentially exposed to a severe stressor that may be related

to the development of negative mental health outcomes. Whether these negative mental health outcomes are transitory and expected reactions to extreme situations or become codified into a diagnosable mental disorder such as PTSD, the reduction of the stressors themselves will lessen the possibility of subsequent negative mental health outcomes in a wide range of people.

Insert Table 1 about here

Traumatic stressors may include not only exposure to a traumatic event itself, but also the degree of *perceived risk* of exposure to traumatic events. For instance, extensive media focus on high school shootings in recent years shifted to new levels the nation's understanding of the risk of personal violence that is a daily part of our lives. Individuals' responses to their perception that stressor prevalence is rising can form negative cycles that create a higher-risk society. Population-level interventions can best break these cycles. Moreover, individuals' responses to perceived increased risk may, paradoxically, increase their risk further. To illustrate, although having a firearm is widely believed to serve a protective function, keeping a gun in the home may actually increase ones risk of becoming a homicide victim or perpetrator (e.g., Kellermann, Rivara, Rushforth, Banton, Reay, Francisco, Locci, Prodzinski, Hackman, & Somes, 1993; Kleck & Hogan, 1999). Thus, purchasing a handgun in response to a fear of crime may increase risk of firearm death.

Public Health Approaches to Health Problems

Public health takes a population-based approach to studying health issues and formulating policies to address them. Rather than treating individual health problems on a case-by-case basis, a public health approach attempts to identify the factors that give rise to or that

reduce the number of cases in the population.

An essential step in a population-based approach is the proper recognition of cases. Social norms that encourage or discourage care-seeking behavior, experts' understanding of the quality of measurement methods, the actual quality of the measurement methodologies, and whether individuals in a population have access to health care all will affect whether a constellation of symptoms are identified and correctly attributed to a disease or illness. More specifically, the identification of population factors associated with PTSD cases can only reflect the patterns among those cases that succeed in becoming recognized as cases.

Recognizing that limited resources are available to prevent or ameliorate health problems and their impact on the surrounding community, optimal allocation is an important consideration in policy decisions. In addition, policy decisions regarding health problems weigh the effects of preventive strategies against or in combination with other important social policies. Population health prevention methods often implicate personal liberty and privacy, sometimes at a level that is unacceptable in this country. Policy decisions often incorporate these social and legal norms implicitly.

Public health interventions generally can be classified into four basic categories: education, regulation, legislation, or litigation. *Education* programs focus primarily on changing behavior by making people aware of risks of which they might not have been aware previously. Education also may have the effect of raising community awareness levels to the point where social mores and norms begin to change. Tobacco control and anti-drunk-driving policies owe a great deal of their success to such shifts in social acceptability. *Regulations* may be aimed at professionals such as physicians, institutions such as hospitals, and corporations such as those that manufacture potentially dangerous products or that produce hazardous waste materials.

Legislation may outlaw or restrict behavior or the distribution of products deemed risky, potentially costly, or otherwise politically unacceptable to society, such as riding a motorcycle or bicycle without a helmet, or the use of certain classes of drugs. Legislation also may implement and fund programs intended to promote social welfare. *Litigation* (and prosecution) may be used to assign responsibility and costs to individuals or entities that may have harmed or violated the rights of an individual or a group, and, thus, simultaneously reaffirms the rights of individuals against specific types of harm. Litigation has held accountable the manufacturers of harmful drugs, dangerous consumer products, and public agencies such as police departments whose practices harmed specific individuals or classes of individuals. Education, regulation, legislation, and litigation potentially serve multiple purposes. They may primarily be exemplary as disincentives to lessen future risks to the public, may provide avenues of redress to specific individuals, or may be symbolic with little or no direct avenue for effective change.

The four types of interventions work best collectively. Regulations and legislation both set standards and define incentives that eventually result in altered behaviors. Those alterations occur only after some period of education of the public about the changed standards since secret regulations would be meaningless. Often the more controversial aspects of legislation are deliberately left unresolved to avoid political risks or difficulties; therefore, courts may set those aspects of policy. Judicial decisions, in turn, can serve as forceful educators of the public and can influence subsequent exposures to risk. Corporations often protect themselves through political forces, but with court rulings against them, businesses cannot and do not rely on political protection alone. Thus, altered business climates can have an end result that guards the public against traumatic stressors.

Each approach distributes costs among affected individuals, entities, and public

institutions. The choice to criminalize and prosecute certain risk-laden activities requires government budgetary backing; whereas, in a civil case the litigants are responsible for financing their access to the courts. Some redistribution of civil litigation costs has been affected by awarding statutory costs and attorney fees to successful litigants; therefore, for these civil suits there is a higher incentive for the individuals and for their attorneys to pursue litigation as a solution. Legislative and regulatory schemes require some oversight, generally requiring funding from some level of government. Education plans, like litigation, have more flexibility for allocating costs between public and private sectors. In the best scenario, cost allocations for prevention would be tied explicitly to direct responsibility and control for each of the personal, private, and public entities. Such a plan would allow for direct comparison of prevention costs and tangible benefits, thus providing the impetus for the long-term financial commitment of each sector.

Public Health Approaches to Injury Prevention

The field of injury control followed other areas of public health in its development. Long after public health approaches were addressing ways to prevent infectious diseases, environmental toxins, and poisonings at the community level, injuries still tended to be viewed as inevitable chance occurrences. They were not thought of as being preventable until the 1960's when the conceptual work in injury control by Haddon (e.g., Haddon, 1968, 1972) shifted the view of roadway crashes, falls, burns, and drownings. Much of this work involved uncovering the components of accident or event etiology by modifying the host-agent-environment model to a model including the human, the energy vector, and the physical and social environments. Haddon (1968) created a matrix for the conceptualization of the etiology of injuries resulting from motor vehicle crashes.

Haddon's matrix allows us to consider points at which to intervene before the event, during the event itself, and after the event. These time periods can be thought of as roughly similar to primary, secondary and tertiary prevention. The matrix also considers interventions directed at the host or person (i.e., the potential survivor or victim), the agent or vehicle (i.e., the mechanism of the injury or violence), the social environment (i.e., norms, values and mores), and the physical environment (e.g., the structure of the roadway, traffic lights, guard rails, and other such features). This comprehensive approach for directing resources includes primary prevention strategies as well as treatment and rehabilitation strategies.

Pre-event interventions are designed to prevent the occurrence of the phenomenon. For instance, pre-event interventions directed at the host or persons at risk may include education programs to ensure a high level of skill among drivers. Pre-event interventions directed at the agent or automobile might include anti-lock brakes or designs emphasizing high visibility and small blind spots in vehicles. Pre-event social environment interventions may include programs such as designated driver systems that promote the idea that it is unacceptable to let friends drive while under the influence of alcohol. Pre-event environmental interventions may include reflective or raised bumps on roadway surfaces to alert drivers when they drift into an adjacent lane of traffic. *Event* interventions are directed towards minimizing injury in the case that the event occurs. These may include, again, raising the skill level of drivers so that they know how to minimize crash severity, requiring all vehicles to have driver and passenger-side air bags to minimize injuries, educating the public about what to do when they see a car crash, and modifying the physical environment to include breakaway guard rails and poles so that injury is reduced when such structures are struck in a crash. *Post-event* interventions include effective emergency services and physical and mental health rehabilitation care, repair to damaged

vehicles, prosecuting traffic law violators, and timely repair to roadways, signs, and other such structures.

Public Health Approaches to Violence Prevention

Researchers in violence prevention have worked to adapt the Haddon matrix to address violent events. This has proved to be a rather complicated endeavor because the events surrounding violent encounters may have many different precursors. Thus, identifying the most effective points of intervention is in some ways less straightforward than it is for the prevention of unintentional injuries. In addition, although identified, some points of intervention may prove infeasible given limited resources and competing social and political views. The framework, however, provides an excellent starting point for thinking about effective policy interventions.

Insert Figure 1 about here

Figure 1 provides several examples of strategies to reduce firearm injuries. Firearms and ammunition serve as vehicles for the mechanical energy, which causes tissue damage. As can be seen from the examples provided in the matrix, the primary focus is on preventing or reducing the *injury* that results from the violence rather than on preventing the *violence* itself. Such strategies are useful when the mechanism is a clearly defined external vehicle such as a firearm. The Haddon Injury Prevention Matrix is less useful when applied to interpersonal violence that is inflicted by personal weapons (hands, fists, feet), in other words, interpersonal violence such as child physical abuse, incest, battering, and sexual assault. The primary conceptual contribution of public health to injury and violence prevention is likely the focus on the mechanism of the

potential injury.

Resources for Effective Policies

Public policy regarding traumatic stressors, as for any issue, undergoes continual modification. Policy represents and reflects a shifting balance among multiple priorities, for example, the relative social importance of individual privacy zones compared with the value of public safety from random violence. In addition, knowledge is continually growing about which specific characteristics and factors are influential in defining or altering specific behaviors. Preferences among policy options will shift as new knowledge leads to a better understanding of expected results from various strategies of action.

Policy effectiveness may vary with respect to its hoped-for efficacy as well as its utility as implemented. The most well thought out policy may be completely ineffective if the resources and/or the political will to support and enforce it do not exist. To illustrate, police may be required to file a report on any complaint of domestic violence, whether or not the victim is willing to testify, but may lack the desire or the concrete resources to follow through on all but the cases they deem to be the most serious. In the context of limited resources and competing alternative uses for those resources, policy-making bodies often enact policies that a public demands but allocate insufficient funds to support or enforce those policies. For instance, the relevance of quality PTSD treatment programs is undermined if they are inaccessible to populations at high risk.

Policy decisions that consider fiscal capacity and human incentives when designing a strategy to prevent future harm or to motivate socially beneficial actions implicitly allocate responsibilities among individual players and groups. Such an allocation recognizes that the group and the individual have some capacity to exert power and to control, and thus change, their

own actions and those of others. The capacity to exercise such power must be recognized, real, and harnessed for policy designs to be effective.

Conclusion

A primary prevention approach to the reduction of stressors associated with PTSD has multiple benefits. If extreme stressors are reduced (e.g., witnessing a violent death or fearing for one's life during an armed robbery), not only will the likelihood of survivors developing mental disorders such as PTSD be diminished, but fewer health resources will be devoted to treating and rehabilitating the victims, witnesses, and survivors of such exposures. Furthermore, the most basic of health outcomes--survival--will be improved.

Historical examples in public health show that complete understanding is not necessary for successful prevention. Affecting one link in a causal chain may prevent some or even many stressors, for instance, potentially violent situations may become less frequent with effective preventive interventions. However, ongoing research is the key to designing effective interventions and efficiently targeting resources to the populations at greatest risk. One important research need is to improve data collection systems to measure the problem more completely and accurately along with the systematic testing of interventions and longitudinal multi-community studies that will allow for a more rigorous testing of causal hypotheses. Such research will document intervention effectiveness and assess the legitimacy of extrapolating those benefits to a broader implementation of the intervention. The identification of relevant populations is an implicit goal in such measurement systems. Effective transfer of knowledge from researchers to decision-makers, implementers, and educators is essential for progress in PTSD prevention.

Rather than focusing solely on what characteristics of a particular individual led to

his/her disease, a population-based approach examines the structural, environmental, and social context as well as causes in the population as a whole that can be addressed through changes or interventions at the population level. The best treatment for an individual may be to treat the environment around him or her. Research and policy constitute reciprocal processes in reducing stressors that may lead to the development of negative mental health sequelae including PTSD. The choice among possible population-level interventions--or whether to intervene at all--depends upon an understanding of effectiveness, who will gain, who will lose, and societal values.

References

Haddon, W., Jr. (1968). The changing approach to the epidemiology, prevention, and amelioration of trauma: The transition to approaches etiologically rather than descriptively based. American Journal of Public Health, 58, 1431-1438.

Haddon, W., Jr. (1972). A logical framework for categorizing highway safety phenomena and activity. Journal of Trauma, 12, 193-207.

Kellermann, A.L., Rivara, F.P., Rushforth, N.B., Banton, J.G., Reay, D.T., Francisco, J.T., Locci, A.B., Prodzinski, J., Hackman, B.B., & Somes, G. (1993). Gun ownership as a risk factor for homicide in the home. New England Journal of Medicine, 329, 1084-1091.

Kessler, R.C., Sonnega, A., Bromet, E., Hughes, M., Nelson, C.B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. Archives of General Psychiatry, 52, 1048-1060.

Kleck G., & Hogan M. (1999). National case-control study of homicide offending and gun ownership. Social Problems, 46, 275-293.

Norris, F.H. (1992). Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. Journal of Consulting and Clinical Psychology, 60, 409-418.

Table 1. Rank of Injuries among Leading Causes of Death by Age, United States, 1998

	Age in Years					
	1-4	5-14	15-24	25-44	45-64	65+
Rank						
1	A	A	A	A		
2			H			
3	H	H	S		A	
4				S		
5						
6		S		H		
7						A
8					S	
9						
10						

A = Accidents (unintentional injury deaths)

H = Homicides

S = Suicides

Data source: Murphy SL. Deaths: Final Data for 1998. National vital statistics reports; vol 48, no.11. Hyattsville, MD: National Center for Health Statistics, 2000.

Figure 1. Strategies to Prevent Firearm Injuries

	Human	Energy Vector	Environment	
			Social	Physical
Pre-event	Train people in conflict negotiation & anger management	Eliminate handguns	Reduce media violence (e.g., TV, video games)	Patrol streets regularly by law enforcement
Event	Provide people with bullet proof vests	Allow the sale of small caliber bullets only	Change norms regarding intervening (e.g., in domestic violence)	Install video cameras to identify events in progress
Post-event	Train people in first aid, provide rehabilitation services	Melt, rather than resell, confiscated weapons	Provide access to emergency health care regardless of insurance coverage	Provide nearby emergency medical care

Based on Haddon's injury matrix (1968, 1972).