The Public Costs of Mental Health Response: Lessons From the New York City Post-9/11 Needs Assessment

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ABSTRACT *There is evidence of increased rates of psychiatric disorder in New York City in the period following September 11th. Public mental health services need to develop plans to respond to these higher rates of disorder. This article describes what we know and do not know with respect to the costs of such response. We examine evidence on the demand for mental health services, the nature of services to be provided, the characteristics of providers, and the likely sources of payment for care in the context of the attacks of September 11th in New York City.*

Traumatic events that affect large populations, such as the terrorist attacks of September 11, 2001, are likely to have large-scale mental health sequelae. Recent research suggests that the attacks of September 11th were associated with significantly elevated levels of psychiatric morbidity.¹ Similarly high rates of mental health disorders were found in the aftermath of the Oklahoma City, Oklahoma, bombing.² This evidence suggests that, as part of the work that public health departments around the country do to confront the risk of further terrorism, they need to prepare mental health service responses. We report here on the lessons learned about the costs associated with such a response; our report is based on work we conducted at the request of the New York State Office of Mental Health as part of a post-September 11th needs assessment. A further description of that assessment is provided in the article by Herman et al.³ in this issue.

We prepared cost estimates for public mental health services based on Herman et al.'s³ assessment of the epidemiology of mental health disorders arising from the terrorist attacks. The population at risk of mental health sequelae in New York State in consequence of the attack was very large—including the over 8 million residents of New York City; 4.7 million residents of the surrounding counties, where many of the direct victims lived; and residents of the rest of the state, who saw these traumatic events on television. For this reason, we tried to err on the side of fiscal caution when possible. Even a low cost per case, multiplied over this enormous population, would yield extraordinarily high aggregate spending estimates. The estimates described below should be understood as lower bounds for planning purposes.

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Planning for the resources needed for a public mental health response requires developing a model of service demand following a terrorist attack. This model must incorporate information in four areas: the demand for mental health services, the nature of services to be provided, the characteristics of providers, and the sources of payment for care. The model that results from combining information across these areas will, necessarily, yield information that is associated with considerable uncertainty and that is quite context specific. We have little information in several of these areas. In some areas, there is considerable dispute about the information that does exist. Finally, given the diversity of the US health care delivery and financing system, in some areas model parameters must be situation specific.

DEMAND FOR MENTAL HEALTH SERVICES

The first step in assessing the demand for posttraumatic mental health services consists of measuring the incidence of associated events in the population. Galea et al.¹ found that as many as 7.5% of adults in lower Manhattan showed signs of posttraumatic stress disorder (PTSD), and as many as 9.7% reported symptoms of depression in the weeks following September 11th. Longer-term studies suggest that 12% of those with PTSD continue to be symptomatic 9 years after the trauma.⁴

The epidemiology of illness, however, is only the first step in assessing demand. As prior studies of mental health problems in community samples have shown, only 25% of people in the community who meet diagnostic criteria for any psychiatric disorder use services in the health care sector in any given year, as do about 28% of those with PTSD, while as many as 40% of those who do use services do not meet diagnostic criteria for disorder.⁵ Translating epidemiology into service demand requires making assumptions about whether the relationship between diagnosis and service use following a terrorist attack will be similar to or different from that in other contexts. Herman et al.³ estimated that 62% of those most directly affected who develop disorders and 28% of the general population who develop disorders will use services.

There are reasons to believe that service demand could go in either direction. Outreach efforts are likely to be much greater after an attack affecting an entire population. The stigma of mental illness is likely to be lower when the cause of the illness is identified as a terrorist attack. Financial and other access barriers to help-seeking may diminish. In Oklahoma City, about 70% of direct victims with a diagnosable mental disorder related to the terrorist attack utilized mental health services (C. North, MD, Department of Psychiatry, Washington University, St. Louis, MO, personal communication).

On the other hand, people may turn inward after an attack and avoid disrupting normal routines, even to seek care. Furthermore, people with pre-existing mental disorders, who were not direct victims of the attack, may reduce their service use. In the 2 months after September 11th, key informants in New York City area psychiatric facilities and managed behavioral health organizations reported significant reductions in routine mental health service use. These reductions may counterbalance any attack-related increase. Herman et al.³ estimated 527,790 people will develop PTSD, and 80% of these cases will last at least 3 months.

A final element in assessing the demand for mental health services is the possibility that a terrorist attack will lead to exacerbations of existing psychiatric disorders. The literature provided no information on this point, and we did not incorporate it in our estimates.

NATURE AND COST OF SERVICES PROVIDED

The two main psychiatric disorders expected to arise as a consequence of a traumatic event are PTSD and depression. There are well-established clinical guidelines for treating depression.⁶ The estimated cost of treating a case of depression in the most cost-effective manner based on these guidelines is about \$1,000 or less.⁷ Although there is considerable practice variation, evidence suggests that about half of those with depression are treated in accordance with these guidelines.⁶

The more prevalent condition likely to arise in the population as a whole (as opposed to families of direct victims) is PTSD. There is less consensus about how to treat PTSD effectively.⁸ The latest treatment guidelines for PTSD recommend a combination of psychotherapy and medication.⁹ The guidelines suggest that 18 to 20 annual visits to a mental health professional along with the use of a selective serotonin reuptake inhibitor (SSRI) medication provide effective treatment for PTSD.¹⁰ There is less evidence, however, that guideline-consistent treatment is, in fact, provided to those with PTSD. This lack of consistency may be a consequence of the uncertainty that surrounds the guidelines or the fact that PTSD is often comorbid with other mental disorders, especially depression and substance abuse.¹¹

Since we could not find evidence on the actual treatment patterns for people with PTSD, we used the 1996 Medical Expenditure Panel Survey (MEPS) (conducted by the Agency for Health Care Research and Quality and the National Center for Health Statistics) to find the average number of clinical visits and medication cost for the 110 people in that sample who had a diagnosis of ICD-9-CM (International Classification of Diseases, 9th Revision, Clinical Modification) code 308 (acute reaction to stress, including catastrophic stress, posttraumatic stress disorder, and "combat fatigue") in the survey year. Among persons with at least 1 mental health clinical visit (including visits to general practitioners, psychiatrists, and non-MD professionals) the mean number of visits was only 6.3, well below that recommended by the guidelines. In addition, the MEPS indicated that 78% of those with PTSD received 6 visits or fewer, and less than 8% received at least 19 visits. The MEPS also indicated some utilization of inpatient mental health services among those with PTSD, although such treatment is not explicitly discussed in the guidelines. Further, the MEPS indicated that only 51% of those with diagnosis code 308 received any psychotropic medication.

Planning for treatment also requires estimating the cost of treatment. The cost of a mental health visit varies substantially by geographic location. In New York State, data on the cost of an individual mental health visit in the public mental health system are available through the New York State Office of Mental Health.* In New York City, the average cost of a visit was \$132.57. In the rest of the state, the average cost was \$94.84. For prescription medication, data from MEPS indicated an average of \$745 (2002 dollars) annual expenditure on medication among people with diagnoses relating to ICD-9-CM code 308 and at least one clinical visit. A survey of area pharmacists indicated that a 1-month supply of Paxil, one of several SSRI medications commonly used to treat PTSD, costs approximately \$100 on the retail market.

*Obtained by K. Jones, PhD, Nathan Kline Institute for Psychiatric Research and the Center for the Study of Issues in Public Mental Health, in communication with J. Simon, Resource and Reimbursement Program Development Specialist III, New York State Office of Mental Health. The average cost per visit was calculated using the Consolidated Fiscal Report (CFR) for fiscal year July 1998–June 1999 for components of freestanding outpatient clinics (article 31).

We concluded that average treatment among those with a diagnosis of PTSD would consist of seven outpatient visits and a 6-month supply of medication. In New York City, this treatment regime would cost approximately \$1,500 per person. This conclusion assumes that most people will not get the treatment recommended under guidelines. Thus, the case cost represents the likely average mental health care utilization of a person with PTSD, but the effectiveness of treating PTSD under this utilization pattern is questionable.

PROVIDERS OF MENTAL HEALTH SERVICES

Many people will need mental health services after an attack. Most of them, however, will not be served by the public mental health system. People who experience psychiatric symptoms following a terrorist attack and who seek services may receive them from many sectors. In the wake of a terrorist attack, special, disaster-specific mental health services may be arranged. These services offer short-term crisis counseling and are offered at nonconventional locations. In New York, Project Liberty, the program sponsored by the Federal Emergency Management Agency, continues to offer disaster-specific mental health outreach services.

Many people are likely to seek care from general practitioners. Nearly a third of service use among those with any psychiatric diagnosis (and among those with PTSD) in the 1991 National Comorbidity Survey was to general practitioners.⁵ Public mental health systems often do not think of general practitioners as frontline mental health service providers, but they are likely to be among the most frequently used source of services. Treatment provided by these practitioners is not generally funded by public mental health agencies.

Employees of affected companies may also receive services through existing employee assistance programs (EAPs). These programs may be staffed internally, through contracts with behavioral health care companies, or through contracts with outside providers. Key informants in New York suggested that EAPs played an important role in providing counseling to employee groups in the aftermath of the terrorist attacks.

Some people will seek care from specialty mental health service providers in the public or private sectors. The distinction between public and private sector mental health providers has become increasingly blurred. Some public mental health systems contract services from nonprofit mental health service agencies. Others contract with managed behavioral health care companies, which in turn contract with a range of providers. Others provide service using their own salaried staff. In New York City, some nonprofit providers, such as the Jewish Board of Child and Family Services, provided ongoing services in the public mental health system, crisis services in the disaster-specific mental health system, and privately contracted services to companies that had been affected by the disaster (R. Abramovitz, MD, Chief Psychiatrist for the Jewish Board of Family and Children's Services, personal communication).

Finally, some people will seek care from informal care providers, such as clergy, nonprofessionally staffed support groups, 12-step programs, and teachers, as well as friends and family. These channels of care are hard to count and locate.

The diversity and organizational overlap of care sources makes planning more complicated. At the same time, if used appropriately, this structure introduces useful redundancy into the mental health system. Public mental health planning would benefit from considering ways to incorporate educational and operational linkages

to sources of care outside the public mental health system. Similarly, increasing the capacity of general practitioners and nonmedical service providers to address less-complicated cases in the wake of an attack will reduce the strain on the public specialty mental health sector.

PAYING FOR MENTAL HEALTH SERVICES

The US health care system is a multipayer and multiprovider system. In general, but with many specific exceptions, the private mental health care system serves those with private insurance and Medicare, while those with Medicaid coverage and the uninsured, when treated, receive care through the public mental health system. The overlap between public and private service providers means that the only way to estimate the burden on the public mental health system is by reference to insurance categories. In our estimates, we assumed that those with Medicaid coverage and the uninsured would use the public system, while those with other types of insurance would use the private system.

Health insurance coverage is measured annually by the US Census Bureau in its March Current Population Survey (CPS).^{*} Estimates for large states and cities can be derived from a single year of data. More reliable estimates for smaller geographic areas are best estimated using several years of data. We used the March 2001 survey to estimate insurance coverage among those affected. Terror attacks are likely to affect only subsegments of geographic areas, and insurance coverage patterns can vary tremendously within a city. To capture this variation using data we had available, we used information on family income, wages, and unionization to proxy for geographic location within New York.

As these results suggest (see the Table), the terrorist attacks in New York City most acutely affected a population with much higher average private health insurance coverage rates than the city average. Costs of mental health services delivered to those with private insurance are not likely to appear on public budgets as long as private insurance coverage itself is adequate and sustained.

To assess the stability and adequacy of insurance coverage, we examined three key, situation-specific, aspects of coverage. First, our review of private insurance benefit limits suggested that, for those in the privately insured population with depression or PTSD who received guideline-consistent treatment, benefit limits would not be exceeded. Our review found that most insurance plans include at least 20 mental health visits per year. Those with employment-sponsored insurance also benefited from mental health services and counseling provided by EAPs, which did not count against benefit caps. Second, we found that insurance coverage for those direct victims and their families who held employer-sponsored coverage would continue, even if employment status may have changed. A survey of the benefits of several companies that had lost large numbers of employees and of the public employees of New York City (police, fire, and other) found that health insurance benefits would be continued for the families of victims for at least 1 year and in some cases up to 20 years (Cantor Fitzgerald) or, for dependents, until graduation from college (police, firefighters, and Port Authority workers). Finally, we found, based on the limited treatment associated with guidelines, that high copay-

^{*}The March 2001 CPS was conducted by the US Census Bureau, and the March 2001 version contains data for the year 2000. All CPS tabulations are for the nonelderly population (under 65 years of age).

TABLE. Insurance coverage in New York by victim category

Trauma exposure category	Relevant CPS population	Privately insured, %	Medicare, %	Medicaid, %	Uninsured, %
Residents of New York City excluding lower Manhattan	New York City general population	57.2	2.3	15.6	24.8
Residents of 10 surrounding counties, residents of New York State excluding New York City and surrounding counties	New York State general population	67.4	2.3	11.2	18.7
Residents of lower Manhattan*	New York City, Manhattan below 116th Street—based on average income† of residents below 116th Street ¹²	64.2	1.9	12.2	21.7
Hospitalized; injured; families of the dead and missing, hospitalized, and injured; World Trade Center employees; families of rescue workers, World Trade Center employees	New York City—families in which at least 1 person earns \$10/hour or more	79.9	0.8	3.7	15.6
Rescue workers	New York City unionized workers who earn at least \$10/hour	88.9	0.5	2.0	8.6

*Note that the epidemiologic estimates divide New York City into below or above 110th Street. The CPS provides data only for the entire City of New York. For New York City below 110th Street, we created weighted averages of the CPS insurance breakdown for New York City based on income levels using New York County household income and population data.

†We used the 1990 Census (2000 has not been released) to estimate the portion of the each income group that reside above 116th Street. The Census gives information by zip code and 116th Street is the closest zip code break to 110th Street.

ments would not drive people into the public sector. All of these findings were specific to the population affected in the New York City terror attacks. In other contexts, the structure of private insurance might be quite different.

In the longer run, the composition of insurance coverage among those affected by the attack is likely to change. In particular, people who become disabled as a consequence of the attack may lose their jobs and private insurance. Those with chronic and debilitating mental disorders may become eligible for Medicaid and, eventually, Medicare.

In today's health care environment, the distinction between public and private mental health services cannot be made by looking at who provides the service. It is

essential to understand the sources of financing. Looking at the public and private sectors as we do here makes it clear that the costs to either the public or the private sector depend on what population is most affected by the terrorist attack. Herman et al.³ suggest that workers and residents of lower Manhattan and their families along with rescue workers have the highest probability of developing mental disorders due to the September 11th attacks. Since these populations have high rates of private insurance, the bulk of the cost of treating these people is likely to fall on the private sector. For example, had the September 11th attacks occurred in a poor region of New York City rather than in downtown Manhattan, the public sector cost of providing mental health services would have been much higher. While the general population of New York City and New York State is also at risk for mental disorders and has a much lower level of private insurance coverage, they are expected to experience much lower rates of mental illness.

DISCUSSION

The effects of the terrorist attacks of September 11th include an increase in mental disorders. Public and private resources will be used to treat these disorders in a variety of care settings. Although other terrorist attacks have occurred in the United States, there is very little literature examining the implications for mental health planning. Our analysis suggests that such planning needs to incorporate credible assessments of service use, context-specific analysis of provider availability and insurance coverage, and the development of ongoing linkages for disaster planning among the many providers of mental health services in our diverse health care system.

This analysis clearly shows a need for additional study of utilization of mental health services following a disaster. The World Trade Center disaster provided a unique opportunity for researchers to explore this subject. The epidemiology is a first step toward creating a picture of the mental health impact of September 11th. Broader analysis of community response to increased mental illness is necessary to form a complete picture. Specifically, there is a great need for the collection of data on service utilization among different types of providers and different population groups, the nature and amount of treatments received, and payment mechanisms involved in the mental health response to the terrorist attacks of September 11th. These additional data would be helpful in future planning and analysis of the mental health response to terrorism and disasters in general.

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