

CHAPTER 11

Public Mental Health Surveillance and Monitoring

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Public health surveillance is “the ongoing, systematic collection, analysis, interpretation, and dissemination of data about a health-related event for use in public health action to reduce morbidity and mortality and to improve health” (Centers for Disease Control and Prevention [CDC], 2001a, p. 1). A public health surveillance system should include the capacity for systematically collecting data, its analysis, and dissemination of results to persons who can implement effective interventions. Historically, most surveillance efforts and systems have focused on communicable disease detection, and it is only recently that the notion of surveillance has been broadened to include surveillance for chronic diseases and, potentially, mental disorders. It is the purpose of this chapter to frame the key issues surrounding public health surveillance as they might apply to mental health. To do so, first we will summarize the history of and key concepts underlying public health surveillance. Second, we will discuss key issues in the collection and analysis of surveillance data with particular reference to the relevance of these issues to public mental health surveillance. Third, we will discuss the central role that public mental health surveillance can play in mitigating the mental health consequences of disasters. We will conclude with a discussion of the potential features of a national public mental health surveillance system.

PUBLIC HEALTH SURVEILLANCE: HISTORY AND KEY CONCEPTS

Evolution of Public Health Surveillance

The notion of systematically collecting data for public health purposes is not new, and dates back to Hippocrates (Eylenbosch & Noah, 1998). Formal efforts at public health surveillance probably began in the Middle Ages, when public health officials in Italy systematically assessed persons onboard ships, screening for bubonic plague, with the intention of quarantining such persons and preventing them from spreading disease in the general population (Moro & McCormick, 1988). In the 18th century, governments in western Europe increasingly assumed responsibility for the health of their populations and established regulations about the handling of food, burial, and the pollution of public water. The evolution of public health as a formal profession followed soon. For example, in France, rapidly changing demographics and the economic situation in urban areas contributed to *hygiene publique*, or public health, becoming formally constituted as a science (Coleman, 1982). During the first half of the 19th century, Louis René Villermé and other *hygienistes* implemented programs aimed at monitoring disease conditions in France. Contemporaneously, in London, William Farr, one of the founders of the modern concept of surveillance, in his capacity as the superintendent of the statistical department of the Registrar General's office of England and Wales, developed systems for collecting vital statistics and disseminating those data to policymakers and to the general public (Langmuir, 1976).

Systematic collection and reporting of disease data in the United States began in 1874 in Massachusetts; in 1878, Congress authorized the collection of morbidity data for use in quarantine against infectious diseases such as yellow fever (Trask, 1915). The poliomyelitis epidemic of 1916 and the influenza pandemic of 1918–1919 prompted participation in national morbidity reporting by all U.S. states by 1925 (National Office of Vital Statistics, 1953). The use of survey data as a means of surveillance is relatively new, with the first national health survey in the United States being conducted in 1935 (Thacker, 2000).

Prerequisites to Public Health Surveillance

As the historic examples suggest, there are several key prerequisites to the development and functioning of a public health system in general, and to surveillance systems in particular. Perhaps most fundamentally, a public health surveillance system needs to be grounded on a functioning and organized health care system within a stable government. Although, at this writing, countries in the Western world have developed such systems, public

health surveillance remains rudimentary or simply absent in many parts of the world where national governments function poorly if at all. Second, public health surveillance rests on clear classification of illness and disease (Thacker, 2000). As we shall discuss further on in this chapter, this continues to be a particular challenge in the context of developing effective and practicable public mental health surveillance. Third, public health surveillance fundamentally relies on accurate, replicable measurement systems that incorporate both the collection of data systematically as well as its timely analysis and consistent interpretation. The development of statistics and epidemiology as viable disciplines during the past 150 years has provided public health professionals with the tools needed to collect and evaluate surveillance data.

Evolving Concepts of Surveillance

Coincident with the evolution of systematic data collection for the purpose of public health monitoring, the notion of what constitutes surveillance has also been evolving, particularly in the past 50 years. There are three concepts worth mentioning in this regard. First is the question of whether surveillance functions include public health intervention. Early concepts of surveillance incorporated both the monitoring of disease as well as implementation of public health intervention to address the detected disease, but now the term *surveillance* is limited to the collection and dissemination of data, thus separating public health *intervention* (i.e., disease control) functions from disease monitoring (Langmuir, 1963; Thacker, 2000).

The historic, and growing, role of infectious disease monitoring at the heart of surveillance also merits comment. Much of our thinking about surveillance has evolved from public health systems aimed at monitoring communicable disease transmission. Therefore, earlier concepts of surveillance were rooted in infectious disease concepts and paradigms. Although modern surveillance has expanded substantially beyond these paradigms, in many respects monitoring infectious diseases remains at the core of surveillance functions in the United States and in much of the world. In the wake of recent fears about bioterrorism, substantial investment has been made in infrastructural development for the purposes of enhancing infectious disease surveillance throughout the country. However, development of surveillance for less traditional diseases, including psychiatric disorders, has not kept pace. As we will discuss below, there are particular considerations relevant to mental health surveillance that require advancing beyond notions of surveillance centered on infectious diseases.

A final note is about the relationship between surveillance and research. Public health surveillance has traditionally been a public health function that is primarily concerned with the description of diseases in the

population. However, integral to public health surveillance is the interpretation of patterns and an effort to understand why diseases are occurring in a specific manner. Research is typically considered to be original investigation undertaken to gain knowledge or understanding. Therefore, research would exclude the routine data collection and analysis that is typical of surveillance systems. However, the line between the two often blurs. Data that are collected primarily for surveillance purposes can lead, and frequently have led, to the advancement of knowledge. Also, surveillance systems have amassed tremendous amounts of data that have contributed to etiological insights about behaviors and chronic disease. For the purposes of this chapter we consider surveillance to be the collection of data for the express purpose of monitoring population health and disease. We consider surveillance to be a function of public health practice, not research, but recognize that data collected for surveillance purposes also can contribute to the advancement of knowledge when it is called upon to serve as a foundation for biomedical and behavioral research.

Types of Public Health Surveillance Systems

One can classify surveillance systems in several ways. We adopted a functionalist perspective based on mode of data gathering: (1) intensive disease-specific monitoring, (2) syndromic surveillance, and (3) systematic data collection and monitoring.

Disease-Specific Monitoring

The earliest form of surveillance, and probably the dominant and most common form of surveillance in place today, involves the focused and intensive monitoring of potentially worrisome diseases, typically infectious diseases. During the Middle Ages, Venetian public health officials who boarded ships in an attempt to stop passengers with the bubonic plague from disembarking were practicing a form of disease-based monitoring. Disease-specific monitoring may be *passive* or *active*. Passive systems are initiated by providers, in which health care practitioners who observe an unusual disease pattern notify local health authorities, who then investigate. The 1999 outbreak of West Nile virus in New York City was a classic case of provider-initiated surveillance where a local physician, noting an unusual disease manifestation, notified the New York Department of Health and Mental Hygiene, which subsequently conducted an investigation (Nash et al., 2001). Active surveillance systems are generally initiated or supervised by public health authorities. Mandatory reporting is in place for many infectious diseases in the United States, and local and state public health authorities monitor these reports for unusually high rates of particu-

lar diseases and launch investigations where appropriate. Both active and passive forms of disease-specific surveillance thus rest on disease case-finding and the subsequent investigation of detected anomalies.

Syndromic Surveillance Systems

Syndromic surveillance is the monitoring of key health events or symptoms through specific sites, events, health providers, or laboratories. Syndromic surveillance systems use data that are not necessarily diagnostic of a disease, but rather suggest early stages of a disease in the community. A manual form of syndromic surveillance was used to detect additional anthrax cases in the fall of 2001 in New York City after the recognition of the initial anthrax case (Tan et al., 2002). The key characteristic of syndromic surveillance is the use of both symptom and indicator data, such as chief complaints in emergency departments, retail drug purchases, and work absenteeism. Therefore, syndromic surveillance extends the traditional unit of analytic interest in surveillance beyond the typical infectious disease outcomes to other proxy outcomes using new data types.

Systematic Data Collection and Monitoring

Systematic monitoring of health, risk behavior, and disease is a cornerstone of public health surveillance in the United States. These systems collect data on a regular basis expressly for the purposes of monitoring health and behavior. Several such formal systematic surveillance systems are currently in place. Key among these are (1) the Behavioral Risk Factor Surveillance System (BRFSS), a monthly telephone interview of U.S. adult residents that focuses on assessing changes in risk behavior over time; (2) the National Health and Nutrition Examination Survey (NHANES), which conducts in-person interviews and collects biometric data from a nationally representative sample; and (3) the National Health Interview Survey (NHIS), an annual in-person interview with a representative sample of U.S. residents. Information from these surveys and systematic collections of biometric data has been invaluable to monitor disease trends in the United States over time and to guide national policy and interventions. For example, the recent concern about the rising prevalence of obesity nationwide arose in response to BRFSS and NHIS results. Although there is currently no formal surveillance system dedicated to mental health surveillance, the National Comorbidity Survey, fielded from the fall of 1990 to the spring of 1992, was the first nationally representative mental health survey in the United States to use a fully structured research diagnostic interview to assess the prevalence and correlates of DSM-III-R disorders (Kessler et al., 1994). The recent replication of this study, fielded in 2001 and 2002, has allowed us a

glimpse into the potential of such monitoring, documenting the patterns and predictors of the course of mental and substance use disorders and evaluating the effects of primary mental disorders in predicting the onset and course of secondary substance disorders (Kessler et al, 2005).

KEY ISSUES IN THE SURVEILLANCE OF MENTAL HEALTH

Mental health has not historically been, nor is it currently, a focus of surveillance in the United States. It probably should be. Mental and behavioral disorders affect more than 25% of people during their lifetime and are estimated to be present in 10% of the adult population at any given time (World Health Organization, 2001). The *Global Burden of Disease* report for 2000 (Murray & Lopez, 1996) estimated that mental health problems accounted for 12% of the total Disability Adjusted Life Years (DALYs) lost worldwide and for 31% of the years of life lived with a disability. Beyond their impact on the individual, mental health and behavioral problems are frequently accompanied by social and economic impact on families and society. For example, it is estimated that anxiety and depression account for up to a third of all presentations in primary care settings (Goldberg & Lecubrier, 1995; Katon, Kleinman, & Rosen, 1982; Marks, 1986).

Of the challenges that will be faced in the implementation of mental health surveillance, three are particularly noteworthy: (1) establishing case definitions of "disease" and disorders; (2) linking syndromic data on symptoms to morbidity, dysfunction, and needs; and (3) deriving models appropriate for analyzing and interpreting mental health surveillance data.

Establishing Case Definitions

Public health surveillance depends upon the extant definitions of what constitutes health and disease and an appreciation of the baseline prevalence of disease. The definitions of diseases that are commonly subject to surveillance, particularly infectious diseases, are well established. The definition of disease, however, is potentially more complicated when considering mental health outcomes. Although the establishment of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) has systematized psychiatric definitions, and the science of psychiatric nosology is advancing rapidly, the ongoing revisions of psychiatric definitions through subsequent versions of the DSM suggest that this challenge will continue to dog public mental health surveillance efforts for years to come. There is also tremendous interpractitioner variability in the diagnosis of psychiatric disorders, suggesting that passive surveillance of mental health may be particularly challenging.

There are several promising developments that may help overcome this challenge. Standardized diagnostic instruments, such as the Composite International Diagnostic Interview (CIDI; World Health Organization, 1997), that have been used in national and international prevalence estimate surveys (Andrade et al., 2003) provide a common point of reference that could be used as the building block of active surveillance. Yet, the time and training required to administer diagnostic interview schedules would make this a costly approach that may not be practical in many situations.

Linking Symptoms to Morbidity and Needs

Syndromic surveillance methods hold particular promise for effective monitoring of the public's mental health. Surveillance of self-reported psychological symptoms (e.g., posttraumatic stress, depression, general distress) or other indicators (e.g., psychiatric presentations to emergency departments) may transcend some of the definitional and implementation challenges associated with a disease-specific approach. However, an issue of particular importance for syndromic mental health surveillance is the meaning of distress in the absence of reports of impaired functioning. If surveillance systems identify symptoms that do not reflect morbidity, the link between surveillance and attendant action may be tenuous. Thus, it is advisable to measure both distress and dysfunction in mental health surveillance.

A related concern is the utility of surveillance data for community needs assessment. Population surveys have long been held to be superior to most other approaches to needs assessment in terms of the scientific quality of the data they provide (Bell, Warheit, & Schwab, 1977). As defined by McKillup (1998, p. 261), a need is a *value judgment* that a particular group in a particular circumstance has a problem that can be solved by appropriate action. This definition implies that data on the prevalence of disorder, distress, and dysfunction are most useful if they lead to conclusions about needs/problems and actions/solutions. For this to be true, information about the extent to which distress and dysfunction are elevated (presumably meaning that need for services is elevated) must be coupled with information on barriers to use of services, especially key elements of availability, awareness, acceptability, and accessibility. Moreover, it is advisable to balance assessment of needs or deficits with assessment of resources or strengths that community members can draw upon to address those needs.

Deriving Analytic Models

An additional challenge for mental health surveillance is the need for further development of appropriate models for analyzing and interpreting the data. The absence of longitudinal mental health data collected from popu-

lation-based samples limits our understanding of the natural course of mental disorders. Underlying patterns (e.g., seasonal variations) and systematic errors (e.g., climate changes that influence reporting of depressive disorders) may complicate the interpretation of cross-sectional data on mental health (Strup, Brookmeyer, & Kalsbeek, 2004).

In addition, well-established models for infectious disease surveillance may not be directly applicable to mental health surveillance. For example, models of spatiotemporal analysis that take into account the spread of infectious disease through interpersonal contact may not be relevant for the analysis of mental health surveillance where social contagion may have substantially different implications. Similarly, well-documented ecological inference problems in the analysis of surveillance data (i.e., drawing conclusions about the individual likelihood of disease from observed population rates of disease) may be less of a concern in the context of mental health surveillance that is intended to guide the implementation of community-level (ecological) interventions. None of these problems is insurmountable, and with the growing systematization of public mental health assessments and the potential implementation of surveillance systems, these problems will be tackled and solved. However, in the short term, they represent important considerations in the development and analysis of public mental health surveillance.

PUBLIC MENTAL HEALTH SURVEILLANCE IN THE CONTEXT OF DISASTERS

Estimating Mental Health Burden after a Disaster

We see three contributions of mental health surveillance in the aftermath of disasters. First, most importantly, public mental health surveillance can play a key role in helping to monitor the morbidity associated with postdisaster distress and disorder. One of the primary challenges faced by public health planners in the aftermath of a disaster is to accurately document the scope of the potential mental health consequences of the event. Our ability to do this is limited, and recent events have provided ample examples of the misestimation of the consequences of disasters. Most notably, after the September 11, 2001, terrorist attacks, predictions of incident psychopathology in New York City were substantially higher than was subsequently borne out in empirical study. Such questions will continue to be difficult to answer unless comparable data are collected at regular intervals across major disasters. Such documentation will, over time, establish a much clearer understanding of the natural history of psychopathology after disasters.

Although surveillance of disaster-related morbidity may well begin in

the immediate aftermath of the event, ideally postdisaster surveillance is embedded within a system of ongoing mental health surveillance that has provided normative (pre-disaster or baseline) data on a local, regional, or national level. The larger mental health surveillance system could convincingly establish norms for the population and subpopulations, making the interpretation of estimates of the mental health burden after a disaster easier. One of the key limitations of current postdisaster estimates of psychopathology is that public health practitioners cannot be certain of the extent to which documented psychosocial problems are higher than they might have been anyway, regardless of the disaster. For example, Norris and colleagues' (Norris, Murphy, Baker, & Kaniasty, 2005) ability to show that their sample of displaced Mexican disaster victims had strikingly low social support was enhanced by the availability of concurrent Mexican norms for their measures of social support. Unless the surveillance is undertaken on a very large scale, only rarely can surveillance samples themselves be studied prospectively in the aftermath of disaster, but it would happen occasionally. Two sites in the Epidemiologic Catchment Area Survey (St. Louis and Puerto Rico), for example, experienced major disasters within a year or two and were reassessed (Bravo, Rubio-Stipec, Canino, Woodbury, & Ribera, 1990; Robins et al., 1986).

Evaluating Effects of Policies and Interventions and Facilitating Planning

Second, an early understanding of the potential mental health consequences of disasters can guide the implementation of programs that may alleviate some of the burden of psychopathology. Returning to the earlier point about the translation of surveillance data to value judgments about community needs is also important. A question that in our minds remains unanswered is whether the symptoms documented in postdisaster studies constitute psychopathology or whether they are simply normal and transient reactions to mass traumatic events. The two alternatives have different implications for postdisaster intervention, with the former implying the need for expanded clinical services, the latter implying the need for psychosocial programs that provide support, educate that public about expected reactions to trauma, and identify the minority of persons who are at risk for longer-term adverse reactions.

The evidence base for interventions aimed at improving population mental health in the aftermath of disasters is nascent (Gibson, Hamlden, Zvolensky, & Vujanovich, Chapter 13, this volume; Marshall, Amsel, Neria, & Suh, Chapter 14, this volume). Similarly, very few empirical studies have successfully demonstrated a link between public health policies and mental health in select groups after disaster. What we do know about what

may or may not work after a disaster stems from two sources: (1) findings of studies aimed at assessing specific interventions that may not be generalizable to other postdisaster contexts; and (2) studies that have assessed proxy markers of mental health status, such as emergency department or hospital ward presentations. Not surprisingly, results from the latter type of studies have frequently been inconclusive as investigators are forced to draw inference from insufficient or suboptimal data.

Unfortunately, until we can determine with some degree of certainty whether specific interventions are efficacious in reducing the burden of psychopathology after a disaster, it will remain difficult for public health practitioners and policymakers to devote resources to novel interventions aimed at minimizing this psychopathology. Definitive assessments of crisis counseling programs and other forms of postdisaster intervention are hampered by the absence of baseline data and by our limited understanding of what the course of psychopathology in the population after these disasters may have been had these programs not been implemented. Therefore, a public mental health surveillance system, through establishing baseline prevalence and natural history of psychopathology, will lend itself to assessing how this excess prevalence may be reduced, or recovery hastened, by social experimentation. Moreover, such surveillance could tap achievement of key public health intervention goals, such as the public's understanding of program messages, awareness of services, and reduction of stigma. This clearly lies at the heart of what a postdisaster mental health surveillance system could achieve and how it would ultimately improve the health of the population. Policymakers may be more willing to invest in bold public mental health interventions within the context of a surveillance system that can systematically evaluate the impact of such interventions.

Generating Hypotheses and Stimulating Research

Third, a program of postdisaster surveillance could advance the research agenda in this field. One of the major criticisms of current research assessing the mental health consequences of disasters is that far too often disaster research concerns itself with documenting the prevalence of psychopathology after a disaster at the expense of tackling more challenging, and in the long-term more rewarding, etiological research questions (see Benight, McFarlane, & Norris, Chapter 4, this volume). Although we concur that this criticism is valid, absent an appreciation of the scope of the consequences of a given disaster, and given concerns about generalizability of results stemming from studies that were designed only to assess the consequences of a disaster in a particular context, it is unavoidable that researchers and public health practitioners will first and foremost be concerned

with the magnitude of the mental health consequences of the disaster that has stricken their community. The presence of an effective public mental health surveillance system would obviate such research. More important than rendering these basic prevalence questions unnecessary, a public mental health surveillance system can stimulate etiological research that asks *why* we may observe specific consequences in certain groups. Analogously, very little research today concerns itself with assessing the prevalence of infectious diseases in the United States; much of those estimates are available through health departments and their surveillance systems. This has both freed up researchers to pursue questions pertaining to the etiology of infectious diseases and their transmission and has provided data that has guided inquiry into the full range of potential risk factors from genetic factors, to individual behaviors, to contextual determinants.

A STRATEGY FOR NATIONAL PUBLIC MENTAL HEALTH SURVEILLANCE IN THE UNITED STATES

We make no attempt here at specific prescription regarding implementation of a public mental health surveillance system, recognizing that such prescription is far beyond the scope of a book chapter. We offer instead a brief discussion of the central tenets of such a system that might overcome the challenges it could face and maximize its potential. Below, we describe the purposes, stakeholders, and essential features of the proposed system and conclude by describing a tiered system under development by a federally sponsored working group.

Purposes

Any public mental health surveillance system needs to have a clearly defined purpose that is conservative enough to be achievable but bold enough to make such a system truly effective. We make three primary recommendations. First, we recommend a functionally hybrid system to maximize cost-effectiveness. Because frequent disease-specific surveillance of psychological disorders (diagnoses) would be prohibitively expensive, we recommend ongoing syndromic surveillance focusing on key indicators of current depression, posttraumatic stress, dysfunction, anxieties/fears, and psychosocial resources, punctuated with occasional disease-specific surveys that provide reliable estimates of current psychological disorders and more in-depth assessment of risk/protective factors. The periodic combination of the two types of data (indicators and diagnoses) would facilitate interpretation of the indicator data, which would be collected more frequently and regularly.

Second, we recommend that surveillance be implemented on a large enough scale as to provide hybrid data for specific racial, ethnic, and socio-economic groups. This information would increase understanding of the differences in the need for and use of mental health services. In light of the threat of terrorism, the surveillance system should overrepresent large urban centers, such as New York City and Los Angeles.

Third, we recommend that public mental health surveillance aim to educate major stakeholders, including the general public. The fact that relatively fewer resources are devoted to mental health as compared to physical health stems largely from lack of understanding of the nature of mental health problems, the stigma that remains associated with mental health problems, and misconceptions about the burden of psychopathology in the general population. The early efforts by public health practitioners such as William Farr to document health status and to use such documentation to guide public health intervention were instrumental in educating the public about health measurement and, indirectly, in making physical disease a subject worthy of governmental attention and intervention. Public mental health surveillance needs to make a similar contribution today.

Stakeholders

A public mental health surveillance system needs to be responsive to a wide range of stakeholders without bogging such a system down with competing demands from disparate groups' interests. As medical care becomes increasingly sophisticated and complicated, the implementation of public mental health surveillance would have important implications for diverse entities. Clearly, such a system needs to be developed in concert with national and local public health authorities. Most of the surveillance efforts in the United States are conducted by the Centers for Disease Control and Prevention (CDC) or by local health authorities. Federal leadership in developing such a system would then be natural, with the inclusion of representatives from local health authorities being critical both to system implementation and to acceptance of system results. Apart from federal and local public health authorities, it is likely that SAMHSA, NIMH, the medical-industrial complex, medical practitioners, mental health professionals, and patient (client) groups would also be key stakeholders in such a system. Clearly, multiple stakeholders run the risk of grounding any effort at developing public mental health surveillance. A clear and committed vision about the usefulness of the task at hand as a high priority for national public health would be essential to transcend the sectarian differences that one might expect in any such process.

Essential Features

The exact form that public mental health surveillance could take would depend, of necessity, on a balance between desired system purpose, resources available, and political compromise. Regardless of the specific mechanisms of its implementation, four features of any such system would be preeminent: usefulness, acceptability, stability, and flexibility.

First and foremost, public mental health surveillance needs to be *useful*. Keeping this feature in mind may avoid many of the potential pitfalls in its development. Surveillance certainly should be good enough to generate hypotheses and stimulate research, but its primary purpose is to provide data to inform public mental health efforts. Therefore, public mental health surveillance needs to be useful to its primary consumers—public health practitioners.

A viable public mental health surveillance system must be *acceptable* to all key stakeholders. There can be several barriers to acceptability of a public mental health system. For example, nosological issues and assessment controversies may jeopardize the extent to which surveillance data are accepted and used. Similarly, developers of mental health surveillance must grapple early with the concept of what truly constitutes “need” in mental health. A system that produces data without clear guidelines for practitioners as to what might constitute grounds for intervention would likely quickly be unacceptable, in addition to not being useful.

A public mental health surveillance system must also be *stable*. Some of the most useful surveillance systems currently in place are made all the more useful by virtue of their longevity, having provided data over time that allows policymakers to see trends emerge and consider their actions. For example, it is the *rise* in obesity nationwide, as documented through ongoing surveillance such as the BRFSS and NHANES, more than the current absolute prevalence of obesity itself that is driving national concern about the issue and attendant public health interventions. Similarly, efforts to ban smoking in public spaces are buttressed by assessments of surveillance data over time that suggest that these efforts may indeed decrease the prevalence of smoking in the population. Therefore, maximizing the utility of mental health surveillance will require a long-term commitment to stable funding for such a system. Implementation of a system that meets its intended goals but is affordable is probably better than the development of an overly sophisticated but unsustainable system. The addition of mental health surveillance to ongoing health surveillance efforts may prove, in the long term, to be more cost-effective than the *de novo* development and implementation of a national mental health surveillance system.

Much as a public mental health surveillance system needs to be stable

and robust to changing political pressures, it must also be *flexible*, able to be adapted to provide policymakers and public health practitioners with useful information. This may be most readily apparent in considering how such a system must contribute to the disaster relief effort. Any public mental health surveillance in the United States should be scalable to heightened surveillance during periods of particular concern, such as after disasters. Therefore, resources and reserves should be built into the system such that it can provide different, or more, data if necessary.

Work in Progress

Our proposal is largely consistent with that of a national "needs assessment working group" whose work is in progress as of this writing (personal communication, Patricia Watson, May 22, 2005). In August 2003, an international panel of experts was convened in Bethesda, Maryland, to discuss screening, assessment, outreach, and intervention for mental health and substance abuse needs following disasters and mass violence. The meeting was sponsored by the U.S. Department of Veterans Affairs and the U.S. Department of Health and Human Services, including representatives of the National Institute of Mental Health, CDC, and SAMHSA's Center for Mental Health Services, the agency responsible for administering the federal crisis counseling program after presidentially declared disasters. Several working groups were formed by the panel. One of these working groups focused on needs assessment and surveillance and organized its recommendations using the concept of tiers.

Tier 1 was composed of a 5- to 10-minute set of surveillance items assessing functioning, exposure to traumatic stress, distress, behavior change, and perceptions of risk, to be included within an existing ongoing national health survey. Tier 2 involved a more in-depth assessment that would be implemented after a critical event in a community, the purpose of which would be to gather information that would inform intervention. In Tier 2, a 20- to 25-minute set of surveillance items would be administered via a phone survey to separate samples drawn randomly on a weekly or monthly basis following a disaster or terrorist incident. Tier 2 would track several topics of potential policy relevance, including distress, functioning, and continued needs of the community; media habits and how people receive information; perceptions of risk and recovery; perceived barriers to services and trusted sources of information; and the reach and impact of screening, outreach, and intervention efforts. Tier 3 would mark a shift of purposes from surveillance to research by supporting in-depth studies on predictors of resilience to posttraumatic psychopathology; genetic and environmental interactions that increase risk for posttraumatic disorders; biomarkers, behavioral assessments, and phenotypic characterizations of posttraumatic

disorders; neurohormonal, physiological, and behavioral parameters in disease development; and the success/failure of current and new interventions.

CONCLUSIONS

There is little question in our minds that the health of the public would be well served by the development of a program of comprehensive public mental health surveillance. Many factors have slowed the evolution of mental health surveillance, but none is insurmountable. The science of surveillance is rapidly evolving, as is the science of mental health in general. With suitable political will, public mental health surveillance is achievable and has the potential to immeasurably add to our knowledge of the general population's mental health, improve our responses to disasters, and integrate mental health concerns into the mainstream of medicine and public health.

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REFERENCES

- Andrade, L., Caraveo-Anduaga, J., Berglund, P., Bijl, R., De Graaf, R., & Vollebergh, W. (2003). The epidemiology of major depressive episodes: Results from the International Consortium of Psychiatric Epidemiology (ICPE) Surveys. *International Journal of Methods Psychiatry Research*, 12, 3-21.
- Bell, R., Warheit, G., & Schwab, J. (1977). Needs assessment: A strategy for structuring change. In R. Coursey, G. Specter, S. Murrell, & B. Hunt (Eds.), *Program evaluation in mental health: Methods, strategies, and participants* (pp. 67-76). New York: Grune & Stratton.
- Bravo, M., Rubio-Stipec, M., Canino, G., Woodbury, M., & Ribera, J. (1990). The psychological sequelae of disaster stress prospectively and retrospectively evaluated. *American Journal of Community Psychology*, 18, 661-680.
- Centers for Disease Control and Prevention. (2001a). Updated guidelines for evaluating public health surveillance systems: Recommendations from the guidelines working group. *Morbidity and Mortality Weekly Report* 2001, 50(No. RR-13), 1-35.
- Coleman, C. (1982). *Death is a social disease: Public health and political economy in early industrial France*. Madison, WI: University of Wisconsin Press.
- Eylenbosch, W. J., & Noah, N. D. (1998). Historical aspects. In W. J. Eylenbosch & N. D. Noah (Eds.), *Surveillance in health and disease* (pp. 3-8). Oxford, UK: Oxford University Press.

- Goldberg, D. P., & Lecubrier, Y. (1995). Form and frequency of mental disorders across centers. In T. B. Ostun & N. Sartorius (Eds.), *Mental illness in general health care: An international study* (pp. 323–334). Chichester, UK: Wiley (on behalf of the World Health Organization).
- Katon, W., Kleinman, A., & Rosen, G. (1982). Depression and somatization: Part I. A review. *American Journal of Medicine*, 72, 127–135.
- Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., et al. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey. *Archives of General Psychiatry*, 51(1), 8–19.
- Kessler, R. C., Demler, O., Frank, R. G., Olfson, M., Pincus, H. A., Walters, E. E., et al. (2005). Prevalence and treatment of mental disorders, 1990 to 2003. *New England Journal of Medicine*, 16, 2515–2523.
- Langmuir, A. D. (1963). The surveillance of communicable diseases of national importance. *New England Journal of Medicine*, 268, 182–192.
- Langmuir, A. D. (1976). William Farr: Founder of modern concepts of surveillance. *International Journal of Epidemiology*, 5, 13–18.
- Marks, I. M. (1986). Epidemiology of anxiety. *Social Psychiatry*, 21, 167–171.
- McKillip, J. (1998). Need analysis: Process and techniques. In L. Bickman & D. Rog (Eds.), *Handbook of applied social research methods* (pp. 261–284). Thousand Oaks, CA: Sage.
- Murray, C. J. L., & Lopez, A. D. (Eds.). (1996). *The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors from 1990 and projected to 2020* (report, Global Burden of Disease and Injury Series, Vol. I). Cambridge, MA: Harvard School of Public Health (on behalf of the World Health Organization and the World Bank).
- Moro, M. L., & McCormick, A. (1998). Surveillance for communicable disease. In W. J. Eylesbosch & D. Noahh (Eds.), *Surveillance in health and disease* (pp. 166–182). Oxford, UK: Oxford University Press.
- Nash, D., Mostashari, F., Fine, A., Miller, J., O'Leary, D., & Murray, K. (2001). The outbreak of West Nile virus infection in the New York City area in 1999. *New England Journal of Medicine*, 344, 1807–1814.
- National Office of Vital Statistics. (1953). Reported incidence of selected notifiable disease: United States, each division and state, 1920–1950. *Vital Statistics Select Reports* (National Summaries), 37, 1180–1181.
- Norris, F., Baker, C., Murphy, A., & Kaniasty, K. (2005). Social support mobilization and deterioration after Mexico's 1999 flood: Effects of context, gender, and time. *American Journal of Community Psychology*, 36 (1–2), 15–28.
- Robins, L., Fischbach, R., Smith, E., Cottler, L., Solomon, S., & Goldring, E. (1986). Impact of disaster on previously assessed mental health. In J. Shore (Ed.), *Disaster stress studies: New methods and findings* (pp. 22–48). Washington, DC: American Psychiatric Press.
- Stroup, D. F., Brookmeyer, R., & Kalsbeek, W. D. (2004). Public health surveillance in action: A framework. In R. Brookmeyer & D. Stroup (Eds.), *Monitoring the health of populations: Statistical principles and methods for public health surveillance* (pp. 1–36). Oxford, UK: Oxford University Press.
- Tan, C. G., Sandhu, H. S., Crawford, D. C., Redd, S. C., Beach, M. J., & Buehler, J. W. (2002). Surveillance for anthrax cases associated with contaminated letters, New Jersey, Delaware, and Pennsylvania, 2001. *Emerging Infectious Disease*, 8, 1073–1076.

- Thacker, S. B. (2000). Historical development. In S. M. Teutsch & R. E. Churchill (Eds.), *Principles and practice of public health surveillance* (2nd ed., pp. 1-16). Oxford, UK: Oxford University Press, 2000.
- Trask, J. W. (1915). Vital statistics: A discussion of what they are and their uses in public health administration. *Public Health Report* 1915, 30-34.
- World Bank. (1993). *World Development report 1993: Investing in health*. New York: Oxford University Press (for the World Bank).
- World Health Organization. (1997). *Composite International Diagnostic Interview (CIDI). Version 2.1*. Geneva, Switzerland: Author.
- World Health Organization. (2001). *Mental health: New understanding, new hope*. Geneva, Switzerland: Author.