CAN EARLY SCREENING FOR MENTAL DISORDERS REDUCE CRIMINAL JUSTICE COSTS?

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I. INTRODUCTION

Recent events, notably the shootings at Columbine High School in Littleton, Colorado, have stimulated considerable interest in identifying and treating mentally ill persons who might commit violent crimes. Some studies and much anecdotal information indicate that there probably is a considerable overlap among the seriously mentally ill, substance abusers, and convicted offenders. In particular, police and prosecutors have many stories of apparently disordered people who first came to the authorities' attention by being arrested.

Arrest, trial and incarceration are expensive and can only be employed after a crime has occurred. Obviously, crimes themselves impose costs on society and on victims and their families. Mental health treatment is relatively inexpensive, even without counting the benefit of crime prevention. Therefore, some form of early detection and diversion into treatment appears attractive, if the appropriate individuals can be identified.

Any screening program, however, must fit realistically with society's willingness to inconvenience many individuals, and perhaps to curtail significantly some individual rights and freedoms before any laws have been broken. Clearly, such programs raise difficult issues of due process and constitutionality, which are beyond both the scope of this paper and the expertise of this author. Recent United States case law does demonstrate that society may force a mentally ill person accused of a violent crime to accept involuntary medical treatment[1] and compel individuals deemed dangerous to undergo evaluation. We need not reach these issues, however, until we have concluded that a

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1 *See generally* United States v. Weston, 36 F. Supp. 2d 7 (D.D.C. 1999).

screening program has a reasonable chance of working effectively. Can an effective program be devised, given the state of current science and information? This question is the one I will attempt to answer.

II. THE SOCIETAL CONTEXT

Violent crime has increased dramatically in the United States since the early 1960's. The murder rate, per capita, has declined through most of the 1990's but remains substantially higher than it was three to four decades ago. Many social, legal and legislative trends since the 1960's have contributed to the current difficult situation:

* Drug abuse and illegal drug trafficking have increased dramatically.
* The introduction of crack cocaine in the early 1980s made a powerful drug available at a low price.
* Shifting practices and priorities in law enforcement combined with the rapidly expanding illegal drug market created opportunities for organized crime.
* Technological changes have affected how successful criminals behave: they now have more powerful weapons, more concealable weapons, body armor, and new communications and information technology.
* Liberals, promoting individuals' rights to refuse treatment, and conservatives, seeking to improve cost-effectiveness, teamed up to close inpatient mental hospitals and move many patients into outpatient settings. This greatly increased the number of untreated, unmonitored mentally ill at large in the community.
* Case law has made forced commitment of suspected mentally disordered and apparently crime-prone individuals more difficult.
* The shift in case law toward the dangerousness criterion has moved the legal system away from the thinking of medical experts. Dangerousness is a probability, and both doctors and the legal system prefer to deal with near-certainties.
* Changing fiscal and social policies made homelessness much more prevalent.
* Deadlier weapons, such as assault rifles, have become much more numerous and apparently more readily available.
* Changing health care financing options have left some people with less access to mental health care.

* Increasing concern about privacy and confidentiality, especially with sensitive ailments such as mental disorders, complicates efforts to do epidemiological studies of mental illness.

III. THE NATURE OF MENTAL ILLNESS

In addition to these social problems there is a more fundamental difficulty: mental disorders are relatively hard to define and diagnose, and treatments are harder to evaluate, than most physical disorders. If an individual goes to a general practitioner, or an ear, nose and throat specialist, complaining of an upper respiratory infection, the doctor can perform tests to confirm the diagnosis and, in most cases, identify the type of pathogen that caused it. On the other hand, if the physician's diagnosis indicates allergy rather than infection, he or she will give that diagnosis and prescribe appropriate treatment. In either case, once the doctor has made a diagnosis, the patient's opinion carries little weight: better evidence is at hand.

In contrast, a patient describing himself as depressed will and should continue to be taken seriously even after a psychiatrist or psychologist has interacted with the patient enough to believe strongly in a different diagnosis. Moreover, psychiatric diagnoses fall along a spectrum of behavior, with all but the most extreme denoting normal sorts of actions in inappropriate circumstances. For example, most people cry, or get angry and shout, or tremble in fear from time to time; no diagnosis of mental disorder attaches to these behaviors unless they occur in circumstances that would not produce them in most people.

Another difference between physical and mental illnesses is that mental illness is context-dependent. Suppose, for example, that we hear of a teenager who regularly rehearses acts of violence; identifies closely with a group of like-minded persons, similar to himself, and prepares for violent activities jointly with them; is disposed to action without much reflection, as the leader of this group directs; and keeps a rifle and a bayonet in his room and refers to them as his friends. If this were a 14-year-old high school student, we would consider this profile cause for concern. If, on the other hand, he were a 19-year-old Marine just out of basic training, we would say that the training was successful, as designed – and we are happy to have him in this condition, ready to defend us.

In short, a mental disorder, unlike an infection, is not something a person either has or does not have, readily detectable objectively. As a statistician, I find it most accurate to define a mental illness as a set of probabilities of effective action in various situations - so the usual concepts of physical illness, especially infection, do not apply. Neither onset nor cure nor likely course of the disorder, with or without treatment, is as sharply identifiable. Far less is certain, or nearly certain, than with physical ailments.

IV. THE CONSEQUENCES OF UNCERTAINTY

The uncertainties involved in mental illness have a number of implications. From my experience in statistical analysis of health outcomes and from probabilistic definition of mental disorders, as sketched above, some critical insights result:

* If there were an infectious agent or environmental toxin causing a worldwide epidemic of, say, depression in the developed countries over the past twenty to thirty years, we could not find it given our current data.

* Most violent offenders are not mentally ill. The overwhelming majority of mentally ill people are not violent. Most mentally ill people who get arrested are not arrested for violent offenses.

* Given error rates for the best screening methods available, a large majority of people who screened positive for mental disorders would not have them: the false alarms would outnumber the truly ill. This occurs because the false positive rate (in statistical terms, the conditional probability of a positive test result when the disorder is not present) of the best screens we can devise is several times the incidence of the disorders in the population.[2]

* Consequences of actions based on screening and treatment are hard to assess because treatment for mental disorders tends to take place over a period of months or years, with many other factors changing along the way.

In short, it is difficult, given current science and data, to envision a screening program that would effectively discern likely violent offenders. Such programs also would have adverse social consequences, falsely identifying as potential criminals many more individuals who, albeit odd, are non-violent and law-abiding. Therefore,

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[2] See the technical appendix for a rigorous development of this conclusion.

efforts to prevent violent crime resulting from mental illness are better directed to other approaches.

V. POLICY ALTERNATIVES

So what will work? With the warning that my expertise is limited, I offer a few suggestions:

* One of the most important insights from the study of information warfare is that, in an information-rich environment, networks defeat hierarchies.[3] This means that government, which is necessarily more hierarchical than an effective criminal organization, must improve security of its information and communication, enable police to function more outside the hierarchy, but still within the law, and improve coordination and information-sharing among and within law enforcement agencies.
* Some communities have found "community policing" programs, especially in cooperation with mental health professionals, do appear to be effective. Most seriously mentally ill people outside any system of care and support present not through violence but through strange behavior in public. Effective, compassionate responses to these people reduce the cost of society's intervention and maintain the community's respect for law enforcement.
* Keep deadly weapons out of the hands of known risks. In particular, prior violent criminal activity is a fairly good predictor of future inclination to violence. Persons already convicted of violent crimes should have great difficulty gaining access to weapons violent criminals prefer. A modest background check requirement, rigorously enforced, would provide significant benefit while imposing modest inconvenience on law-abiding citizens.
* Eliminate barriers to entry into mental health and substance abuse treatment for those who seek it. Much violent crime attributable to mental illness involves people who are also substance abusers, in many cases impelled to crime at least in part to sustain their addiction.
* Provide attractive alternatives for the homeless. Although the homeless mentally ill generally are not violent, what widespread homelessness does do is provide an attractive supply of potential

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[3] John J. Arquilla & David F. Ronfeldt, *Cyber War is Coming*, 12 COMPARATIVE STRATEGY 141, 141-65 (1993).

victims to criminals who are violent and, more likely than not, not mentally ill.
* Do more research on effectiveness of services and treatments, especially for people with multiple disorders and other complications.
* Re-examine the balance of individual rights and society's concerns in the legal system, with a focus in reducing crime. In particular, devise new legal means to protect against likely repeat offenders, including reducing their access to likely victims and reducing their access to weapons. Perhaps society needs to consider giving the identified violence-prone individual a choice: either the right to have firearms or the right to refuse mental health evaluation and treatment, but not both.

VI.   CONCLUSION

While a comprehensive screening program for mental illness with violent potential seems attractive as a way of reducing violent crime, current data and science are insufficient to sustain such programs without imposing unreasonable costs on other members of society. Other approaches, emphasizing a comprehensive response to mental illness without criminal activity, and moving people toward treatment rather than punishment while the choice is still available, seem much more promising.

TECHNICAL APPENDIX

Following standard statistical nomenclature, we denote by P{A} the probability of event A, and we denote the event "not A" (A does not occur) by A'. We denote by P{A—B} the conditional probability of event A given that event B occurs.

Now we will use an early, fundamental result, Bayes' Theorem:

$$P\{B\text{—}A\} = P\{A\text{—}B\}P\{B\} \ / \ (P\{A\text{—}B\}P\{B\} + P\{A\text{—}B'\}P\{B'\}).$$

In statistical estimation, "B" often represents a hypothesis, and "A" some observed data. If the likelihood of the observation varies considerably depending on whether the hypothesis is correct, then the observation provides evidence in favor of or against the hypothesis. The unconditional P{B} and P {B'} in the formula are our best estimates, prior to observing any data, of the probability that B is true or false, respectively.

In plain terms, the theorem advises us that, in the absence of any other evidence, a lost child we happen upon is most likely to have come from the nearest house.

In particular, let A denote a positive result from a screening test, and B the event that the person does, in fact, have "dangerousness disorder" (if we could agree that there is such a disorder.) Suppose that the test is 97 percent sensitive and specific: that is, the false positive and false negative error rates of the test are both only 0.03. This would, in fact, be an excellent test, approximately as accurate as the most common blood test for HIV – and much better than most psychological instruments. In probabilistic terms, this would give us P{A—B} = 0.97, and P{A—B'} = 0.03.

Suppose also, however, that the actual ailment has a prevalence of 0.5 percent in the population. Before any screening, therefore, an individual selected at random would have a probability of 0.005 of having the disorder. That is, our prior P{B} = 0.005. Since one either has or does not have the disorder, P{B} + P{B'} = 1. It follows that P{B'} = 0.995.

Substituting these values into the formula,

$$P\{B\text{—}A\} = (.97)(.005) \,/\, ((.97)(.005) + (.03)(.995)) = 0.14.$$

This means that, of those who tested positive, only 14 percent, or slightly fewer than one out of seven, would actually have the disorder.

The reader is invited to try the formula with other assumed values. In general, screening will be similarly uninformative unless the false positive rate of the test is considerably less than the population incidence of the disorder.[4]

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[4] A good exposition of Bayes' Theorem and related topics, including the application to screening for rare disorders, is found in Samuel Kotz and Donna F. Stroup, EDUCATED GUESS-ING, 43-47 (1983).