Toward a Balanced Drug-Prevention Strategy: A Conceptual Map

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Public discussions of drug policy have come to rely on some conventional distinctions. "Zero tolerance" policies aimed at eliminating all illicit drug use are contrasted with "harm reduction" policies designed to reduce the adverse consequences of drug use (Caulkins and Reuter 1997). Policies designed to "reduce the supply" of drugs are contrasted with those aimed at "reducing the demand" (Domestic Council Drug Abuse Task Force 1975; Rydell and Everingham 1994). Among "supply-reduction" policies, overseas efforts to eradicate crops and immobilize international trafficking networks are contrasted with efforts made at the border to interdict the flow of drugs, and with efforts to suppress street-level drug markets (Moore 1990). Among "demand-reduction" policies, distinctions are made between "prevention programs" (generally, programs designed to dissuade teenagers from using drugs; Botvin 1990) and "treatment programs" (including methadone maintenance, therapeutic communities, and 12-Step programs; Gerstein and Harwood 1990).

Such distinctions have their uses. They remind us of the varied tools available to manage the problem. They allow us to analyze the "balance" in the current portfolio of policy instruments (Office of National Drug Control Policy 1999a, 4). And, insofar as we think we know the most desirable portfolio for dealing with the drug problem, they allow us to see how close we are to that optimum (Tragler, Caulkins, and Feichtinger 1997).

Less usefully, however, these distinctions align themselves with important political ideologies. Those on the right of the political spectrum generally favor "zero tolerance" polices over "harm-reduction policies." They also favor supply reduction and drug law enforcement over prevention and treatment. Those on the political left generally favor the opposite. Often, then, the concepts are used less as analytic tools for considering the best possible combination of policies than as ideological clubs to hammer one side or the other in the apparently endless debate over drug policy.

The concept of "drug abuse prevention" is often used precisely in these ways. Fueled by the commonsense view that "an ounce of prevention is worth a pound of cure," support for drug abuse prevention is widespread. The broad enthusiasm for the general idea of prevention translates into sustained support for particular policy instruments that are conventionally described as the "prevention" component of drug abuse policy: primarily school-based programs designed to dissuade children from using drugs.[1] Those programs, in turn, build a constituency of parents, schools, and drug educators who lobby for a continued emphasis on prevention.

My purpose here is to challenge these comfortable assumptions. My aim is to clarify the concept of "drug abuse prevention" so that it can do some analytical rather than political work. More particularly, I want to distinguish an *effect* that could be called *preventive* from a *program* that is described as a *prevention program.* Using this distinction, I want to argue that supply reduction and drug law enforcement measures produce some of the most important preventive effects of current drug policy instruments. Indeed, in my view, these preventive effects provide the principal justification for relying as much as we do on these instruments (Moore 1990). In contrast, the programs that are often considered prevention programs either have little preventive effect or produce their preventive effects only in combination with other policy instruments, including drug law enforcement.

I also want to argue that drug problems often emerge as "epidemics," and that the proper balance among drug policy instruments depends on the stage of the epidemic the society confronts (Behrens 1997; Behrens and Caulkins 1997). Supply reduction and drug law

enforcement instruments have a particularly important role to play at the onset of drug epidemics, while treatment programs play a more important role at later stages of the epidemic. In short, my aim is to develop and defend a different definition of drug prevention from the one that is usually relied upon, and then, using that definition, to reconsider the proper balance to maintain in our portfolio of drug policy instruments.

A Simple Analytic Model of the Drug Problem

To start, consider the simplified model of the drug "problem" presented as Figure 1.1.[2] Briefly, this model characterizes the drug problem as a commonly imagined set of *adverse consequences* of drug use. These adverse consequences affect both the drug user (damaged health, reduced economic resourcefulness, and degraded social functioning) and the wider society (crime, increased public spending).

Of course, what are commonly called the adverse consequences of drug use are, in fact, only partly caused by drug use in itself. Also implicated are the effects of individual personality, social conditions, and public policies (MacCoun and Reuter 1998). For example, the adverse health consequences of drug use on users are produced partly by the drugs themselves, but also by the fact that drugs that have been made illicit by public policy come to users in unsterile and unpredictable doses. The reduced economic resourcefulness is produced partly by the fact that drug use makes people less competent at jobs, but also by the fact our public and private policies treat drug users as unreliable employees. So, when observing the poor condition and behavior of many drug users, we must keep in mind that we are looking at the effects of personality, social structure, and public policy as well as of drug use in itself.

However important the patterns of drug use are in producing adverse consequences for users and the wider society, these patterns of use emerge from an underlying demand for drugs. Biology, individual personality, and environmental conditions shape that underlying demand. Some portion of that demand expresses itself as realized drug consumption through the operations of drug markets in which more

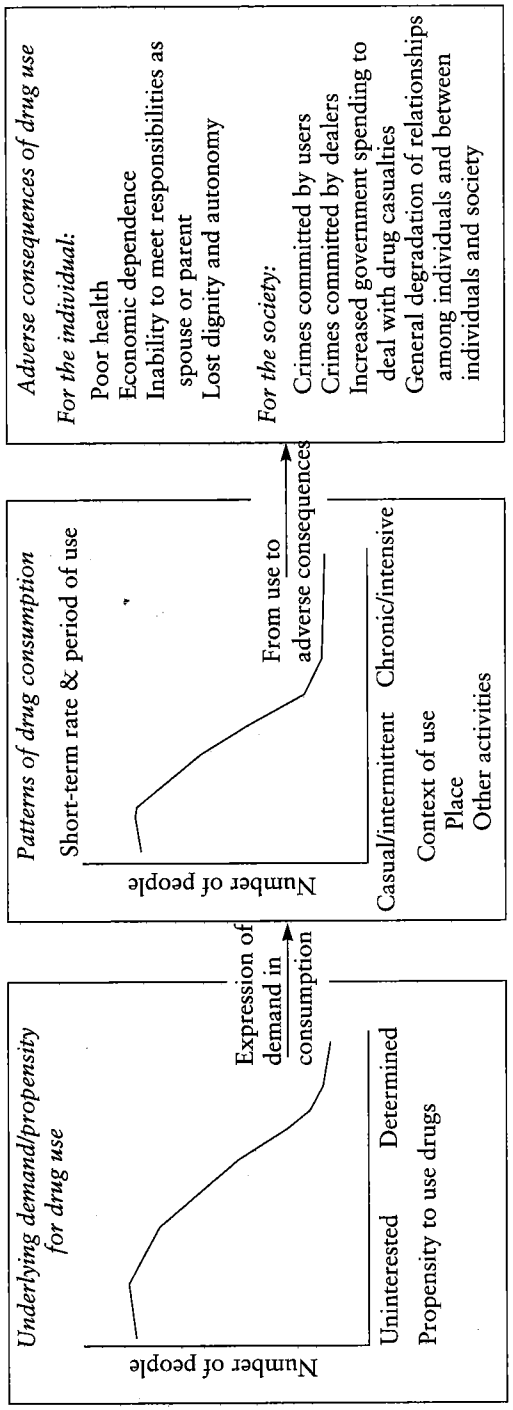

Figure 1.1. A simple analytic model of the drug problem, part 1.

or less enthusiastic demanders meet more or less cautious and greedy suppliers to sustain individual and aggregate patterns of drug use.

Note that this simple model leaves room for three different kinds of prevention policies. First, policies that reduce the underlying demand for drugs. Second, policies that make it difficult for any underlying level of demand to be expressed in sustained consumption. Third, policies that alter the relationship between any given level of drug use and the adverse individual and social consequences of that use.[3] To understand this simple model more fully, let's start with the demand for drugs.

The Underlying Demand

The underlying demand for drugs can be conceptualized as a distribution of individual propensities to use drugs.[4] In all likelihood, this distribution has the shape of a log-normal distribution as illustrated in the first panel of Figure 1.1. After all, virtually everything in life—ranging from drug use, through criminal offending and corruption in police departments, to speeding on the highway and the depth of genuflection in Catholic churches—seems to be distributed in this way.[5] The large number of individuals toward the left of this distribution are those who are either determined never to use drugs or disinclined to do so. The smaller (but still substantial) group in the middle would be open to drug use if the circumstances were right. The small number of people at the "right tail" would be eager to use drugs and particularly vulnerable to developing chronic patterns of use.

It is also plausible that individual propensities to use drugs are shaped by certain, more or less durable, individual characteristics. Individual propensities could start with specific biological inheritances that make each of us at least a little (and some of us highly) vulnerable to the abuse potential of drugs such as heroin and cocaine (Committee on Opportunities in Drug Abuse Research 1996). The biological endowments, in turn, could have been revved up or damped down by the social conditions that shaped our individual development (Committee to Identify Strategies to Raise the Profile of Substance Abuse and Alcoholism Research 1997). The social conditions could have shaped our psychology (that is, our more or less unconscious drives, needs, fears, passions, moods, and so on). Or they could have shaped

our knowledge of and experience with drugs (that is, our conscious, cognitive understandings of drug use and its consequences). These social conditions could act on individuals through broad factors such as the individuals' objective circumstances or the mechanisms of mass culture. Or social conditions could impress themselves on individuals through the much more intimate networks that link individuals to family, friends, or school (Jacobson and Zinberg 1975).

Presumably, changes in these social conditions could change the underlying demand for drugs among individuals and therefore the overall shape of this distribution. If an economic disaster left a large proportion of the population without hope, the individual and aggregate propensity to use drugs might increase. If family structures collapsed in ways that exposed adolescent children to even greater influence by their peers, propensities to use drugs might well increase. In effect, these social conditions could shift the whole distribution of propensities to use drugs "out" toward a wider, more intense desire to use drugs. Alternatively, these changes, operating on particular segments of the population, could affect the shape and the skew of the distribution, increasing or decreasing the difference between the median propensity to consume drugs and the propensity at the right tail of the distribution.

Obviously, if the underlying propensities to use drugs changed and everything else in this model remained constant, one would expect the patterns of drug use and the adverse consequences to change as well. Policy levers that could be used to reduce the propensities to use drugs (that is, to push the whole distribution inward, toward the origin, or to tilt the distribution so there were fewer individuals at the right tail) could be considered "primary preventive instruments." For example, if some kind of medication could be administered that would make people permanently resistant to the addictive powers of psychoactive drugs, that would constitute a primary preventive capability for drug use broadly analogous to the primary preventive impact produced by the Salk vaccine on polio. Similarly, if some kind of cognitive training could produce permanent, psychological resistance to drug use, that too could be considered a primary preventive instrument. Indeed, it is precisely the hope that relatively permanent cognitive resistance training could be provided to schoolchildren that lies at the heart of our

commitment to school-based prevention programs. Because many of these programs start before students have much real experience with drugs, they must perforce be counting on being able to produce a long-lasting effect (DeJong 1987).

The Supply and Availability of Drugs

Whether the underlying demand for drugs ever gets a chance to express itself in actual drug use depends a great deal on how conveniently, reliably, and inexpensively potential users can obtain drugs. That is, the level of drug consumption depends on the supply of drugs as well as on the underlying demand. Of course, if drug users want drugs, and back up their need with money to spend, profit-motivated entrepreneurs will find a way to supply the market—at least to some degree, in some particular ways, for a particular price. But, as we will see, it is possible that all those qualifications—to some degree, in some ways, at some price—may matter. If it can be made risky for drug entrepreneurs to supply drugs, fewer entrepreneurs will enter the market. They will also behave more cautiously, and will demand more money to compensate them for the risks they are running (Moore 1977). All this will make drugs less available and more expensive than they otherwise would be. If drugs are less available and more expensive, then less of the underlying demand will be expressed in actual drug consumption. How much less depends on how risky drug dealing can be made to be (Reuter and Kleiman 1986). If the risks are low, the expressed level of drug consumption will be quite high. If, however, the risks are high, the supply of drugs may be suppressed, and with that the overall level of use—*even though the underlying demand for drugs remains constant.* To the extent, then, that burdening drug dealers discourages them from providing drugs conveniently at low prices, doing so may have an important "preventive" effect. We could call this one of the preventive *effects* of supply reduction and drug law enforcement.[6]

Later I will present the details of this argument about whether and how supply reduction and drug law enforcement might produce preventive effects. Here I simply want to indicate that the underlying *demand* for drugs differs from the observed *consumption* of drugs. Further, how much of the underlying *demand* expresses itself as *consumption* depends a great deal on the available *supply* of drugs. And finally, there are many things other than the underlying *demand* to use drugs that can affect the *supply*. In short, an underlying demand for drugs can call forth a supply. But how big the supply is, and how much of the underlying demand is satisfied depends on the *supply* conditions as well as the *demand* conditions.

Patterns of Use

Given an underlying demand for drugs, and some degree of drug availability, some individuals will use drugs. But how they do so—how intensively, for how long, and in what particular contexts—will vary from one user to another. Some will never advance beyond experimentation. Others will quickly become deeply involved and stay that way for a long time. Some will be able to confine their drug use to relatively safe contexts; others will not be so disciplined and their drug use will spill over to contexts in which it is physically or socially dangerous.

Note that what I have been calling a "pattern of drug use" is a complex concept (MacCoun and Reuter 1998, 208–212). One apparently simple part of the concept focuses on drug consumption: how much is being used. The other part focuses on the context of use. But even the simple idea of drug consumption has to be divided into two distinct parts.

The first part measures the short-term rate of use: how much a user consumed in a particular episode of drug taking. This is important because it determines whether the user became intoxicated or not. In principle, one can smoke a little pot, or take a little cocaine, and suffer no more impact on judgment or physical skill than if one consumed a martini, or a cup of strong coffee. (Note: I am not saying that these drugs are equally dangerous. Indeed, one of the things that makes drugs like heroin and cocaine particularly dangerous is precisely that it seems to be hard for users to keep the use of these drugs below intoxicating levels in any given episode. Further, these drugs are particularly likely to cause people to want to reach this intoxicated state over and over again.)

The second part measures the period of time over which drug use is maintained. This is important because it tells us how addicted or de-

ɔendent the user has become. Combining the two dimensions, one ould describe a continuum that went from "casual, intermittent sers" at one end to "intensive, chronic users" at the other. "Casual" nd "intensive" refer to the *short*-term rate of consumption; "inter-ıittent" and "chronic" refer to the period over which consumption ontinues.

The distinction between short-term *rate* of use and long-term *pe-iod* of use is important because some of the risks and harms of drug se are tied to the risks associated with short-term intoxication while thers only emerge from long-term use. One can die of a drug over-ose, or get involved in a serious crime, in a short-term burst of inten-ive use. One can only squander one's entire savings and destroy the ·ust of family and friends through sustained use.

Of course, long periods of use increase the number of reckless pisodes as well. The longer one sustains use, the more chances one as to become intoxicated. But, given the nature of drug use, sus-ıined use increases the likelihood that, in any given episode, the user ·ill become intoxicated and use the drug in dangerous contexts. It is ossible that an experienced user's growing physical tolerance and nowledge of drugs would allow him to manage his use so that there ·ere fewer reckless episodes of intoxication than among inexperi-ıced users. But the nature of drug use seems to be that the chronic sers lose control over their drug use. Thus the long-run users may roduce more reckless episodes than inexperienced users—*even when ·e control for the overall level of use.*

This is, in fact, what Dean Gerstein and I found when we looked osely at alcohol consumption. Intensive, long-term users not only ɔnsumed much more alcohol than others; their number of "drunk ays" was also disproportional to their consumption (Moore and erstein 1981, 24–42). In effect, while the chronic users consumed ıuch more alcohol over the years than intermittent users, they were so more likely than the intermittent users to drink to intoxication in ıy given episode. The net result is that chronic drug users get a triple hammy when compared to intermittent users: not only do they get ıe bad effects of reckless use, they also get the bad effects of long-rm use, and they get the bad effects of large numbers of particularly

reckless episodes of use! This is why many of the worst consequences of drug use are concentrated among chronic intensive users.

To be analytically helpful, a "pattern of use" should describe the social and physical context in which drugs are used as well as how intensively and how long drugs are used. The reason is that the context of drug use affects the social harms associated with drug use. With respect to medical complications, for example, a drug user experiences one set of consequences when heroin is administered through sterile needles in a hospital, and quite a different set of consequences when he administers the drug to himself on the street. With respect to family welfare, it is one thing for an unmarried Wall Street yuppie with significant personal and family resources to become involved with cocaine; it is quite another for a pregnant young woman with no resources to do so. The consequences to the first user will be handled largely within private institutions relying on private resources. The consequences to the second user will, in all likelihood, spread from the mother to the child, and from the family to the broader society (Besharov 1994). The point is that the activities that are paired with drug use, and the social position of the drug user, affect the magnitude and character of the individual and social harms associated with drug use.

Insofar as the different patterns of drug use produce different social consequences, policymakers have an opportunity to prevent some bad consequences of drug use by discouraging dangerous patterns of use. For example, if we provided oral doses of methadone as a substitute for intravenous use of heroin, we could reduce the number of crimes committed by drug users and increase their level of employment. Or, if we distributed clean needles to drug users, we might be able to reduce the users' rate of septicemia or AIDS. Or, if we provided drug counseling in employment contexts, we might be able to change the relationship between drug use and unemployment. Such interventions are not designed to eliminate drug consumption; they are designed to change some part of the pattern of drug use that is causing the adverse social consequences.

The difficulty with such approaches is that we are not sure what the relationship is between relatively benign patterns of use and malig-

nant patterns of use. If the relatively benign patterns develop into the relatively malignant patterns at a certain, unchangeable rate, then we cannot reduce the relatively malignant patterns without reducing the relatively benign patterns. This concern is part of what justifies commitments to "zero tolerance" policies: we can't afford to have any drug use, because the minor drug use will beget the serious drug use.

It is not hard to imagine mechanisms that might link relatively benign patterns of drug use to malignant patterns. If, for example, a relatively constant proportion of casual, intermittent users got swept up in the addictive and dependence-producing power of heroin and cocaine, then the amount of chronic, intensive use might be a direct function of the amount of casual, intermittent use. Or, if the relative success of drug users in benign patterns advertised the apparent safety of drug use, unsuspecting individuals with high degrees of vulnerability might be drawn into drug use and find themselves trapped. Or it may be that the high levels of use sustained by chronic, intensive users supply the core financing that supports drug markets, which then become relatively accessible to all.

The point is simply this: to the extent that benign patterns of use tend to increase the risk of advancing to malignant patterns of use, society might decide to treat the benign patterns not as tolerable behavior but instead as a "risk factor" for malignant patterns. As such, the benign patterns might become important targets of prevention efforts along with the malignant patterns. Or, if society's principal concern was with the malignant patterns, we might concentrate on finding prevention instruments that were specific to reducing the malignant patterns, leaving the benign patterns untouched.

Harms and Adverse Consequences

The patterns of use are linked to a set of *adverse consequences* of drug use that constitute the core of the drug problem. These consequences can accrue to, and be evaluated by, individual drug users. For example, users may experience more or less disabling health consequences, and may feel more or less satisfaction with their current drug-using patterns. Alternatively, the adverse consequences may accrue to, and be evaluated by, society at large. For example, drug users may commit crimes, and those crimes may affect both the individual victims and

the wider society. Analytically, one could think of the harms and adverse consequences (as well as some benefits) as emerging probabilistically from any given aggregate level of drug use, distributed across a particular set of patterns. Thus an underlying propensity to use drugs, expressed through an existing market for drugs, emerges as an aggregate distribution of use patterns. The use patterns, in turn, result in an observed set of harms and adverse consequences.

As noted above, however, some particular features of patterns of use may be particularly important in linking any given level of consumption to any particular adverse consequence. For example, some of the most important adverse health consequences of drug use (such as septicemia or the spread of AIDS) may be linked to the use of borrowed, dirty needles to administer the drug—a risk common among street-level heroin addicts, less common among those who smoke crack. Or crime and child abuse may be linked more to poor drug users than to rich ones simply because the wealth of the rich insulates them from the conditions that necessitate these crimes among the poor. The rich can loot their own bank accounts rather than their neighbors' wallets, and can purchase child care for those days when they feel they can't cope.

Insofar as there are some separate causal mechanisms that link patterns of use to adverse consequences, these, too, can become the focus of prevention instruments. We can make the world more or less safe—both physically and socially—for those who use drugs in particular use patterns. We can choose to provide clean needles to drug users in the hope of changing the relationship between drug use and health consequences. We can provide cocaine-addicted mothers with combinations of support and discipline, and through such interventions alter the relationship between cocaine use and child neglect and abuse. Policies that change the relationship between patterns of drug use on the one hand and adverse consequences on the other can be called "tertiary" prevention policies.

The Environment

So far I have emphasized the way desires or propensities to use drugs "go through" to adverse consequences of drug use via drug consumption organized in various patterns of use. An obvious objection to this

view is that it places far too much emphasis on the underlying demand. It ignores the impact of the environment or social conditions on the demand for drugs. And it misses the way social conditions transform relatively benign patterns of drug use into events that produce serious adverse consequences. At the extreme, some would argue that there wouldn't be much consumption of drugs if social conditions were more prosperous or more just, or if there were no financial profit in the illicit trade. Others would argue that what appear to be adverse consequences of drug use are really expressions of broader individual pathologies created by an unfair society.

These criticisms are apt. Figure 1.2 attempts to accommodate them by showing an important role for the social environment as well as for underlying demand and its expression through patterns of use to adverse consequences. The figure suggests that the broader social environment influences the size and shape of the drug problem in three important ways.

First, as noted above, the environment and social conditions are important in what might be called the *background* of both the individual propensities to use drugs and the aggregate distribution of these propensities. If society has a significant amount of poverty, racial discrimination, and family deterioration as environmental conditions, those conditions might well affect the location and shape of the underlying propensities to use drugs. In fact, one could easily imagine that these effects could be explosive in their impact: that a society with a certain level of these structural conditions might be particularly vulnerable to an epidemic of drug use in the same way that a population weakened by malnutrition might be vulnerable to a flu epidemic.

Second, environmental and social conditions may also be very much in the *foreground* of the drug problem. The social conditions in which individuals find themselves—how many of their close friends and relatives use drugs, how conveniently available drugs are, what the meaning of drug use is in their local milieu—can all affect the likelihood that an underlying individual propensity to use drugs will be expressed in a particular pattern of use.

Note that the distinction between *background* and *foreground* conditions is based on two key characteristics. One is time: a factor is in the background when it happened in the past and has accumulated

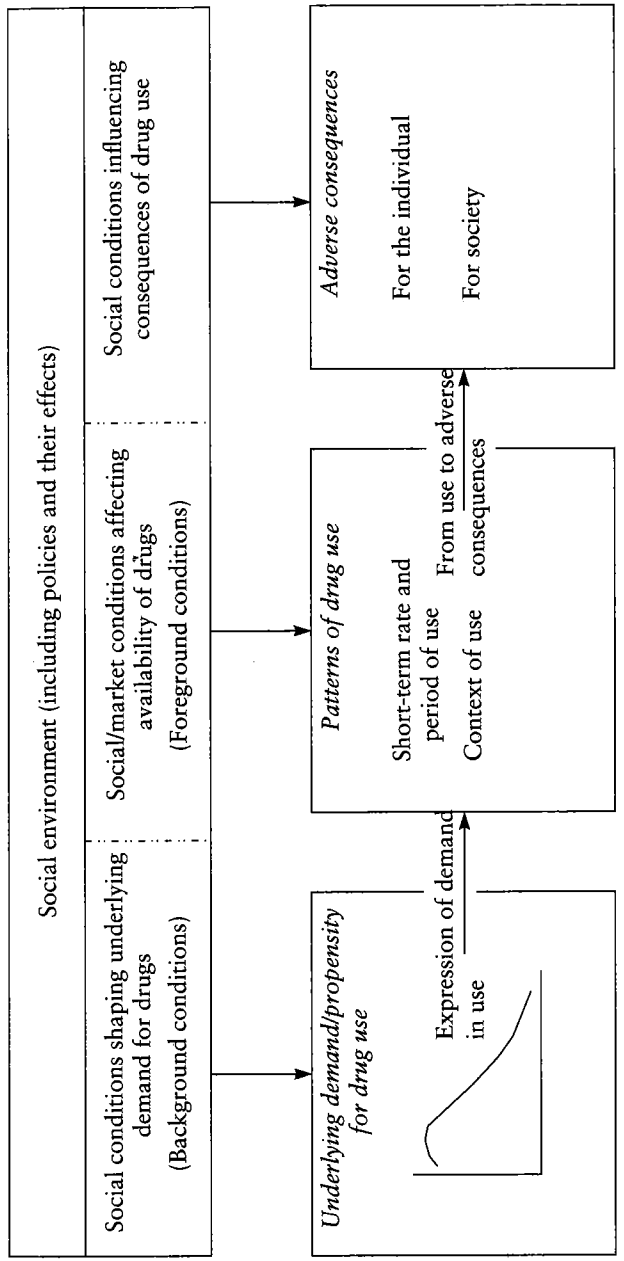

Figure 1.2. A simple analytic model of the drug problem, part 2.

within the experience of individuals or the shared experience of a community or society. In contrast, a factor is in the foreground when it is a condition an individual currently confronts. The second distinction is linked to the way background and foreground conditions operate on human behavior. Background conditions influence one's motivations and knowledge—the capital one carries around within oneself. Foreground conditions present themselves to individuals as opportunities to be exploited or neglected.

In the context of our simple model, background social conditions affect the propensity to use. Foreground social conditions affect the likelihood that a particular underlying propensity to use will be expressed in a particular pattern of use.

Third, the social environment operates not only on levels and patterns of drug use but also on the causal mechanisms that transform any given pattern of drug use into adverse social consequences. If I'm a drug user and can't find a legitimate job that fits well with my drug use, I'll end up as a criminal offender. If the crowd with whom I smoke crack likes to pair that activity with unprotected sex, I face a greater risk of contracting AIDS than if my drug-using crowd uses LSD for lonely introspection. In this sense, my environment exacerbates the adverse consequences of using drugs.

In this model, then, the broader social environment is an important factor shaping the size and character of the drug problem via three different mechanisms: (1) by producing important environmental influences on the location and shape of the underlying distribution of propensities to use drugs; (2) by influencing whether and how those propensities are translated into particular individual and aggregate patterns of use; and (3) by influencing how those patterns of use are translated into levels of adverse consequences.

Policies as Environmental Factors

The simple model is also vulnerable to the criticism that it ignores the fact that many of the most important observed adverse consequences of drug use emerge not from drug use in itself but as unintended effects of drug policies (MacCoun and Reuter 1998). Thus the only reason drug users end up committing property and violent crimes is that laws prohibiting the sale of drugs make the drugs expensive and not

conveniently available. Since not all drug users can become highly paid consultants working flexible hours, some must turn to crime to maintain their habits. Or the only reason drug users become so unhealthy is that drugs sold in illicit markets cannot be quality controlled and are apt to be unpredictable as to dose and loaded up with dangerous contaminants.

This criticism, too, is apt. One way to deal with it is to treat the broad social conditions that affect the drug problem as inclusive of the conditions created by drug and other social policies. Thus the current level of poverty and racial discrimination in labor markets could be seen as at least partly a consequence of failed policies in these areas. Economic and social conditions within neighborhoods could be seen as consequences of economic development policies.

Of more immediate concern, perhaps, is that the character of local drug distribution systems and the markets they help to sustain—how big, how visible, how easily accessed, how expensive, how risky, and so on—can and should be seen as the result of policies toward drug trafficking. The foreground factors described above may be strongly influenced by drug enforcement activities of one kind or another (Moore 1990; Chaiken 1988).

Equally important is the idea that drug policies can affect the attitudes of both the wider public and the immediate neighbors of drug users. Those attitudes, in turn, become part of the foreground social conditions that drug users confront. A society largely committed to "zero tolerance" may succeed in discouraging drug use among many; but for those who use drugs despite the intolerance, the consequences will be much worse. Their drug use will result in social disapprobation, loss of employment, and so on. Such sanctions may, in the long run, help the committed users abandon their drug use through the mechanism of specific deterrence. Or they may simply inflict a loss on the drug users and the rest of us without producing any real deterrent effects.

Prevention Policies

With this simple model of the drug abuse problem, it is possible to be more precise about what we might mean by drug prevention policies.

Prevention as an Effect or as a Kind of Policy?

The first question to be answered is whether we want to define prevention policies in terms of their *effects* or in terms of a particular *target* or *mode of operation.* Arguably, a prevention policy could be any policy designed to produce, or actually producing, an effect on either overall levels of drug use or adverse consequences. This broad definition would certainly embrace treatment policies. It might also include supply reduction and drug law enforcement options. In fact, this definition of drug prevention is so broad that it excludes no important drug policy instruments.

A more restrictive definition would limit prevention programs to those which operate on specific parts of the drug abuse problem in particular ways (Polich et al. 1984). For example, we could limit drug prevention policies to those designed to prevent persons who have never used drugs from initiating use. This definition would exclude treatment programs that seek to prevent future use by persuading current users to give up their drug use. And it would exclude early intervention programs that seek to discourage experimental users from advancing to more chronic, intensive drug use.

Or we could narrow the definition still further and limit drug prevention policies to those which aim to prevent the initiation of drug use by developing decisionmaking and peer-resistance skills among teenagers. Indeed, this last definition is what "prevention programs" ordinarily mean in drug policy debates. Such prevention programs can be based on mass media or on more intimate and intensive forms of communication. And they can be paired with various kinds of additional activities such as health education or after-school recreation programs. But the core idea is that prevention programs are information programs designed to dissuade those not now using drugs from beginning to do so (Polich et al. 1984).

Obviously, there are enormous differences among these definitions of drug prevention policies. In principle there is nothing wrong in having several different definitions of drug prevention policies. The only practical difficulty comes if we assume, on a commonsense basis, that any effective drug policy should have a preventive component, and then assume that that commonsense intuition justifies expenditures on the particular kinds of prevention programs included in the second definition without testing them against the power of other instruments to produce the same preventive results (Caulkins et al. 1998).

Note that there are two analytic failures here. One is to assume that "prevention" (however defined) is self-evidently a valuable component of drug policy—"an ounce of prevention is worth a pound of cure"—when it is by no means clear that this is true. The second is to assume that whatever value prevention policies may have is realized through the use of a particular kind of policy instrument: namely programs directed at people who are not yet users, operating through the mechanisms of persuasion to reduce the likelihood of future use. Both assumptions *may* be true, but their truth cannot and should not be taken as given. If we are interested in drug abuse prevention on *prima facie* grounds, we should at least explore the relative effectiveness of different instruments in achieving the desired effect.

Prevention of What?

The second question to be answered is about the goal of drug prevention policies. Is the goal (1) to reduce drug use of any kind, (2) to reduce the patterns of drug use that are particularly likely to produce adverse consequences, or (3) to reduce the adverse consequences of drug use without worrying too much about the underlying levels or patterns of use (Caulkins and Reuter 1997)? This is a very important question. The reason is that programs designed to prevent all drug use may have a negative impact on the goal of reducing adverse consequences, while those designed to reduce adverse consequences may have a negative impact on the goal of reducing all drug use.

For example, if society wanted to discourage drug use in general or particular patterns of drug use, it could decide to achieve this goal by stigmatizing particular patterns of drug use. It could pass laws prohibiting certain patterns of use. Or it could mobilize cultural antipathies to using certain kinds of drugs in particular ways. If society succeeded in these efforts, it would create a social environment hostile to those who used drugs despite the prohibition or stigma. That hostility, in turn, would produce consequences that were adverse not only to the drug users themselves but possibly also to the society at large. If employers react to drug use by firing drug users, the fired employees are adversely affected. But society is adversely affected as well if it has

to pay the unemployment compensation, or endure the reduced productivity, or suffer through the crimes that the unemployed users will commit. If wives react to drug use by throwing their husbands out, or parents react the same way to drug-using teenagers, that, too, can be bad not only for the drug-using husbands and teenagers but also for the wider society.

Conversely, if society wanted to focus on reducing the harms of drug use, without worrying so much about underlying levels of consumption, it might adopt policies designed to make the world a safer place in which to be intoxicated or drug dependent. Thus it might want to increase tolerance of drug use—particularly of forms of use that did not seem to create bad consequences for the user or the wider society. We might even want to change the environment in ways that would make it safer to be intoxicated: by, for example, reducing the availability of weapons or making mattresses that were less likely to catch fire when burning cigarettes fell from sleeping hands. This might protect drug users from some of the bad consequences of their use. But for precisely these reasons, it might very well increase overall levels of use. Since the penalties for use had been reduced, reasons for resisting use would have been attenuated.

The tension between reducing drug use in itself and reducing the bad consequences of drug use seems intrinsic (Kleiman 1992). The reason is that if society's goal is to reduce drug use, it wants to use the bad consequences of drug use to help discourage the practice. In fact, it doesn't want to wait for the naturally occurring bad consequences of drug use to show up sometime in the future for drug users; it wants to construct quicker and more certain bad consequences of drug use to warn users of the real harms of drug use (Musto 1973). In doing so, it may reduce overall drug use, but only at the cost of increasing the adverse consequences to those who continue to use. When society comes to review its drug policies, then, what will be apparent is the impact of the policies on those who were not dissuaded from use. What will be less apparent is the impact of the policies on dissuading others from using.

On the other hand, if society's goal is to reduce the adverse consequences of drug use and not consumption (let alone the underlying propensity to use drugs), then it may deliberately decide to insulate

drug users from many of the consequences of drug use. Doing so may reduce the harms experienced by drug users. But precisely for that reason, the same policies may increase the total number of users in any given use pattern.

Whether it makes sense to focus preventive efforts on drug use in itself or on its adverse consequences depends on different factors, about which people make quite different assumptions. Three key assumptions are: (1) how responsive drug use is to difficulty in obtaining drugs or adverse consequences of drug use; (2) how bad drug use in itself would be once shorn of the iatrogenic effects of policies designed to discourage drug use; and (3) how likely it is that drug users, given some starting level of use, will advance to dangerous patterns of use.

If one assumes that individuals are naturally destined to use drugs or not, and that little in their actual experience with drugs will affect their fate, then one naturally favors "harm reduction" policies over "use reduction" policies. The reason is that, under these assumptions, there is little that society can do to reduce consumption, therefore little price to be paid for making the world a safe place in which to be intoxicated or drug dependent. (This assumption may make sense, but to be consistent, one must recognize that this claim renders treatment and the more limited forms of prevention doubtful, since they depend on being able to dissuade users from using drugs.)

Similarly, if one assumes that most of the observed bad consequences of drug use—poor health, unemployment, crime, and so on—result from efforts to make drugs unavailable and unattractive to users rather than from drug use in itself, then one will favor harm-reduction policies over those designed to reduce consumption. The reason is that since all the burden of drug use comes from the adverse consequences produced by policies designed to reduce use, we can relax those policies and get the benefits of reducing adverse consequences while not increasing the total number of users.

And, if one assumes that very few users who are now using drugs in relatively harmless patterns will advance to dangerous patterns of use, then one will, once again, favor harm-reduction policies over use-reduction policies. The reason, again, is that there is little to be gained (and some important losses to be incurred) by trying to prevent people from advancing to dangerous use patterns.

Alternatively, if one makes the opposite assumptions—that consumption of drugs is responsive to social stigma, to difficulty in purchasing drugs, to real adverse consequences of using drugs; that many of the bad consequences of drug use result from using drugs, not just from the artificially constructed hazards; and that seemingly harmless patterns of drug use elevate the risk that users will advance to more dangerous patterns of use—then one tends to take a more benign view of policies designed to prevent drug use, even if these increase the adverse consequences of drug use for those who are not dissuaded. It is here that the sharpest debates about drug policy occur.

Points of Intervention

It is useful, in talking about drug prevention policies, to get past these fundamental issues and to look more closely at an array of drug prevention policy instruments that are targeted at different points of intervention. Five useful distinctions can be made.

As noted above, the first kind of prevention policy could be characterized as "primary prevention." I will define these as policies that focus on the environmental conditions that affect the underlying propensities to use drugs. This could include social policies aimed at reducing poverty and racial discrimination, increasing employment opportunities, or strengthening the capacities of families to care for their children. For the most part, these efforts are not thought of as drug policy but as more fundamental social policy. Their effect on preventing drug use is secondary to their most important justification, which is to alter damaging social conditions.

The second kind of prevention policies might be called "secondary prevention." These are designed to affect the milieu within which potential and current experimental users interact with one another. This includes the array of after-school activities available to teenagers, the prevailing views about drug use held within different teen subcultures, and so on. The aim of these policies is to reduce the social supports to and the enabling conditions of drug use among particularly vulnerable populations. These are what are most commonly viewed as drug prevention policies.

The third kind of prevention policies might also be considered "secondary prevention" programs, but instead of working on the demand

side of the market, they work on the supply side. It is here that many supply-reduction efforts—ranging from eradication programs in source countries, through interdiction, to street-level drug enforcement—can have their preventive effects. Insofar as these programs succeed in making it harder, more expensive, and more dangerous for users to gain access to drugs, they may help to discourage new users from beginning to use and casual users from advancing to more serious use patterns. They may also help create conditions under which those in serious use patterns seek treatment on their own or are exposed to criminal justice interventions that require them to seek treatment.

A fourth kind of prevention policy could be considered "tertiary prevention." Those policies are designed to break the connection between any given pattern of use and the adverse consequence—to reduce the adverse consequences associated with any given level of use.

It is worth noting that what are commonly called drug abuse prevention programs are really exploiting only one of these possible points of intervention: the milieu of social supports and enabling conditions surrounding those not-yet-users judged to be particularly vulnerable to drug use. Within this family of policies we can distinguish between policies that operate through mass instruments such as advertising and those which operate through more tailored, intimate instruments such as drug resistance education or individualized drug counseling. These programs can focus on drug use specifically or on health and responsibility more generally. They can be designed to influence individual knowledge and cognition or to develop individuals' resistance to peer influences. While there are many variants of this kind of drug prevention program, they all can usefully be seen as one broad family of preventive interventions. Thus they must compete with other forms of prevention efforts—notably with primary prevention, with secondary prevention focused on drug markets, and with tertiary prevention designed to break the link between drug use and adverse consequences (such as needle exchange programs). In the remainder of this chapter, I would like to develop the idea of supply-reduction and drug law enforcement policies as important drug prevention policies—not simply as expressive instruments of a zero tolerance policy.

Supply Reduction and Drug Law Enforcement

Many people have come to believe that supply-reduction and drug law enforcement efforts have little impact on the supply of drugs, and therefore little impact on the overall level of drug use. This is possible. And given the enormous direct and indirect costs of such efforts, this possibility should loom large in discussions of drug policies. But arguing the theoretical possibility is very different from imagining that one has a lever that could end legal restrictions against the production and distribution of drugs such as cocaine and heroin, and deciding to go ahead and push the lever. Before pushing the lever, one might want to consider the following observations and facts.

First, it is worth remembering that prohibiting the production and distribution of drugs such as heroin and cocaine does significantly burden drug entrepreneurs. It exposes them to the threat of arrest and long prison terms. And, despite the claim that imprisonment matters little or is even viewed positively by young drug dealers, it seems unlikely that drug dealers would prefer to be in prison rather than on the street (Reuter, MacCoun, and Murphy 1990). Perhaps more important, making drug trafficking illegal denies drug dealers the protection of the law, and thereby exposes them to rip-offs and violence at the hands of other dealers and criminals (Moore 1990). There may well be many young men who are willing to face these risks. This means that drug law enforcement policies cannot totally eliminate drug dealing. But it is unlikely that the number of those willing to be drug dealers facing these risks is greater than the number of those who would be willing to deal drugs if doing so were legal. If there are fewer dealers, the supply will be less, and the amount of consumption will be less than it otherwise would be. This is fundamental economic theory.

Second, if dealers are exposed to threats from law enforcement agents and other criminals but nonetheless decide to continue dealing drugs, they will operate in ways that are designed to (1) reduce the risks they face and (2) compensate them for the risks they cannot reduce (Moore 1977). One way they will reduce their risks is to limit their dealing to people they trust. This means that they will prefer to deal with those who are already using drugs rather than run the risk of recruiting new users. The way they will compensate themselves for

the risk of dealing drugs is to raise prices. The net effect of both these responses will be to increase the "effective price" of drugs to users, and perhaps particularly to new users. By the effective price I mean the total amount of time, effort, money, risk, and other kinds of inconvenience customers must endure to purchase drugs.

The effective price may differ from user to user. Experienced drug users may well face lower effective prices than less experienced users. Inexperienced users in neighborhoods where drugs are commonly used will face lower effective prices than those in neighborhoods where drugs are less commonly available. Moreover, the effective price will never be entirely prohibitive. Given enough money and effort, one can probably find drugs to buy even if one looks like an undercover narcotics agent, let alone a drug addict.

But all these points mean is that some drugs will continue to be sold—an unsurprising conclusion. Those at the right tail of the distribution of propensities to use drugs will find some way to score. This does not mean that the aggregate amount of drugs sold will be the same as if the effective price were uniform and low. At some (plausibly achievable) high level of effective prices, some in the middle of the distribution of the propensity to consume will be discouraged from doing so. And that is an effect that might be worth counting as prevention—particularly if some of those who are discouraged from using are young people who have limited experience with drugs. High effective prices to them should create a large negative response (because their elasticity of demand with respect to changes in the effective price of drugs is very high).

So far I have been making primarily theoretical arguments for considering supply-reduction and drug law enforcement policies as potentially important in preventing drug use. I have not presented any empirical evidence to show that the effects I am claiming actually exist or are large enough to matter. The only empirical evidence I can present is the following.

First, on the question of whether supply-reduction efforts can succeed in raising the effective price of drugs, it is worth comparing the prices of illegal drugs to close substitutes that are legal. Table 1.1 compares the price of heroin in illicit markets with that of methadone in licit markets, and the price of cocaine in illicit markets with that of

Table 1.1 Illegal versus legal drug prices

Drug	Current retail price	Estimated legal price	Ratio
Heroin (pure gram)	$2,280	$30–35	70:1
Cocaine (pure gram)	$143	$15–20	8:1
Marijuana (cigarette)	95¢	6–7¢	15:1

Source: Moore 1990, 124. Legal heroin price estimated from prevailing legal prices for morphine and methadone. Legal cocaine price estimated from prevailing prices for cocaine. Legal marijuana price estimated from prevailing prices of tobacco cigarettes.

cocaine in licit markets.[7] It is clear from this table that there is something about making drugs illegal that makes them expensive and probably less conveniently available as well. Illicit heroin is 70 times more expensive than methadone; and illicit cocaine is 8 times more expensive than legal cocaine (even though legal cocaine has a small and specialized demand, and therefore may be much more expensive in legal markets now than it would be under more liberal regimes).

Second, one might imagine that these changes in price would have little impact on committed drug users. That might well be true. But one has to keep in mind that the goal is to prevent and reduce drug use among less committed users as well as committed ones. Further, price increases significantly less than these have been shown to reduce consumption of alcohol and cigarettes among alcoholics and two-pack-a-day smokers as well as among less committed users. Part of the reason is that those at the right tail of the distribution consume drugs so intensively that small changes in price translate into large new expenditure requirements that are not easy to meet. That seems to make a difference even to highly committed users.

Considering the issue more empirically, a National Academy of Sciences panel recently established a range of estimates for the price elasticity of the demand for cocaine ranging from -0.38 to -1.00 or even more (Manski, Pepper, and Thomas 1999, 26). These numbers suggest that if we let the price of cocaine fall by a factor of 10 (which would be roughly the effect of allowing the drugs to fall to their current legal price), we could expect cocaine consumption to increase between 380 and 1,000 percent—a nontrivial result! Such numbers should not be taken too seriously, but they do remind us that drug consumption could be relatively inelastic and quite unresponsive to price and still be strongly influenced if the change in price is large enough. It may be important, then, that the combination of making drugs illegal and enforcing the laws against them seems to be able to drive up the price by 1,000 percent.

Third, while it is hard to determine whether increases or decreases in drug consumption are produced by changes in demand, or changes in supply, or some combination of the two, there are some conditions involving changes in price and consumption that produce unequivocal evidence of the impact of reductions in supply (Moore 1990). If, for example, prices are rising as consumption is falling, it is unambiguous that the supply of drugs has diminished. On the other hand, if prices are falling while consumption is increasing, it is unambiguous that supply has increased. Applying this simple diagnostic test to the past few decades of experience with American drug markets, one can conclude that there have been three supply-reduction successes and one remarkable supply-reduction failure. The three successes involved heroin in the late sixties and early seventies, heroin again in the late seventies, and marijuana in the eighties. The remarkable failure was the worst drug epidemic the country has faced: cocaine that surged in the late eighties. This failure was to some degree inexplicable. It is as if the supply system kept growing beyond the capacity of supply-reduction efforts to inhibit it. Viewed from this perspective, the supply-reduction efforts may have produced some beneficial results even as the cocaine epidemic was spreading. But they were simply not enough to stem the tide.

Drug Epidemics, Supply Reduction, and Drug Law Enforcement

As noted above, whether one considers policies focused on supply reduction and drug law enforcement effective preventive instruments depends a great deal on one's assumptions about whether they can be effective in standing in the way of underlying propensities to use drugs expressing themselves in actual drug use. This is a key issue. The use of the imagery of "drug epidemics" is related to this question, and is therefore worth some independent consideration.

The public health community makes an important distinction between conditions considered "endemic" and those considered "epidemic." The distinction is based on the relationship between current conditions and what is expected. If a disease is occurring at levels within a normal, expected range, the problem is said to be "endemic." If, on the other hand, a problem is occurring at an unexpected, elevated rate, it is considered "epidemic."

The idea of an epidemic is often confused with the idea that there are some important causal mechanisms at work that are producing nonlinear increases in the problem. There are many contagious or other nonlinear processes that could lie behind epidemics of drug use (Hunt and Chambers 1976).

Many analysts consider drug use in the United States an endemic rather than an epidemic problem (National Commission on Marihuana and Drug Abuse 1973). These analysts tend to look at the use of many different intoxicants, including alcohol, tobacco, and marijuana, and conclude that the overall level of drug use has not changed much over time. In this sense, the drug problem seems endemic. There may be some local epidemics of drug use associated with particular fads or the emergence of some kind of specialized local supply. But usually these are just blips in a relatively constant overall pattern of drug use.

Other analysts, however, would say that while America may have endemic drug problems associated with alcohol, tobacco, and marijuana, America has also experienced several important epidemics of drug use over the last few decades. In this view, America faced a serious epidemic of heroin use in the late sixties and early seventies, which abated in the mid-seventies and then reappeared in the late seventies. And it faced an even more serious epidemic of cocaine use that appeared in the early eighties and worsened throughout that decade, becoming an epidemic of use of crack as well as powder cocaine. Arguably, the cocaine epidemic was by far the worst of these epidemics. It affected many more people than the heroin epidemic. It crossed class boundaries in ways that the heroin epidemic did not. And perhaps most important, it involved women in large numbers as well as men. The social consequences of this epidemic showed up in all parts

of the society—in labor markets, in welfare and child-protection systems, in criminal justice agencies, and in medical institutions.

There are several important implications of thinking of drug abuse as an epidemic rather than an endemic problem. First, it makes it seem as though the problem may be solvable. If one can find the proximate cause of the epidemic, one may be able to intervene to stop it.

Second, it stimulates a search for the immediate cause, and for ways to bring that cause under control. Here there are many candidates. One idea is that drug use is spread by cultural trends aided and abetted by the mass media. Another is that drug use is spread through interconnected networks of peers vouching for the pleasure and safety of the experience (Hunt and Chambers 1976). In these accounts, one characteristic that allows the epidemic to spread is the fact that the long-term adverse consequences of drug use have not yet appeared. Drug use looks safe. Once the epidemic has gone on long enough to produce chronic intensive users, with all their adverse consequences, the epidemic will have run its course. The society will learn for itself that drug use is bad (Musto 1973).

Note that these familiar accounts focus on demand-side explanations. But one could also explain the emergence and abatement of drug epidemics in supply-side terms. This explanation would put a lot of the explanatory weight on the development of illicit distribution channels. Indeed, one extreme version of this theory sees the entire explanation for drug epidemics in changes in supply. This view holds that the underlying demand for drugs in a society doesn't change very much or very fast. It is fixed at a relatively high level. It is fixed there partly as a consequence of inherited biological vulnerabilities to drugs such as heroin and cocaine, and partly as a consequence of social conditions such as poverty and discrimination that make us vulnerable to drug epidemics. In this conception, all societies are vulnerable to drug epidemics all the time on the demand side.

What ignites an epidemic at a particular place and time—what transforms that vulnerability into a painful reality—is not, then, changes on the demand side. It is, instead, changes on the supply side. Once the epidemic occurs, one can say that it was caused by an underlying high level of demand and the emergence of a supply system. But

what made the epidemic happen at a particular place and time was the change in the supply conditions, not a change in the underlying demand.

This view is given some credence by the fact that the earliest signs of a coming epidemic appear on the supply side. It is not usually that poverty suddenly deepens or discrimination becomes more virulent. It is that some bad guys start showing up with suitcases full of illicit drugs. If this analysis is correct, then one can treat the changes in supply conditions as an important proximate cause of drug epidemics.

The third important implication of thinking of the drug problem as an epidemic is that what is considered an appropriate balance among drug policy instruments may differ depending upon the stage of the epidemic (Behrens 1997). At the early stages of an epidemic it will make sense to emphasize supply reduction and drug law enforcement to minimize the spread of the epidemic. At this stage it may also make sense to invest heavily in secondary prevention policies focused on those at risk of drug use to reduce the number of susceptibles, and to deny the developing drug markets consumers who can fuel their continued growth. The point is that an all-out effort should be made to halt the spread of the epidemic in its early days. Later in the epidemic, when the real consequences of drug use have become more apparent to all, and when the society has accumulated a large number of casualties who need sustained attention, the balance of drug policy should shift toward treatment rather than supply reduction or secondary prevention. It is then that society must work on trying to reduce the adverse consequences of drug use for those who became involved while the epidemic was spreading.

Conclusion

No doubt prevention must be an important part of drug policy. But in deciding what role prevention must play, it is important to be clearer than we have been in defining what we mean by prevention, and more accurate in our attribution of preventive effects to particular policy instruments. We might all think that the best way to solve the drug problem is through primary preventive efforts designed to eliminate social conditions—such as poverty and racial discrimination—that influence the underlying propensities for using drugs. But it is worth keeping in mind that these important efforts to prevent drug use cannot be easily distinguished from more general social policies that are justified in their own right—not primarily as means to prevent drug use.

We might also find some important uses for secondary prevention policies focused more narrowly on the attitudes, social supports, and conditions surrounding potential drug users. But it is possible that the most important drug prevention effects are achieved through supply reduction and drug law enforcement efforts. Indeed, these instruments may be particularly valuable in preventing the spread of drug-abuse epidemics when they break out. These policies always have the undesirable consequences of worsening the condition of those who continue to use drugs despite the stigma and the practical difficulties, to the misfortune not only of the users themselves but also of the rest of society. Consequently, these policies may be usefully combined with "tertiary prevention policies" such as treatment programs that are designed not only to reduce consumption among committed users but also to break the link between their continued use and their adverse individual and social consequences.

From this perspective, what has often been viewed as an overreliance on drug law enforcement and an underinvestment in preventive measures is turned on its head: it is precisely our interest in preventing drug use that counsels the continued use of drug law enforcement as a preventive instrument.

Notes

1. The federal government spends $2.08 billion, or about 12 percent of its overall drug budget, on these programs (Office of National Drug Control Policy 1999b). On these programs see Jacobson and Zinberg 1975; Polich et al. 1984; Botvin 1990.
2. For a similar model and conceptual framework used in the analysis of alcohol prevention policies, see Moore and Gerstein 1981.
3. These kinds of policies correspond roughly to the conventional public health distinctions among "primary," "secondary," and "tertiary" preventive efforts. Primary prevention seeks to alter the general conditions that

cause a public health problem to emerge. Secondary prevention seeks to reduce risks to high-risk populations by creating obstacles to the development or spread of a health problem. Tertiary prevention seeks to reduce the seriousness of the consequences of the health problem. See also Polich et al. 1984, 117–120.

4. A similar idea—that there are relatively stable, underlying propensities to engage in disapproved behavior distributed across a broad range—has gained some currency in the exploration of criminal offending (see Blumstein et al. 1986) and the use of alcohol (see Moore and Gerstein 1981).
5. This hypothesis was first advanced in 1934; see Allport 1934.
6. On elasticity of demand and the elastic demand of new users see Moore 1973.
7. Because cocaine, unlike heroin, has legitimate medical uses, it is classified in Schedule II of the Controlled Substances Act and may be sold for limited medical purposes. It is used as a topical anesthetic in dentistry.

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Drug Users and Drug Dealers

William N. Brownsberger

Who uses drugs? Who deals drugs? Where do they live? they otherwise criminals? These questions are crucial to underst ing the mechanics, merits, and politics of alternative approache drug control. In this chapter I offer an overview of the available dence.

Drug Use

Experimentation with illegal drugs has been widespread in the U States. According to the National Household Survey on Drug Al over one-third of Americans have tried an illegal drug (SAM 1999b, table 3B). Prevalence of drug use varies over time. An those who were young in the early 1980s, few completely avoided gal drugs: 81 percent of those who graduated from high scho 1981 and 1982 had tried an illegal drug by 1995 when they we or 32; 60 percent had tried an illegal drug other than marijuana 37 percent had tried cocaine.[1]

Adolescents and young adults are much more likely than adults to begin using drugs. Few initiate drug use after the age o The strength of this generalization varies over time. Drug initiati older adults was relatively high during the explosion of drug use i late 1960s and early 1970s, although still far lower than drug i tion by the young.[2] In the mid-1990s marijuana and cocaine initi rates for those aged 12–17 were at historic highs, while initiatio