

**PREVENTION OF METHAMPHETAMINE
ABUSE: CAN EXISTING EVIDENCE
INFORM COMMUNITY PREVENTION?**

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ABSTRACT

Little research exists on effective strategies to prevent methamphetamine production, distribution, sales, use, and harm. As a result, prevention practitioners (especially at the local level) have little guidance in selecting potentially effective strategies. This article presents a general causal model of methamphetamine use and harms that reflects the available findings from either research specific to methamphetamine or from alcohol and other illegal drugs, and suggests prevention approaches and strategies that communities might use based upon research evidence and experience. Community methamphetamine prevention can use the public health and safety perspective applied to other substance abuse prevention. Analyses of the complex system of intermediate variables that interact to affect methamphetamine use and harms suggest that multiple reinforcing prevention interventions may have the greatest potential effectiveness.

INTRODUCTION

Methamphetamine, a derivative of amphetamine, is a powerful stimulant that affects the central nervous system. In 2004, an estimated 1.4 million persons in the United States aged 12 or older (0.6% of the population) had used methamphetamine in the past year, and 600,000 persons (0.2% of the population) had used methamphetamine in the past month (Substance Abuse and Mental Health Services Administration [SAMHSA], 2003, 2004, 2005). Illicit labs for the production of methamphetamine have received increasing news coverage, and local and state officials have focused public attention on methamphetamine. In a survey conducted by the National Association of Counties (2006), more law enforcement officials cited methamphetamine abuse as their county's primary drug problem than cocaine, marijuana, and heroin combined. Many states have enacted laws or regulations that call for much closer monitoring of and restrictions on the chemicals used in methamphetamine production (e.g., requiring limitations on the amount of over-the-counter cold medications that one person can purchase at one time, as they contain amphetamine).

Little research exists on effective strategies to prevent methamphetamine production, distribution, sales, use, and harm. As a result, prevention practitioners, especially at the local level, have little guidance in selecting potentially effective strategies. This article:

1. presents a general causal model of methamphetamine use and harms that reflects the best available findings from research specific to methamphetamine (where available) or on alcohol and other illegal drugs; and
2. suggests prevention approaches and strategies that communities might use based upon research evidence and experience.

GENERAL MODEL

Birckmayer, Holder, Yacoubian, and Friend (2004) presented a general causal model that identified key variables and other factors contributing to the use of and harms associated with alcohol, tobacco, and other drugs (ATOD), including availability, norms, enforcement, price, individual factors, use, and harm. The model for methamphetamine presented here (Figure 1) was guided by this general causal model. The model illustrates the complexity of the system that produces methamphetamine-related problems and the need for multiple intervention points within a "systems" approach (Gruenewald, Holder, & Treno, 2003; Holder, 1999). As with any public health problem, methamphetamine use and associated harms result from a multifaceted set of intermediate variables that interact over time. Intermediate variables are defined herein as factors that make important contributions to the overall system surrounding methamphetamine. Published research in peer-reviewed scientific journals are the primary sources for this model, but in many cases, there may be no direct empirical evidence specific

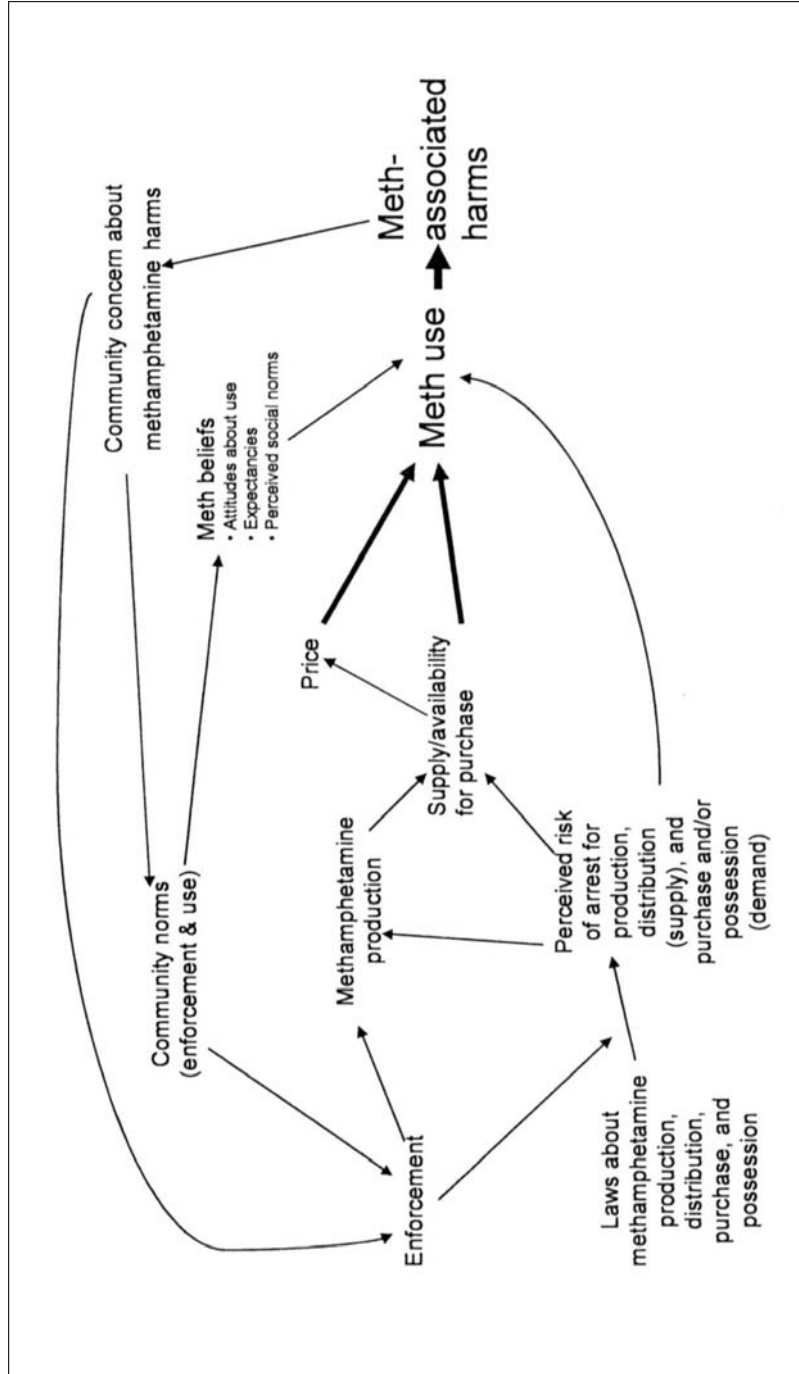


Figure 1 . Causal model of methamphetamine use and harm.

to methamphetamine for a specific intermediate variable. In such situations, the intermediate variable and its relationship to other variables are based upon reasoned arguments applying other research evidence that may be generalized from other ATOD research.

Efforts to reduce the use of methamphetamine can be grouped into two broad categories:

1. *supply reduction* efforts that seek to decrease the physical and economic availability of the drug primarily through enforcement of laws and increased perceptions of risk of arrest for producers, suppliers, and dealers; and
2. *demand reduction* efforts that seek to curb consumption among current or potential users by influencing methamphetamine-related beliefs (such as through education and treatment programs) and risk-of-arrest perceptions for purchase and possession of methamphetamine.

As shown in Figure 1 (from right to left), *supply reduction* involves price, supply/availability for purchase, and methamphetamine production, the latter two of which are influenced by perceived risk of arrest and enforcement of laws regarding methamphetamine production and distribution. A second pathway is related to *demand*, which is influenced by beliefs related to methamphetamine (e.g., attitudes, perceived social norms about use, and expectancies) and overall community norms concerning use along with deterrence. Community concern about methamphetamine harms influences community norms as well as creates pressure for local enforcement. Each intermediate variable is discussed.

Methamphetamine Associated Harms

Harms associated with methamphetamine use and abuse/dependence affect the individual user (e.g., cardiovascular problems, increased risks for contracting HIV/AIDS and hepatitis B and C) and the broader community through the transmission of sexually transmitted diseases (Hirshfield, Remien, Humberstone, Walavalkar, & Chiasson, 2004; Mansergh et al., 2006; Molitor, Truax, Ruiz, & Sun, 1998), other health consequences (Cohen et al., 2003; Derauf, Katz, Frank, Grandinetti, & Easa, 2003; Hohman, Oliver, & Wright, 2004), crime (Cohen et al., 2003; Derauf et al., 2003; Hohman et al., 2004), environmental contamination from toxic waste at methamphetamine production sites, and public nuisances associated with injection drug use.

Methamphetamine Use

Methamphetamine use is the recreational (i.e., nonmedicinal/therapeutic) use of both prescription and illicit methamphetamine. Estimates from the 2002-2004 National Survey on Drug Use and Health suggest that in the United States prevalence rates of nonmedical methamphetamine use are highest among young adults, with 1.6% of those aged 18 to 25 reporting use in the past year compared to

0.4% among those aged 26 and older and 0.7% among those aged 12 to 17. Methamphetamine users tend to be White males between the ages of 18 and 35 (Oetting et al., 2000; Rodriguez, Katz, Webb, & Schaefer, 2005; Yacoubian, 2005; Yacoubian & Peters, 2004) who are more likely to live in private housing (Herz, 2000; Pennell, Ellett, Rienick, & Grimes, 1999; Rodriguez et al., 2005) and to be employed in blue-collar occupations (truck driving, construction, and factory work) (Jenkins, 1994; Miller, 1991).

Price

Price is the cost of purchasing a specific amount of methamphetamine. Econometric studies have established that higher prices are associated with lower ATOD use and that an increase in price yields decreased use of marijuana (DeSimone & Farrelly, 2001; Pacula & Chaloupka, 2001), cocaine (Caulkins, 1995), and heroin (Saffer & Chaloupka, 1999). Even with no econometric research about methamphetamine, research suggests that higher methamphetamine prices may lead directly to reduced methamphetamine use and its associated problems.

Supply/Availability for Purchase

Supply or physical availability refers to the level of methamphetamine available for purchase. Methamphetamine sold in U.S. drug markets is supplied by domestic labs and foreign producers, most notably the large “super labs” in Mexico that have become an increasingly important source in recent years. Methamphetamine sales tend to use social networks of known persons. Methamphetamine dealers are more likely than cocaine and heroin dealers to sell out of single family homes or areas with fewer security measures (Eck, 1995; Rodriguez et al., 2005). Limited research on physical availability provides evidence that ATOD supply influences use (Babor et al., 2003; MacCoun & Reuter, 2001). Analyses on the spatial relations between drug sales and use, however, suggest that associations may be more complex with drug sales occurring across neighborhoods (i.e., use is higher among residents of surrounding areas compared to those living in communities with drug markets; Freisthler, Gruenewald, Johnson, Treno, & LaScala, 2005).

Methamphetamine Production

Production refers to the manufacturing of methamphetamine, usually in clandestine laboratories using ingredients typically purchased locally. The production of methamphetamine influences amounts available for retail purchase (supply). Because methamphetamine labs are often portable and thus are easily dismantled, stored, or moved, methamphetamine manufacturers can easily avoid law enforcement.

Laws about Methamphetamine Production, Distribution, Purchase, and Possession

The Controlled Substances Act of 1970 made it illegal to produce or consume methamphetamine without a prescription. The chemicals used to produce methamphetamine are controlled under the Comprehensive Methamphetamine Control Act of 1996, which increased penalties for the trafficking and manufacturing of methamphetamine and listed chemicals, and expanded the controls of products containing the licit chemicals ephedrine, pseudoephedrine, and phenylpropanolamine. The Methamphetamine Anti-Proliferation Act of July 2000 reduced the amount of pseudoephedrine that could be purchased over the counter and regulated the distribution of chemical ingredients used in methamphetamine production. The effects of such laws are mediated by the level of enforcement and the resulting perceived risk of arrest and punishment.

Perceived Risk of Arrest

Perceived risk of arrest is the personal assessment of:

1. a methamphetamine manufacturer/distributor/seller of his/her risk of being detected and/or arrested for manufacturing or selling methamphetamine; or
2. a drug user of his/her likelihood of being detected and arrested for purchasing or possessing methamphetamine.

Research in crime prevention has shown that, as the actual and/or perceived likelihood of being detected and arrested or cited for law violations increases, compliance with the law increases (Hingson, Heeren, & Winter, 1999; Ross, 1982; Vingilis & Coultres, 1990).

Enforcement

Enforcement of existing laws and regulations is a key variable, as actual risk of arrest influences perceived risk of detection and arrest, thus affecting compliance with laws. Because dealers tend to be heavy users, Reuter (2001) noted that putting dealers in prison may have two effects: a supply-side effect (i.e., diminishing the retail market) and a demand-side effect (i.e., reducing consumption), the latter of which may be substantial.

Methamphetamine Beliefs: Attitudes about Use, Expectancies, and Perceived Social Norms

Methamphetamine beliefs refer to various sociocognitive influences on individual substance use behavior. Attitudes toward methamphetamine refer to individuals' evaluative assessments of methamphetamine use (e.g., wrong/not wrong, good/bad, pleasant/unpleasant). Expectancies about methamphetamine refer to individuals' perceptions of the likelihood of personally experiencing

positive and negative consequences from using methamphetamine (i.e., anticipated rewards and punishments associated with methamphetamine). Perceived social norms refer to individuals' perceptions of the approval or disapproval associated with using methamphetamine by others, such as peers and parents (injunctive norms or what people ought or ought not to do), and the extent to which others use methamphetamine themselves (descriptive norms or what others actually do).

Community Norms

Community norms are the level of local acceptability of methamphetamine availability and use (Birckmayer et al., 2004) and can influence individual decisions about drug use and can stimulate local action (e.g., enforcement against supply and sales). The empirical relationships characterizing community norms and methamphetamine use have not been studied. Changes in community norms likely evolve slowly and are influenced by changes in Community concern about methamphetamine harms as shown in Figure 1.

Community Concern about Methamphetamine Harms

Community concern about methamphetamine harms refers to broad-based awareness and fear about the harms associated with methamphetamine use. Such concern is often prompted by media reports of drug use and the associated consequences or specific instances of harm associated with methamphetamine use to an individual in the community (e.g., overdose of a friend or the death or injury of law enforcement officers attempting to destroy a lab). Community concern about methamphetamine problems and shifts in community norms can increase local support of law enforcement.

STRATEGIES FOR PREVENTION

As illustrated in Figure 1, no single factor causes methamphetamine use or harms. A complex set of variables that interact with one another suggests that a mix of evidence-based strategies is necessary to reduce methamphetamine use and its associated harms. In this section, potential strategies linked to one or more specific intermediate variables are discussed. The strategies presented do not represent an exhaustive list of potential interventions. Rather, strategies are presented to exemplify how prevention efforts can utilize a causal model to identify levers of change in a community (intermediate variables) and identify strategies to address specific intermediate factors.

**Supply/Availability for Purchase:
High-Level Law Enforcement to Disrupt Drug
Importation and Distribution**

One law enforcement strategy to reduce the amount of methamphetamine in retail drug markets is drug seizures of large suppliers. Federal agencies, such as the Drug Enforcement Administration (DEA) and U.S. Customs and Border Protection, work to interdict methamphetamine imported from other countries, such as Mexico, that have become the predominant source of methamphetamine in the Midwest and West. The DEA and state and local officials are involved in seizing domestic methamphetamine labs, monitoring major supply routes, and disrupting distribution networks. The effect of interdiction efforts on local supply are hampered by drug traffickers' ability to modify their operations and the relatively cheap replacement costs associated with drugs seized high in the distribution hierarchy. Without a substantial reduction in drug flow to the local level, these strategies alone are unlikely to produce long-term reductions in local supply.

**Supply/Availability for Purchase:
Local Law Enforcement Efforts to Arrest
Suppliers and Dealers**

Law enforcement uses an array of techniques aimed at retail sellers to curtail the supply of drugs available for purchase, including massive drug "sweeps" (concentrating uniformed police officers in known drug hotspots or production sites, which results in many arrests) and undercover "buy and bust" operations (employing undercover officers to purchase drugs from suspected dealers and arrest them). Such enforcement activities may, at least temporarily, reduce the quantity of drugs available in the retail market of a given geographical area. Without other efforts accompanying the crackdown, however, drug sales generally pick up again once police resources are removed (Sherman, 1990; Worden, Bynum, & Frank, 1994). In short, rapid high-profile enforcement alone is unlikely to achieve long-term reductions in retail supply.

**Supply/Availability for Purchase:
Civil Remedies to Disrupt Local Drug Markets**

Although police crackdowns focus primarily on individuals (i.e., dealers and users), civil remedies target drug-selling locations, making it more difficult for buyers and sellers to engage in the drug trade. Studies of drug abatement actions, in which owners of properties from which drugs are being sold are threatened with civil suits unless drug sales are terminated, have found these actions effective in achieving their immediate goal of eradicating drug activity (Lurigio et al., 1993; Smith, Davis, Hillenbrand, & Goretsky, 1992). Eck and Wartell (1998), in a

randomized study of abatement actions, found significantly fewer crimes reported in the two abatement conditions than in the control condition. In a randomized experiment with 100 drug hotspots assigned to traditional police enforcement (surveillance, arrests, and field interrogation) or traditional police enforcement plus civil enforcement (abatement actions and code enforcement), Green-Mazerolle, Roehl, and Kadleck (1998) found a decrease in drug sales and a decline in signs of disorder for properties assigned to enforcement plus civil remedies over traditional police enforcement only. The specific application to methamphetamine is untested.

Supply/Availability for Purchase: Alterations to the Physical Environment

Communities have used measures designed to change the physical environment in which drug sales have been occurring—such as cutting back shrubbery in parks, improving lighting, and boarding up abandoned buildings—to make locations less conducive to the drug trade. Such strategies have been borrowed from the broader crime-prevention field where research has shown that changes to the physical environment can help deter many forms of economic and personal crime (Jeffrey, 1971; Newman, 1972). Environmental modifications may be relatively inexpensive and easy for communities to implement. Despite their promise, however, no rigorous studies have been conducted regarding their effects on retail drug markets.

Price: Increased Enforcement of Laws Regarding Methamphetamine Production and Distribution

Because its retail price cannot be regulated through taxation, authorities try to influence the price of illegal drugs, including methamphetamine, through the enforcement of laws against producers, distributors, and sellers. The underlying assumptions are that increased enforcement will raise costs to drug producers, suppliers, and dealers and that these additional costs will be reflected in increased retail drug prices. Caulkins and Reuter (1998) suggested that the drug supply system allows for the risks of enforcement, reduced wholesale supply, and threats of punishment in its retail prices. After a certain point, further intensification of enforcement may achieve only modest effects toward raising prices in the long run. In fact, although enforcement became substantially tougher between 1980 and 2000, prices for drugs such as cocaine and heroine fell by about 50% (Reuter, 2001). Even if enforcement activities do not lead to increased drug prices, they might still be considered successful if they affect supply, making drugs more scarce.

Production: Criminalize Importation and Possession of Precursor Chemicals

Laws prohibiting the importation and possession of precursor chemicals are intended to decrease access to substances necessary for the “cooking” process and thus decrease the amount of methamphetamine produced in the United States. Studies of the effectiveness of these regulations have produced mixed findings. Cunningham and Liu (2003), for example, found that three different regulations imposed in 1989, 1995, and 1997 were associated with sharp reductions in methamphetamine-related hospital admissions, presumably through reductions in the prevalence of use or total consumption. In another study by Reuter and Caulkins (2003) that examined other indicators of methamphetamine supply and consumption (including price, prevalence of use among arrestees, treatment admissions, drug use survey results, and emergency department mentions), evidence regarding the effectiveness of regulation was ambiguous. Although there was a 9-month increase in the price of methamphetamine in 1989, no subsequent increase was found in 1995, and only a small 3-month increase in price occurred in the last quarter of 1997. The U.S. Arrestee Drug Abuse Monitoring (ADAM) system reported a substantial downturn in methamphetamine positive rates among arrestees following the August 1995 regulation but not following the 1997 regulation. Estimates from the 1999-2001 National Household Survey on Drug Abuse of the annual incidence of methamphetamine use from 1995 to 2000 showed no downturn following the precursor regulations.

Production: Dismantle Domestic Methamphetamine Labs

The seizure of facilities used to manufacture methamphetamine is another strategy used to reduce the amount of the drug produced domestically. The relatively simple equipment used in the production process, along with the ease of moving and storing labs, make detection difficult for law enforcement and facilitate the entrance of new manufacturers into the market. In addition, methamphetamine production has increasingly moved from independent lab operators in the United States to labs in Mexico. As conditions surrounding production and supply change, the relative focus on different enforcement strategies to reduce the amount of methamphetamine provided for retail markets (e.g., interdiction, lab seizures, disruption of supply networks) needs to be reassessed.

Laws about Methamphetamine Production, Distribution, Purchase, and Possession: Enact Harsher Penalties

Designating a substance as illegal increases its retail price because of the additional costs introduced by prohibition and the associated threat of detection

and arrest (Caulkins & Reuter, 1998). Penalties are meant to impose considerable costs (in dollars and in sanctions) so that individuals who do not currently sell drugs will choose not to do so in the future (general deterrence) and apprehended drug sellers will not repeat their behavior (specific deterrence). Caulkins (1993) noted that “zero-tolerance” policies that impose severe sanctions for all drug offenses may actually stimulate drug consumption. Caulkins, Rydell, Schwabe, and Chiesa (1998) concluded that conventional enforcement is more cost-effective than mandatory minimum penalties because enforcement imposes costs on dealers (including seizure of drugs and other assets), as well as through incarceration, which produces loss of income. Spending additional money arresting, prosecuting, and sentencing more dealers to standard prison terms may be more effective than sentencing fewer dealers to longer, mandatory terms (Caulkins et al., 1998).

**Laws about Methamphetamine Production,
Distribution, Purchase, and Possession:
Required Treatment for Users**

Retail dealers are often heavy users of the drugs they sell. By removing them from the marketplace and incarcerating them or treating them, enforcement efforts can effect both supply and demand. Research suggests that treatment is both effective and cost-effective (Reuter & Pollock, 2006). In addition to reducing an individual’s drug use, treatment has been associated with improved health and employment outcomes, and reductions in the risk of serious harms including overdose, crime, and HIV infection (Institute of Medicine [IOM], 2000; National Consensus Development Panel on Effective Medical Treatment of Opiate Addiction, 1988; Stewart, Gossop, & Marsden, 2002). Although some cooperation between treatment and enforcement currently exists, these linkages can be more explicit and purposeful. For example, drunk driving, drug courts, and other forms of required treatment use sanctions (e.g., jail) as an incentive to maintain clients’ participation in treatment. A variant, termed “coerced abstinence,” would require probationers and parolees to stay clean (i.e., test negative for drugs) or face imprisonment.

Beliefs, Social Norms: Normative Education

Social norms approaches to preventing substance use are based on empirical findings that:

1. perceptions about the prevalence and frequency of peers’ use of ATOD are positively associated with personal substance use; and
2. youth tend to overestimate how much and how often their peers engage in unhealthy behaviors including substance use.

The notion that such beliefs influence substance use behavior is grounded in such theoretical approaches as cognitive social learning theory (e.g., Bandura,

1986), problem behavior theory (e.g., Jessor, Donovan, & Costa, 1991), and current reformulations of the theory of planned behavior (Ajzen, 1985, 1989). Normative education or norms correction interventions attempt to correct (i.e., adjust downward) perceived social norms by providing accurate information about a referent group's prevalence of use and/or total consumption. Most normative educational approaches are targeted at students whose methamphetamine use is low. There have been no tested normative educational approaches for adults (the age group most likely to use methamphetamine).

Beliefs, Expectancies: Expectancy Challenge

Expectancy challenge refers to interventions designed to reduce positive outcome expectancies, increase negative outcome expectancies, or both in order to decrease the chances that participants will engage in unhealthy behaviors. The results for youth and college students are mixed (Austin & Johnson, 1997; Corvo & Persse, 1998; Cruz & Dunn, 2003; Darkes & Goldman, 1993, 1998; Kraus, Smith, & Ratner, 1994). The application of expectancy challenges for adult methamphetamine use is untested.

Community Concern about Methamphetamine Harms: Media Advocacy

Media advocacy refers to the strategic use of news media by those seeking to advance a social or public policy initiative. Media advocacy brings an issue to the public's attention by providing local activities, events, and other "happenings" that the news media can cover but that are not intended to change individual behavior directly. Holder and Treno (1997) found that the purposeful application of the tools and techniques of media advocacy increased local news coverage of alcohol-related problems and provided indirect support for the use of local news to increase community awareness and concern about methamphetamine. Public concern about harms, such as those associated with methamphetamine, help shape decisions about how to focus enforcement resources by identifying the problems that the community feels are a priority for law enforcement intervention.

Community Norms: Planned Public Education Campaigns

Mass communication or health education campaigns have often been used to increase public awareness and information about specific public health issues and to change broad-based community perceptions about the acceptability of behaviors such as drug use. The research concerning these campaigns has repeatedly demonstrated that public education campaigns alone can increase the public's awareness and information level but have little to no effect on behavior.

Worden and colleagues (1988) and Flynn and colleagues (1994), who evaluated media campaigns designed to deter smoking initiation, showed the positive effects of media campaigns. In contrast, Bauman and colleagues (1991) found no effects from three media campaigns targeting youth smoking, and Hornik and associates (2003) found no behavioral effects on drug use from the national anti-drug campaign. Holder and Treno (1997) concluded that planned mass media campaigns are most effective as reinforcers of specific environmental efforts to reduce high-risk drinking in general and drinking and driving in particular, but these campaigns are insufficient by themselves.

CONCLUSIONS AND RECOMMENDATIONS

Figure 1 illustrates a system of intermediate variables that interact to affect methamphetamine use and harms and suggests that multiple re-enforcing prevention interventions may have the greatest effectiveness potential. As discussed, however, the relationships in the causal model are not necessarily linear (i.e., as one variable increases or decreases, other intermediate variables may not demonstrate equivalent change). For example, occasional lab destruction does not necessarily reduce retail supply and increase prices if the drug supply system can accommodate this destruction and other sources are activated.

Most current prevention approaches to methamphetamine focus exclusively on law enforcement, often with high-profile arrests and lab destruction. Enforcement is critical in giving “teeth” to laws by influencing market participants’ perceptions about the likelihood of detection and apprehension. Unfortunately, research suggests that such strategies alone achieve mixed results or can be counterintuitive, that is, the result is worse. Thus, “brute force” approaches alone may not produce the desired effects or be cost-effective (Caulkins, Reuter, Iguchi, & Chiesa, 2005). Civil remedies, in particular drug house abatement statutes, seem to be effective in discouraging illicit sales of specific illegal drugs and may hold promise for methamphetamine. Less is known about the effectiveness of modifying the physical environment to reduce methamphetamine sales, especially because such sales involve social contact networks in which dealers and users know each other.

Mass media or school based health education’s ability alone to achieve behavioral change among the adult or youth population is not supported by evidence. Furthermore, low methamphetamine use among school-age children suggests that youth-specific approaches will have limited effects on the levels of population use and harms. Evidence from other substance abuse prevention areas supports the notion that public attention using local news media can effectively raise community concern about methamphetamine use and harms. Relatively few community members have direct contact with drug dealers and users; thus, most of the information about the prevalence of methamphetamine sales, use, and associated problems will come from local news media.

Community methamphetamine prevention can use a public health and safety perspective, as has been applied to other ATOD prevention. For example, the Community Trials Project used five mutually supporting interventions:

1. a media and mobilization component to develop community organization and to use local news to increase public support of environmental strategies;
2. a responsible beverage service component to reduce service to intoxicated patrons at bars and restaurants;
3. an underage drinking prevention component to reduce underage alcohol access through training and enforcement;
4. a drinking-and-driving component to increase local enforcement of driving while intoxicated; and
5. an access component to reduce the availability of alcohol through civil and regulatory approaches.

This multi-pronged approach produced significant reductions in nighttime injury crashes (10% lower), assault injuries in emergency departments (43% lower), and assaults requiring hospitalization (2% lower) (Holder et al., 2000). Biglan and colleagues (Biglan et al., 1996; Biglan, Duncan, Ary, & Smolkowski, 1995) also used a multiple strategy approach to reduce local youth smoking via efforts to lower both social and retail availability of cigarettes to young people. The average proportion of outlets willing to sell tobacco products to youth was reduced from 57% to 22%. Both of these community projects illustrate important principles that can be relevant to community prevention of methamphetamine use and associated harms:

- Community mobilization and targeted education can be used to increase local support of prevention efforts and inform the overall community, as well as political and economic leaders, about the importance of the problem and the potential value of the prevention strategies.
- Multiple re-enforcing strategies are most cost-effective because, typically, no single strategy implemented alone can reduce a complex public health problem.
- Reward-and-punishment approaches are more efficacious than punishment only or reward-only strategies. Threat of punishment (perceived risk of enforcement) can be an important intermediate variable if effectively used.
- Laws and their enforcement are an essential aspect of the community project but cannot be the single focus of any comprehensive project.
- Successful community prevention efforts typically involve coalitions of organizations and interested individuals that seek to foster broad-based participation, input, and ownership in addressing problems. Thus, health education and training, treatment, media, law enforcement professionals, and others in the community can work together as cooperating partners. Such collaborative efforts can take advantage of the diversity of expertise in a community and can promote more effective and sustainable interventions.

Any community approach to prevention of methamphetamine problems must go beyond law enforcement strategies alone and seek a broader set of supporting community strategies. That methamphetamine is illegal does not rule out consideration of successful prevention approaches from other fields, especially at the local level.

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