Closing the gap between RESEARCH and PRACTICE

1997-2000

Lessons of the First Three Years of CSAP's National CAPT System

SAMHSA
Substance Abuse and Mental Health Services Administration

CSAP Center for Substance Abuse Prevention
NATIONAL CAPT
APPLYING PREVENTION THAT WORKS!

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ABSTRACT

This paper presents the lessons learned by CSAP's National CAPT Program in supporting CSAP's mission to reduce substance use and abuse by bringing science-based prevention to every community. As a key CSAP training and technical assistance mechanism, CSAP's CAPTs have faced a myriad of challenges and developed unique solutions to helping States and communities to increase the application of science-based approaches to prevention. The core lessons learned by CSAP's CAPTs address issues related to:

- Motivating the field to embrace a science-based approach to prevention planning, implementation, and evaluation
- Promoting application of these approaches
- Supporting the on-going implementation of these approaches in day-to-day prevention practice

This paper is intended to stimulate further discussions within the field on how to further advance the application of science-based approaches to prevention.

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INTRODUCTION

The Center for Substance Abuse Prevention (CSAP), Substance Abuse and Mental Health Services Administration (SAMHSA), provides national leadership in the development of policies, programs, and services to prevent the onset of illegal drug use, to prevent underage alcohol and tobacco use, and to reduce the negative consequences of using substances. Its mission is to decrease substance use and abuse by bringing effective prevention to every community. CSAP develops science-based prevention knowledge, makes this knowledge available, and builds the capacity of States, communities, and other groups to apply this knowledge effectively. CSAP also seeks to facilitate the adoption of science-based prevention through education, publications, technical assistance, and training.

CSAP's Centers for the Application of Prevention Technologies (CSAP's CAPTs) system are major mechanisms by which CSAP brings research to practice. Established in 1997, these six regional centers provide materials, training, technical assistance to:

- *Motivate* the field to embrace a science-based approach to prevention planning, implementation, and evaluation
- *Promote* the application of science-based strategies
- *Support* the implementation of science in day-to-day prevention practice

The primary target audiences for CSAP's CAPT services include CSAP's State Incentive and Border Incentive Grantees, Single State Agencies for alcohol, tobacco, and drug issues, prevention providers within communities including Drug- Free Community Grantees, and providers and funders within State, Territorial, and Tribal Governments.

This paper will capture, amplify, and synthesize the lessons learned by CSAP's CAPTs and the CSAP staff with whom we have worked so closely in the first three years of the National CAPT Program. We will discuss the issues we have faced, the solutions we have developed, and the work that still needs to be done to increase the application of

science-based approaches to prevention. Our goal is to inform Congress, policy makers at CSAP, SAMHSA, and the States and Territories, practitioners in the field, and the research community about the work of CSAP's National CAPT Program and the lessons we have learned from it. Perhaps more important, we wish to stimulate thought and discussion about how best to apply these lessons to advance our common goal of preventing the negative health and social consequences of alcohol, tobacco, and drug use.[1]

Our Continuing Challenge

We have made tremendous strides in our understanding of the causes of alcohol, tobacco, and drug use and related problems. And we have developed and tested a wide variety of prevention approaches that reduce use and problems. But we have had challenges promoting the use of these scientific advances by the policy makers, practitioners, and concerned citizens that are responsible for the vast majority of prevention planning and implementation.

In some American communities, lack of awareness of scientific progress leads to continued implementation of strategies that are less effective than alternative approaches of similar complexity and cost. In other communities, strategies that have been shown to be ineffective are used year after year owing to long-standing and entrenched beliefs about what constitutes prevention or because they are easy to implement. And in many communities, effective approaches go unused not because policy makers and citizens are unaware of them, but because of a lack of expertise and the organizational infrastructure to implement them. Overall, our scientific knowledge is much more advanced than is evident in the day-to-day practice of prevention.

In discussing the application of scientific knowledge to practice, Haynes (1993) concludes that our national enthusiasm for research studies often neglects the fact that

[1] This paper is a work in progress. Future revisions are planned that will further refine and expand the discussions presented in this version.

"most of the evidence generated from such studies is going to waste because we do not know how to overcome the problems of dissemination and application" (p 221).

It will surprise some readers to learn that Haynes is referring not to substance abuse prevention, but to health care practice. We do not make this comparison to science-based health care simply because misery loves company. Rather, we wish to emphasize that problems of promoting science-based practice are endemic in the health field. They are by no means limited to substance abuse prevention. And they are not easily solved in any area of health policy and health services.

Expectations for the Promotion of Science-Based Prevention

Research on the promotion and adoption of science-based prevention is sparse. Available reviews tend to address problems of implementation (Toomey at al., 1996; Giesbrecht et al., 1993; Moskowitz, 1989). A handful of papers have directly examined the factors that facilitate or impede the adoption of specific science-based substance abuse prevention practices (see, for example, Wagenaar et al., 2000). These papers focus primarily on alcohol policy and the difficulties encountered in attempting to stimulate needed legislation or enforcement activities.

Conceptually, promoting science-based prevention practice fits within the more general arena of diffusion of innovation in health care. The health care literature, in turn, fits within the extensive literature on the diffusion of innovation -- a problem that has been studied by social scientists for over a century (see Rogers, 1995 for a historical review and Klitzner, 1999 for a comprehensive review of the health area). A consideration of this larger literature provides a useful context for the current discussion.

The literature suggests that the diffusion process can be divided into five stages (strategy planning, awareness, conversion, adoption, and on-going implementation). Each of these stages, in turn, subsumes multiple empirically derived factors that increase or decrease the probability that an innovation will be adopted (Klitzner, 1999). So, for example, the

conversion phase includes factors such as 1) the belief by targets[2] that promoters understand their needs (disciplinary/sectorial cultural competence), 2) the availability of concrete evidence of results, and 3) endorsement of the innovation by credible sources and by people like the targets. Similarly, the implementation phase includes factors such as 1) the availability of organizational support and adequate resources, and 2) on-going technical assistance and boosters.

The nomenclature in the area of diffusion science is widely variable and deserves comment. Some use the term "dissemination" interchangeably with the term "diffusion." Others assign distinct meanings to these two terms to distinguish proactive dissemination processes from more spontaneous diffusion processes -- analogous to the diffusion of molecules in chemistry. Still others, including CSAP, reserve the term "dissemination" for the distribution of materials and ideas only. In this paper, we will use the term "diffusion" to refer to the entire process of motivating, catalyzing, and supporting the use of science-based prevention and the terms "dissemination," "distribution," or "promotion" to refer to activities concerned with packaging and distribution information. We note, however, that, CSAP's mandate to its CAPTs is unequivocally proactive.

As already noted, there are few studies of strategies specifically designed to catalyze diffusion of science-based prevention. Thus, direct empirical support for many of our recommendations is lacking. However, the broader literature to which we have referred allows us to make logical inferences concerning the potential of generic diffusion strategies when they are applied to prevention science and practice. The guiding principles and major findings of diffusion science differ little by substantive area. Accordingly, to the extent that our efforts in prevention mirror those that have been shown to be effective in health care generally and/or in the wide variety of areas in which diffusion has been studied over the last century (agriculture, education, computer and other technology, economic development, community planning, etc.) we can infer their applicability in the current context.

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[2] Some may find the term "target" a bit dehumanizing as a gloss for CSAP's CAPTs' various target audiences. We mean no disrespect, but rather use "target" as an efficiency and as a term of art in diffusion and marketing science.

The literature of the diffusion of health care innovations supports four important generalizations:

1. *The number of factors that must be successfully addressed increases at each successive stage of the diffusion process* -- Roughly speaking, this means that as one moves from strategy planning to implementation, the challenges increase and the probability of success decreases. Not surprisingly, the number of diffusion efforts in the health field that lead to ongoing implementation of an innovation (the final stage) is small (Walker et al., 1994).

2. *Person-to-person contact is a factor at each stage* – Among the most successful attempts to introduce science-based practice into health care are those that rely on face-to-face contact in all components of the diffusion process (see Nardella et al., 1995). Like other diffusion strategies, however, face-to-face contact will only succeed when the target believes that the communicator understands his or her needs, working context, and constraints.[3]

3. *The majority of factors are target-oriented rather than program/strategy/policy-oriented* -- An understanding of targets' needs, perceptions, values, and readiness for change is a primary determinant of the success of diffusion efforts.

4. *Adoption and implementation are heavily dependent on fitting the innovation to the context in which it is implemented* – No matter how committed people are to an innovation, it will fail to take hold if the necessary organizational supports are not in place. Capacity building must precede implementation. Moreover, innovations that are inconsistent with community values will not generally survive even if they have positive effects.

[3] One prototype for face-to-face diffusion – Academic Detailing – uses physicians as face-to-face communicators to other physicians. This approach facilitates the development of a trusting relationship between the change agent and the target.

The diffusion of innovation literature provides important guidance about the levels of success we may expect in promoting the application of science-based prevention. As suggested above, the diffusion process is complex and dependent upon a large number of factors. For this reason alone, our expectations about the success of our diffusion efforts should be conservative.

Our expectations for promoting science-based prevention often seem to derive from Ralph Waldo Emerson: "Make a better mousetrap, and the world will beat a path to your door." In other words, we seem to believe that science-based prevention should be readily adopted because it is *better*. However, the diffusion literature suggests that science-based prevention strategies will not necessarily be embraced by policy makers, practitioners, and citizens based solely on scientific evidence of better results. In practice, there is often little relationship between the evidence supporting an intervention and its adoption by the field (Grube and Nygaard, in press; La Fond et al, 2000; Wagenaar, 2000; Gorman, 1995, 1996).

This is not to suggest, as does some conventional wisdom, that policy makers, practitioners, and citizens are resistant to new ideas or unable to understand the importance of a scientific approach. This conventional wisdom ignores important differences between the role of the researcher and the role of the practitioner. As Greer reminds us, "just as science is not practice, practice is not merely applied science." The products produced by prevention scientists must be fit into the day-to-day realities of the practitioner. Attempts to force fit policies or programs into new contexts will almost always fail. And the practitioner is the only reliable expert concerning what can and cannot be implemented in his or her community or setting.

We must also be realistic about the resources required to advance science-based prevention. The need for resources is well recognized by the U.S. Department of Agriculture (USDA), whose knowledge diffusion program is arguably the most successful in the world (Rogers, 1995). One major reason for the USDA's success is that for every dollar spent on knowledge production, one dollar is spent on knowledge

diffusion. Consider the extremely ambitious diffusion effort that accompanied the publication of the landmark *Guide to Clinical Preventive Services* (United States Preventive Services Task Force, 1989). As reported by Woolf et al. (1996), the release of the *Guide* was heavily covered in the medical press and large-circulation medical journals. More than 64,000 copies have been sold and translations have been distributed in Japan, Spain, Italy, Argentina, and Russia. The entire *Guide* is accessible online through the National Library of Medicine, and *American Family Physician* and *JAMA* have reprinted major sections. Despite this massive diffusion effort, which far exceeds what is commonly done in prevention, rates of awareness of the *Guide* (let alone use of its recommendations) were as low as 20% for some relevant specialty areas.

In prevention, we often set up high expectations for our efforts. The use of phrases such as "alcohol free" and "drug-free communities" in describing prevention program goals, while intended to inspire community action and buy-in, may lead to expectations that are unlikely to be attained. Even when goals are more attainable, expectations of rapid change are contrary to all that is known about the diffusion of innovation.

BOX 1

Marketing Prevention

As is the case in the marketing of consumer products and services, social marketing seeks the optimal mix of product, price, promotion, and place.

The *product* in a social marketing campaign is the specific behavior we wish to catalyze. In the current case, the product is science-based prevention -- as a framework for planning, as a guide to the selection of strategies, as the criterion against which success is measured, etc.

The *price* may be measured in a psychological, social, personal resource or economic metric. For example, adopting a science-based approach in a community may involve anxiety over abandoning traditional assumptions, conflict with providers of current services, substantial additional work for professionals and volunteers, or the need for new resources.

Promotion refers to the way the target behavior is packaged and presented. That is, what benefits are targets to be told they will enjoy as a result of "buying" the product? Clearly, safe, healthy communities are valued by all Americans, but a promotion may also appeal to self-esteem, enlightened self-interest, the promise of an improved business climate, etc. Promotion also refers to the specific communication strategies to be used – e.g., how the message is to be structured and delivered, by whom it is to be delivered, what the tone will be, and so on.

Place refers to the availability of the product (i.e., science-based prevention information and technology). As Wallack (1990a) notes, no one has ever bought a product they could not find. Just as manufacturers and distributors compete for the best shelf space in retail outlets, new prevention approaches compete for priority and resources in any community. Once communities become interested in science-based prevention, they must have ready access to additional information, training and technical assistance. Otherwise, our promotion efforts will fail to catalyze utilization of science-based prevention.

(The above discussion is adapted from the social marketing plan for NIAAA's Leadership to Keep Children Alcohol Free initiative.)

In summary, the literature on diffusion of innovations in health care suggests that the infusion of science-based programs and strategies into the day-to-day practice of prevention is a complex and dicey undertaking. Examples of successful diffusion in any area of health care are rare. Perhaps the most important lesson from this literature is that practitioners are unlikely to adopt science-based prevention simply because it is "better." Rather, the factors that facilitate and impede adoption are largely focused on the extent to which the needs of targets and the constraints in the contexts in which they operate are addressed. The literature also dictates modest expectations concerning the success of diffusion efforts. The evidence is clear that changes in practitioner behavior are not easily realized and protracted time frames are the rule. We may set ourselves up for failure when we promise to accomplish too much in too short a time.

The Social Marketing Approach

A major challenge for CSAP's CAPTs is to package and market science-based prevention in ways that will compete successfully with all the other appeals that reach prevention professionals. The challenge is not unlike those we face in packaging health promotion messages to compete with the flood of commercials that encourage Americans to drink, smoke cigarettes, eat fatty foods, and so on. Social marketing (Wallack 1990a, 1990b; Atkin and Arkin, 1990) has provided CSAP's CAPTs with a set of strategies that can assist in meeting this challenge.

Social marketing uses a framework borrowed from the promotion of consumer goods and services, but combines these with concepts from social influence theories and other social scientific formulations related to health behavior. The marketing concepts of product, price, promotion and place are reinterpreted within the context of specific health or social objectives and are then used as the basis for campaign planning.

The fundamental goal of social marketing is to make it easy for targets to act in compliance with the message (see boxes 1 and 2). Social marketing theorists also point

out the utility of the concept of exchange. That is, strategies must be designed cognizant of the fact that targets are being asked to exchange some resource for the product we are promoting (science-based prevention). The terms of this exchange (price vs. payoff) must be favorable to the targets – otherwise, there is little reason for them to adopt science-based practices.

LESSONS LEARNED

Over the last three years, we have amassed a rich body of experience in motivating, catalyzing, and supporting the application of science-based approaches to prevention. As regional centers, each of CSAP's CAPTs faces different challenges related to target population needs, geographic and sociodemographic factors, and attitudes, beliefs, values, and priorities regarding alcohol and drug problems. This diversity provides a varied tapestry of experience from which to derive lessons to share with the field.

BOX 2
Porque Si Importa

In Minnesota the Central CAPT helped organize and support an English and Spanish version of a social marketing initiative, entitled "Because It Matters" or "Porque Si Importa," targeting adults about providing alcohol to youth. Based on the research that many youth get alcohol from their own homes, messages were tested and communicated about adult providers, social host liability, and guidelines/standards within the family. Concurrently, other groups collaborated with CAPT assistance in public policy change, eventually increasing public support for state leadership that significantly contributed to new laws passed stiffening penalties for adult providers of alcohol, including not only parents and adult friends, but liquor retailers as well.

In marketing terms, the *Product* was the behavior change sought, specifically, to reduce and prevent alcohol giving or selling to youth by adults. The *Price* was commitment to confront adult providers, even friends, and to change the environment that tolerated giving/selling of alcohol to youth. The *Place* was parent education classes, Parent-Teacher-Community meetings, faith communities, local employers. The *Promotion* included a "Because It Matters" logo and a campaign kit that contained press releases, free print ad copy, background articles, radio scripts, outdoor board specs, a campaign Use Agreement (to guidelines), a "20 Things You Can Do" re-printable direct mail piece, and a website. The logo was reproducible, and was often applied to all local activities that fit the theme and goal of youth alcohol access prevention. The widespread use of the logo was intended to gain the power-in-numbers force, much like the Nike Swoosh, which fits all forms of physical activity.

Data on CSAP's CAPTs activities are available from a variety of sources. Each CAPT maintains process-oriented databases on 1) the provision of technical assistance (contact database), 2) sponsorship of or participation in events such as conferences, trainings, workshops, and meetings (event database), and 3) products that have been

developed (product database). Data on the immediate or short-term outcomes of selected CAPT events are collected by pretests and/or posttest questionnaires. The dimensions assessed differ across CSAP's CAPTs and by event, but some common measures of satisfaction are used. Data on long term outcomes -- changes in the way the business of prevention is conducted at the state or local or other levels -- is recorded in the contact database. Recently, a separate outcome database was designed to collect more detailed information. An array of additional methods is used by the individual CAPTs: face-to-face interviews, phone interviews, focus groups, and facilitated discussions.

Overall, the data collected by CSAP's CAPTs to date are largely descriptive. Accordingly, synoptic analyses have been used to extract lessons learned for this paper. There are a number of inferential problems that arise in drawing conclusions about outcomes from the data collected by CSAP's CAPTs. We will discuss these in more detail below. Despite these inferential problems, a number of useful lessons can be extracted from first three years of CAPT operation. We will present these lessons under four main headings:

- Motivating the field to embrace a science-based approach to prevention planning, implementation, and evaluation
- Promoting application of these approaches
- Supporting the on-going implementation of these approaches in day-to-day prevention practice
- Other lessons

Motivating the Field

As noted earlier, the social marketing perspective teaches that successful packaging and marketing of science-based prevention requires gaining the attention of target audiences and capturing their interest -- positioning the innovation so that it will stand out from all the other programs and strategies that are marketed to prevention policy makers and practitioners. The social marketing perspective also teaches that successful diffusion of

innovations in the health field requires a nuanced understanding of targets' aspirations, needs, preferences, values, and budgets.

Lesson 1: Diffusion Activities Must Stand Out From the Surrounding Noise

We have taken several steps to make CSAP's CAPTs' diffusion activities stand out from the "noise" created by all these competing materials. First, we have amplified our message by using the terms "science-based," "effective prevention," and "best practices" as often as possible when communicating with our constituents (over a third of the products available on the CAPTUS.ORG website contains one or more of these phrases in the title). As commercial advertisers well know, repetition is the single most important determinant of message memorability. Second, we have taken a narrow focus in many of our sponsored activities. For example, the regional summits that constituted a major activity of the first contract year focused on science-based environmental strategies. Such focus allows participants an immersion experience in a specific topic rather than the usual roster of speakers and workshops on different topics.

Most important, we have emphasized face-to-face contact as a major vehicle for disseminating information to States, U.S. Territories, and community-based organizations. This diffusion strategy is further discussed under Promoting Application.

BOX 3:
You Can't Teleconference without Telephones

Teleconferencing, videoconferencing, and other distance learning technologies have become a popular and effective method for disseminating science-based prevention. For example, a "Moving Research to Practice" interactive videoconference was developed and implemented by Central CAPT for the Iowa Single State Agency. Evaluations indicated this training built strong capacity among the Iowa prevention training network.

Applying the same technology in the Pacific Jurisdictions would have been difficult, if not impossible. Phone lines are unpredictable and service is far from universal. In addition, our experience taught us that Pacific Islanders expect and value face-to-face contact. Accordingly, the Western CAPT staff flew to Guam and facilitated a training of trainers event. Evaluations of the training were overwhelmingly positive.

Here, two very different dissemination methods were dictated by the needs and practical constraints of the recipients. Both were successful because the CAPTs understood these needs and constraints and responded to them.

Lesson 2: Regionalization facilitates effective packaging and marketing of science-based prevention

Aspirations, needs, perceptions, values, and budgets for prevention vary immensely in the U.S. and its territories. For example, local attitudes towards alcohol control policies are generally more favorable in politically conservative areas (Wagenaar et al., 2000) and less favorable in resort areas, areas whose economies are dependent on alcohol production, or areas where alcohol use is a part of ethnic heritage or local tradition. Similarly, neighborhood watch programs may be easier to introduce into communities where police-community relations are historically positive than in areas where these relations are strained. Thus, packaging and marketing strategies for science-based prevention must also be diverse.

Regionalization of CSAP's CAPT system has facilitated specific responses to regional challenges – e.g., independent attitudes in many Western states and underage individuals crossing the U.S./Mexican Border to drink. Despite these important regional issues, the regions themselves are also highly diverse. For example, the Southeast CAPT includes the high-tech corridor of Northern Virginia, the dry counties of Kentucky, the offshore islands of the Carolinas, and the Caribbean/Latino culture of Puerto Rico. The Central CAPT includes the cosmopolitan Twin Cities, the coal mining towns of West Virginia, Big Ten towns like Madison, Ann Arbor, and Bloomington, and the Red Lake Nation. However, this diversity is much more manageable than is the diversity of the entire nation. Thus, CSAP's CAPTs have succeeded in addressing diversity to an extent not possible for a national technical assistance and training system. Just as commercial marketers segment consumer groups, CSAP's CAPTs have been able to segment the prevention "market" and develop specific appeals for specific audiences.

Lesson 3: CSAP's CAPTs Should Serve as a Consumer's Reports of Prevention

Prevention is a growth industry with a variety of products competing for the attention of policy makers and practitioners. Some of these products are aggressively marketed even though they lack scientific evidence of effectiveness.

CSAP's CAPTs have served as a "Consumer Reports" for prevention policy-makers and practitioners. That is, we strive to educate our constituents to make them more savvy consumers of prevention products, to assist them in identifying misleading claims, and to direct them to programs and strategies that are worthy of further investigation. CAPT publications such as *Science-Based Prevention Primer, What is Scientifically Defensible Prevention?, Selecting and Implementing Appropriate Prevention Programs*, and *Using Science-Based Prevention* reflect this orientation.

Lesson 4: Science Should not be "Oversimplified" for States and Communities

An enduring American myth holds that science is too complex and arcane to be understood by anyone but scientists. Thus, there is a common expectation that practitioners must be provided overly simplified versions of scientific findings to ensure easy understanding. However, as Greer (1987) reminds us, there is little to be gained by the belief that "practitioners are merely slow scientists." In fact, the result of such an orientation is to lend credence to the belief among many practitioners that scientists are disconnected from the realities of agencies and communities.

In our experience, practitioners want science and understand science. When failures to understand occur, we believe that the fault is usually not with the subject matter or the audience. It is with the way the materials are presented. Most prevention science articles in journals are written by scientists for scientists. By contrast, we have found it possible to package complex arguments (e.g., the scientific rationale for environmental prevention strategies) in ways that assume no particular science background. Rather, we try to adopt the perspective of the audience and anchor scientific concepts to everyday experience, define terms as we go along, and present numerous familiar examples. In other words, we follow the long-standing tradition of packaging science education for the interested

lay person as reflected in the Smithsonian Institution's Associate Program, the PBS Nova television series, and the many best-selling books for general audiences written by eminent scientists. Our experience suggests that policy-makers, practitioners, and concerned scientists expect CSAP's CAPTs to provide science-based prevention information in accessible formats, which can be easily used by States and communities as they work to integrate this information into their prevention efforts.

Lesson 5: Computer Technology is Promising, but has Limitations

The prevention field has done an excellent job of putting computer technology to work. From PREVLINE (www.health.org) to PreventionDSS (www.preventiondss.org) to e-mail newsletters and distance mentoring, computer technology has been used to expand the reach, scope, speed, and interactivity of information diffusion. The Northeast CAPT, for instance, has completed state-level interviews and local level surveys, in preparation for developing an on-line course for practitioners; the findings suggest a high level of interest in using a web environment for learning and for an exchange of ideas

In our enthusiasm for these new technologies, CSAP's CAPTs remain mindful of the digital divide, not only among private citizens, but among providers as well. While taking advantage of the unique benefits of electronic information transfer, CSAP's CAPTs strive to utilize a variety of other communication channels to reach the small but significant segment of our colleagues who do not have electronic access.

Moreover, it is not yet clear the extent to which electronic information dissemination is successful. A 1996 study by Wallingford and colleagues (Wallingford et al., 1996) of 300 National Institute of Medicine computer-based out-reach programs found marginal rates of penetration into the health care provider community. Kanouse et al. (1995) studied the use of various health databases by providers. Most users relied on the databases to answer specific questions. Browsing or other searching to gather new information or to stay current was rare, reducing the probability of encountering any information for which users were not specifically looking. Allowing that comfort with and acceptability of on-

line databases has increased in recent years, these two studies and others like them suggest that the power of computer technology as a dissemination tool should not be assumed.

It also must be recognized, however, that, in some areas, telecommunications technology is the *only practical method* by which on-going information transfer and technical assistance can occur. These areas include remote Native Alaskan villages, numerous frontiers in the Territories, continental U.S. towns isolated by geography or weather, and so on. Ironically, of course, these are the areas that may be least likely to have access to modern communications and computer technologies.

The same issues have been faced in providing such areas with specialty medical care. Telemedicine practitioners have developed numerous technologies to bring telecommunications to the remote areas they serve. These same technologies could be explored to open paths of on-going communication between CSAP's CAPTs and communities with limited communications access.

Promoting Application

Promoting application of science-based prevention involves two interdependent processes. First, targets must conclude that a given program, policy, or strategy is a good idea and superior to current practices. Second, they must decide to try the new approach. As is the case for packaging and marketing, the chances of adoption are increased when targets believe that the disseminators understand their specific circumstances (cultural, disciplinary, sectorial) and when the innovation is consistent with the current operation of the systems into which it will be introduced. The dissemination literature also suggests the importance of local reinvention, allowing targets to customize strategies and their implementation to meet local needs and constraints.

Lesson 1: Face-to-Face Contact is One Important Avenue for Promoting Application

Face-to-face contact is one extremely effective way to get a message across. A brochure, article or booklet can be thrown out, a videotape can be ignored, and a website can be skimmed and exited. By contrast, a person sitting across the desk or table is hard to ignore. In addition, there is no substitute for the give and take that occurs in a face to face meeting – questions can be answered, concerns addressed, and the process of tailoring interventions to local needs can be initiated. Face-to-face contact is also labor-intensive and expensive, and may not be an efficient strategy with some communities.

As noted earlier, the success of person-to-person contact relies heavily on the relationship between the change agent and the target. The change agent must demonstrate a nuanced understanding of the circumstances and culture of the community, its values and beliefs, its readiness for change, and its concerns and anxieties.

Equally important, the change agent must understand the sectorial concerns of the practitioners and professionals who are being asked to adopt new strategies. If a family-based early intervention strategy is to be implemented, the change agent must fully understand the philosophy and operational characteristics of the agencies that will participate. Similarly, if a new school policy is recommended, the change agent must be thoroughly familiar with existing policies and discipline procedures.

Lesson 2: Use Networking as a Vehicle for Promoting Application

Social support can be a key factor in facilitating application. Such support assists individuals in addressing the concerns and anxieties that often exist when trying something new, different, and potentially risky (Backer 1991a, 1991b). Several of CSAP's CAPTs have established "learning communities" to facilitate networking among communities and practitioners who are working to adopt science-based prevention. For example, CSAP's Southeast CAPT sponsors attendance at national prevention events for four or five individuals from different parts of the Southeast Region. The CAPT then supports conference calls that allow these individuals to continue to exchange ideas, offer mutual support, and so on. CSAP's Southwest CAPT works with the various sectors in its

region through one-day learning community meetings attended by representatives from demand reduction funding streams (e.g., juvenile justice, public/highway safety, single state agency, National Prevention Network, Governor's office, and education). Often these representatives also serve on the Southwest CAPT's regional coordinating council, which meets following the learning community sessions. These sessions help to build long-term, one-to-one linkages between various State offices as well as linkages between similar offices across States.

Lesson 3: Proceed Incrementally

For many states, agencies, and communities, adopting science-based approaches is a complex challenge because of factors such as organizational capacity, resistance to changes in prevailing practice, and funding constraints. If our message is understood as, "give up everything you are currently doing and substitute a wholly different approach," the message is likely to be rejected. We have found it very important to allow policy makers, practitioners, and concerned citizens to "get their feet wet" by beginning with a science-based strategy that is non-threatening, easy to implement, and low in cost. In some cases, the first step may be to provide materials or technical assistance to introduce science-based components into existing efforts. Several CSAP CAPT products can facilitate such initial steps (e.g., the Western CAPT's *Seven Steps to Building an Effective Prevention Program*, the Central CAPT's *Effective Prevention Programs Database*, and the Northeast CAPT's *Science-Based Prevention Strategies*).

In other cases, initial steps may focus on assisting policy makers, practitioners, or concerned citizens in entering a new prevention area (e.g., social policy). For example, citizen action groups can begin to address social norms by surveying the "pro-alcohol" messages in their communities that appear to be directed at people under age 21 (e.g., point of sale advertising, industry sponsorship of community events, promotions on college campuses). Such an activity is very low cost, serves as an awareness raising function, and can function as a needs assessment for action planning. Similarly, a community wishing to implement a program to strengthen families can begin by

establishing a multi-sectorial work group to review available model programs for consistency with community norms, cultural appropriateness, and feasibility with available resources. Such a program review can assist in establishing a common understanding of prevention goals, team building across sectors, and the development of broad ownership of the program initiative.

Lesson 4: Address Systems Issues

The dissemination literature speaks clearly on the need to address systems issues. Several studies have described dissemination failures in health care even when policy makers and practitioners are strongly committed to adopting an innovation. Here the source of resistance is the system into which the innovation is introduced (see, for example, Cook et al., 1997).

We have perhaps learned more about dealing with system issues than about any other area. These lessons include the need to:

- *Establish Communication Linkages Among System Actors* - Science-based prevention strategies are typically multisectorial – that is, they require participation from multiple state and community agencies and organizations. For many policy-makers and practitioners, communication, cooperation, and coordination across sectorial boundaries will be a new experience. One important function of the coalitions that now exist in many communities is to facilitate intersectorial communication and to provide an opportunity for system actors to learn about one another's goals, priorities, methods of operation, and constraints.

- *Prepare the System before Change is Introduced* - Most science-based prevention strategies attempt to change systems – families, schools, enforcement, and whole communities. Any weekend gardener knows that even carefully tended seeds will fail to grow if we do not prepare the soil before we plant. Similarly, innovations fail when the system is not prepared to adapt to them. Characteristically, change in any

part of a system affects all components of the system; so all components need to be considered in preparing to introduce an innovation. This means that all affected agencies, organizations, and individuals must be on board. For example, it is counterproductive to establish student assistance programs if community agencies have not been prepared to handle increased caseloads. Equally important, any conflicts between the innovation and the goals and priorities of affected agencies, organizations, and individuals must be addressed, as must any required changes in the system's structure.

- *Establish the Availability of Needed Resources* -- Some science-based prevention efforts require new resources to be implemented. These resources may be needed to acquire equipment (e.g., cell phones for neighborhood watch programs), for personnel (e.g., youth workers for an after-school supervised recreation program), or for training (e.g., to assist coaches and other school personnel in preventing steroid use among student athletes). Sometimes, needed resources can be acquired through donations (e.g., cell phones from a local provider). In other cases, however, the resources must be developed or leveraged in order to support the new approach. However they are obtained, these resources are an absolute necessity for successful adoption. The best intentions will not substitute for needed personnel, equipment, and training.

To deal with systems issues, CSAP's Northeast CAPT conducted a regional summit in which they employed a series of activities and tools specifically designed to enable state teams to design action plans that allowed them to focus on science-based prevention strategies overall and collaboration as a strategy in particular.

BOX 4
Nothing Succeeds Like Success

As a result of the Illinois SIG effort to improve the state prevention system and put evidenced-based practices at the foundation of that system, the State's Bureau of Substance Abuse Prevention redirected block funding toward evidenced-based prevention. Providers receiving block grant funds are required "to spend 40% of their time implementing research-based prevention models." Providers also choose from a menu of outcomes to measure their prevention efforts. Research-based model programs have been incorporated into the training plan of state supported training and resource center.

Supporting On-going Application

The ultimate goal of our dissemination efforts is, of course, to foster on-going implementation of science-based prevention strategies in the States and Territories we serve. The early history of prevention witnessed a procession of passing fads and changing priorities as practitioners and policy makers searched for workable solutions to a seemingly intractable problem. Now that science-based solutions are becoming available, our challenge is to encourage, nurture, and support their application over time.

As noted by Holder (1999), those science-based strategies that rely on changes in policies may be the easiest to sustain over time. Establishment of policies requires a one-time effort (albeit an intensive effort in many cases) rather than the year-to-year effort needed to sustain, for example, a media campaign. Even with decaying compliance and enforcement over time, some policies (e.g., the minimum legal drinking age) have demonstrated residual effects.

Most new initiatives first take hold tenuously. People committed to trying the initiative may not be committed to its continued implementation, continued funding may be contingent on the success of a "pilot program," and naysayers may be watching for the first indication of problems. For all these reasons, we believe that significant attention must be given to fostering and supporting on-going implementation and to building sustainability into the initiatives we catalyze or support. We are beginning to learn how to meet this challenge.

CSAP's Southeast CAPT is developing a highly detailed logic model for sustaining prevention initiatives. This model directs attention to the importance of addressing sustainability issues at multiple levels – the strategy itself, the organization that houses or sponsors the strategy, the community, and the state. The model includes strategy specific issues (e.g., appropriateness to target population needs, fidelity of implementation, and person power development), institutional issues (e.g., creating an institutional "home" for prevention, creating institutional support for the specific strategy), resource issues (e.g.,

insuring multiple funding streams), and communications/advocacy issues (e.g., developing prevention "champions" at the organizational, community, and state levels). Here, we present some specific lessons derived from the work of the Southeast and other of CSAP's CAPTs in the area of sustainability.

Lesson 1: Help Policy Makers, Practitioners, and Concerned Citizens Anticipate Barriers

One important component of supporting on-going implementation is helping policy makers, practitioners, and concerned citizens anticipate barriers. We now have enough experience with implementing science-based prevention that we can anticipate some of the obstacles that are likely to arise as specific strategies take hold in States and communities. These obstacles include difficulties in recruiting and sustaining the interest of participants in parenting programs, peer educator programs, neighborhood initiatives, and community coalitions; resistance from retail alcohol and tobacco outlets who may feel "blamed" for what they perceive as a problem with individual users; competition from other pressing problems in the community, State, or Territorial agenda; difficulty in achieving the policy or regulatory changes needed to support many environmental strategies; and problems sustaining enforcement. Obstacles may also be encountered from individuals with a vested interest in traditional ways of doing things and from those concerned that the community's image will suffer if substance-related problems are openly discussed. Useful introductions to these and other barriers are found in CSAP's *Environmental Strategies: Putting Theory into Practice* (a video and CD-ROM resource package), in CSAP's Border CAPT's *Selecting and Adapting Programs: Does It Fit* guide addressing cultural issues, and in CSAP's Southwest CAPT's *Planning for Change: A Systems Model for Communities and Organizations* addressing change theories and methods.

We have found that the most effective way to deal with barriers is to assist policy makers, practitioners, and concerned citizens in considering what these might be and how they can be addressed. In other words, an analysis of potential barriers should be a part of

strategic planning. CSAP's Northeast CAPT's video on enforcement provides one relevant example. Considering barriers in strategic planning allows some barriers to be addressed proactively – e.g., those from whom resistance is anticipated can be brought into the planning process to air their concerns and negotiate ways to address them. Other barriers can be anticipated and strategies can be developed to deal with them – e.g., resources can be set aside for stepped up outreach to parents in the later years of a parenting initiative. This sort of planning helps avoid the usual "damage control" approach that is required when problems arise.

As elsewhere, face-to-face discussions have been helpful in facilitating strategic planning to address barriers. Thus, technical assistance has been one vehicle of choice for this activity. A related strategy has been to link new adopters with communities that have successfully implemented a particular science-based prevention strategy.

Lesson 2: Help Policy Makers, Practitioners, and Concerned Citizens Anticipate "Spin-Off" Effects

Precisely because most science-based prevention strategies affect systems, they can have unintended spin-off effects. For example, effective parenting education or early intervention programs may increase demand for assessment and counseling services. Similarly, zero BAC tolerance laws for underage drivers may increase the burden on prosecutors, courts, and corrections. These spin-off effects complicate the task of sustaining science-based prevention -- effective efforts may fall victim to their own successes.

As is the case with barriers, these unintended spin-off effects can be anticipated as part of strategic planning. Policy makers, practitioners, and concerned citizens should be encouraged to make a system-wide analysis of the potential spin-off effects of any new initiative. This analysis should examine possible impacts on individuals, agencies, and organizations beyond those that are directly and immediately involved or affected.

Community coalitions are an excellent vehicle for this assessment since representatives of most relevant systems actors should be members.

Lesson 3: Provide On-Going Technical Assistance Tailored to Changing Needs

At one time, prevention technical assistance (TA) was commonly viewed as a one-shot activity aimed at solving specific problems. Although there is still a need for such TA, today's science-based prevention strategies tend to develop over time in phases and stages (see, for example, CSAP's *Decision Support System*). Thus, we believe that technical assistance should be a planned and on-going collaboration between CSAP's CAPTs, the State TA contract, as well as the Model Programs Dissemination Initiative and the States, Territories, and organizations we serve. In particular, our experience suggests that a portion of technical assistance resources should be reserved for the implementation phase when additional support can mean the difference between a sustainable innovation and one that decays or disappears.

Other Lessons

We have learned a number of other lessons that do not fit comfortably into any given category. We offer them here.

Lesson 1: The Bridge Between Science and Practice is a Two-Way Street

As disseminators of science-based prevention, CSAP's CAPTs demonstrate the feasibility of creating a bridge between science and practice. Although the bridge metaphor is apt (there is,

BOX 5
What Comes Around Goes Around

Scientists did not develop many science-based prevention innovations. Rather, the innovations originated with policy makers, practitioners, and concerned citizens in the field. From the earliest alternatives programs to the currently ubiquitous community coalition movement, the "science-to-practice bridge" has really been a bridge from practice to science.

We are an "experimenting society," endlessly creative in our search for solutions to social problems. As Donald Campbell pointed out a quarter century ago, trying out solutions is not enough – we must also "retain, imitate, modify, or discard them on the basis of apparent effectiveness on the multiple imperfect criteria available (1975, p. 71)." A bridge from practice to science will help ensure that the myriad promising innovations developed in states and communities come to the attention of those with the training and resources to evaluate and disseminate them.

after all, a sometimes impassable divide between the world of the researcher and the world of the practitioner), we are struck by the consistency with which the bridge in this metaphor is assumed to carry one-way traffic only. That is, innovation flows from scientist to practitioner. Greer (1987) and Ferguson (1995) have noted a similar belief in health care generally – i.e., that science and practice form a hierarchy, with practitioners taking directives from researchers.

Our experience suggests that the bridge between science and practice is and must be a two-way street – that is, new knowledge must flow from practitioners to scientists as well as the reverse. First, policy makers, practitioners, and concerned citizens can supply invaluable information about the changing needs of communities. For example, NIDA's Community Epidemiology Work Group uses local informants in metropolitan areas to gather current descriptive information regarding the nature and patterns of drug abuse, emerging trends, characteristics of vulnerable populations and social and health consequences. Second, policy makers, practitioners, and concerned citizens can alert researchers to indigenous innovations that warrant scientific assessment of effectiveness. Finally, closing the loop between researchers and practitioners can speed the process of refining innovations and developing alternative versions that fit the needs, values, and resources of the diverse communities we serve.

Lesson 2: CSAP's CAPTs can Increase their Value to the Field through Developing Areas of Emphasis

CSAP's CAPTs were designed to fulfill the role of well-qualified generalists. However, because CAPT services respond to the needs of their regions, and because these needs differ, each CAPT has developed selected areas of emphasis. For example, CSAP's Western CAPT has developed expertise in workforce development, CSAP's Central and Northeast CAPTs in social marketing, CSAP's Southeast CAPT in sustainability, CSAP's Southwest CAPT in program planning and evaluation, and CSAP's Border CAPT in adaptation and cultural issues. The evolution of different areas of emphasis is value added for CSAP, its CAPT system, and for the field. The

knowledge resources of any given CAPT are resources that can be brokered for the target population of any other CAPT. Such sharing, in turn, increases the efficiency and effectiveness of all CSAP's CAPTs in meeting the needs of their regions.

Lesson 3: CSAP's CAPTs Must Remain Flexible to Meet the Needs of the Field

The speed with which our field has changed and evolved is clear to all who have been involved in prevention for any length of time. Today, we have a sophisticated and established system of prevention epidemiology, service development, and delivery with national coordination and regional and state support. Undergraduates can take courses and even major in prevention, and masters and doctoral dissertations on prevention topics are commonplace. Today, rich epidemiologic information is available from a variety of sources, etiologic studies number in the hundreds, and theoreticians engage in productive debates concerning the best models to synthesize and explain the data. Prevention scientists have their own journals, conferences, and professional societies. And many of today's policy makers, practitioners, and concerned citizens are effectively promoting the scientific rationales for the strategies they adopt.

The rate of evolution in prevention shows no signs of slowing. Indeed, recent infusions of resources by both Federal agencies and private foundations will likely catalyze even greater development and stimulate even more change. Accordingly, CSAP's CAPTs cannot be static if we are to keep up with the field we serve. Rather, we must remain flexible to meet changing needs and to support the many new innovations and initiatives that will doubtless emerge. This flexibility will require our own willingness and preparedness to adapt. It will also require CSAP to promote and support the development of mechanisms that will allow CSAP's CAPTs as well as the CSAP State Technical Assistance contract and the Model Programs Dissemination Initiative to make course corrections as dictated by the emerging needs of the field.

Lesson 4: Outcome Evaluation of CSAP's CAPTs Presents Significant Challenges

We clearly recognize the need for outcome evaluation of CSAP's CAPTs' activities. We expect of ourselves no less accountability than we expect from state or local programs. We have learned, however, that attempting an outcome evaluation of an initiative like CSAP's CAPTs is a challenging enterprise with many pitfalls.

Some of these challenges are conceptual. The dissemination literature makes clear that the adoption and implementation of a given science-based prevention strategy will result from a complex interaction among factors associated with the intervention itself, the way the intervention is packaged and disseminated, the target audience, and the context in which the target audience operates. Such multi-component systems are not easily studied with traditional experimental approaches and appropriate alternatives are only now being explored. In addition, CSAP's CAPTs are one of numerous change agents that are currently promoting science-based prevention. From a dissemination perspective, these multiple message channels are highly desirable. However, they significantly increase the difficulty of making causal inferences about the isolated effects of CSAP's CAPT activities.

For all these reasons, we believe that expectations for outcome evaluation of CSAP's CAPTs should be modest. Again, this is not to say that such studies are not needed. Rather, we wish to highlight the need for a tight focus in any study (or series of studies) we undertake.

Summary of Lessons Learned

Perhaps the most succinct summary of the lessons we have learned in the first three years of operating CSAP's CAPTs is this:

> Science-based strategies are the beginning, but only the beginning, of increasing the effectiveness of prevention efforts in States, Territories, and communities. In order for these strategies to realize their potential, CSAP's CAPTs and other

similar initiatives must develop solutions to a variety of problems in dissemination, implementation, and sustainability.

Building a better mousetrap is not enough. Considerable effort, ingenuity, and persistence are necessary in order to catalyze and sustain its use.

THE FUTURE

Much remains to be done in developing approaches to the promotion of science-based prevention. We have a considerable body of research and experience to guide our efforts. But we must continue the task of applying this knowledge to the specific circumstances of our field. There are considerable gaps in our knowledge of:

- Current levels of adoption of science-based prevention
- The most important factors that promote adoption in different kinds of state and community settings
- The extent to which various strategies can be locally reinvented while still maintaining their integrity and effectiveness
- The most effective ways to package and market prevention innovations
- The best ways to support long-term implementation

The diffusion literature suggests that progress in these areas will occur not only through research, but also through the accretion and compilation of practical experience. The current paper provides one such compilation. Many others should be published and we invite other SAMHSA, NIDA, and NIAAA grantees and contractors to follow our lead in sharing their experiences.

There are still gaps in our knowledge of workable strategies for conducting the kinds of outcome evaluations that will assist in answering specific diffusion-related questions. These gaps are endemic in social science, and solutions are being explored in a variety of disciplines. For the moment, systematic descriptive studies and highly focused outcome

studies (e.g., comparisons of various adaptations of the same intervention) seem most likely to yield usable information.

Considerable professionalization has occurred in prevention, and today's prevention professionals are much more sophisticated than they were decades ago. But, a more highly skilled prevention workforce is needed to implement the increasingly sophisticated innovations that are becoming available. One mechanism for accomplishing this goal is a national Substance Abuse Prevention Specialist Training adapted by CSAP's National CAPT System from the curriculum originally developed by its Western CAPT and modified from the Prevention Generalist Training curriculum developed by the State of Colorado. Another is the on-line course offered by CSAP's Northeast CAPT. Other mechanisms include the summer schools and institutes sponsored in several states, emphasis on training at national meetings and conferences, web-based instruction, and the development of prevention curriculum content for undergraduates and for graduate programs in the health professions, social work, clinical psychology, public administration, and related areas.

Finally, there are emerging national trends that present both opportunities and challenges. Perhaps first among these is the new White House Office of Faith-Based and Community Initiatives. The new office and the regulations that accompany it remove barriers in terms of the funding and level of involvement of faith-based organizations in human services. CSAP has long understood the need to involve the faith community in prevention and many faith-based organizations and spirituality-based approaches may be found in CSAP's portfolio. Thus, CSAP's CAPTs are well positioned to assist in ensuring that new prevention initiatives of faith-based organizations are also science-based.

The nation is also in the middle of major decisions concerning how tobacco settlement money will be spent. Wide ranging and legitimate arguments have been forwarded for using this money for long term care of chronic disease sufferers, for smoking cessation, for prevention, or simply to reimburse general state coffers for past smoking-related costs. We believe that CSAP's CAPTs can inform this debate by offering evidence that

prevention works and by demonstrating the cost effectiveness of prevention when compared to other possible uses of new revenues.

Finally, CSAP's CAPTs can assist prevention practitioners in adapting to a changing health care system. CSAP has made major contributions to establishing the role of prevention in new forms of delivery such as managed care and workplace health programs. Yet much remains to be done, in part, because the medical marketplace continues to change in ways that contradict even the recent predictions of soothsayers and pundits. As proponents of science-based prevention, we are also proponents of evidence-based practice, accountability, results orientation, and cost-consciousness. Thus, the approach of CSAP's CAPTs matches that of all responsible health reform and cost containment models, and thus provides a resource for prevention practitioners who wish to compete successfully in the new medical marketplace.

Overall, we have come very far and still have far to go. Our discipline is developing, growing, and maturing at a rapid rate. We believe that CSAP's CAPTs and other similar initiatives have both stimulated and focused this growth. We will continue to share our lessons learned as the years pass, and we encourage other knowledge development and application programs to share their experiences also. Our shared understanding of the dissemination of prevention innovations is, itself, an important component of science-based prevention.

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