RAND DRUG POLICY RESEARCH CENTER

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Changing the Behavior of Methadone Recipients

Methadone is a medication used in the treatment of heroin addicts. Although it is an addictive opiate drug, like heroin, methadone can be taken orally and its effects last longer. These qualities relieve addicts of the dangers associated with frequent intravenous injections and the need to devote an enormous portion of their time and resources toward obtaining more illicit drugs. Patients in "methadone maintenance therapy" are thus more capable of leading productive lives and supporting a family than heroin users, and they contribute less to the crime and violence arising from the market for illicit drugs. Although many patients and treatment providers set detoxification from methadone as a treatment goal, detoxification rarely leads to drug-free lives. Instead, clients typically relapse to intravenous heroin use shortly after they discontinue their use of methadone.

Providing methadone blocks the craving for opiates, but it does little to address problems associated with the abuse of other drugs, like cocaine, or the serious psychosocial problems commonly faced by substance abusers. Thus, methadone maintenance therapy always includes some form of counseling to assist clients in achieving a satisfying drug-free lifestyle. Unfortunately, this goal often goes unmet, because many clients continue to abuse a variety of illicit drugs while they are receiving methadone maintenance therapy. Often this leads to a struggle between the client and the counselor in which, after a series of confrontations, the counselor threatens the client with discharge from treatment or other such punishments if illicit drug use does not cease. This type of punitive approach to counseling is often ineffective, leading to clients' withdrawal from treatment and relapse into high-risk drug-use patterns.

Methadone is dispensed daily to block addicts' craving for heroin.

Psychologists know that it is easier to move persons toward a desired pattern of behavior by rewarding them for adopting elements of that pattern than to punish them for undesirable behavior. And taking a positive-reinforcement approach may fill an important need in the case of drug addicts, whose actions have often separated them from the sources of positive reinforcement, such as loved ones, friends, and jobs, that are available to others in society.

continued on page 4

In This Issue:

Aiding Treatment Choices

A Message from the Directors

DPRC codirectors Audrey Burnam and Martin Iguchi

RAND's Drug Policy Research Center began 1998 with a strengthened capability in substance abuse treatment research (see "New People"). This is a deliberate emphasis. It follows from our research showing the greater cost-effectiveness of treatment relative to supply-control strategies, and from the need to improve knowledge of which specific treatments are most effective for whom, and at what cost.

We experienced a poignant example of this gap in knowledge when recently, three of our colleagues, all of whom are experts in substance abuse treatment research, independently confided to us that they had had a family member or close friend who was discovered to have serious problems with alcohol or drugs. To their dismay, none of these experts knew how to help their loved ones. They knew that certain program approaches worked in highly controlled and resource-intense experimental settings, but that gave them little basis for choosing among the array of treatments delivered in their communities. They were left with lots of questions: Was formal treatment really necessary? Which of the treatment programs available to them was most effective? Which would be best matched to the characteristics and needs of their family member or friend? Which provided the best trade-off between expected benefits and costs? These are all straightforward and practical questions, and yet there was no one to turn to for answers.

We know that treatments can work. Controlled experimental studies of efficacy and observational "real-world" studies of effectiveness consistently show that many treatments reduce substance use and improve other related outcomes for the average active program participant. But how do we choose among them? Consider the diverse array of treatment approaches practiced in this country. They vary in setting (e.g., hospital versus community), length of treatment, duration of visit (from 24-hour residential to one-hour outpatient visits), philosophy, array of service components included, training and qualifications of staff, and mode of service delivery (e.g., group versus individual). Programs may cast a wide net, focus on women or other specific populations, or be tailored to individual needs. They may be delivered as stand-alone care or as part of a broader continuum of services. Despite this array of possibilities, within any one community the alternatives may be quite limited and idiosyncratic, and options may be further restricted by consumers' ability to pay or by what their health insurance will cover.

Currently, there is no standard terminology that describes the essential elements of treatment, and little consensus among experts on what represents best treatment practice. We do not know whether appropriate treatment options are available and accessible to specific communities, nor how to evaluate their relative costs and quality. Furthermore, we are unclear about our expectations for substance abuse treatment. Does effective treatment mean reducing substance use to less problematic levels? Does it mean obtaining and maintaining complete abstinence? Or does it entail simultaneously addressing educational and vocational deficits, homelessness, mental health problems, criminal behavior, and social functioning?

Adversity has a way of creating focus. With the growth of managed care, there is a new urgency and attention to accountability, quality assessment, and quality improvement in substance abuse treatment. Clearly, the driving force behind managed care is cost control, but payers, both private (employers) and public (state government), have also turned to managed care as an opportunity to increase the efficiency of health care delivery. Managed care raises hopes that the value of a dollar spent on health care can be increased. Through managed care, there is promise that enrolled populations will be ensured easy access to assessment and treatment when these are appropriate and that they will be denied access to treatments that are ineffective. There is also hope that they will be assigned to the treatment providers and interventions that are the most cost-effective. Is help on the way?

Perhaps. But there is much work to be done. In the absence of information on the relative effectiveness of different substance abuse treatments, managed care can and has resulted in choices based on low price without regard to quality. The RAND Health program has been at the forefront of research on the quality of general medical and mental health care. It has developed methodologies for

monitoring outcomes of routine health care, established empirical and consensus-based guidelines for appropriate treatments and best practices, assessed quality of care across health care systems and populations, and demonstrated quality-improvement techniques. The DPRC hopes to bring about a confluence of these perspectives with substance abuse treatment expertise to advance our understanding of the quality of treatment. ■

Update: The Partnership with Phoenix House

Last year, the DPRC entered into a partnership with Phoenix House, a nonprofit organization providing drug-use treatment, prevention, and education services in the Northeast, California, and Texas. In collaborating with the DPRC, Phoenix House hoped to expand its research agenda and improve the use of data on its clients to understand and improve their responses to treatment. In particular, it sought better use of this information in its decisions regarding program operation and in its demonstration of program effectiveness to potential funders. The DPRC hoped to enhance its analysis of drug policy issues through the exposure its staff would gain to the practical issues faced by a service provider. The DPRC would also have a chance to apply its expertise in a context where the objective was not just identifying problems but helping solve them.

Despite the advantages to both researchers and service providers, partnerships like that between the DPRC and Phoenix House are rare in the substance abuse field. In any such ground-breaking endeavor, there is some risk that expectations will not be met. Accomplishments in the partnership's first year, however, suggest optimism for the future. Over the past year, Phoenix House and the DPRC project staff, led by Patricia Ebener, have realized practical, usable results from four collaborative efforts:

- The DPRC assessed how well the automated clinical and administrative information that Phoenix House maintains could answer the organization's questions about service quality and cost.
- DPRC staff profiled applicants and admissions, then gave Phoenix House concrete evidence on client characteristics that predict, and are thus of use for improving, treatment entry and retention.
- DPRC developed tools for measuring the treatment process, and, through its coordination of data collection, facilitated a test by Phoenix House of a tool for monitoring client outcomes.
- DPRC and Phoenix House have defined possible opportunities for program evaluation and issues for further research. One proposal for third-party funding has been submitted, and others will follow shortly.

In the coming year, the partners hope to build on these efforts and disseminate findings from the exploratory research of the first year. DPRC expects to learn more both from the substance of the work and from the process of collaboration.

Partnerships with private-sector entities are becoming a more important aspect of RAND research as RAND seeks to match its agenda to the decisionmaking needs of the many private organizations undertaking programs of action related to public-policy concerns. Realizing the opportunities afforded by such collaborations requires melding divergent institutional cultures. The experience gained in the Phoenix House partnership will thus contribute to future collaborative efforts between DPRC and the private sector. ■

DPRC researchers Pat Ebener and Donna Farley with Amy Singer and Conrad Levenson at Phoenix House treatment program construction site in New York

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http://www.rand.org/centers/dprc/

The web site includes a description of the DPRC, its research agenda, and the latest issue of our newsletter, as well as a subject index and abstracts of all DPRC publications.

continued from page 1

Martin Iguchi and Andrew Morral have been investigating methods to reward desirable behavior on the part of methadone users. Previously at the Hahnemann School of Medicine in Philadelphia, they moved to RAND last year and are continuing their research at DPRC. Most of their research has been funded by the National Institute on Drug Abuse.

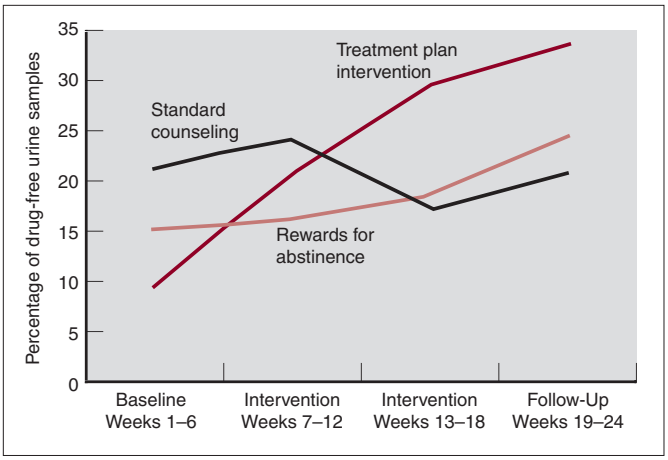
DPRC researcher Andrew Morral meets with expert drug-treatment counselors at a Los Angeles clinic.

Two recently published studies, both conducted at a clinic near Philadelphia, are illustrative of this line of research. In the first,[1] clients in methadone maintenance therapy were divided into two groups. In the first group, clients were rewarded if they abstained from illicit drugs (as verified by frequent urinalysis); in the second, if they attended sessions providing training in interpersonal problem-solving. In both cases, the reward was in the form of take-home methadone doses, which are highly valued by methadone users. This study showed that behavioral reinforcement can work but is quite specific. Those rewarded for staying drug-free did so, and those rewarded for attending training sessions did so. But the latter group did not reduce their use of illicit drugs. And while rewarding abstinence can be effective over the short term, it provides little guidance to addicts on how to construct a sustainable drug-free lifestyle once the rewards end. Users might, for example, divert their attention from drugs by watching television continuously, but this "strategy" for earning available rewards would be unlikely to assist them in finding jobs and living independently.

Finding an Approach with Lasting Effects

Rewarding abstinence is thus often found to be ineffective at promoting sustained abstinence, and rewarding behavior not directly in conflict with drug use (like attending therapy sessions) is by itself not effective. Perhaps rewarding behavior that potentially conflicts with drug use would work better. That approach underlay the second study.[2] In that study, clients in methadone maintenance therapy were divided into three groups. One was a control group that received the standard counseling offered at the clinic where the study was conducted. Of the two experimental groups, one was rewarded, as in the first study, for abstaining from illicit drug use. The second participated in a specially designed treatment program in which they were rewarded for completing tasks designed to promote a lifestyle incompatible with continued drug use. Examples of such tasks are steps toward getting a job, including obtaining the necessary training; attempts to improve family relationships; or participation in community activities. Counselors adjusted the difficulty of the tasks to suit each individual's abilities at his or her stage in treatment. By choosing small steps to reinforce instead of a big one like abstinence, Iguchi and his colleagues hoped to ensure that participants would experience success at some level. The objective is to break the cycle of failure and frustration often observed in this population. The small tasks rewarded also start participants in the direction of more appropriate, socially acceptable behavior that can compete with drug use and that is supported by the larger social environment. It is to reestablish links with such "communities of reinforcement" that steps toward improving family relationships, for example, are included among the tasks that can be rewarded.

For both experimental groups—the one rewarded for abstinence and the one participating in the new treatment plan intervention—rewards were in the form of vouchers redeemable for expenses tied to treatment plan goals, e.g., appropriate clothing for job interviews. The maximum value of a week's vouchers was $15, an amount well below the value of a take-home methadone dose to most persons on maintenance therapy.



Counseling That Rewarded Completion of Tasks Promoting a Drug-Free Lifestyle Resulted in Improved Avoidance of Illicit Drugs by Methadone Recipients.

The group rewarded for positive lifestyle changes had the greatest improvement in percentage of urine tests drug-free (see the figure). Furthermore, this improvement continued after the end of the experimental treatment, when no rewards were provided. These results suggest that if rewards are given for completing tasks that support a lifestyle incompatible with drug use, important gains can be made in the effectiveness of methadone maintenance therapy.

Positively reinforcing completion of incremental treatment tasks thus compares favorably with reinforcing abstinence when the rewards are small. Iguchi and Morral are now giving the treatment-task approach a tougher test. Their current research on methadone maintenance therapy is being conducted at a clinic in Los Angeles from the fall of 1997 to the fall of 2000. It is also a three-group design, with a control group given standard counseling. This time, the first experimental group receives take-home methadone as a reward for negative urine tests, while the second receives vouchers worth up to $20 per week for completing tasks promoting a healthier, prosocial lifestyle. The $20 a week is still considerably below the value users place on take-home methadone doses. Participants will be tested for drugs through the fifth month following the end of the study. This experiment thus pits the incremental-task counseling intervention against a well-studied "gold-standard" behavioral intervention that is known to be effective at temporarily reducing drug use.

Applying the Approach to Detoxification

Not all heroin users are willing or able to undergo methadone maintenance therapy. An alternative treatment frequently used is methadone detoxification, in which methadone is given in progressively lower doses until the addict is taking no opiates at all. Unfortunately, clients in methadone detoxification treatment generally relapse to injection drug use, often before they complete their treatment.

A promising supplement to methadone detoxification is administration of the opiate antagonist (inhibitor) naltrexone. The objective is to block the positive reinforcements that those coming out of methadone therapy receive when they use heroin. Unfortunately, it is difficult to get recovering addicts to adhere to the naltrexone therapy.

Iguchi and Morral are conducting a study in which they will test the effectiveness of their positive-reinforcement approach for improving the performance of the methadone-naltrexone detoxification regimen. Two different reinforcement strategies will be used to determine whether either or both improve compliance with the naltrexone protocol.

The experiment is being conducted at two clinics, one in Los Angeles and one in Philadelphia, from the fall of 1997 to the fall of 2000. Participants receiving a 120-day methadone detoxification treatment are being separated into four groups. One is the control and receives the clinic's standard counseling. The second is rewarded for abstinence from illicit drug use, the third for completion of tasks promoting a drug-free lifestyle, and the third for both abstinence and treatment-related tasks. Participant drug use will be monitored for 20 weeks following the end of treatment.

Conclusion

The treatment plan intervention being tested by Iguchi and Morral is not the only potentially effective approach to reducing drug dependence. Even programs rewarding abstinence have exhibited success in certain situations. But the treatment intervention is more easily implementable than most alternatives in that it does not require researcher oversight and can be administered anywhere by the typical treatment counselor. The modest training investment required results in less cost per participant than needed for the urinalyses upon which abstinence rewards depend.

Previous DPRC research has pointed out that treating drug users is more cost-effective than other approaches to controlling drug use—even taking into account the fact that, to date, the great majority of treatment clients have relapsed. Still, treatment has so far been a "poor cousin" of enforcement when it comes to allocating drug control resources. Any intervention that matches or exceeds prevailing effectiveness standards at lower cost thus represents a valuable new tool in reducing the nation's drug consumption.

In addition to contributing to the improvement of drug-user treatment, the Iguchi-Morral studies are expected to have implications for a wide range of medical treatments in which effectiveness is limited by patient noncompliance with treatment regimens. These include protocols for hypertension, heart disease, obesity, and diabetes. ■

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[1]Martin Y. Iguchi, R. J. Lamb, Mark A. Belding, Jerome J. Platt, Stephen D. Husband, and Andrew R. Morral, "Contingent Reinforcement of Group Participation Versus Abstinence in a Methadone Maintenance Program," *Experimental and Clinical Psychopharmacology*, Vol. 4, No. 3, pp. 315–321, 1996.

[2]Martin Y. Iguchi, Mark A. Belding, Andrew R. Morral, Richard J. Lamb, and Stephen D. Husband, "Reinforcing Operants Other Than Abstinence in Drug Abuse Treatment: An Effective Alternative for Reducing Drug Use," *Journal of Consulting and Clinical Psychology*, Vol. 65, No. 3, pp. 421–428, 1997.

Prenatal Substance Exposure: How Are Health Care Providers Responding?

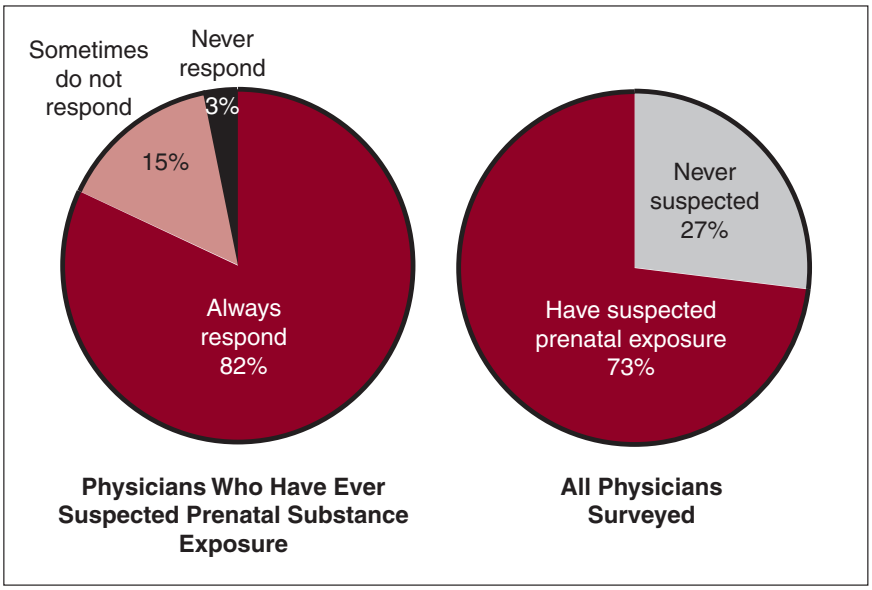
Policymakers and the public have been concerned for a number of years over use of alcohol and drugs by pregnant women. Researchers have responded with studies aimed at better understanding the magnitude of such exposure and its consequences for the child *after* birth. We also know that health care providers have responded with actions taken *after* birth to ameliorate those consequences. What about actions *before* birth?

Considering the pervasiveness of prenatal care, substance abuse during pregnancy would appear to be a preventable problem. This has not been lost on policymakers. Various state legislatures have created priority drug-use treatment slots for pregnant women, mandated surveys of the prevalence of prenatal substance exposure, or defined it as child abuse, making it subject to the child abuse reporting requirements all states have. But there has not been much research on prevention; little has been learned about how physicians and other health care providers respond to prenatal substance exposure. As a result, there has not been much of a basis for deciding which of the various policy solutions that have been tried are effective or even necessary.

This situation is now changing, thanks to a DPRC research project directed by Gail Zellman and sponsored by the National Institute on Drug Abuse. Zellman and her colleagues fielded the first national survey of physician responses to prenatal substance exposure. The researchers received completed surveys from almost 1,400 obstetricians and pediatricians treating newborns. They also surveyed nurse managers and administrators at the hospitals where those physicians practiced to obtain information on nurse responses and hospital protocols relating to prenatal substance exposure. The results of the study include some evidence suggesting that health care providers are responding *during pregnancy* to prenatal substance exposure—and some evidence that they are not doing as much as they could.

Physician Practices

Of responding physicians who reported having suspected prenatal substance exposure, over 80 percent *always* reacted in some way (see left pie in figure): They ran a toxification screen, got a substance abuse history, discussed treatment options with the mother, discussed their suspicions with the mother's primary-care physician, or reported the patient to a hospital social worker. Only a few percent of physicians who had ever suspected prenatal substance exposure acknowledged never having done anything about it. The remainder said they had not always responded to such suspicions, often because of a lack of sufficient evidence.



Physicians Who Suspect Prenatal Exposure Typically Respond, but Too Large a Number Never Suspect It.

While these numbers are on the whole reassuring, they leave some grounds for concern. Twenty-seven percent of surveyed physicians reported never having suspected prenatal substance exposure (see right pie in figure). That seems high, given recent estimates that as many as 12 percent of pregnancies may involve such exposure. Moreover, 80 percent of obstetricians responding to the survey indicated they had delivered at least one baby who turned out to have been exposed during pregnancy when they had not suspected exposure. Such data lend support to the possibility that physicians may fail to detect substance exposure during pregnancy, meaning that preventive measures are unlikely to be taken in some unknown number of cases.

Other information from the physician surveys yielded a similar mix of encouraging and disturbing results. To control for differences in patients and practice settings, all surveyed physicians were presented with vignettes describing hypothetical cases. For vignettes rated by three project medical experts as definitely indicating prenatal substance abuse, surveyed physicians tended to agree with the experts on the diagnosis. But for two of three vignettes rated as suggestive but not definitive, over a third

of responding physicians concluded that prenatal substance exposure was unlikely. In a less-obvious, real-world context (i.e., outside a survey on prenatal substance exposure), that proportion would likely be higher.

Overall, case characteristics such as those in the vignettes were more likely than physician characteristics to influence judgments of prenatal substance exposure. Nonetheless, some physician characteristics mattered. For example, physicians with more formal training in prenatal substance exposure and those more confident in their ability to manage it were more likely to report having suspected it.

A mix of factors affected *how* physicians said they would respond to the vignettes. In vignettes involving newborns possibly exposed prenatally, physicians were more likely to screen, refer, and report if the mother exhibited lack of concern for her baby. Physician responses were also more likely in the presence of such other case characteristics as continued substance use, a history of prenatally exposed or other high-risk pregnancies, and late prenatal care. Some less obviously relevant characteristics also mattered, notably whether the mother was previously known to the physician. In addition, the findings suggested that patients with fewer resources were more likely to motivate physician action, making prenatal substance exposure one of the few conditions for which poor people are more likely to get medical attention than the better-off.

Some factors unrelated to case characteristics influenced response intentions or physician reports of previous responses. Those included availability of drug treatment in the community (the more readily available, the more likely a physician response) and physician gender and age (females and younger physicians being more likely to respond). Intent to report a case to authorities was most strongly influenced by a physician's previous propensity to report.

Hospital Policies

Hospitals that address prenatal substance exposure at all generally do so through developing and implementing protocols or through separate nursing policies. Such protocols and policies can cover actions such as identification of prenatal substance exposure, assessment, reporting, and referrals. Results of the study suggest that if physicians believe their hospital has a protocol covering prenatal substance exposure, they are more likely to respond to their suspicions of such exposure. Nursing policies also appear to be taken quite seriously; nearly all nursing staff are trained in the procedures specified, and most nurse managers indicated that compliance is monitored. Regardless of whether there is a specific protocol or nursing policy, perinatal nurse managers expect staff nurses to take a strong proactive response to suspected prenatal substance exposure. And, according to these same nurse managers, they do.

Again, while this information on institutional practices and procedures may seem reassuring, approximately half the hospitals surveyed had neither a protocol covering prenatal substance exposure nor separate nursing policies dealing with it. Hospitals without protocols reported they lack one because of beliefs that prenatal substance exposure rarely occurs in their patient populations or because staff can be trusted to respond professionally. Obviously, such suppositions carry risks.

Conclusion

Clearly, the importance of prenatal substance exposure is widely recognized by health care providers, and most physicians appear to be reacting appropriately in most cases. But this study also suggests substantial gaps in recognition and response. These gaps could not only lead to tragic consequences for some unknown number of infants but also represent lost opportunities to treat the mothers' substance abuse and thus have negative implications for their other children. These gaps might be remedied if physicians were trained in recognizing and responding to prenatal substance abuse. And, because physicians are more likely to respond if they believe their hospital has a protocol for prenatal substance exposure, states might consider establishing incentives to implement such protocols.

Beyond direct incentives, legislators can raise the profile of prenatal substance exposure through the mechanisms mentioned at the beginning of this article. Could that be sufficient in itself to induce more hospitals to establish protocols? Zellman and her colleagues are now analyzing hospital staff questionnaire results in conjunction with information on state laws to determine if state actions are associated with the likelihood of a hospital's having a protocol. ■

RAND is a nonprofit institution that helps improve policy and decisionmaking through research and analysis. The **Drug Policy Research Center**, established in 1989, is supported by The Ford Foundation, other foundations, government agencies, corporations, and individuals.

Visiting Scholar: Peter Homel

The Drug Policy Research Center hosts scholars from other institutions to take advantage of different experiences and outlooks and to provide a means of sharing RAND research with others. This past year, the Center hosted Peter J. Homel, director of the Crime Prevention Division in the Attorney General's Department, New South Wales, Australia. Mr. Homel visited RAND on a Fulbright scholarship. While here, he collaborated with DPRC researcher Patricia Ebener on an effort to develop policies that Santa Barbara neighborhoods could use in controlling alcohol and drug abuse. ■

Visiting Scholar Peter Homel from the Attorney General's Department in New South Wales, Australia

New Projects

Are the Media to Blame for Teen Drug Use?

In an effort to explain the growing popularity of illicit drugs among teenagers during the 1990s, some have placed blame on the media for glamorizing drug use and playing down the harm drugs cause. The DPRC undertook a pilot project to identify evidence relevant to this theory and to indicate directions for further research.

Eric Larson searched on-line databases describing films released in the United States, popular magazines, and books. He found that films devoted principally to drugs or drug rehabilitation have over the past 25 years amounted to only 1 to 2 percent of the total number of films released, and no upward trend has been observed during the '90s. About 10 to 15 percent of movies released portray drug use or have drug content, according to the rating system established by the Motion Picture Association of America. The vast majority of those are rated "R"—off limits to adolescents unaccompanied by adults. As for magazines, *People* has published about 20 articles a year dealing with marijuana, with no recent upsurge in frequency. The percentage of articles in *Rolling Stone* mentioning marijuana use has shown an upward trend during the 1990s, though it has averaged less than 10 percent.

Larson concluded that there was little evidence to support the hypothesis that the media played a central role in the upsurge in teenage drug use in the 1990s. It would be particularly difficult to isolate media influence from the plethora of other potential factors affecting teen drug use. In the early 1990s, for example, while the trend of glamorizing drug mentions in the media was essentially flat, presumably monitory mentions of drugs by the nation's leaders in the White House and on Capitol Hill were dropping precipitously.

To better understand the influence of the media, Larson proposed more-comprehensive analysis of mentions of drugs in the media and of teens' exposure to those mentions (both in general and by subgroup). He also suggested study of individual-level factors associated with acceptance or rejection of antidrug messages.

ALERT Plus: Helping High School Students Resist Drugs

Responding to the growing national problem of adolescent drug use and to the failure of previous programs to curb it, the Conrad N. Hilton Foundation asked RAND in 1983 to identify promising strategies to address the problem. With further support from the Foundation, a RAND team led by Phyllis Ellickson designed a drug-use-prevention program embodying the preferred strategy. The new program was called Project ALERT (for Adolescent Learning Experiences in Resistance Training).

Project ALERT was tested in seventh- and eighth-grade classrooms in California and Oregon. It was found to prevent the initiation of marijuana use among students who had not already begun smoking marijuana or cigarettes and to reduce cigarette smoking among those who had experimented with tobacco.[1] The curriculum, which was equally effective in low- and high-minority schools, has since been implemented in all 50 states. A companion program, ALERT Plus, is now being created to help teens resist the increasing social pressures of high school.

Project ALERT and ALERT Plus are based on the theory that adolescents turn to drugs because of social influences (peers, media, etc.) and their own desires to appear more

mature or independent. The ALERT curriculum thus was designed to motivate young people to avoid drug use and to help them identify and resist these pressures.

ALERT Plus is designed to respond to the developmental changes occurring during the high school years. These include expanded social pressures to use drugs. As they grow, young people acquire more diverse social networks and greater exposure to unsupervised social settings, such as parties and dates, and to peers who use substances regularly. They are more likely to experience emotional distress, anxiety, or depression and to turn to drugs in an effort to cope with these problems.

Five lessons are being designed for the ninth grade and three each for the tenth and eleventh grades. The curriculum will target marijuana, cigarettes, and alcohol, plus less prevalent substances such as cocaine or other stimulants, depressants, hallucinogens, and heroin. It will continue to focus on developing and reinforcing motivations not to use drugs. In addition to helping students develop effective resistance skills, the program will also include techniques for quitting drug use, for dealing with particular high-risk situations (such as pressure to drink and drive), and for coping with stress. Parents will participate through home learning activities. The ALERT Plus evaluation is now under way in 48 South Dakota school districts and involves 7,000 students. It is funded by the National Institute on Drug Abuse and led by DPRC researchers Doug Longshore and Phyllis Ellickson.

It is important to recognize that, to be successful, drug-use-prevention programs like ALERT and ALERT Plus need not turn every drug-using youth into a lifetime abstainer. It may be sufficient that they delay experimentation by nonusers, delay regular use by experimenters, and get users to cut back. Such delays and reduction mean less likelihood of tragic consequences during the years when people are least able to judge and cope with the implications of substance use. They also translate into lower numbers of users and experimenters over the long term.

[1]See Phyllis L. Ellickson and Robert M. Bell, *Prospects for Preventing Drug Use Among Young Adolescents*, RAND, R-3896-CHF, 1990 (also reported in Ellickson and Bell, "Drug Prevention in Junior High: A Multi-Site Longitudinal Test," *Science*, Vol. 247, pp. 1299–1305, March 16, 1990).

Evaluating Operation Drug TEST

Many defendants facing federal charges are released from custody after arraignment to await trial. In the interim, some of these defendants are rearrested on new charges; others do not show up for their trial. Working from the hypothesis that drug use is associated with such misconduct, the federal government has initiated Operation Drug TEST (for Testing, Effective Sanctions, and Treatment). In districts implementing this program, all federal pretrial defendants will be tested for drug use. Testing is to occur at arrest or as soon as possible thereafter, and results are to be made available to judges determining pretrial conditions. Judges will have authority to require that a defendant on pretrial release be monitored for continued drug use. The National Institute of Justice is sponsoring an evaluation of Operation Drug TEST by a research team from UCLA and the DPRC led by Douglas Longshore and Susan Turner. The evaluation has four objectives:

- Describe key program characteristics and implementation and identify barriers to implementation. This process assessment will be carried out in the 24 federal districts implementing TEST, most of which are in the Southeast and Midwest. It will provide information about whether the program was implemented as expected and what modifications were made to allow it to reach its intended operational level.
- Describe the program's effects on the adjudication system and defendant population and identify contextual factors influencing those effects. Here, the evaluators are interested in changes in the number of drug screens and confirmations, frequency of detention, conditions of release, plea-bargaining patterns, rearrests, time to disposition, and resources expended. They are also interested in changes in the types of drugs detected and in the proportion of incoming defendants drug-free. Finally, they are interested in how all these effects are conditioned by local treatment and detention capacity and drug-use epidemiology. This impact assessment will be conducted in 10 of the implementing districts.
- Describe defendant compliance, drug use, recidivism, and functioning and determine how these outcomes vary with drug-use and criminal histories and other defendant background characteristics. In this outcome assessment, evaluators hope to learn whether the program has the effects on defendants that motivated its initiation. The assessment will be carried out to some degree in 10 districts and in depth in two.
- Estimate the program's cost-effectiveness. Drug testing is expensive. The program may be effective in achieving its goals, but the evaluators will collect cost data and determine whether the program achieves its goals as economically as available alternatives might.

New People

This past September, the DPRC welcomed Martin Iguchi as its new codirector. Martin is an experimental psychologist with research interests in drug abuse, behavioral pharmacology, and HIV/AIDS. He has published copiously, served on committees advising federal agencies, and is active in citizens' groups concerned with substance abuse and AIDS. Martin's research on drug treatment and HIV/AIDS has earned him a national reputation, and we are extremely pleased to have recruited him to head the DPRC. He joins Audrey Burnam, who continues in her codirector role. We greatly appreciate the leadership of Barbara Williams, founding codirector of the DPRC, who stepped in again to help lead the Center while we were conducting the national search that ultimately brought Martin to RAND. She will continue to assist us in planning and resource development. We also welcome the following new associate-level staff to RAND and our DPRC efforts:

- Andrew Morral is a clinical psychologist with an interest in the nature of addiction and its treatment. He continues to collaborate with Martin Iguchi in the examination of positive reinforcement as a means of moving methadone maintenance and detoxification clients toward lifestyles free of illicit drugs.
- Lisa Jaycox is a clinical psychologist interested in the treatment of substance abuse in adolescents and in the interplay between trauma and substance abuse. She is currently studying counties' decisionmaking regarding the placement of adolescents.
- Eric Larson is a policy analyst with expertise in the analysis of public opinion and the media. He has conducted a pilot study on the relationship between drug use and the media and other aspects of popular culture and is planning further work in that area.
- Suzanne Wenzel is a community psychologist interested in the health needs and psychosocial characteristics of impoverished women. She is developing measures to aid in monitoring treatment process and client outcomes for Phoenix House.

The new perspectives, research, and energy of these staff members greatly enrich the intellectual and collegial environment of the DPRC.

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New Publications

Burnam, M. Audrey, et al., *Review and Evaluation of the Substance Abuse and Mental Health Services Block Grant Allotment Formula,* RAND, MR-533-HHS/DPRC, 1997. (Summary available in *Improving Block Grant Allocation Formulas: More Refined Measures Would Shift Substance Abuse Funds to Smaller, More Rural States,* RAND Drug Policy Research Center Research Brief, RB-6006, 1997.)

Suggests a way to improve the formula for allocating federal block grants for substance abuse treatment across states. The improved formula would make the allocation more responsive to the need for services and their cost. Implementing the new formula would shift funds from urban to rural states. The need- and cost-driven approach is also applied to allocating mental-health service grants and is recommended for application to other block grant programs.

Caulkins, Jonathan P., "Is Crack Cheaper Than (Powder) Cocaine?" *Addiction,* Vol. 92, No. 11, pp. 1437–1443, 1997. (RAND Reprint, RP-671.)

Compares retail prices for crack and powder cocaine for 14 U.S. cities. Finds that, on average, crack is neither more nor less expensive per pure unit than powder cocaine. Any differences are not large relative to variation in prices of both forms of cocaine between cities and over time. A belief that crack is cheaper than powder cocaine has been used to explain why U.S. drug problems worsened in the 1980s. Other explanations must now be sought.

Caulkins, Jonathan P., "Modeling the Domestic Distribution Network for Illicit Drugs, *Management Science,* Vol. 43, No. 10, pp. 1364–1371, 1997. (RAND Reprint, RP-679.)

Presents a simple economic model of a drug dealer's decision about how many customers to supply. The model relates the number of customers to the price markup from one

distribution level to the next and the ratio of selling costs to product costs. Running the model allows inference of domestic-distribution-network characteristics from more readily observable market characteristics—thereby allowing insight into how drug control interventions might work.

Caulkins, Jonathan P., and Peter Reuter, "Setting Goals for Drug Policy: Harm Reduction or Use Reduction?" ***Addiction,*** **Vol. 92, No. 9, pp. 1143–1150, 1997. (RAND Reprint, RP-649.)**

Seeks to inform the debate about the relative merits of use reduction and harm reduction as goals of drug control policy. Contributes to more precise definitions and assesses quality of measures. Recommends a clear national goal, i.e., to minimize the total harm associated with drug production, distribution, consumption, and control. Suggests that reducing use be seen as a principal means of attaining that end.

Ellickson, Phyllis, Hilary Saner, and Kimberly A. McGuigan, "Profiles of Violent Youth: Substance Use and Other Concurrent Problems," ***American Journal of Public Health,*** **Vol. 87, No. 6, pp. 985–991, 1997.**

Examines the prevalence of various violent behaviors among high-school-age adolescents, the association of teenage violence with other public-health problems, and gender differences in violence. Finds that more than half of a diverse sample of teenagers had in the past year engaged in actions that were in some sense violent, that violent youths are more likely to be substance abusers or have other serious problems, and that these patterns vary by gender.

Iguchi, Martin Y., Mark A. Belding, Andrew R. Morral, Richard J. Lamb, and Stephen D. Husband, "Reinforcing Operants Other Than Abstinence in Drug Abuse Treatment: An Effective Alternative for Reducing Drug Use," ***Journal of Consulting and Clinical Psychology,*** **Vol. 65, No. 3, pp. 421–428, 1997.**

Examines the effectiveness of three different strategies to reduce illicit drug use among methadone recipients. Finds that the most effective strategy is to reinforce completion of an individually calibrated sequence of tasks designed to promote a lifestyle incompatible with drug use. Alternatives were reinforcing attendance at more traditional counseling sessions and reinforcing abstinence as measured through urinalysis.

Iguchi, Martin Y., and Donald A. Bux, Jr., "Reduced Probability of HIV Infection Among Crack Cocaine-Using Injection Drug Users," ***American Journal of Public Health,*** **Vol. 87, No. 6, pp. 1008–1012, 1997.**

Examines in greater detail the authors' previously reported finding that crack use among injection drug users is associated with lower levels of HIV infection. Rules out various obvious behavioral and demographic differences between crack users and non-crack users as contributing factors. Suggests social networks be examined as a potential factor protecting crack users.

MacCoun, Robert, and Peter Reuter, "Interpreting Dutch Cannabis Policy: Reasoning by Analogy in the Legalization Debate," ***Science,*** **Vol. 278, pp. 47–52, October 3, 1997. (RAND Reprint, RP-657.)**

Uses the Dutch depenalization and de facto legalization of cannabis to highlight the strengths and limitations of reasoning by analogy as a guide for projecting the effects of relaxing drug prohibitions. While the Dutch case and other analogies have flaws, they appear to suggest that growth in the population using drugs (or at least marijuana) is more strongly associated with readier commercial access than with reductions in criminal penalties per se.

Morral, Andrew R., Martin Y. Iguchi, Mark A. Belding, and Richard J. Lamb, "Natural Classes of Treatment Response," ***Journal of Consulting and Clinical Psychology,*** **Vol. 65, No. 4, pp. 673–685, 1997.**

Examines an approach to improving the measurement of treatment effectiveness in methadone maintenance clients. The approach entails cluster analysis of individuals' treatment response profiles to identify classes of response, such as "improving," "stable-poor," "stable-good," and "deteriorating." The method should aid in detecting treatment effects and optimal patient-treatment matches and in specifying predictors of treatment outcome.

Murphy, Patrick, ***Coordinating Drug Policy at the State and Federal Levels,*** **RAND Drug Policy Research Center Research Brief, RB-6005, 1997.**

Describes how and why some agencies involved in drug policy can coordinate their efforts while others have not or cannot. In particular, examines the effects that organizational structure, resources, trust, and political saliency have on improving interagency coordination. Recommends that individuals or committees charged with coordinating efforts do so strategically, focusing their efforts on small sets of agencies for which the potential benefit from coordination is high.

Reuter, Peter, "Why Can't We Make Prohibition Work Better? Some Consequences of Ignoring the Unattractive,"

continued on page 12

continued from page 11

***Proceedings of the American Philosophical Society,* Vol. 141, No. 3, pp. 262–275, September 1997. (RAND Reprint, RP-658.)**

Documents the punitive nature of U.S. drug policy and its limited effect on drug use, together with its side effects of divisiveness and intrusiveness. Claims that in Europe, prohibition policies are less punitive and that drug use there is less of a problem than in America. Concludes that social factors may matter more than policy, but argues that effective policy cannot be formulated without more research on policy consequences.

Zellman, Gail L., Peter D. Jacobson, Robert M. Bell, "Influencing Physician Response to Prenatal Substance Exposure Through State Legislation and Work-Place Policies," *Addiction,* Vol. 92, No. 9, pp. 1123–1131, 1997. (RAND Reprint, RP-669.)

Combines legal analyses and data from a national physician survey to examine the impact of state laws and workplace policies on physician response. Finds that physicians are not usually aware of laws and policies. However, when they are, some physician behaviors are influenced. When a physician believes that a workplace protocol on prenatal substance exposure exists, he or she is more likely to respond in case vignettes portraying such exposure. The findings suggest that actions by state legislatures may increase physician response.

In Remembrance

C. Peter Rydell (1940–1997)

We are saddened by the death of our colleague C. Peter Rydell in October 1997. During his long struggle with cancer, he never lost his enthusiasm for life and for research. Peter's superb systems-analysis and modeling skills formed the basis for several of the DPRC's most influential studies (e.g., *Controlling Cocaine, Mandatory Minimum Drug Sentences*), and his contributions were instrumental in defining the DPRC's value and uniqueness. Indeed, Peter's clear, rigorous approach to the analysis of societal costs, benefits, and savings was a hallmark of RAND research in multiple areas of public policy concern over a period of almost 30 years. His insight, optimism, and generosity have been an inspiration to us all. Personally as well as professionally, he is greatly missed.

CP-201 (6/98)