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# 1998

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# ANNUAL REPORT

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## on Drug Use Among Adult and Juvenile Arrestees



Arrestee Drug Abuse Monitoring Program

*A Program of the National Institute of Justice  
Research Report*

**U.S. Department of Justice**  
**Office of Justice Programs**  
810 Seventh Street N.W.  
Washington, DC 20531

**Janet Reno**  
Attorney General

**Raymond C. Fisher**  
Associate Attorney General

**Laurie Robinson**  
Assistant Attorney General

**Noel Brennan**  
Deputy Assistant Attorney General

**Jeremy Travis**  
Director, National Institute of Justice

**Office of Justice Programs**  
World WideWeb Site  
<http://www.ojp.usdoj.gov>

**National Institute of Justice**  
World WideWeb Site  
<http://www.ojp.usdoj.gov/nij>

**ADAM Program**  
World WideWeb Site  
<http://www.adam-nij.net>

**Justice Information Center**  
World WideWeb Site  
<http://www.ncjrs.org>

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**U.S. Department of Justice**  
Office of Justice Programs

**National Institute of Justice**  
Jeremy Travis  
Director

K. Jack Riley, Ph.D.  
ADAM Director

NCJ 175656

The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, Bureau of Justice Statistics, Office of Juvenile Justice and Delinquency Prevention, and the Office for Victims of Crime.

# From the Director of NIJ

For NIJ's Arrestee Drug Abuse Monitoring (ADAM) program, 1998 was a year of growth and improvement. As this second annual report on ADAM demonstrates, the program increased its methodological rigor, moved further toward a system for locally-initiated research, strengthened its role as a research and policy platform, and expanded its publications and dissemination of data and findings.

The ADAM network now exists in 35 communities across the country — 12 sites added last year and 23 from ADAM's predecessor, the Drug Use Forecasting (DUF) program. Last year, the program began redesigning the ADAM interview to focus more specifically on issues of interest to policymakers and practitioners. This multistage project continues, and NIJ anticipates that the new instrument will be fielded early in 2000. ADAM program staff, working with Abt Associates, have assessed the instrument from several perspectives: cognitive testing, experiments on diagnostic validity, and field tests of the interview package. When redesign and testing are completed, the new ADAM interview will allow the program to calculate the prevalence of various levels of drug dependency among arrestees, determine the need for treatment, and provide information on drug market dynamics.

In 1998, NIJ also began developing an international component — I-ADAM. Several countries have expressed interest in establishing programs modeled on ADAM. To that end, NIJ last year provided technical assistance to government organizations in Australia, Chile, England, Scotland, and South Africa to begin implementing their programs. Among other projects completed last year: an analysis of the impact of specimen handling and storage procedures on test results, an assessment of opiate testing that confirmed its ability to differentiate heroin use from use of medications containing opiate compounds, tests for metabolites and markers that indicate crack as well as general cocaine use, and a comparison of urinalysis screening kits used at ADAM sites in this country against those used in England.

As part of NIJ's efforts to improve communication of research findings to criminal justice practitioners, policymakers, and other professionals, we hosted a series of meetings on ADAM publication and communication approaches with representatives from the local, regional, and national levels. These candid discussions helped us understand their needs and preferences regarding ADAM data and information. The insights they provided are reflected in this annual report as well as the four additional drug-specific reports that accompany it.

We invite your comments about the ADAM program and its publications. You can learn more about ADAM and other NIJ research and programs by calling the National Criminal Justice Reference Service (NCJRS) at 800-851-3420 or e-mailing [askncjrs@ncjrs.org](mailto:askncjrs@ncjrs.org). We also encourage you to visit us on the Internet at <http://www.ojp.usdoj.gov/nij> or at <http://www.adam-nij.net>.

Jeremy Travis  
Director  
National Institute of Justice

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## **NIJ**

K. Jack Riley, ADAM Director

Christine Crossland

Nora Fitzgerald

Tom Hay

Natalie Lu

Gerald Soucy

Bruce Taylor

## **ABT ASSOCIATES**

Dana Hunt, Project Director

Phyllis Newton, Project Manager

Kyla Carrigan

Michael Costa

Sarah Kuck

Quentin McMullen

Carol Putnam

William Rhodes

Tom Rich

Linda Truitt

George Yacoubian

Sylvia Young

## **DBA DESIGN**

Patricia L. Blake

Pearl Jusem

Jude Menz

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# ADAM Program: 1998 Summary

This report provides an overview of 1998 findings and detailed site-by-site tables on drug use among booked arrestees.<sup>1</sup> The primary purpose of this report is to give community-specific information about drug use among the arrested population. However, in response to requests for more detailed analysis on specific drugs, we have developed four separate reports this year. These reports move away from the community level picture to assess regional, sub-group, and other issues that are evident in the trend data. For more extensive analysis on specific drugs, please consult the following reports:

- 1998 Annual Report on Cocaine Use Among Arrestees (NCJ 175657)
- 1998 Annual Report on Opiate Use Among Arrestees (NCJ 175659)
- 1998 Annual Report on Marijuana Use Among Arrestees (NCJ 175658)
- 1998 Annual Report on Methamphetamine Use Among Arrestees (NCJ 175660)

In 1998 the ADAM program conducted interviews and drug

tests with more than 30,000 recent arrestees in 35 metropolitan areas. A total of 20,716 adult males, 6,700 adult females, 3,134 juvenile males, and 434 juvenile females participated in the program during 1998. Twelve of the 35 sites (Albuquerque, Anchorage, Des Moines, Laredo, Las Vegas, Minneapolis, Oklahoma City, Sacramento, Salt Lake City, Seattle, Spokane, Tucson) were added during 1998.

This report presents both urinalysis and self-report data from program participants. Note that data on juvenile female participants are not summarized in this report because the sample sizes at each site are generally prohibitively small.

## Drug Use Among Adult Arrestees

### COCAINE

While there has been some encouraging stabilization and even declines in cocaine use among arrestees in ADAM in the last few years, cocaine is still the drug most commonly found in test results of male arrestees in 11 of the 35 ADAM sites. However, there was substantial variation in cocaine prevalence

between sites. For example, in Miami 47 percent of the adult male arrestees tested positive for cocaine, while in San Jose only 8 percent of that group tested positive. Among adult females, 67 percent tested positive in New York City compared to 10 percent in San Jose.

The percentages of persons who tested positive for cocaine declined between 1997 and 1998 in a majority of the 23 sites for which trend data are available. The median site rate of cocaine positives for males decreased from 37 percent to 36 percent between 1997 and 1998. For females, the site median is higher at 45 percent in 1997 and 41 percent in 1998. Notable percentage point decreases for cocaine positives among adult males were seen in New York City (-11), Portland (-8), St. Louis (-6), and Chicago (-4), and for females in St. Louis (-9), Portland (-8), and San Jose (-6). The largest percentage point increases for males were in Philadelphia (+10), Cleveland (+10), and Detroit (+6). For females, the largest percentage point increases in cocaine positives were in Omaha (+18), Houston (+8), and Birmingham (+8).

<sup>1</sup> Throughout this report we will refer to the number of *arrestees* or participants in the program. These figures actually represent the number of *arrests*. Since we do not retain any identifying information on each case, the counts are not unduplicated; that is, an individual may be represented more than once if he/she was arrested and sampled more than once each year.

There are two sub-groups where discouraging trends may be developing. The use of powder cocaine appears to be increasing among young adults, particularly in the Southwestern and Southern United States. This is a trend which may be masked in part by declines in self-reported crack use. Among adult females, crack use is not declining at the same pace as among males and, in fact, may be growing. These two trends are discussed more fully in the "1998 Annual Report on Cocaine Use Among Arrestees."

#### OPIATES

There has been little change in the prevalence of opiate use among ADAM arrestees or the populations who are using opiates. Only 8 of 35 ADAM sites in 1998 had more than 10 percent of their adult male populations test positive for opiates: Philadelphia (18 percent), Chicago (18 percent), Seattle (17 percent), Portland (16 percent), New York City (16 percent), New Orleans (13 percent), Laredo (11 percent), and St. Louis (11 percent). Excluding Laredo and Seattle, which are in their first year of reporting, the overall opiate-positive rates have remained relatively stable.

As has been the case in previous years, in 1998 female arrestees were more likely to test positive

for opiates than male arrestees. In 1998, male arrestees showed opiate-positive rates higher than female arrestees by at least 4 percent in only 4 sites: three veteran (Cleveland, New Orleans, and St. Louis) and one new (Laredo). In addition, opiate use remains disproportionately concentrated among older offenders (31 and older).

Use of multiple drugs continues to be a substantial problem among opiate users. Sixty-four percent of those testing positive for opiates also tested positive for cocaine, 30 percent also tested positive for marijuana, 15 percent also for benzodiazepines (Valium and other similar drugs), and 13 percent also for methadone.

For additional discussion of these and other issues relating to opiates, please obtain the "1998 Annual Report on Opiate Use Among Arrestees."

#### METHAMPHETAMINE

The addition of 12 new Western sites to the ADAM program has substantially enriched available information about methamphetamine use, which appears to be a phenomenon concentrated in that region of the country. Two of the new sites — Sacramento and Salt Lake City — join San Diego in having more than 20 percent of both the male and female arrestee

populations testing positive for methamphetamine. In addition, Des Moines, Las Vegas, and Spokane each reported more than 20 percent of their females and more than 10 percent of their males as positive for methamphetamine, findings that are similar to such places as Phoenix, Portland, and San Jose. Oklahoma City reported 8 percent of its male arrestees testing positive for methamphetamine. In other new sites such as Albuquerque, Minneapolis, and Tucson, less than 5 percent of their adult population tested positive. In Anchorage and Laredo, methamphetamine was undetectable among the arrested population.

1998 offered relatively little change over 1997 for most communities. Methamphetamine-positive percentages for males were stable across most sites, including Denver, Omaha, Phoenix, and San Jose. The most notable change came in San Diego, which has consistently been the site with the highest proportion of methamphetamine positives. Between 1997 and 1998, however, San Diego showed a drop of 6 percentage points in adult male arrestees testing positive for methamphetamine.

Methamphetamine continues to appear only sporadically outside

western ADAM sites and is showing no signs of geographic expansion within the ADAM network. Other surveillance systems such as NIDA's Community Epidemiological Work Group and the ONDCP *Pulse Check* have indicated methamphetamine problems are also found in the South and Midwest. ADAM sites in the urban centers of Atlanta, Birmingham, and St. Louis demonstrate little or no methamphetamine use among the recently arrested population. More in-depth analysis of methamphetamine use is presented in the "1998 Annual Report on Methamphetamine Use Among Arrestees."

#### MARIJUANA

Marijuana use continues to predominate among young adult offenders, particularly males. None of the 35 sites report less than 20 percent of the adult male samples testing positive, and one site (Oklahoma City) reports that 53 percent of its adult male sample tested positive for marijuana. The majority of sites report consistent levels of around a third of adult male arrestees with only a few reporting any notable changes since 1997. Houston reports a marijuana-positive increase of 12 percentage points for adult males, for example,

while another Southern site, Atlanta, reports a decrease of 10 percentage points among males.

The majority of marijuana use is concentrated among the younger arrestees. For example, 87 percent of the 15- to 20-year-old males in Oklahoma City tested positive for marijuana. In 9 of the 35 sites, over 70 percent of the 15- to 20-year-old male arrestees tested positive for marijuana. Overall, the 1998 levels for males are approximately the same or higher than reported in 1997, with the exceptions of Atlanta, Birmingham, Chicago, Cleveland, Omaha and San Jose. More in-depth analysis of marijuana use is presented in the "1998 Annual Report on Marijuana Use Among Arrestees."

#### USE OF AT LEAST ONE DRUG AND MULTIPLE DRUGS

In 15 sites, about two-thirds of the adult arrestees and more than half of the juvenile males arrestees tested positive for at least one drug. Among adult males, marijuana was the drug most frequently detected in 22 of the 35 sites. Cocaine was the drug most likely to be detected in 11 sites. Among females, cocaine was the drug most frequently detected in 28 of 32 sites. Methamphetamine was

the most frequently detected drug in the three sites for females. Among juveniles, marijuana was far and away the most frequently detected drug in sites collecting juvenile data.

Multiple drug use remains an endemic problem among arrestees. In Philadelphia, more than 40 percent of the males and nearly 30 percent of the females tested positive for more than one drug. In Seattle, almost 45 percent of the females tested positive for multiple drugs. Among certain types of drug users, such as opiate users, there is a strong tendency toward multiple drug use. More than three-fourths of the individuals who tested positive for opiates also tested positive for another drug.

#### Drug Use Among Juvenile Arrestees

Among juvenile arrestees, marijuana is overwhelmingly the primary drug of use. Ranging from a low of 35 percent in San Jose to a high of 64 percent in Phoenix, on average half of the juvenile males tested positive for marijuana. By contrast, anywhere from 2 percent (St. Louis) to 15 percent (Los Angeles) test-

ed positive for cocaine. San Diego recorded the highest fraction of its juveniles positive for methamphetamine, about 12 percent. Opiate use remains very low among juveniles; no site recorded more than 2 percent of its juveniles as positive for opiates.

Generally, those male juvenile arrestees that are in school are less likely to test positive for drugs than juveniles not in school. This is particularly the case for the harder drugs of cocaine and methamphetamine, although it also holds for marijuana. In Los Angeles, for exam-

ple, 23 percent of the boys not currently attending school tested positive for cocaine, compared to 13 percent of the boys currently attending school; nearly 10 percent of the boys not in school tested positive for methamphetamine, compared to 3 percent of the boys in school.

# ADAM Program: Development and Methodology

In 1997 the National Institute of Justice (NIJ) unveiled the Arrestee Drug Abuse Monitoring (ADAM) program. ADAM replaced the Drug Use Forecasting (DUF) program, which had operated since 1987. Although the ADAM program is modeled after DUF, there are several substantive areas that distinguish the two programs, including:

- The ADAM program is supported by substantial resources for training and quality control to ensure that comparable data collection methods are used in each site.
- ADAM will select facilities within a county and arrestees for interview within a facility on a probability basis, and will track arrest activity during the data collection periods in each of the sites. These steps improve the ability to make estimates using the ADAM data and allow assignment of confidence intervals to such estimates.
- The interview instrument has been revised and it substantially improves the ADAM program's ability to produce policy-relevant treatment and law enforcement data. It also includes improved links to other national drug data collection programs, such as the National Household Survey on Drug Abuse and the Treatment Episode Data Set.
- Pending funding approvals, each ADAM site will annually conduct outreach data collection. Outreach is supplemental data collection in areas and jurisdictions beyond the site's boundaries, or in sub-populations found within the site's catchment area.
- The ADAM program incorporates a specific mechanism — Local Coordinating Councils — by which community planners can begin to integrate ADAM data into criminal justice, public health, treatment, and other service planning.

This report summarizes some of the more important technical and operational changes that have occurred in the program over the past 2 years. It serves as interim documentation of programmatic changes until a *Program Focus* detailing the ADAM program's evolution is published in 2000.

## Program Overview

In principle, ADAM is a simple program with two fundamental components. The first is a questionnaire, administered by a trained interviewer to an arrestee in a booking facility within 48 hours of arrest. The second is a urine specimen collected from the respondent that is used to corroborate claims about recent drug use. Together these two

techniques — interviewing and drug testing — provide a powerful platform from which communities can assess the dimensions of their particular local substance abuse problems; evaluate, in a low-cost manner, programs and interventions that serve or target the criminally active population; and plan policy responses that are appropriate for that population. As one of the only regular sources of information that communities have about local drug trends, ADAM is an invaluable aid to community planning, monitoring, and resource allocation.

Although most ADAM sites are referred to by the name of the largest city in the area, the boundaries (or catchment area) of most sites are substantially larger than the named city. In most cases, the catchment area is the county. Some states, such as Alaska, do not have counties or comparable units of government. In those cases, the catchment area is defined by the city or municipal boundaries. In addition, the New York City site includes the five boroughs of the city and thus five counties.

Entire counties are used as catchment areas whenever possible for several reasons. First, county populations are often substantially different from city populations along many demographic measures, including race, employ-

ment, and income. Thus, collecting data at the county level can produce a more varied population than that found within city limits. Second, many jurisdictions have structures under which the largest city will operate a jail of its own and the county sheriff will operate a jail for all of the smaller cities and towns in the county. Often, then, it is a relatively simple task to expand data collection to the county level. Finally, counties are easier geo-political boundaries to track, particularly with respect to the processing of arrestees. The population in city jails tends to change, both because of annexations and population growth, but also because cities may start and stop jailing service contracts with smaller surrounding municipalities depending on jail capacity and other factors. County boundaries tend to be more fixed, with little movement of arrestees across county borders. Thus, counties are an easier unit of analysis to monitor over time. For many sites, catchment areas were gradually expanded to the county level during 1998, so that for sites that were not previously operating at the county level, the catchment area may have changed during the 1998 data collection year. In certain complicated sites with multiple jails, sites gradually increased the number of facilities where they conducted data collection as they added interview staff

and gained access to additional jails. Changes in the catchment area are reported in the “Notes” section that accompanies the trend graphs on all site pages.

## Data Collection Process

Sites collect data on specific populations (adult males, adult females, juveniles) for a two-week period, four times a year. Data collection is done quarterly for several reasons. Perhaps most importantly, quarterly data collection assists the program in maintaining access to jail facilities. Quarterly collection is frequent enough that jail facility staff become familiar with program operations, but not so frequent that the data collection process becomes intrusive. In addition, because continuous data collection is not practical due to the interference it would generate, quarterly data collection ensures that interviewers get frequent opportunity to hone their skills in a live interview environment. Quarterly collection also helps account for potential seasonal variations in arrest and crime patterns that occur in some sites. One byproduct of quarterly data collection is that the process generates new information more frequently than many other national data collection programs. Quarterly collection allows policymakers and analysts to view trends as

they develop, potentially permitting earlier intervention against problems.

During data collection periods, a random selection of arrestees is approached and asked to participate in the study. Prospective respondents are read an informed consent statement, which notes that no identifying information will be requested and that a urine specimen will be requested at the end of the interview. Bar code strips are placed on both the interview form and the urine specimen bottle to ensure that the interview form is matched to the correct urine specimen. In some cases where the facility staff permits it, a small incentive, such as a candy bar, is given to respondents that complete the interview.

In most sites, more than 80 percent of the individuals approached agree to the interview and, of those, more than 80 percent agree to give the urine specimen. The fact that the program does not collect identifying information is an essential component to achieving these high response rates. With the knowledge that the interview is anonymous and confidential, respondents feel more confident in giving honest answers about sensitive topics. In addition, the ADAM program ensures that

interviewers have no potential conflicts of interests with the respondents. This means that police officers, whether off-duty or on, court workers, and pre-trial services staff are not allowed to be ADAM interviewers. Their job-related duties present potential conflicts of interest with information that may be disclosed during the interview process. Equally importantly, respondents are less likely to want to talk to interviewers they see working around the jail in other capacities or they encounter during pre-trial release interviews.

At the conclusion of the interview and the collection of the urine specimen, site staff may ask additional questions of the respondent. It is important that the ADAM interview process be completed prior to asking supplemental questions so that all ADAM arrestees are exposed to the same stimulus and interviewed under the same circumstances. These supplemental questions, called addenda, are usually oriented around a specific topic that policymakers want to address. Examples of addenda administered in the past include:

- acquisition of and attitudes about firearms (see Scott H. Decker, Susan Pennell, and Ami Caldwell, "Illegal Firearms: Access and Use by Arrestees," NCJ 163496);

- patterns of acquiring and using crack, powder cocaine, and heroin (K. Jack Riley, "Crack, Powder Cocaine, and Heroin: Drug Purchase and Use Patterns in Six U.S. Cities," NCJ 167265); and
- patterns of acquiring and using methamphetamine (see Susan Pennell, Joe Ellett, Cynthia Rienick, and Jackie Grimes, "Meth Matters: Report on Methamphetamine Users in Five Western Cities," NCJ 176331).

Reports from these studies may be obtained by calling the National Criminal Justice Reference Service at 800-851-3420 and referring to the "NCJ" number. Examples of addenda under development or currently going to the field include:

- definitions of gang membership and participation in gang activity (in cooperation with researchers at the University of Missouri-St. Louis); and
- attitudes about and patterns of sexually risky behaviors (in cooperation with the Centers for Disease Control and Prevention, National Center for HIV, STD, and TB Prevention).

Training is an important component of the ADAM program. In 1998 each site received training

using a standard curriculum that addresses basic and advanced interview skills and site operational procedures. Interviewers are required to complete and demonstrate competence in basic interviewing skills as well as an understanding of project operational procedures. Their continued competence is monitored through quarterly evaluation of individual interviewers and site error rates. In January 2000, ADAM will field a new interview instrument that will focus on three policy areas: drug use; treatment needs and dependency; and drug markets. See "ADAM Adult Interview Instrument" (page 12) for more details about the new instrument.

## The Drug Test

Drug testing is an important component of the ADAM program because it lets analysts know, with a high degree of certainty, whether a person has used drugs recently. In this report, we report on those persons testing positive by urinalysis for any drug. ADAM is the only national drug data program that utilizes drug testing. The ADAM program uses the EMIT™ (Enzyme Multiplied Immunoassay Testing) system to screen for the presence of drugs in urine. The testing is done at a laboratory and the specificity and accuracy are, for

# Drug Testing and the ADAM Program

The standard ADAM testing panel includes the following ten drugs:

- amphetamines
- barbiturates
- benzodiazepines
- cocaine
- marijuana
- methadone
- methaqualone
- opiates
- PCP
- propoxyphene

For cases in which a specimen screens positive for amphetamine, the specimen is subjected to confirmation testing to detect whether a specific form of amphetamine, methamphetamine, was used.

In some cases, the EMIT™ test detects the drug itself, while in other cases the assay detects the metabolites of the drug. Metabolites are compounds that result from the breakdown of a drug by the body. A list follows that details the drugs for which the ADAM program tests. The specific drugs or metabolites that the EMIT™ process detects are listed as well.

It is important to note that in some cases the EMIT™ test is very specific to a drug, while in other cases, it is general to a class of drugs because it detects multiple drug metabolites. For example, there are specific metabolites for the EMIT™ marijuana assay. However, there is no specific EMIT™ heroin assay. Instead, EMIT™ detects metabolites common to both heroin and codeine. In other words, EMIT™ is general to the opiate group, not specific to heroin. For cases in which a screen is indicative of a class of drugs, but not a specific drug, a confirmation test can be done. Such is the case with methamphetamine among the amphetamine class of drugs.

## Amphetamines

The drug detection period for amphetamines is 2 to 4 days. A positive EMIT™ screen result indicates the presence of one or more drugs in the amphetamine group. Drugs that will result in an amphetamine positive screen include:

- amphetamine (d, d&l, l forms)
- methamphetamine (d, d&l, l forms)
- methylenedioxyamphetamine (MDA)
- methylenedioxymethamphetamine (MDMA)

Any screen that is positive for amphetamine is subjected to GC/MS confirmation for methamphetamine. This is necessary because when methamphetamine is administered, some of the drug is metabolized into amphetamine, its major active metabolite, and both of these drugs will appear in the urine. Without confirmation of the screen, it cannot be determined whether amphetamine or methamphetamine was used. Policymakers are interested in separately tracking

amphetamine and methamphetamine use. In the United States, most amphetamine use represents legal or illegal use of manufactured products containing amphetamines (e.g., diet pills). In contrast, most methamphetamine use represents consumption of an illegal substance trafficked on the black market.

## Barbiturates

The drug detection period for barbiturates is 3 days. A barbiturate screen detects drugs belonging to the barbiturate drug group. A positive screen indicates the presence of any metabolite of the drug group. The EMIT™ screen process is most efficient at detecting secobarbital in the urine. However, the assay will detect other commonly encountered barbiturates, depending on the concentration of drug present, including butalbital, pentobarbital, alphenal, amobarbital, aprobarbital, barbital, cyclopentobarbital, 5-ethyl-5-(4-hydroxyphenyl) barbituric acid, butabarbital, phenobarbital, talbutal, and thiopental.

## Benzodiazepines

The drug detection period for benzodiazepines is up to two weeks. Most benzodiazepines are extensively metabolized in the liver and excreted in the urine as metabolites. The EMIT™ assay is best at detecting oxazepam, a common metabolite of benzodiazepines. However, the assay shows positive for many other metabolites of benzodiazepines, such as the following compounds: alprazolam, bromazepam, chlordiazepoxide, clobazam, clonazepam, clorazepate, clobazepam, demoxepam, N-desalkylflurazepam, desmethyldiazepam, diazepam, flunitrazepam (Rohypnol), flurazepam, halazepam (Halcion), a-hydroxyalprazolam, 1-N-hydroxyethylflurazepam, a-hydroxytriazolam, ketazolam, lorazepam, medazepam, midazolam, nitrazepam, norchlor-diazepoxide, prazepam, temazepam, tetrazepam, and triazolam. Common names of prescription drugs are given in parentheses.

## Cocaine

The drug detection period for cocaine is 2 to 3 days. Cocaine is extensively metabolized by liver and plasma esterases, and only 1 percent of the dose is excreted in the urine unchanged. Unless a person has consumed very high doses of cocaine very recently, the EMIT™ test is unlikely to find cocaine itself. However, a metabolite of cocaine, benzoylecgonine, is easily identified in a urine specimen. Therefore, the EMIT™ assay was specifically designed to detect benzoylecgonine, the major metabolite of cocaine. It also detects cocaine, ecgonine, and methyl ester if they are present in sufficiently high concentrations.

## Opiates

The drug detection period for opiates is 2 to 3 days. Opiates are a broad class of drugs that include heroin, morphine, codeine, and semisynthetic derivatives of morphine. Heroin is rapidly broken down first to 6-monoacetylmorphine, which is then metabolized to morphine in the body. Both heroin and 6-monoacetylmorphine disappear rapidly from the blood. Codeine is metabolized to morphine, the same compound as for heroin.

Because heroin and codeine all break down to morphine and the unique metabolite of heroin, 6-monoacetylmorphine disappears rapidly from the body, the EMIT™ opiate assay was designed to detect morphine and morphine's metabolites. A positive screen on the EMIT™ assay indicates only that heroin might have been used; use of other opiate drugs cannot be ruled out with the screen. The EMIT™ assay can detect the following common compounds that belong to the class of opiates:

- morphine
- morphine-3-glucuronide
- codeine, dihydrocodeine
- hydrocodone
- hydromorphone
- levallorphan

A person who has used morphine (after surgery, for example) or codeine (in a prescription pain medication, for example) might screen positive for opiates. The

ADAM program is currently conducting confirmation testing of opiate positive urine specimens to determine what fraction of these samples are positive because of something other than heroin consumption.

## PCP

The drug detection period for PCP is 3 to 8 days. The EMIT™ assay for PCP is designed to detect the following metabolites of PCP:

- phencyclidine
- N,N-diethyl-1-phenylcyclohexylamine (PCDE)
- 1-(4-hydroxypiperidino) phenylcyclohexane
- 1-(1-phenylcyclohexyl) morpholine (PCM)
- 1-(1-phenylcyclohexyl) pyrrolidine (PCPy)
- 4-phenyl-4piperidinocyclohexanol
- 1-(1-(2-thienyl)-cyclohexyl) morpholine (TCM)
- 1-(1-(2-thienyl)-cyclohexyl) piperidine (TCP)
- 1-(1-(2-thienyl)-cyclohexyl) pyrrolidine (TCPy)

All of these are metabolites that the body produces as a result of consuming PCP. Only about 10 percent of a PCP dose is excreted unchanged in the urine. About 40 percent of the material in a PCP urine specimen has not been identified.

## Methadone

The drug detection period for methadone is 2 to 4 days. The EMIT™ assay is specific to methadone. Unchanged methadone is directly detectable in the urine.

## Marijuana

The drug detection period for marijuana is up to 10 days for infrequent users and up to 30 days or longer for chronic users. Delta-9-tetrahydrocannabinol (THC) is the primary psychoactive ingredient in marijuana. THC is rapidly metabolized

by the body to a number of metabolites (approximately 30). All types of marijuana are broken down to the same metabolites. These breakdown compounds are excreted in the urine and are detectable by the EMIT™ test. Practically no unchanged THC is excreted in the urine. The primary metabolite of THC is 11-nor-delta-9-THC-9-carboxylic acid. Major metabolites detected by EMIT™ assay are listed as follows:

- 11-nor-delta-9-THC-9-carboxylic acid
- 8-beta-11-hydroxy-delta 9-THC
- 8-beta-hydroxy-delta 9-THC
- 11-hydroxy-delta 8-THC
- 11-hydroxy-delta 9-THC

Prior to 1996 marijuana was tested at the 100-nanogram level. In 1996, testing at the 50-nanogram level became the standard.

## Propoxyphene

The drug detection period for propoxyphene is 3 to 7 days. Propoxyphene is a category of drugs used for pain relief that includes the trade name drug Darvon. The EMIT™ process detects the following compounds indicative of propoxyphene use:

- propoxyphene
- norpropoxyphene

## Methaqualone

The drug detection period for methaqualone is up to 10 days. Methaqualone is extensively metabolized. Less than 1 percent of the dose is excreted as unchanged drug in the urine. The assay is designed to detect the following compounds:

- methaqualone
- macloqualone
- 3'-hydroxy-methaqualone
- 4'-hydroxy-methaqualone
- 2'-hydroxymethyl-methaqualone

most drugs, higher than 95 percent. Because the program's mission is primarily epidemiological, it is not necessary or cost-effective to confirm the presence of the drug. Confirmation gives greater accuracy, but the ADAM program only uses confirmation if it is necessary to establish the presence of a particular sub-category of a drug, or if no screening method exists. For example, the laboratory confirms specimens that screen positive for amphetamines to determine if methamphetamine was used.

## Sampling Strategy

ADAM's redesigned sampling methodology allows policymakers and planners to generalize ADAM data to all arrest and booking activity that occurs in the catchment area. Beginning in 1999, ADAM participants will represent a probability sample of adult males and females arrested and booked during the data collection period (juveniles do not yet constitute probability samples, but this issue will be addressed in 1999 and 2000). Use of probability samples provides policymakers with greater accuracy of ADAM estimates, as well as allowing them to quantify the uncertainty associated with those estimates. In addition, local policymakers will be able to report not only the proportion of arrestees testing positive for illegal drugs in their counties, but also

estimate the number of arrestees who would test positive, giving local areas a powerful tool for resource allocation and planning.

The goal set in establishing case production targets — i.e., setting sample sizes — across sites was to provide an adequate number of cases to each site to estimate the proportion of arrestees who test positive with a specified precision. Cases are sampled with known probability of selection within each 24-hour period (to capture types of cases over the entire day) and on each day of the week (to capture variation in types of cases over different days). Simple sites with a single facility in the catchment area can thus collect a random sample of arrestees, determine the proportion with the characteristic of interest (drug use, need for treatment) and, using data on the total number of arrests in the target area for the data collection period, estimate the number of arrestees with that characteristic. The standard error for estimating proportions associated with a simple site with a sample size of approximately 200 cases per quarter is approximately .035. The sampling problem is not much more complicated in sites with just a few jails. Site staff would sample arrestees from every jail, developing proportionately more cases in large jails than in small jails. In the case of a

small number of jails, the standard error associated with a given sample size would be about the same as in places with a single jail.

Sites with many booking facilities, however, have a more complex problem. To capture variation in arrestees across facilities requires that all be represented and adequate numbers of cases (representing times and days as discussed earlier) be collected. For sites with many facilities, this requires clustering or grouping them in some logical fashion. This clustering of facilities introduces what are termed “design effects,” reducing the precision of the estimates and necessitating a larger sample size. In both the simple and complex sites, the overall number of cases is determined in part by the volume of arrest activity. Sites with a smaller annual arrest figure, but numerous facilities, may in fact collect a larger proportion of their total flow than large, high volume sites.

## Local Coordinating Councils

ADAM represents an important partnership with and among local, State, and national policymakers. The National Institute of Justice provides ADAM as a flexible platform that allows policymakers to customize aspects of the program to meet specific

needs. For example, officials interested in gang activity can, in partnership with their local data collection team, append gang-related questions to the main interview instrument. This type of special study can be done on a local, regional, or national basis, depending on who has interest in the topic. In a significant departure from the DUF program, NIJ supports Local Coordinating Councils (LCCs) to assist in identifying such research needs and to assist in integrating ADAM data into local planning and policymaking

contexts. Funding for LCCs is now available and sites are preparing budgets to reflect their LCC plans.

### Next Steps

In the coming year, sites will implement the probability-based sampling procedures and the new instrument discussed earlier. These represent major enhancements to the ADAM program, allowing sites to have greater confidence that results represent their entire catchment areas and that questions of importance to policymakers

have been addressed. In addition, the President has submitted a Fiscal Year 2000 budget request that includes funds to expand ADAM from 35 to 50 sites, begin the operation of outreach data collection in sites that were established in FY 1999 and earlier, and support local-federal research partnerships. NIJ anticipates using a competitive process to add the 15 new sites. The process will be publicized through direct mailings, and the NIJ and ADAM web sites ([www.ojp.usdoj.gov/nij](http://www.ojp.usdoj.gov/nij) and [www.adam-nij.net](http://www.adam-nij.net), respectively).

# ADAM Adult Interview Instrument

In the fall of 1997, NIJ convened a panel of criminologists, treatment practitioners, evaluation specialists, law enforcement representatives, and researchers to discuss ways that a new ADAM interview instrument could be developed to address ongoing policy concerns. The panel drew several broad conclusions that have guided instrument development work. First, given resource and interview time constraints, each question on the instrument needs to serve an analytic or monitoring purpose. Second, the instrument should not try to be all things to all constituencies, but rather should focus on establishing core components that have direct utility for policymakers and practitioners. Finally, the instrument should capitalize on the ability to use addenda, or supplemental questionnaires, to address topic areas outside the core.

Development work on the new instrument began in the spring of 1998, and was oriented around assessing information needs in several broad topical areas: dependence and treatment; law enforcement; prevalence estimation; and links to other national drug data systems. Consultations were undertaken with policymakers and practitioners in these areas, and existing interview instruments in these areas were also reviewed. At the same time,

a planning time line was established for completing the instrument development process. This article provides a status report on the development process to date.

## Objectives for the New ADAM Instrument

The new ADAM instrument is designed to collect data from a probability-based sample of arrestees in each of the participating counties. The primary objectives of the new instrument are:

- to estimate the proportion and number of arrestees who use a variety of illegal drugs;
- to estimate the need for treatment and dependence on substances in the arrestee population;
- to describe drug markets in an area over time; and
- to establish links to other data sets (such as the National Household Survey on Drug Abuse and the Treatment Episode Data Set) to facilitate development of more comprehensive and integrated national estimates of drug use.

Much of the data to be collected remains the same as in prior years. The new content areas — need for treatment assessment and drug markets — were identified by the initial review panel, as well as by treatment, law

enforcement, and other representatives, as areas not adequately covered by the current instrument. In assessing need for treatment, we are developing a brief set of diagnostic questions to determine substance abuse dependency as an indicator of treatment needs. In the case of drug markets, questions will provide information on such things as how users obtain drugs, how much their use costs, and how different drugs are distributed. As these areas are new to ADAM, each was subject to more detailed validity testing than other areas of the instrument.

## Strategy for Instrument Development

With the exception of booking information and urinalysis, ADAM data collection relies primarily on self-reported data. The limitations of self-report data have been discussed repeatedly in the literature and consist basically of two problems: poor recall of events and unwillingness to reveal information. In the case of drug use behaviors, both problems confound the results. To minimize these problems several strategies were identified to assist in the instrument development process:

- using a calendar method of data collection to help respondents recall events over time with greater precision;

- creating the shortest possible dependency diagnostic and need for treatment module through validation testing;
- exploring new topical areas with focus groups consisting of active drug users who have recent arrest experience; and
- assessing the effectiveness of drafts of the new instrument as they are developed through cognitive interviews with active drug users with recent arrest experience.

## Calendar Method of Data Collection

“Calendar” or “life events” methods of data collection are designed to collect data using a visual cue (a calendar) to better characterize complex behaviors or events and to increase the accuracy of recall. As many researchers have reported, an individual’s drug abuse is dynamic in nature and most often consists of cycles of use and non-use which change over time. This makes static information about a single point in time a less useful measure of drug use than one which can capture drug use behavior over time of sufficient length to reflect cycles of use and non-use.

Problems related to memory are also addressed by the use of a cal-

endar. By placing events in real time with memory anchors relevant to the respondent, the individual is able to more clearly remember complex behaviors than if asked simply, “How often did you...?” The method operates on the assumption that events in peoples’ lives are inter-related and are remembered as such. At the start of the interview, significant “anchoring” events are placed within the structure of a calendar containing the time frame to be referenced. First, events such as holidays are placed within the calendar. Respondents are then encouraged to provide additional, more personal anchors such as birthdays, weddings, travel, and personal medical events. Typically, as the interview progresses, more events which are significant to the respondent evidence themselves and are added as anchors. The interview is then conducted by referencing the anchors when asking about events and behaviors over time, rather than referring to labels (like month names) that may be of little, or no, personal significance. The timing and utility of the calendar method in this context was explored first in focus group settings, and again in cognitive interviewing and preliminary testing of the full draft instrument.

## Dependency and Need for Treatment Module

The dependency module of the ADAM instrument has to serve two primary purposes: it needs to be accurate so that policymakers can correctly estimate the need for treatment among the arrested population and it needs to be brief because the ADAM program has only a limited amount of time with each arrestee.

Achieving a clinical diagnosis of dependency during the interview is neither necessary (the responses are confidential and information obtained during the interview cannot be used to develop individual treatment plans) nor practical (clinical dependency instruments are too long to use in the limited time available for interviewing).

The aim in developing a dependency diagnosis screen was to condense elements from longer diagnosis instruments into the shortest set of questions that would give high concordance with DSM-IV (*Diagnostic and Statistical Manual* 4th Edition, American Psychiatric Association) criteria for a diagnosis of substance dependence or abuse. Fifteen screening questions, which have been found effective in estimating probability of dependence and abuse in other populations and which are generic to a wide

range of drugs and alcohol, were considered for inclusion in the new instrument. A validity test was constructed in which responses to these 15 items were compared to responses to a longer clinical diagnostic interview, the SUDDS-IV (Substance Use Disorder Diagnostic Schedule). Hair samples were also obtained to corroborate self-report information about levels and frequency of drug use.

Data for the validity test were provided by volunteer arrestees from four different booking facilities in three different cities: Boston, Massachusetts; Tampa, Florida; and Riverside, California. The self-report data will be analyzed to determine the sensitivity (proportion of true positives correctly identified) and specificity (proportion of negative cases correctly identified as negative) of the 15 screener questions. These data are then compared with an analysis of hair samples provided by the respondents, matching the concentration of drugs found with diagnostic levels obtained. This analysis is expected to yield a subset of the 15 questions that provide a valid and reliable measure of dependence and need for treatment.

## Feasibility of New Question Areas

Topic areas such as episodes of treatment, incidents of arrest and incarceration, drug transactions, and other drug marketplace characteristics represent new content for the ADAM program. To assess how to formulate questions in these topic areas, we convened focus groups that consisted of current drug users with recent arrest experiences. Focus groups were conducted in three locations (Roxbury, Massachusetts; Brooklyn, New York; and San Diego, California) and involved a total of 70 participants. The participants were recruited by local organizations actively involved with drug users and located in areas with a high percentage of active drug users. Each local group recruited men and women who reported both current drug use and recent incidents of arrest. The recruitment of these individuals was intended to bring together participants with knowledge of illegal drug use and arrest situations. They were not intended to mirror exactly the information that would be provided by a respondent participating in an ADAM interview. The difference in environment would make it impossible for them to mimic the kind of information provided by individuals in an arrest situation. The information provided by the

focus group participants was, nonetheless, valuable in understanding the context in which the information the instrument seeks to collect exists.

The groups explored several areas targeted for inclusion in the core instrument, including 12-month calendar recall/reporting of employment, treatment, arrest, incarceration, and alcohol and other drug use; cash and non-cash drug transactions; frequency and quantity of drug purchases; and characteristics of the marketplaces in which transactions take place. The groups also provided valuable insights about users' ability to recall treatment, arrest, and drug purchase events. From the focus groups it was apparent that for certain drugs, such as heroin and crack cocaine, there are both multiple purchase per day patterns, as well as multiple use per day patterns. In one of the Brooklyn focus groups, respondents indicated that purchasing 4-6 times per day was not uncommon. Such information is crucial to collecting accurate data about total quantities of drugs obtained during transactions. In addition, it was also clear from the focus groups that characteristics of participation in drug markets change relatively rapidly as

users gain experience and as selling conditions change. Thus, questions which ask drug users to describe drug market participation over longer periods, such as a month, in effect require respondents to inappropriately “average” across diverse circumstances.

Experience with the cognitive interview phase of the new instrument development has emphasized the importance of designing the questionnaire as a discussion of interrelating topics that proceed in a logical sequence, rather than as a set of disjointed modules that have no connection to the preceding topic. The cognitive test version of the draft instrument was fielded in Boston and employed the interrelated topic structure discussed above as well as the new topic areas. Results indicate that the new structure assists the respondent in recalling many different kinds of information as the interview proceeds. For example, first discussing patterns of obtaining drugs over a given period of time enabled respondents to then fairly easily recall use patterns over that same period of time. Building (with the respondent) an overlapping history of events enables the respondent to more accurately recall information.

## Links to National Datasets

To expand the usefulness of ADAM data as much as possible, it is important that they be linked to other national datasets. For example, booking information collected on the face sheet will be used to link to UCR (Uniform Crime Report) and NIBRS (National Incident-Based Reporting System) data. New sections will offer clear links to NHSDA (National Household Survey on Drug Abuse) data for sex, age, race, Hispanic origin, education, employment, residency, marital status, and past 30-day alcohol and other drug use. The 12-month calendar will also collect information about treatment episodes which can be used to link to data regarding state-funded primary, secondary, and tertiary treatment programs contained in the TEDS (Treatment Episode Data Set). The drug transaction and marketplace characteristics section will be used to link to data contained in STRIDE (System to Retrieve Information from Drug Evidence) by collecting data regarding drug price, quantity, and unit; STRIDE data can then in turn inform the ADAM data as to levels of purity of drugs. Working in concert with these other national datasets will both increase the usefulness of ADAM data to a wider audience, as well as allow the users of ADAM data to better interpret findings.

## Summary

As of April 1999, the draft instrument will have undergone three levels of preliminary testing:

- testing of new content areas and formats in focus groups in three cities;
- validity testing of instrument subsections in three cities; and
- preliminary testing of the full draft instrument in two ADAM sites.

The full instrument will be subjected to two final peer review panels and then undergo final field testing in the last quarters of 1999. All ADAM sites will begin using the new instrument in the first quarter of data collection in 2000. Toward the conclusion of 1999, a process will be established for re-design of the juvenile interview instrument.

The original DUF/ADAM instrument was limited to basic data on drug use and characteristics of a purposive sample of arrestees over time. The new instrument offers the opportunity to collect information not previously available to policymakers through DUF/ADAM. It is tempting, however, to forget the limitations inherent in the ADAM data collection setting. Only a small subset of what we want to know about the arrestee popula-

tion can be addressed in the instrument. Interview time is limited and certain types of questions cannot be asked in a setting where extensive development of rapport is not possible. Any new instrument must ultimately work within these boundaries. So that

while a new instrument could be wide ranging in scope, if it is too long, too complex, or too threatening, it is useless in this context. Therefore, our overall goal is to determine the extent of drug use in the arrestee population, in specified counties, for the time

period of data collection, while providing as much corollary information about those users as is reasonable in a 20- to 30-minute interview in the holding facility setting.