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Efficient Drug Testing: Addressing the basic Issues

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Abstract

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KEYWORDS: drug, testing, use

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I. Introduction

Urine drug testing has become very popular. It has been suggested that such testing is necessary because of the widespread abuse of drugs that affects health, safety, and performance. The sudden increase in demand for drug testing has led to inadequate testing and the questionable interpretation of results. The questions which follow highlight some of the problems with urine drug testing programs.

II. Why is Urine Drug Testing so Important Now? Has the Drug Problem Become More Serious?

The attention recently given to drugs seems to suggest that the drug problem has changed dramatically. What facts are available to substantiate the need for increased emphasis on this perennial problem?

Although the use of drugs was greater in the '70's, it appears that the advent of a presumptive screen for marijuana metabolites initiated the testing demands of the '80's. Similar methods for some of the other drugs of abuse were available in the early '70's. For some reason this country is going to war on all people to find the small minority who use drugs excessively.

The deaths of two athletes in the summer of 1986 have been cited as evidence that drug testing is needed. Testing, it is suggested, might have prevented these deaths. Many transportation accidents have been blamed on "drugs" when alcohol was the drug involved or when close scrutiny of the facts revealed that there were other causes for the accidents.[1] There is no evidence that drugs other than alcohol are involved in a significant number of accidents. The number of deaths attributed

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1. McBay, *Drug Concentrations and Traffic Safety*, 2 ALCOHOL, DRUGS, AND DRIVING 51 (1986). Control of alcohol and drug use in railroad operations, 50 Fed. Reg. 31,508-31,579 (1985).

to alcohol and other drugs has not changed significantly. Advocates of drug testing have produced no evidence that there is a significant problem with drugs other than alcohol in the workplace, schools, and armed services, or that testing will have a major impact on the problem.

III. What Does it Cost to Test Urine Properly?

Drug testing is being done correctly in some laboratories. The fact that the tests are being done correctly does not mean that a drug will be identified adequately. There is evidence that much of the large scale inexpensive testing is not adequate for the purpose for which it is being used and that many people are being punished for drug use without acceptable drug identification and proper interpretation of the results. Even when adequate testing is available, employers may decide not to pay the added costs. Testing each of the 100 million workers in this country once would cost about one billion dollars. This would be for unconfirmed analyses of less than ten of the many drugs which people use which might affect them. Large numbers of specimens can be screened for a very limited number of drugs inexpensively, about $10 to $25, if false positives and false negatives are acceptable. Adequate confirmatory tests cost two to five times more for each drug requiring identification.

It has been reported that the armed services spent one-half billion dollars in drug testing programs in 1983 to 1985.[2] Most of this testing was for marijuana. A recent survey of the military reported, "Marijuana-only users present a discipline problem for violation of laws, but experience relatively few serious negative effects."[3] There appears to be no evidence that the military's drug problem has improved.

The NCAA expects to test, either once or twice, urine samples of about 3,000 athletes. The samples will be tested for eighty-one of the hundreds of substances which can affect performance, and the first-year cost will be about $3 million (about $1000 per athlete).[4] None of these estimates include costs to the person whose career could be ruined or costs to the employer or employee for any litigation.

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2. *Military Discharged 51,000 for Drug Use*, Raleigh News and Observer, Aug. 8, 1986.

3. Bray, Marsden & Guess, *1985 Worldwide Survey of Alcohol and Nonmedical Drug Use Among Military Personnel* at iv, vi, viii, June 1986, Research Triangle Institute, Research Triangle Park, N.C.

4. *Drug Testing to Start in November*, Durham Morning Herald, Sept. 25, 1986, at 1D.

IV. Does a Positive Result Mean that the Reported Drug Was in the Person?

A positive result does not indicate that the reported drug was actually in the person. Employers, the employees, and most attorneys are unable to interpret the data that a laboratory might furnish. Most laboratories are not certified or tested by outside agencies to establish the proficiency of the laboratory. The data from the presumptive tests (such as immunoassays, thin layer chromatography, gas chromatography, and high pressure liquid chromatography) may be presented as numbers, plates, or charts. These types of data are insufficient documentation for an expert to determine that an identification has been made. Positive drug identification requires sophisticated and expensive procedures and personnel. A procedure using a gas chromatograph mass spectrometer can produce the only kind of evidence that an expert can evaluate at the present time to determine that the drug was most probably identified correctly.

V. Can it be Established by Testing Urine that a Person was Impaired by Drugs?

Even if it was possible to test for all the hundreds of drugs that might affect a person, the concentrations of most drugs in urine, except for alcohol, cannot be correlated with blood concentrations or with impairment. The time that a drug was used cannot be established from urine concentrations. Most drugs can be found in urine for one day to one week after use. Marijuana metabolites may be found in urine three to eighteen days after light use (one use weekly or less often). This time is extended to one month or more with daily uses.[5] How long a drug will be detectible in urine depends on many factors. An expert cannot tell when a person last used the drug. The usual effects of most drugs persist for minutes to a few hours after use. Some drugs improve performance. Performance cannot be correlated with blood concentrations of most drugs but the finding of a drug in blood will generally indicate recent use.[6]

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5. Ellis, Mann, Judson, Schramm and Tashchian, *Excretion Patterns of Cannabinoid Metabolites after Last Use in a Group of Chronic Users*, 38 CLINICAL PHARMACOLOGY AND THERAPEUTICS 572 (1985).

6. Blanke, Caplan, Chamberlain, Dubowski, Finkle, Forney, Hawks, Hollister, Jatlow, Maickel & McBay, *Consensus Report: Drug Concentrations and Driving Impairment*, 254 J. A.M.A. 2618 (1985).

VI. Is Random Drug Testing Efficient and Legal?

The answer to the question of whether random drug testing is efficient and legal depends on the status of the individual. The job seeker is in no position to refuse to provide a specimen for testing. The employer may use the least expensive unconfirmed test. He does not have to tell the applicant why he was refused employment. Members of the armed services, athletes, probationers, and prisoners have little recourse short of litigation.

Civilian employees have to rely on any contracts they have with the employer and on arbitration and litigation. Federal employees may be protected by the Civil Service Reform Act, which provides for disciplinary action against civil service workers for such cause as will promote the efficiency of the service.

All government workers may be protected by the fourth amendment of the Constitution. The courts will have to decide whether testing randomly or without probable cause is an unreasonable search and seizure, but private sector employers may not be constrained by the Constitution.

There appear to be no plans to test the unemployed who have most of the drug problems. The war on drugs cannot be won as long as these people use drugs excessively.

Random testing is inefficient and costly because of the large numbers of apparently healthy and normally functioning people who will be tested in order to discover the few symptom-free people in whom a drug might be found. Testing only when there is reason to do so would be relatively infrequent, could be done less expensively, more carefully, and more effectively.

VII. Are the Analyses Being Made for Substances that Impair the Most People?

The majority of urine analyses have been for marijuana metabolites. A minority of tests were for other controlled substances. Reports of testing for other prescription and non-presecription drugs are rare.

A 1984 survey of the "Economic Costs to Society of Alcohol, Drug Abuse, and Mental Illness," reported that alcohol abuse in this country costs about $117 billion and that drug abuse costs about $60 billion.[7]

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7. H. Harwood, D. Napolitano, P. Kristiansen, J. Collins, Economic Costs to Society of Alcohol and Drug Abuse and Mental Illness, 1980 Research Triangle Institute,

More than half of the funds for drug abuse, about 33 billion, was for "reduced productivity." A correlation was found between reduced productivity and the positive response to the question, "If an individual ever smoked marijuana daily for a period of at least one month." The reduced productivity of current users and lifetime users of marijuana, and users of drugs other than alcohol was not statistically significant. Since testing for marijuana reveals only recent or current use of the drug, testing for it would be of questionable value based upon the findings of this survey. A fact known to those familiar with drug users, that the majority of drug users also use alcohol, was stated in this survey. Based on this survey, the economic costs of other drug use are about half that of alcohol. If corrected for the reduced productivity which cannot be determined by drug testing, the figure is less than 25% without correcting for those who would be discovered by testing for alcohol. In addition, many mental illnesses are related to alcohol abuse.

Alcohol is involved in 50 to 70% of murders, fatal accidents, fire deaths, and arrests, and in 35 to 49% of assaults, suicides, and drownings. In North Carolina in 1985, about 100 deaths were attributed to alcohol overdoses and about 3,000 more deaths were alcohol-related.[8] All other substances which caused overdose deaths in North Carolina numbered less than 150 and included antidepressants, opiates, propoxyphene, cocaine, barbiturates, aspirin, caffeine, antihistamines, and about 25 other substances. Documented deaths due to marijuana have not been found.

Alcohol is the drug most abused by workers, members of the armed services, as well as many others. Alcohol testing is much simpler than testing for other drugs and it can be non-invasive, inexpensive, and more accurate.[9] Breath can be tested by persons with minimal training. Furthermore, results are immediately available and inexpensive instruments can provide tests for less than one dollar each. Saliva can also be tested inexpensively. Confirmatory tests of urine and blood are relatively inexpensive. The concentrations of alcohol can be correlated with impairment.

Research Triangle Park, N.C. (1984).

8. McBay, North Carolina Poison Fatalities 1985, Office of the Chief Medical Examiner, Chapel Hill, N.C. 27514.

9. Dubowski, *Recent Developments in Alcohol Analysis*, 2 ALCOHOL, DRUGS AND DRIVING 13 (1986).

VIII. What Testing Could be Cost-Effective?

After testing for alcohol it would appear to be efficient to test for other drugs in the following order: antidepressants, opiates, propoxyphene, barbiturates, and antihistamines. These drugs are the ones most likely to impair performance. Cocaine and caffeine in small doses should not be impairing. If health, safety, productivity, performance and cost-effectiveness are criteria, testing for marijuana should have a very low priority. At the present time the concentrations of other drugs in urine and most drugs in blood cannot be correlated with impairment.

Advocates of urine drug testing programs should be able to give detailed documentation of the following: the extent of the drug problem; the need for testing; the substances and concentrations to be measured; the procedures used, including quality control; the certainty of identification; the frequency of testing; whether testing will be based on reasonable suspicion or be at random; safeguards, including preservation of an extra specimen; turnaround time; expert interpretation of the results; and cost to the employer and the employee.

IX. Conclusion

Evidence of an increased and immediate need for large-scale urine drug testing is not available. Much of the present testing is incorrect, inefficient, and not cost-effective. Testing for alcohol and other impairing drugs, only when there is a valid reason to do so, would protect the public, employers and employees and would be cost-effective.