A MANUAL ON DRUG DEPENDENCE

Compiled on the basis of reports of WHO expert groups and other WHO publications

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Preface

This Manual was prepared at the request of, and with financial assistance from, the United Nations Fund for Drug Abuse Control. It is intended to be of help to health workers and others professionally involved in efforts to reduce, now and in the future, the health and social problems associated with the use outside acceptable medical practice of certain dependence-producing drugs.

In preparing this Manual, Dr J. F. Kramer [1] *and Dr D. C. Cameron have drawn extensively on the reports of a number of WHO Expert Committees, Scientific Groups, and Study Groups that were convened to consider various problems in the field of drug dependence. Most of the material has been taken directly from, or is based on, these reports. The Manual therefore represents the combined efforts of the many experts who gave generously of their time and talents.*

In many of the passages from selected Expert Committee and Scientific Group reports and other WHO publications the wording has been to some extent modified to bring the information up to date, eliminate irrelevant details, and permit stylistic continuity. No changes of substance have been made except where a statement in the original publications has been invalidated by more recent information.

Only in a few instances have references given in the original WHO reports been retained. Appropriate acknowledgement is made of other written material on which various passages are based. Full details of the WHO publications used in the preparation of this manual (asterisk) together with several selected references for further reading are given in an annex (p. 107).

[1] Dr. Kramer's work on the manual was performed while on sabbatical leave with support from the United States Drug Abuse Council, Washington, D.C.

Introduction

Man has long used psychoactive drugs, not only to enhance pleasure and relieve discomfort, but also to facilitate the achievement of social, religious, and ritualistic aims. In earlier times, the range of available psychoactive substances was not large, and one of them usually became the local drug of choice — alcoholic beverages in some countries, for example, and opium, cannabis, or coca preparations in others. The degree to which society accepted the use of drugs differed according to the nature of the drug, the region of the world, the period of history, the occasion, and the dose. Such variation in acceptance still remains today. In the past, the use of psychoactive or "mind altering" drugs was limited largely to persons who had attained the age of responsibility within their communities, and such drugs tended to be taken much more frequently and in far greater amounts by men than by women.

Only a certain proportion of those who took these drugs for recreational and other purposes became dependent on them. The total proportion, and the proportions becoming dependent on different drugs, are not well known ; however, they probably varied not only with the nature of the drug used, but also with its social acceptability and the controls on its use, the community's attitude towards intoxication and other effects, the frequency and regularity of use, and the characteristics and experience of the users.

What, then, is the basis of the growing and increasingly widespread concern about the non-medical use of psychoactive drugs at the present time ? It is suggested that, over and above the long-existing concern about unlawful activities associated with the non-medical use of drugs, the following factors may be involved : (1) a perceived and, doubtless, in many communities, an actual increase in the number of persons taking socially disapproved drugs ; (2) the use of socially unacceptable drugs, especially by young persons ; (3) the use of "unfamiliar" drugs, i.e., drugs used outside the regions of their traditional use (e.g., can-

nabis in the Western Hemisphere and Europe and alcoholic beverages in the Indo-Pakistan subcontinent and some countries south and east of the Mediterranean), and the use of "new" drugs, such as those of the amphetamine type and lysergide (LSD) ; and (4) the increasing involvement in drug taking of members of the middle and upper socioeconomic groups. Strangely, there often appears to be much less concern about the human degradation associated with the problem-related use of socially approved alcoholic beverages than about the comparable effects associated with the non-medical use of less familiar drugs. Indeed, according to the report of the WHO Study Group on Youth and Drugs, [1] the number of adults experiencing serious adverse effects from dependence on alcohol or some other traditional and locally accepted drug probably far exceeds the number of young people similarly affected by their use of socially disapproved drugs. Consequently, means must be found to reduce the present and future adverse consequences associated with the non-medical use of *all* types of dependence-producing drug in all groups.

Such problems as arise from the experimental, casual, or dependent use of psychoactive drugs are "human problems", not drug problems. So are the problems associated with the treatment, rehabilitation, and aftercare of drug-dependent persons, as well as those associated with the prevention of drug dependence, including the imposition of effective controls on the availability of drugs. It is widely recognized that the non-medical use of dependence-producing drugs involves a dynamic interaction between three major variables — namely, (1) the properties of the drug or drugs taken, and the manner of use ; (2) the characteristics of the users ; and (3) the nature of the immediate and broader sociocultural environment in which the drug use occurs.

Some idea of the complexities of the interrelationships between a person, his environment, and a drug is obtained by noting that a barbiturate is often used to induce sleep, but sometimes to induce excitement. A cannabis smoker may experience little subjective effect when smoking in private, yet he may feel quite relaxed or stimulated when smoking comparable amounts of the same material in the company of congenial companions. For LDS users, the availability of a suitable setting, appropriate expectations, and a competent and experienced person ("guide") who will remain with the user during the experience are generally regarded as desirable in order to reduce to the minimum the possibilities of a "bad trip".

For many years, interested international and other organizations, as well as governments and individuals, have given consid-

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 516.

erable attention to the identification and control of dependence-producing drugs that, used under certain circumstances, can give rise to public health and social problems. While vigorously applied controls have an important limiting effect on the availability or *supply* of such drugs, a continuing and very substantial *demand* for these drugs has resulted in their being quite readily available in many parts of the world. Although continuing efforts to control the supply of dependence-producing drugs are important, and much still remains to be done, it is clear that there is an urgent need to intensify considerably the efforts currently being made to decrease the *demand* side of the balance between supply and demand. Since a demand for drugs is created by actual and potential users, whether they are experimental, casual, or dependent, increasing attention must be given to both the human and the environmental aspects of the problem.

This manual is primarily oriented towards the human problems related to the demand side of the demand/supply balance, and it contains general reviews of (1) the basic concepts involved ; (2) the clinical syndromes associated with the use and withdrawal of specific types of dependence-producing drugs ; (3) patterns of drug use ; (4) current etiological hypotheses ; (5) principles for the management of drug-dependence problems ; and (6) some aspects of research on drug dependence.

CHAPTER 1

Basic concepts and the use of terms[1]

In examining the human problems associated with the use of drugs outside approved medical practice, the following definitions and concepts are employed.

Drug

Any substance that, when taken into the living organism, may modify one or more of its functions. This usuage is intentionally broad. It includes not only medications intended primarily for the treatment of patients, but also other pharmacologically active substances.

Drug dependence

A state, psychic and sometimes also physical, resulting from the interaction between a living organism and a drug, characterized by behavioural and other responses that always include a compulsion to take the drug on a continuous or periodic basis in order to experience its psychic effects, and sometimes to avoid the discomfort of its absence. Tolerance may or may not be present. A person may be dependent on more than one drug.

Whether or not a given person develops dependence on a particular drug will depend on the interaction of three factors : (1) the personal characteristics and experiences of the individual taking the drugs, (2) the nature of his broader and his more immediate sociocultural milieu, and (3) the pharmacodynamic characteristics of the drug used, taking into account also the amount used, the frequency of use, and the route of administration (i.e., whether the substance is ingested, inhaled, or injected).

Dependence-producing drug

A drug having the capacity to interact with a living organism to produce a state of psychic or physical dependence, or both. Such a drug may be used medically or non-medically without

[1] Based on *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 516.

necessarily producing a state of dependence. The characteristics of a state of drug dependence, once developed, will vary with the type of drug involved. Some types of drug, including those in tea and coffee, are capable of producing dependence in a very broad sense. The existence of such a state is not necessarily harmful. There are, however, several types of drug that, because they can produce substantial central nervous stimulation or depression, or disturbances in perception, mood, thinking, behaviour, or motor function, are generally recognized as having the capacity, when used under certain circumstances, to produce health and social problems of both an individual and a public nature. Substantial dependence effects and problems can be produced by the types of drug listed below. As used here, the term "dependence-producing drug" means a drug belonging to one of the following categories :

(1) *alcohol type :* alcoholic beverages of all kinds ;

(2) *amphetamine type :* e.g., amphetamine, dexamphetamine, methamphetamine, methylphenidate, and phenmetrazine ;

(3) *barbiturate type :* e.g., barbiturates (especially those with a short or intermediate duration of action) and certain other drugs with sedative effects, such as chloral hydrate, chlordiazepoxide, diazepam, meprobamate, and methaqualone ;

(4) *cannabis type :* preparations of *Cannabis sativa* L., including marihuana *(bhang, dagga, kif, maconha),* ganja, and hashish *(charas) ;*

(5) *cocaine type :* cocaine and coca leaves ;

(6) *hallucinogen (LSD) type :* e.g., dimethyltryptamine (DMT), lysergide (LSD), mescaline, peyotl, and psilocybin ;

(7) *khat type :* preparations of *Catha edulis* Forsk ;

(8) *opiate (morphine) type :* e.g., opium, morphine, heroin, codeine, and synthetic drugs with morphine-like effects, such as methadone and pethidine ;

(9) *volatile solvent (inhalant) type :* e.g., toluene, acetone, gasoline, and carbon tetrachloride, and also certain anaesthetic agents such as ether, chloroform, and nitrous oxide.

Comment on tobacco and analgesics

While the term "dependence-producing drug", as used here, refers to one or more of the 9 types listed above, there are some other types of substance (e.g., tobacco and certain analgesics, such as aspirin and phenacetin) that may clearly give rise to some degree of drug dependence. In some cases, dependence may even be very marked. The intensive use of these substances may result in serious physical harm to the user,

and in the case of tobacco, at least, use is so widespread and the associated problems so serious as to constitute a public health problem. However, unlike the dependence-producing substances listed above, tobacco and the analgesics in question produce relatively little stimulation or depression of the central nervous system or disturbances in perception, mood, thought, behaviour, or motor function. Any such psychotoxic effects produced by tobacco and the analgesics, even when large amounts are taken, are slight compared with those of the dependence-producing drugs. Only the use of dependence-producing drugs capable of exerting major psychotoxic effects is dealt with in this manual.

Non-medical use of drugs

The use dependence-producing drugs of the types noted above, except when their use is medically indicated.

Psychic dependence

A situation where "there is a feeling of satisfaction and a psychic drive that requires periodic or continuous administration of the drug to produce pleasure or to avoid discomfort. Indeed, this mental state is the most powerful of all of the factors involved in chronic intoxication with psychotropic drugs, and with certain types of drugs it may be the only factor involved..." [1]

Physical dependence

"An adaptive state that manifests itself by intense physical disturbances when the administration of the drug is suspended or when its action is affected by the administration of a specific antagonist. These disturbances, i.e., the withdrawal or abstinence syndromes, are made up of specific arrays of symptoms and signs of psychic and physical nature that are characteristic for each drug type. These conditions are relieved by re-administration of the same drug or of another drug of similar pharmacological action within the same generic type. No overt manifestation of physical dependence is evident if an adequate dosage is maintained. Physical dependence is a powerful factor in reinforcing the influence of psychic dependence upon continuing drug use or relapse to drug use after attempted withdrawal." [1]

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[1] *Bull. Wld Hlth Org., 1965,* **32,** 723.

Tolerance

"An adaptive state characterized by diminished responses to the same quantity of a drug or by the fact that a larger dose is required to produce the same degree of pharmacodynamic effect."[1]

Cross-tolerance

A phenomenon in which one drug is taken and tolerance develops, not only to that drug, but also to another drug of the same, or sometimes a related, type ; for example, heroin produces cross-tolerance to morphine and *vice versa,* and to a lesser degree the heavy use of alcohol produces cross-tolerance to drugs of the barbiturate type.

Comment on the terms "drug abuse", "addiction", and "habituation"

"Drug abuse" is a term in need of some clarification. A definition acceptable to a majority of persons concerned with the problem-related use of drugs would be difficult to formulate. The term is really a convenient, but not very precise, way of indicating that (1) an unspecified drug is being used in an unspecified manner and amount by some person or persons, and (2) such use has been judged by some person or group to be wrong (illegal or immoral) and/or harmful to the user or society, or both. What might be called "drug abuse" by some would not necessarily be considered so by others. Further, many drug users, whether experimental, casual, or dependent, and some non-users, also, tend to ignore the views of persons who use this term because, rightly or wrongly, they are seen as prejudiced or poorly informed. For these reasons, the term "drug abuse" is avoided here.

"Drug addiction" is another term whose various definitions have created substantial problems and misunderstandings. Some authorities would argue that physical dependence must be present for a state of addiction to exist ; others would disagree. Nearly all would accept cocaine as an "addicting" drug since craving for it may be very intense, yet it produces no physical dependence. Further, the term "addiction" usually carries the connotation of *serious* harm to the drug-taker and/or society, and implies the need for a particular type of control ; these connotations are inappropriate in view of the different types of drug dependence and differences in the degree of dependence liability characterizing different dependence-producing drugs. The term "habituation" has been used variously to in-

[1] *Bull. Wld Hlth Org.*, 1965, 32, 723.

dicate that there is either an absence of physical dependence on the drug in question and/or that the consequences of using a "habit forming" drug are less serious than those associated with the use of an "addicting" drug. Attempts to differentiate between "addiction" and "habituation" have been of little help since the same two issues (i.e., the nature of the condition and the possible need for control) are combined in a single term.

Criteria for drug control

The definition of drug dependence given on page 13 deals only with the broad nature of the phenomenon, and, for clarity, it is often essential to specify the type of drug dependence (opiate, alcohol, etc.) being discussed. The definition makes no reference to the need for controlling the availability of the substance. This question involves issues beyond the nature of the clinical syndrome characteristic of dependence on a particular drug. In the sixteenth report of the WHO Expert Committee on Drug Dependence,[1] it was stated that the need for, and level of, control depend on the degree of risk to health (in public health terms) and the usefulness of the drug in medical practice. The Committee also noted that, if drug dependence of a particular type is associated with behavioural or other responses that adversely affect the user's interpersonal relationships or cause adverse physical, social, or economic consequence to others as well as to himself, and if the problem is actually widespread in the population or has a significant potential for becoming widespread, then a public health problem exists. Society must then take the responsibility for determining whether or not the drug in question should be controlled.

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[1] *Wld Hlth Org. techn. Rep. Ser.*, 1969, No. 407.

CHAPTER 2

Patterns of use[1]

The scarcity of reliable data on the prevalence and incidence of the non-medical use of dependence-producing drugs and on the associated personal and sociocultural factors precludes a detailed review of the situation. In this Manual, therefore, only a general description is given of the broad patterns of such use in selected regions, with illustrations from a few countries.

Traditional drugs and patterns of use

Although the importance of the complex and changing patterns in the non-medical use of dependence-producing drugs that have emerged in recent times, especially by pre-adolescents, adolescents, and young adults, should not be underestimated, the more traditional patterns of use must first be examined because they involve a greater number of drug-dependent persons, the majority of whom, from the point of view of their age, would have to be regarded as mature adults.

Alcohol

The "moderate" use of alcoholic beverages by "adults" is normative and acceptable behaviour in most countries. However, their "immoderate" use, certainly to the point of producing dependence, is neither acceptable nor normative in any country.

Recent studies have shown that in some countries there appears to be a positive correlation between the *per capita* consumption of alcohol, the rate of death from cirrhosis of the liver, and "excessive consumption" (defined as a daily average consumption in excess of 150 ml of pure ethanol). This level of consumption is found in clinically treated alcoholics, and is associated with a high risk of liver cirrhosis. From 1% to 10% of the world's population aged 15 years and over are estimated to consume alcohol at that level, depending on the country of residence. The amounts of alcohol consumed by individual consumers within a

[1] Based on *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 516.

given population of users exhibit a unimodal frequency distribution, i.e., the large majority of consumers are to be found at the lower end of the continuum, progressively smaller frequencies being found towards the higher end. [1]

Cannabis [2]

The use of cannabis preparations has long been widespread in certain populous regions where alcoholic beverages have been little used — e.g., the Indo-Pakistan subcontinent and some areas of North Africa. The extent of such use has not been accurately documented, nor has the proportion of users who have developed dependence of the cannabis type. The occasional recreational and festive use of cannabis preparations involves a large proportion of the adult population of India. In these circumstances the preparations are almost always ingested, either as a drink or in a confection. In other parts of the world, they are usually smoked, either in cigarettes or in pipes, some of the latter being so constructed that the smoke first passes through water. Cannabis preparations are also smoked on the Indo-Pakistan subcontinent, but this practice is most prevalent among men of the lower socioeconomic classes. In that and other regions, tobacco is often a part of the smoking mixture. Cannabis preparations are coming to be used more and more in countries that have traditionally been oriented to the use of opium (e.g., South-East Asia and some countries east of the Mediterranean) or alcohol (e.g., the Western Hemisphere and Europe).

Coca

The centuries-old practice of chewing coca leaves has been estimated by Zapata-Ortiz [3] to involve some 6 000 000 persons — almost half the total population — in certain Andean regions of South America. Goddard et al.[4] indicate that "it is regarded as quite 'natural' that a young man when he begins to work also begins chewing coca. Yet he is not required to do so for membership in the group of men to which he has just been admitted, nor is he particularly expected to do so". This is a far different matter from the non-medical use of cocaine derived from the coca

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[1] Ledermann, S. (1956) *Alcool, alcoolisme, alcoolisation*. Paris, Institut national d'Etudes démographiques (Travaux et Documents, Cahier No. 29) ; de Lint, J. & Schmidt, W. (1968) *Quart. J. Stud. Alcohol*, 29, 968—973 ; de Lint, J. & Schmidt, W. (1971) *Brit. J. Addict.*, 66, 97—107.

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1971, No. 478.

[3] Zapata-Ortiz, V. (1970) *Int. J. Addict.*, 5, 287.

[4] Goddard, D., Goddard, S.N. & Whitehead, P.C., (1969) *Int. J. Addict.*, 4, 579.

plant, which results in marked stimulation of the central nervous system and is not infrequently associated with the use of opiate-type drugs.

Opiates

The non-medical use of opium and its derivatives is most widespread in certain countries east of the Mediterranean and in South-East Asia. In Iran, for example, there are estimated to be some 100 000 opium-users currently registered in a population of about 30 million. There is also an uncertain number of unregistered users, variously, and very roughly, estimated at from 150 000 to 500 000. Heroin began to appear in that country after a ban was placed on poppy culture and the non-medical use of opiates in 1955. Prior to that time, most opium-dependent persons were middle-aged or older men. During the period of the ban, many users gave up opium, some continued to obtain it, others switched to heroin, and a new, smaller, group of relatively young heroin-users appeared. Poppy culture was resumed in 1969 and opium has since been made available to certain persons dependent on this type of drug. The use of heroin, which remains under strict control, was said to be decreasing in Iran but there is now some evidence to the contrary.

Opium is used extensively in the hill areas where Burma, Laos, and Thailand lie in close proximity. Opium, and to a lesser extent morphine, are generally the opiates of choice among relatively older men in Singapore and Malaysia. Heroin is preferred in the flat lands of Thailand and in Hong Kong. According to very rough estimates, the number of users in this general region could be measured in hundreds of thousands, with rates in some countries ranging from about 300 to 2 250 per 100 000.

In the USA, some 35 years ago, morphine was the drug most commonly taken by opiate-dependent persons. Hospitalized users were predominantly middle-aged Caucasian males who tended to come from deteriorated metropolitan areas. A smaller number came from rural areas in the south of the USA. Nowadays, the typical user tends to be much younger and is usually of Negro or Puerto Rican stock. Also, he prefers to take heroin intravenously but often takes a number of other drugs as well.

The traditional pattern of opiate use in the United Kingdom until the early 1960 s involved some 300 to 400 Caucasian adults of mature years who became dependent in the course of medical treatment and who used medically prescribed opiates. This pattern remains but is hardly comparable to the graver situations mentioned above.

Emerging patterns of use

In the past 25—30 years, and particularly in the last decade, many countries have experienced new trends or problems related to drug use. For the most part, these have been added to the older patterns noted above. Thus drugs that have long been used in certain parts of the world are beginning to be consumed in locations outside the regions of traditional use. For example, cannabis has come to the Western Hemisphere and Europe. In 1970, 18% of high-school students in one city in Canada had used cannabis at least once in the previous 6 months. Among students in selected universities, 26—35% had used cannabis at least once and the rate was similar among young adults aged 18—25 years in the general population. Rates of cannabis use in the USA vary from 20% to 40% for high-school students to 30—50% for students in certain colleges. In some European countries, from 11% to 23% of a representative sample of students in high schools have used cannabis. The number of cannabis offences began to increase sharply in the United Kingdom in 1966. In India, about 5% of all students in one university were reported to be regular cannabis users whereas 50% of male and 8% of female students were said to have used it at least once. Although some regular use of cannabis by certain groups in India is essentially traditional, the described use in a university is new.

Within the past two decades, opiates, too, have come to be used in new areas, often in new ways (e.g., heroin in the United Kingdom, Thailand, Iran, and recently France, and opium in the Netherlands, Sweden, and other countries). Alcohol — perhaps the oldest known intoxicant of all — is being increasingly used in areas traditionally oriented to cannabis and/or opiates (e.g., the Indo-Pakistan subcontinent and some countries in North Africa and east of the Mediterranean). Alcohol is also being used more frequently, and in larger amounts, by some young persons in a number of countries traditionally oriented to the use of alcohol. The motive for such drinking sometimes appears to be rapid intoxication rather than the achievement of any social purpose.

A second new trend is the use of all types of dependence-producing drug by pre-adolescents and adolescents from the middle and upper classes — young people who do not come from minority groups or those living in poor social and economic circumstances. This is indeed a very important factor in the current widespread concern, especially among middle and upper-class adults, about drug-taking by youth. Their children, or those of their neighbours are, or could be, involved ! When young

persons take drugs, regardless of socioeconomic class, they tend to merge into subcultures that are involved in drug-taking.

A third new feature of the situation regarding drug-taking is that many adolescents and young adults appear to have little interest in the maintenance of the social *status quo*. Among them are students as well as young people who are less socially attached and often highly mobile. A substantial proportion have experimented with drugs and a much smaller proportion have become regular users. Many of them affect unconventional clothing and hairstyles, loosely characterized as "hippie" style. This general mode of dress has also become fashionable among a number of young persons who are seriously concerned with and have a stake in the maintenance and improvement of the current social system. Though many of these young persons may dress somewhat alike, they certainly do not think or act alike, nor do they all take drugs. Despite these important differences, not a few adults quite incorrectly impute recreational or regular drug-taking to all of them. The "problem" is often seen by such persons as solely or primarily one of drug-taking. On the other hand, an equally polar view is taken by certain adults, including professionally trained persons, who see the present non-medical use of dependence-producing drugs primarily as a symptom of the alienation and unconventionality of users.

Still another recent trend is towards multiple drug use by the same person. There has, of course, always been some multiple drug use, especially the sequential substitution of one drug for another when a preferred drug was unavailable. Simultaneous use of more than one drug is also not new ; barbiturates have been used with alcohol to enhance the effect ; cocaine has been taken with heroin or other opiates to complement or moderate the effect of one or the other. What is new is the large number of different types of dependence-producing drug used in sequence or simultaneously by many regular users. Drugs with differing effects are chosen according to the mood of the moment. In Sweden, for example, opiates dominated the picture before 1955, but their use was not extensive. In the early 1950s, the use of central nervous system (CNS) stimulants began to increase and the oral, and particularly the intravenous, use of these drugs became an especially serious problem in that country. In the early 1960s, marihuana and hashish made their appearance in increasing amounts, while hallucinogens and volatile solvents were added in the latter half of the decade. More recently, morphine-base has come into the picture. Hypnotics and sedatives are usually taken orally ; CNS stimulants, orally or intravenously.

In 1968, Goldberg [1] estimated that one-fourth to one-half of the more regular drug-users combined different types of drug in a variety of ways. Attention has been given to the problem in Sweden, not because the situation there is unique — it is not, but because Sweden is one of the few countries in which fairly extensive studies were carried out early in the course of the development of the problem. The above-mentioned trends, in addition to the availability of a wide variety of psychoactive drugs and the rapid and extensive means of communication and transport, have all contributed to the existing complex and changing patterns of drug-taking.

Manner of use

Experimental

Many young persons and a few older ones try one or more of the dependence-producing drugs once or a few times and then stop. This experimental pattern, often motivated largely by curiosity and peer pressures, is perhaps the most widespread of any with respect to certain dependence-producing drugs. Cannabis preparations have been and are being used in this way by substantial numbers of persons in the Western Hemisphere and Europe as well as in countries where the use of some cannabis preparations has been more traditional. There is perhaps a tendency for increasing numbers of those who try cannabis to continue to use it. Volatile organic solvents are also used in this way by a very much smaller number of persons, usually during the pre-adolescent or adolescent periods. All types of dependence-producing drug, including opium and heroin, have been used by some persons on a brief, experimental basis only.

Casual or recreational

This involves the intermittent use of drugs without the development of psychic or physical dependence. It is characterized more by the purpose and manner of use of a given dependence-producing drug than by the frequency of such use, but the latter is, nevertheless, an important consideration. Also very important are the nature of the drugs in question and the route of administration (whether ingested, inhaled, or injected). Alcoholic beverages are taken in a casual or recreational way by the vast

[1] Goldberg, L. (1968) *Bull. Narcot.*, 20 (2), 35—36.

majority of persons who use them. The same may be said for cannabis preparations, particularly in areas where such use is socially tolerated or acceptable. Comparable use is also made of opium in some parts of the world where the manner, amount, and frequency of use are governed quite closely by local cultural conventions and *mores*. This is not the predominant pattern for the use of opium, and particularly opiates.

By drug-dependent persons

Biological phenomena, including those of a behavioural character, tend to range themselves in a continuum. This holds true for dependence on one or more dependence-producing drugs. At one end of the continuum psychic or physical dependence do not exist, whereas at the other end one or both clearly do. Between these extremes there is a zone of behaviour that is not sufficiently characteristic of either extreme to enable it to be said that dependence does or does not exist. In judging the presence or absence of psychic dependence in an individual, it is important to ascertain to what extent he (1) devotes his time and energy to thinking about, obtaining, and experiencing drug effects, and (2) tends to react to differing life situations and personal moods by almost automatically taking a drug rather than by responding in other possible ways.

There are a number of overlapping patterns in the use of drugs by drug-dependent persons. One involves the *regular* use of a particular drug several times a day for long periods. This pattern is perhaps most often seen in connexion with drugs capable of producing marked physical dependence (i.e., those of the opiate, barbiturate, and alcohol types). Such regular use is also sometimes seen among persons dependent on cannabis preparations or relatively modest doses of amphetamines taken orally.

Another pattern might be characterized as *episodic* or "spree" use. The duration of the episodes may range from a few hours to several days or even a week or two. All types of dependence-producing drug have been used in an episodic manner, but perhaps such use is most frequently encountered in connexion with drugs that produce little or no physical dependence (i.e., those of the amphetamine, cocaine, and hallucinogen types). This pattern is particularly prevalent in connexion with the intravenous use of central nervous system stimulants. The episodic use of alcohol is well known. Also, episodic use of one or more drugs may be superimposed on the regular use of the same or another drug.

Typically, drug dependence is more prevalent among males than among females in most parts of the world, except that women predominate among oral users of drugs of the barbiturate type, whether taken alone or in combination with alcohol, especially in the "western" countries. However, the sex difference in drug use is diminishing in many countries, particularly in relation to experimental use and to casual or recreational use.

CHAPTER 3

Types of drug dependence: Clinical syndromes[1]

The definition of drug dependence quoted on p. 13 gives only broad indications of the nature of the phenomena that are, in large measure, common to the various generic types or groups of drugs. The characteristics of drug dependence show significant differences from one generic type of drug to another, a situation that makes it essential to establish clearly the dependence pattern for each type. Even though some variations occur between individual drugs in each generic group, the consistency of the pattern of pharmacodynamic actions and responses [man-drug interactions] is sufficiently uniform to permit a delineation of the principal types of dependence.

Before describing these types, it should be recalled that not all persons who take dependence-producing drugs become dependent on them. It is well known, for example, that most users of alcoholic beverages and cannabis preparations do not become dependent on them. It is, perhaps, not so widely appreciated that the non-medical use of opium and some drugs with similar effects is not always accompanied by the development of dependence. The risk of such dependence is, however, much greater with drugs of the opiate (morphine) type than with alcoholic beverages and cannabis preparations. The route of administration is also important; intravenous administration involves not only a greater risk of dependence, but also of life-threatening complications. It has already been noted that the frequency and regularity of drug use, the characteristics and experience of the user, the social acceptability of the drug, and community attitudes towards intoxication are also important factors in determining whether or not a given user will become dependent on one or more of the drugs he takes.

Alcohol-type drug dependence

The signs and symptoms of alcohol and of barbiturate intoxication are similar, as are the signs and symptoms of abstinence

[1] This chapter, except for the subsection on drug dependence of the cannabis type, is based largely on *Bull. Wld Hlth Org.*, 1965, 32, 721—733 ; the material on cannabis is drawn largely from *Wld Hlth Org. techn. Rep. Ser.*, 1971, No. 478 (see Annex for full details of these references).

from these drugs. Barbiturates will suppress alcohol abstinence phenomena, and alcohol will suppress, at least partially, the symptoms of barbiturate withdrawal; there is some cross-tolerance. The two drugs are essentially additive and interchangeable in chronic intoxications ; these similarities justify the term "dependence of barbiturate-alcohol type", but there are psychological and sociological differences, so that alcohol and barbiturate dependence are described separately.

Drug dependence of the alcohol type may be said to exist when the consumption of alcohol by an individual exceeds the limits that are accepted by his culture, if he consumes alcohol at times that are deemed inappropriate within that culture, or if his intake of alcohol becomes so great as to injure his health or impair his social relationships. Since the use of alcoholic beverages is a normal, or almost normal, part of the cultures of many countries, dependence on alcohol is usually apparent as an exaggeration of culturally accepted drinking patterns, and the manifestations of dependence vary accordingly in a characteristic fashion with the cultural mode of alcohol use. For example, in North America and countries in northern Europe, alcohol is frequently taken in concentrated forms as an aid to social intercourse, so that dependence on alcohol in these countries is usually characterized by heavy consumption of strong spirits during short periods of the day, by a tendency to periodic drinking, and by overt drunkenness. In some other countries, on the other hand, alcohol is customarily consumed as wine, usually with meals. In these countries, dependence on alcohol is characterized by the drinking of wine throughout the day, by a relatively continuous intake of alcohol in this manner, and by relatively little overt drunkenness. A similar pattern applies where beer is the common beverage.

Psychic dependence on alcohol occurs in all degrees. In the mildest grade, alcohol is missed or desired if not available at meals or at social functions. A moderate degree of psychic dependence exists when the individual feels compelled to drink in order to work or to participate socially and takes steps to ensure a supply of alcohol for these purposes. Strong dependence is present if the individual uses alcohol in amounts far exceeding the cultural norm, drinks in situations that culturally do not call for drinking and is obsessed with maintaining a supply of alcohol, even to the extent of drinking unusual or poisonous mixtures.

Tolerance to alcohol does develop. During continuous drinking there is a slight but definite increase in the amount of ingested alcohol required to maintain a given blood level. In

addition, some physiological adaptation occurs so that the alcoholic appears less intoxicated and is less impaired in performance tests at a given concentration of blood alcohol than is a non-alcoholic. Tolerance to alcohol, however, is incomplete and never reaches the degree seen with morphine-like agents.

Physical dependence on alcohol definitely occurs, and the abstinence syndrome resulting when the intake of alcohol is reduced below a critical level is manifested by tremors, sweating, nausea, tachycardia, rise in temperature, hyper-reflexia, postural hypotension and, in severe grades, convulsions and delirium. The last-mentioned condition is characterized by confusion, disorientation, delusions and vivid visual hallucinations. The intensity of the alcohol abstinence syndrome probably varies with the duration and amount of alcohol intake. The mortality rate is substantial when the alcohol abstinence syndrome is severe and medical management inadequate.

The harm to the individual resulting from dependence on alcohol can be quantitatively greater than that caused by any other type of drug dependence. Alcohol impairs efficiency of thinking and psychomotor coordination, leading to deterioration in work performance and to accidents. Judgement deteriorates, leading to all sorts of errors in business and to disturbances of relations with other people. Conscious controls of behaviour are "dissolved", with resulting exhibitionism, aggressiveness, and assaultiveness. In addition, dependence on alcohol predisposes to and causes serious physical disease. The physical damage may be indirect, due to neglect of hygiene or to inadequate dietary intake and utilization, with resultant deficiencies, for example, in vitamins, minerals and proteins. The most common serious complication of protracted alcoholism is fatty portal cirrhosis. Alcoholics are frequently injured because of impaired coordination and judgement.

Damage to society is great. The alcoholic uses his often meagre resources to obtain his beverage, his productivity declines, and his family may be neglected to the extent that it has to be supported by society. Alcoholics are frequently involved in accidents, with damage to property and injury to others. The economic burden of dependence on alcohol is enormous; even more important is the tremendous amount of human suffering endured by the alcoholic and all who are close to him.

The characteristics of drug dependence of the alcohol type are:

(1) psychic dependence, varying in degree from mild to intense;

(2) the development of a definite physical dependence that can, however, generally be detected only after the consumption

of amounts considerably above the usual socially acceptable levels. Following the reduction of intake below a critical level, a characteristic self-limiting abstinence syndrome ensues, the symptoms of which can be largely suppressed by the administration of a barbiturate-like agent ;

(3) the development of tolerance that is irregular and incomplete, so that there is considerable persistence of behavioural disturbances dependent upon the pharmacodynamic effects of the drugs. There is a mutual, but incomplete, cross-tolerance between alcohol and the barbiturates ;

(4) a frequent consequence of alcoholism is overt pathology in the body tissues.

Amphetamine-type drug dependence

The capacity of the amphetamines and drugs with similar pharmacological properties to elevate the mood and induce a state of subjective wellbeing is probably largely the basis for their previously widespread, but now decreasing, medical use as stimulants and anorectics. [1] Since such therapy commonly involves continuous and prolonged administration, those taking drugs of this kind, therapeutically or otherwise, may develop varying degrees of psychic dependence on them. The stimulating and euphorogenic properties of drugs of this type lead to their non-medical use, and the user may increase both the size of the dose and the frequency of administration in order to attain a continuing stimulation and state of elation. When this increasing use is carried to an extreme, the psychotoxic effects of large amounts of amphetamine-type drugs may lead to aggressive and dangerous antisocial behaviour. Qualitatively, the psychological effects are in many respects similar to those produced by cocaine.

It must be emphasized that the effects are dose-related. The occasional, or even the regular, oral consumption of relatively small doses produces primarily a sense of decreased fatigue, enhanced alertness, and wakefulness. Such use is often, however, dangerous because excessive fatigue may break through at inopportune times, leading sometimes to serious accidents, if the user falls asleep while driving a motor vehicle, for example. Large doses, especially when taken intravenously, result not only in an intense sense of euphoria and excitation that is prized by many users, but also in marked stimulation and bizarre mental effects that may produce serious antisocial behaviour.

[1] Such medical use is now eschewed in many places because the drugs in question are considered to have little therapeutic usefulness for these purposes. Indeed, the amphetamine-like drugs are now thought to have only a few medical indications involving a relatively small number of patients.

A unique feature of the amphetamine-type drugs is their capacity to induce tolerance, a quality possessed by few central nervous system stimulants. Although tolerance develops slowly when the amount taken is close to the usual therapeutic dosage, a progressive increase in the dosage eventually permits the ingestion of amounts several hundred times as great as the original therapeutic dose. With high doses, tolerance develops very rapidly. Apparently, not all parts of the central nervous system become tolerant at the same rate, so that the user will continue to experience increased nervousness and insomnia as the dose is increased. Although an individual may survive the oral administration of very large quantities of amphetamines, such doses may produce profound behavioural changes that are often of a psychotic nature, including hallucinations, paranoid delusions, etc. These effects are much more likely to occur after intravenous injection than after ingestion.

Although the amphetamines induce little, if any, physical dependence, as measured by the criterion of a characteristic and reproductible abstinence syndrome, it would be inaccurate to state that withdrawal from very large dosages is symptomless. The sudden withdrawal of a stimulant drug that has masked chronic fatigue, the need for sleep, and perhaps depression, permits these conditions to appear in an exaggerated fashion. Thus, the withdrawal period is characteristically a state of depression, both psychic and physical, which probably reinforces the drive to resume using the drug. The phenomena that occur when large doses of amphetamines are discontinued do not compare in magnitude with those that follow withdrawal from morphine, barbiturates, alcohol, and other drugs that create substantial physical dependence. The withdrawal of drugs of the amphetamine type is never threatening to life, as far as physical dependence is concerned. The unmasking of severe depression may, however, raise the possibility of suicide.

The use of amphetamines by self-administration has increased consistently in recent years, ostensibly because of their value as antifatigue agents in situations where the user wishes to remain mentally alert for long periods without sleep or rest, or to achieve increased physical performances. The use of amphetamines as stimulants has also increased markedly in persons who also use alcohol and/or barbiturates ; in many such instances there is dependence on more than one drug. Concurrently with the recent increasing concern about the non-medical use of central nervous system stimulants of this type and the

strengthening of controls on their availability, the incidence of such use appears to have risen sharply in some countries.

In summary, the characteristics of drug dependence of the amphetamine type are :

(1) a variable, but sometimes intense, psychic dependence ;

(2) little, if any, physical dependence and, consequently, no characteristic abstinence syndrome, although withdrawal is followed by a state of mental and physical depression as persistent stimulation is discontinued ; and

(3) the development of a considerable degree of tolerance to many effects, that is not, however, shared equally by all the components of the central nervous system ; nervousness and sleeplessness therefore persist and psychotoxic effects, such as hallucinations and paranoid delusions, may occur.

Barbiturate-type drug dependence

Drugs producing dependence of the barbiturate type include not only barbiturates but also some sedatives chemically related to them or to alcohol. In addition, some, but not all, drugs commonly referred to as "tranquillizers" produce dependence of this kind. Among those that do produce barbiturate-type dependence are certain anti-anxiety agents, such as chlordiazepoxide, diazepam, and meprobamate. Other tranquillizers (e.g., chlorpromazine and other phenothiazines) used extensively in the treatment of patients with particular types of psychosis do not produce dependence.

There is a very substantial difference in the extent to which drugs capable of producing dependence of the barbiturate type are self-administered for non-medical purposes. Short- and medium-acting barbiturates such as secobarbital and pentobarbital are employed in this way much more than long-acting barbiturates such as phenobarbital. The non-barbiturate sedatives also vary in this respect ; methaqualone, for example, being more widely used non-medically than chlordiazepoxide.

As noted earlier, there are many similarities between drug dependence of the alcohol and barbiturate types. In respect of their intoxicating properties, these drugs also have much in common ; both have some stimulant effects but their sedative properties are more prominent. The release of inhibitions, impairment of judgement, progressive impairment of motor coordination, and clouding of consciousness are well known symptoms and signs of increasing intoxication with either beverage alcohol or dependence-producing drugs of the barbiturate type.

Drug dependence of the barbiturate type is a state arising from the repeated administration of drugs of this type on a continuous basis, generally in amounts that exceed the usual therapeutic dosages. There is a strong desire or need to continue taking the drug, a need that can be satisfied by the drug used initially or by another with barbiturate-like properties. There is a psychic dependence on the effects of the drug that is related to the subjective and individual appreciation of those effects, and there is physical dependence requiring the presence of the drug for the maintenance of homoeostasis and resulting in a characteristic and self-limiting abstinence syndrome when the drug is withdrawn.

Tolerance to barbiturate type drugs does develop and, with relatively low doses, it will become evident within a few days. There is, however, in contrast to the tolerance to morphine-like drugs, an upper limit to the size of dose to which a person may become tolerant. This limit differs with the individual user and varies widely. Following the withdrawal of barbiturates, tolerance is rapidly lost, and some patients may become more sensitive to barbiturates than they were prior to their chronic intoxication with these drugs.

Furthermore, the development of tolerance to the various effects of this group of drugs is uneven. For example, tolerance to their stimulating effects may develop less rapidly or completely than tolerance to their sedative properties. Thus, with a constant dosage, the stimulating effects may become relatively prominent, leading the drug-user to take increasing amounts until the desired sedative effect is obtained. Only a moderate tolerance is ever developed to certain depressant effects of these drugs and thus to the amount necessary to cause death.

During the chronic intoxication caused by continuing administration, there is some persistence of the sedative action, ataxia, etc., on account of the incomplete development of tolerance ; this makes the individual accident-prone. There is also an impairment of mental ability, confusion, increased emotional instability, and a risk of sudden overdosage due to the delayed onset of activity, a drug-distorted perception of time, and the relatively limited tolerance to the lethal dose. The clinical manifestations of chronic barbiturism are similar to those of chronic alcoholism.

The abstinence syndrome is the most characteristic and destructive feature of drug dependence of the barbiturate type. It begins to appear within the first 24 hours after the cessation of drug-taking, reaches a peak of intensity in 2—3 days, and subsides slowly. At present, no agent is known to precipitate

the barbiturate abstinence syndrome during the continuing use of the drugs. The complex of symptoms that constitute the abstinence syndrome, in their approximate order of appearance, are : anxiety, the involuntary twitching of muscles, tremor of the hand and fingers, progressive weakness, dizziness, distortion in visual perception, nausea, vomiting, insomia, loss of weight, a precipitous drop in blood pressure on standing, and not infrequently convulsions of the grand mal type and a delirium resembling alcoholic delirium tremens or a major psychotic episode. Convulsions and delirium do not usually occur at the same time ; generally, a patient may have 1 or 2 convulsions during the first 48 hours of withdrawal and then become psychotic during the second or third night. With respect to the psychotic episodes, paranoid reactions, reactions resembling schizophrenia with delusion and hallucinations, a withdrawn semistuporous state, and panic have been observed. In a person with a substantial physical dependence on a drug of the barbiturate type. unsupported withdrawal of the drug is a life-threatening process. Carefully supervised *gradual* withdrawal is therefore essential.

It might be expected that the mechanism of physical dependence of the barbiturate type, like that of the opiate (morphine) type, would be set in motion by the first dose, but there is no evidence that physical dependence develops to a detectable degree with a continuation of the usual therapeutic doses administered to produce sedation or hypnosis ; the daily dose must be increased appreciably above the usual therapeutic level before abstinence signs appear on abrupt withdrawal of the drug. Some degree of psychic dependence facilitating the continuance of administration may occur with therapeutic doses, but such doses can usually be discontinued without serious subjective disturbances. Factors that may lead to an increasing consumption, and eventually to overt physical dependence, include, in addition to those noted with respect to tolerance, the incomplete relief of emotional problems and tension and impairment of judgement, so that larger doses are taken without regard to real need.

In drug dependence of the barbiturate type, the detrimental effects to the individual arise in part from his preoccupation with drug-taking, but more particularly from the untoward effects of large doses of the drug — namely, ataxia, dysarthria, the impairment of mental function (with confusion, loss of emotional control, poor judgement and, occasionally, a toxic psychosis), coma, and death. The harm done to society is also related to both the individual's preoccupation with drug-taking and the

persistence of the effects of these drugs on motor function, emotional stability, and interpersonal relationships, with accident-proneness and assaults on other persons as frequent consequences.

In summary, the characteristics of drug dependence of the barbiturate type are as follows :

(1) a variable, but often marked, psychic dependence related to the desired effects of the drug ;

(2) a marked physical dependence when the dosage levels are substantially above therapeutic levels ; if the drug is stopped, the resulting withdrawal syndrome can be life-threatening, especially in the absence of appropriate medical treatment ; and

(3) the development of an incomplete and variable tolerance to the different pharmacological effects of the drugs (there is mutual, but incomplete, cross-tolerance between alcohol and drugs of the barbiturate type).

Cannabis (marihuana)-type drug dependence

The hemp plant, *Cannabis sativa* L. grows in most temperate to tropical parts of the world. It is used, both for its fibre and its psychoactive properties. Although it is still used in some traditional systems of medicine, cannabis is of little importance in modern medical practice. While there are many chemical constituents in *Cannabis sativa,* the cannabinoids are believed to be responsible for most, if not all, of the plant's psychoactive properties. However, not all of the cannabinoids are biologically active. Of the active compounds, (—) $\triangle^9$-*trans*-tetrahydrocannabinol (referred to as $\triangle^9$-THC or sometimes just as THC) will produce most of the effects of cannabis or extracts of cannabis in both animals and man, whether the material is smoked or ingested. It is therefore believed, but not entirely proved, that $\triangle^9$-THC accounts for most of the pharmacological activity of cannabis. The cannabinoid $\triangle^8$-THC is also biologically active, but generally occurs in only very small amounts by comparison with $\triangle^9$-THC. A number of other constituents may contribute directly or indirectly to the psychoactivity of cannabis preparations.

The amount of psychoactive material in a given cannabis preparation is influenced by (1) the characteristics of the plant, (2) the place and circumstances of its growth, (3) the nature of the preparation, and (4) the age of the harvested material

[1] Based on *Wld Hlth Org. techn. Rep. Ser.,* 1971, No. 478.

and the way in which it is stored. In general, preparations containing mainly leaves, but often with some flowering tops also, are commonly referred to as *marihuana, bhang, kif,* and *dagga,* to mention only a few. Such preparations are less potent than those consisting almost entirely of the flowering tops *(ganja). Hashish (charas)* consists mostly of resinous material obtained from the cannabis plant, and is more potent than the other common preparations. The term "hashish" is used in some places, Egypt, for example, for any cannabis preparation.

Because of all these variations, the psychoactive potency of one cannabis preparation may be many times higher (or lower) than that of another. Since drug effects, including those of cannabis, are greatly influenced by the amount taken, it is not surprising that persons whose experience has been primarily with a low-potency material may have a very different view of its immediate effects than other people who have been mainly exposed to similar amounts of much more potent material.

The usual way of consuming cannabis is by smoking it, but it may be ingested as an ingredient of a food or beverage. The effects of cannabis appear sooner when it is smoked, and greater amounts are required to produce comparable effects when cannabis is ingested.

The symptoms produced by $\triangle^9$-THC or cannabis preparations depend on the dose, but they also depend on the environmental setting and the expectations, physical condition, and personality of the user. The *usual* immediate symptoms and signs resulting from low to moderate doses, in general order of appearance and increasing dose, may include a mild to marked euphoria as well as sensory and perceptual changes, some decrease in the user's sense of identity and reality, and sometimes visual, but less often auditory, hallucinations. Cannabis users often report a sense of increased auditory and visual sensitivity, with an enhanced appreciation of music and works of art. The perceptual changes involve mainly space and time. There are relatively few immediate signs of use ; primarily, they are injected conjunctivae, decreased muscular strength, and an increased pulse rate. When these symptoms and signs subside, they may be followed by sedation and sleep.

At high dosage levels, a state of acute intoxication is usually observed, the major manifestations of which often include paranoid ideas, illusions, delusions, depersonalization, confusion, restlessness, excitement, and sometimes hallucinations. Gross ataxia, however, does not normally occur, even after large doses of cannabis. Such a syndrome may resemble an acute psychotic

episode. Occasionally, there may be additional features of a toxic psychosis, such as delirium, disorientation, and a marked clouding of the consciousness. In other unusual cases, there may be a panic reaction, with agitation, excitement, and apparent fear. These acute reactions usually disappear in 1—3 days, but occasionally last for up to 7 days. Such acute and marked reactions sometimes follow the use of relatively small doses of cannabis, especially among "naive" users.

With the prolonged chronic smoking of substantial amounts of cannabis preparations on an almost daily basis, there is often evidence of uveitis [1] and bronchitis. Since tobacco is frequently used in association with cannabis, it is difficult to assess the role of cannabis, especially in the latter condition. Except for the acute psychotoxic reactions already noted, the relation of various psychoses to the heavy use of cannabis remains unclear. There is evidence to suggest a relationship, although not necessarily a causal one, in exceptionally heavy use. [2] There is also evidence that, under certain conditions, the regular use of cannabis for several years is associated with measurable deficits in a number of psychomotor and cognitive functions. [3] An "amotivational syndrome" has been associated by some authors with the long-term use of cannabis. It is characterized by apathy, withdrawal, poor judgement, and a lack of achievement.

It is possible that some long-term behavioural effects attributed to cannabis use are due largely, or in part, to the sociocultural setting in which the drug is taken. For example, in a society where the use of cannabis is illegal and generally disapproved of, the user is *ipso facto* engaged in nonconforming behaviour. This, in itself, may close various avenues of social adjustment to him and lead to his adoption of a different style of life.

Drug dependence of the cannabis (marihuana) type is a state arising from the chronic, regular, or periodic use of cannabis preparations. Its characteristics are as follows :

(1) a moderate to strong psychic dependence related to the desired subjective effects ;

(2) little, if any, physical dependence (some possible abstinence phenomena have been reported, but there is no evidence to suggest that the withdrawal of cannabis, even from an extremely "heavy" user, produces an abstinence syndrome that

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[1] Tennant, F.S. jr et al. (1971). *J. Amer. med. Assoc.*, 216, 1965—1969.

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1971, No. 478, pp. 27—29.

[3] Soueif, M.I. (1971) *Bull. Narcot.*, 23 (4), 17—28. Tennant, F.S. jr & Groesbeck, C. J. (1972) *Arch. gen. Psychiat.*, 27, 133—136.

begins to approach in severity those produced by drugs of the alcohol, barbiturate, and opiate (morphine) types) ; and

(3) perhaps some degree of tolerance associated with "heavy" use in man (recent experiments in animals have shown the rapid development of a high degree of tolerance in certain kinds of animal).

Cocaine-type drug dependence

Cocaine is the prototype of the stimulant drugs that are capable, in high dosages, of inducing euphoric excitement and hallucinatory experiences. On account of these properties, cocaine ranks high in the esteem of experienced drug users, and they lead to the highest degree of psychic dependence.

The non-medical use of cocaine takes several forms. The most common is the centuries-old custom of chewing coca leaves, which is practised habitually by certain Indians of the high Andes in South America. The leaf mixed with lime, apparently to release the alkaloid, is used almost continuously to reduce sensations of cold, fatigue, and hunger. With this form of use, the release of the alkaloid and its absorption are generally too slow and the quantities too small to induce mental changes that would lead to abnormal behaviour.

Despite its vasoconstrictor properties, cocaine is readily absorbed through mucous membranes. For this reason, it may be self-administered by the snuffing of cocaine crystals. This is a concentrated form of administration that induces intense psychic effects, much like those obtained from intravenous administration.

The diminished need for cocaine as a local anaesthetic and control of the world supply has reduced the total illicit use of this drug, but it appears that such use may now be increasing in some localities. Coincidentally with these changes in the extent of its use, the intravenous self-administration of cocaine, a very hazardous practice, appears to have increased. The most marked form of such use involves frequent administration at intervals as short as 10 min, the user desiring the intense sensations associated with this practice. Cocaine sometimes induces feelings of great muscular strength and mental alertness, leading the individual to overestimate his capabilities. This, associated with paranoid delusions and auditory, visual, and tactile hallucinations, often makes the user very dangerous and capable of serious antisocial acts. Digestive disorders, nausea, loss of appetite, emaciation, sleeplessness, and occasional convulsions are commonly experi-

enced by those who use cocaine in large amounts. The longstanding and continuing use of cocaine alone at a high dosage level is, however, rare. The user reaches such a state of excitement that he voluntarily seeks sedation. A frequent practice is to antagonize the exciting effects by the alternate administration of morphine or some other depressant drug, or by the injection of the two types of drug in combination, e.g., a cocaine-heroin mixture. No physical dependence on cocaine develops and, consequently, no characteristic abstinence syndrome is noted on abrupt withdrawal, but severe depression may occur, and delusions may persist for some time after withdrawal.

Since cocaine is rapidly destroyed in the body, large quantities can be given during a 24-hour period. Indeed, as much as 10 g daily may be used when the drug is administered in relatively small doses at short intervals. This has led to the belief that tolerance to cocaine develops, a conclusion that is warranted neither by the facts nor on the basis of experiments in animals. The criteria for tolerance (i.e., a diminution in objective effects and an elevation of the lethal dose) are not observed in animals, even though it may be possible to administer several lethal doses within a 24-hours period, the total quantity varying with the detoxification capacity of the particular species of animal. The acute lethal dose of cocaine for man has not been established. Probably, if the blood level remains constant, no diminution of the subjective or objective effects of the drug occur. In animals, these effects, in fact, become enhanced. It is safe to conclude that man, like animals, does not develop a tolerance to cocaine.

In summary, the characteristics of drug dependence of the cocaine type are :

(1) a strong psychic dependence ;

(2) the absence of physical dependence and, therefore, of a characteristic abstinence syndrome when the drug is withdrawn ;

(3) the absence of tolerance ; there is, rather, a sensitization to the drug's effects in some instances ;

(4) a strong tendency to continue administration, as in chewing coca leaves, or the rapid repetition of doses, often observed when intravenous administration is involved. Quantitatively, the effects differ strikingly, according to the mode of use.

Cocaine is probably the best example of a substance to which neither tolerance nor physical dependence develops, and for which psychic dependence can lead to a profound and dangerous type of drug dependence.

Hallucinogen (LSD)-type drug dependence

Drugs of this type include lysergide (LSD), which is a semi-synthetic derivative of ergometrine ; psilocybin, an indole found in the sacred mushroom *Psilocybe mexicana (teonanácatl);* mescaline, the most active alkaloid present in the buttons of a small cactus, *Lophohora williamsii (mescal, peyotl);* and in the seeds of some varieties of morning glory or bindweed, especially *Rivea corymbosa* Hall f. and *Ipomoea violacea* L. *(ololiuqui),* active principles that are closely related to lysergide. The mushrooms, cactus buttons, and the morning glory seeds are used by certain American Indian tribes in religious ceremonies or are employed by the medicine men or women of these tribes in treating illnesses, usually in ritualistic fashion. Such religious and ritualistic use does not seem to lead frequently to drug dependence.

Aside from these local uses of hallucinogens, substances of this kind are used largely by those who have a more than usual interest in artistic and intellectual pursuits, whether or not they excel in those fields, and by others for "kicks" (i.e., changes in sensory perception, the development of hallucinations, etc.) and particularly to "expand the consciousness" and obtain "mystical insight". Such use is found mainly in the developed "western" countries. Some users seek an insight into their own emotional problems. Generally, the drugs are taken orally and in the company of other users. The ingestion of a single dose or of several doses over a period of 2—3 days is the customary pattern ; prolonged or continuous use is unusual. Periodic, rather than continuous, use is favoured by the rapid development and disappearance of tolerance and a lack of physical dependence on these drugs.

Drugs of the LSD type induce a state of excitation of the central nervous system and central autonomic hyperactivity manifested by changes in mood (usually euphoric, sometimes depressive), anxiety, distortion in sensory perception (chiefly visual), visual hallucinations, delusions, depersonalization, dilatation of the pupils, and increases in the body temperature and blood pressure.

Psychic dependence on drugs of the hallucinogen type varies greatly, but it is usually not intense. The users may enjoy the effects of these agents and may wish to repeat them, but if such agents are not readily available, these persons will either do without them or accept a substitute. A minority of users may develop strong psychic dependence on these substances. No evi-

dence of physical dependence can be detected when the drugs are withdrawn abruptly.

A high degree of tolerance to LSD and to psilocybine develops rapidly and disappears with equal rapidity. Tolerance to mescaline develops more slowly. Persons who are tolerant to any one of these three drugs are cross-tolerant to the other two.

The chief dangers to the individual arise from the psychological effects of hallucinogens. Serious impairment of judgement has led to dangerous decisions and accidents, while a "bad trip" with an associated panic reaction can be a most frightening experience.

Khat-type drug dependence

Khat (*Catha edulis* Forssk.) is cultivated and consumed in circumscribed areas of East Africa and the Arabian peninsula. The common, and quantitatively most profitable, mode of use is to chew the tender parts of the plant while they are in as fresh a state as possible.

Chemically and pharmacologically the active principles of the khat leaf appear to be so closely related to the amphetamine group of substances that its effects are to be considered qualitatively identical with those of the amphetamines, and quantitatively equal to those of the weaker members of the group. These resemblances extend to the somatic as well as to the psychic effects, among which a usually moderate degree of central nervous stimulation, with an ensuing feeling of wellbeing and the removal of subjective feelings of fatigue, are the effects most desired by khat users ; in addition, there is a suppression of hunger and, sometimes, of libido. The natural limit to the amount of khat that can be chewed and hence ingested and absorbed enhances the quantitative differences between the effects of khat and those of the commonly used amphetamine substances. This limitation of the intake is believed to prevent the occurrence of tolerance, rebound phenomena after cessation, and psychotoxic effects typical of the amphetamines when the latter are taken in a pure form and high dosage. There is no evidence for the development of physical dependence on khat during its chronic use.

Nevertheless, the pleasurable effects afforded by khat are a strong inducement for many to procure the necessary supplies at least once a day, and to repeat or prolong the periods of chewing, often at the expense of vital needs such as food. Such behaviour is a manifestation of psychic dependence.

Drug dependence of the khat type is, under the circumstances of its traditional mode of consumption (i.e., chewing), characterized by :

(1) a moderate, but often persistent, psychic dependence as long as continuation is at all practicable ;

(2) a lack of physical dependence ;

(3) an absence of tolerance.

On account of the non-amphetamine ingredients (tannins) of khat, its habitual and, in particular, exaggerated consumption may also damage the individual's health. The social and economic consequences of khat dependence mainly occur when the dependent person loses interest in work and other matters and utilizes his meagre resources to purchase the drug.

Opiate (morphine)-type drug dependence

The outstanding and distinctive characteristic of dependence on opium and morphine-like agents is that the major features — psychic and physical dependence, as well as tolerance — can be initiated by the repeated administration of small doses, and increase in intensity in direct relation to an increase in the dosage. This characteristic implies that dependence on drugs of this generic type may be created within the dosage range generally used for therapeutic purposes, and that the mechanism may be set in motion by the first dose administered.

The subjective effects of taking drugs of the opiate type may vary from person to person, and in the same person at different times. These effects depend on the dose, the route of administration, the physical and mental characteristics of the user, and his expectations. "Narcotics do more than produce indifference to pain. They also suppress those drives that motivate an individual to appease hunger, seek sexual gratification, and respond to provocation with anger. In short, they seem to produce a state of total drive satiation. Nothing needs to be done because all things are as they should be. For certain types of personalities, but clearly not for all, such a state is extremely pleasant."[1]

Some narcotic users say that opiate-type drugs give them a pleasant "floating", "drifting", or "coasting" sensation, and that everything seems to be all right. If they experience pain or nausea it does not matter. The nausea that sometimes accompanies the taking of opiates is often referred to by regular users as a "good sick". The range and paradoxical nature of the effects of narcotics are astonishing. For the man who wants to remain awake, they provide an answer. For the man who wants to go to

[1] Goodman L.S. & Gilman, A. (1970) *The pharmacological basis of therapeutics*, New York, MacMillan.

sleep, narcotics induce slumber. Narcotics have both euphoriant and sedative effects. They provide relief from pain, from fear, from anxiety, and even from excessive passivity. Some of the signs often associated with the use of drugs of the opiate type are apathy, lethargy, respiratory depression, orthostatic hypotension, vasodilatation, constriction of the pupils, and a decreased motility of the digestive tract with constipation.

The regular use of opiate-type drugs results in the development of strong physical dependence. A characteristic abstinence syndrome occurs when the narcotic is withdrawn. With morphine, the abstinence syndrome appears within a few hours of the last dose, reaches peak intensity in 24 to 48 hours, and subsides spontaneously. The most severe symptoms usually disappear within 10 days, although a residuum persists for a much longer period. The time of onset, peak intensity, and duration of abstinence phenomena vary with the degree of dependence on the drug and with the characteristics of the specific agent involved. Administration of a specific antagonist during continuing administration of morphine-like drugs promptly precipitates a more rapid and intense abstinence syndrome that lasts only a few hours.

The unique feature of the morphine abstinence syndrome is that it represents changes in all major areas of nervous activity, including alteration in behaviour, excitation of both divisions of the autonomic nervous system simultaneously, and dysfunction of the somatic nervous system. The complex of symptoms and signs include anxiety, restlessness, generalized body aches, insomnia, yawning, lacrimation, rhinorrhoea, perspiration, mydriasis, piloerection (gooseflesh), hot flushes, nausea, emesis, diarrhoea, elevation of body temperature, respiratory rate, and systolic blood pressure, abdominal and other muscle cramps, dehydration, anorexia, and loss of body weight.

The generic type of opiate-like compound for which morphine is used as the standard of reference comprises substances with different chemical constitutions but similar pharmacological profiles. They vary in potency from substances with low activity to others that are several thousand times as potent as morphine. These agents are alike in their ability to produce and maintain some degree of physical dependence, to maintain tolerance and physical dependence, and to prevent the appearance of abstinence phenomena. These agents are mutually interchangeable by substitution, although not on a milligram-for-milligram basis. Varia tions exist in the capacity of potent morphine-like substances to induce psychic dependence and to produce psychic satisfaction on substitution for one another.

Within the generic class of agents with pharmacodynamic features similar to those of morphine, making them capable of inducing physical dependence with sufficient dosage, there are some with a high degree of usefulness, which, in therapeutic doses, are generally inadequate substitutes for morphine. Even in higher doses, these compounds are not completely satisfactory in sustaining an established morphine dependence ; their effects are not usually sufficiently satisfying subjectively to induce significant psychic dependence. Codeine is generally recognized as a reference standard for this group.

A relationship between dose, pharmacodynamic properties, and intensity of physical dependence has been mentioned. Regularity of administration at intervals well within the duration of action of the drug also hastens development of physical dependence. The time from the beginning of administration to the appearance of demonstrable physical dependence also varies with the agent. With morphine, this interval under clinical conditions of administration is two or three weeks ; it is shorter for ketobemidone, probably longer for phenazocine, and definitely longer for codeine, especially when this is administered orally.

Finally, with drug dependence of the morphine type, harm to the individual is, in the main, indirect, arising from his preoccupation with drug-taking ; personal neglect, malnutrition, and infection are frequent consequences. For society also, the harm resulting from dependence is chiefly related to the preoccupation of the individual with drug-taking ; disruption of interpersonal relationships, economic loss, and crimes against property are frequent consequences.

In summary the characteristics of dependence of the opiate-morphine type are as follows :

(1) a strong psychic dependence that manifests itself as an overpowering drive or compulsion to continue taking the drug for pleasure or to avoid discomfort, and to obtain it by almost any means ;

(2) an early development of physical dependence that increases in intensity, paralleling the increase in dosage ; this requires continued administration of the same drug, or of an allied one, to maintain a semblance of homoeostasis and to prevent the appearance of the symptoms and signs of withdrawal. Both the withdrawal of the drug and the administration of a specific antagonist precipitate a definite, characteristic, and self-limiting abstinence syndrome ;

(3) the development of tolerance that requires an increase in dosage to produce the pharmacodynamic effects obtained initially.

Volatile solvent (inhalant)-type drug dependence

Since anaesthetics administered by inhalation became available there have been instances of their self-administration, not to produce unconsciousness and anaesthesia, but to induce a sense of giddiness, intoxication, and sometimes euphoria. Among the agents used in this way are diethyl ether, chloroform, and nitrous oxide (laughing gas). More recently, certain volatile solvents, such as acetone, toluene (an ingredient of a variety of products, including some types of glue), and also petrol (gasoline), have been used for this purpose, especially by pre- and early adolescents.[1]

These substances are central nervous system depressants and produce effects somewhat comparable to those produced by alcohol, although the symptoms vary from agent to agent. There may be initial mild euphoria and exhilaration, followed by confusion, disorientation, and ataxia. The subject may behave as though drunk.[2] Some of the substances, including petrol and toluene, may also produce symptoms rather like those sometimes induced by the hallucinogens, i.e., a marked euphoria, grandiosity, recklessness, delusions, hallucinations, and a substantial loss of self-control.[3] With increasing doses, there may be convulsions, coma, and death.

Certain of the substances, including petrol, benzene, and carbon tetrachloride, are more likely to result in grave complications, pathological conditions of the liver or kidney, or blood dyscrasias. A special complication associated with the self-administration of volatile solvents is death by suffocation. In order to facilitate sniffing, glue is often squeezed into a plastic bag. Suffocation may ensue if the sniffer lapses into unconsciousness while the bag covers his face.

The development of tolerance to toluene, for example, is described by most users, but the matter is unclear with respect to other substances, including petrol. Some cross-tolerance is thought to develop between alcohol and some of the anaesthetic agents mentioned above.

Physical dependence, at least of the magnitude associated with the use of a drug of the alcohol, barbiturate, or opium type, does not ordinarily occur. However, abrupt withdrawal after the use of substantial amounts may be associated with some degree

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[1] Press, E. & Done, A. K. (1967), *Pediatrics*, 39, 451—461, 611—622.

[2] Polson, C. J. & Tattersall, R. N., (1969) *Clinical toxicology*, London, Pitman Medical Publications, pp. 428, 438.

[3] Press, E. & Done, A. K. (1967) *Pediatrics*, 39, 612.

of lethargy, depression, and irritability.[1] Two cases have been reported in which delirium, delusions, and hallucinations reminiscent of delirium tremens occurred following withdrawal.[2,3] From the description given, the possibility of transient toxic psychoses cannot be excluded.

In summary, a number of volatile solvents will produce psychic dependence of varying degrees because of a liking for the subjective effects. Some of these substances will also produce tolerance. The question of physical dependence remains open, but if it occurs the syndrome is usually less intense than that associated with drugs of the alcohol, barbiturate, and opiate types

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[1] Press, E. & Done, A. K. (1967) *Pediatrics*, 39. 613.
[2] Merry, J. & Zachariadis, N. (1962) *Brit. med. J.*, 2, 1448.
[3] Lindström, F. (1960) *Svenska Läk. Tidn.*, 57, 2214—2219.

CHAPTER 4

Circumstances of use[1]

Underlying causes

Many factors have been thought to play a part in starting, continuing, and stopping the self-administration of dependence-producing drugs. Some drugs are apparently used because a particular effect or sensation is sought. For example, certain persons take stimulants because of their conviction that such drugs will enhance their awareness or increase their sexual or other gratification. Other persons, or the same persons at another time, may take stimulants in an attempt to allay fatigue associated with sustained effort (e.g., when studying, working, or driving). Some drugs, including alcohol and cannabis, are taken to foster relaxation, enhance sociability, or reduce anxiety and inhibitions.

No single "cause" of drug-taking has been demonstrated, but the following motives and hypotheses are among those most frequently put forward to "explain" why drug-taking is begun or pursued. Persons who take dependence-producing drugs apparently do so for a great variety of stated or unconscious reasons at different times. However, one or more of the following motives often appear to be associated with the initiation and continuation of drug-taking : (1) to satisfy a personal curiosity about drug effects ; (2) to achieve a sense of belonging, i.e., to be "accepted" by others ; (3) to express independence and sometimes hostility ; (4) to have pleasurable, new, thrilling, or dangerous experiences ; (5) to gain an improved "understanding" or "creativity" ; (6) to foster a sense of ease and relaxation ; and (7) to escape from something.

It must be noted that these motives are not necessarily associated with individual psychopathology or with adverse social influences. They can be, and are, operative for normal as well as abnormal persons, whether or not such persons are satisfied with the social structure and the situation in which they find themselves. Furthermore, these motives do not necessarily lead

[1] The material in this section is taken largely from *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 516, pp. 18—24.

to drug-taking. Indeed, they can and do induce most people to obtain satisfaction through activities other than drug-taking.

Curiosity is one of man's outstanding characteristics; it appears early in life and leads to extensive exploratory behaviour. It is therefore not surprising that many young persons wish to try certain drugs in order to discover their effects for themselves. Since a great many young people first use drugs (especially alcohol and cannabis) in the company of others, the novice may find that, in endeavouring to satisfy his curiosity, he may also have achieved a sense of "belonging" to the group involved and/or a sense of independent responsibility for his actions. Indeed, the first or subsequent trials may be more related to the experimenter's need for acceptance as a person or a sense of independence than to his curiosity. It is understandable that these powerful factors, reinforced by the pharmacological and other effects of taking dependence-producing drugs, will make such drugs attractive for some persons once they have tried them. Among the possible reinforcing pharmacodynamic properties of various types of dependence-producing drug are : relief from pain, anxiety, fear, inhibitions, and excessive passivity ; a sense of ease, relaxation, and blunting of consciousness ; a sense of decreased fatigue and heightened awareness of both external and internal sensory and other stimuli, sometimes to an intense degree; a sense of increased understanding, insight, or creativity ; and the production of dreamy and/or euphoric states.

A knowledge of the pharmacological interaction between the drug and the drug-taker and of the interaction between the drug-taker and the environment is essential to an understanding of drug dependence. Given that pharmacological, human, and environmental factors are present, some of the many hypotheses put forward to explain the causation of drug dependence include the following :

"(1) that such drug dependence may be a manifestation of an underlying character disorder in which immediate gratification is sought in spite of the possibility of long-term adverse consequences and at the price of immediate surrender of adult responsibilities ;

"(2) that it may be a manifestation of delinquent-deviant behaviour in which there is pursuit of personal pleasure in disregard of social convention, so that to some this is primarily a moral problem ;

"(3) that it may be an attempt at self-treatment by persons suffering from *(a)* psychic distress either of the normal variety seen, for instance, in adolescence or as a reaction to social and/

or economic stress, frustration, or blocked opportunity ; or the more persistent problem of depressive illness, chronic anxiety, or other psychiatric disorders ; *(b)* physical distress — hunger, chronic fatigue, or disease ; *(c)* a belief that the drug has special powers to prevent disease or to increase sexual capacity ;

"(4) that it may provide a means of achieving social acceptance in a social subculture, particularly for the socially inadequate ;

"(5) that it may be a manifestation of a permanent or reversible metabolic lesion brought about by the repeated use of high doses of drugs ;

"(6) that it may be part of a rebellion against conventional social values relating to pleasure, tradition, success and status ;

"(7) that, even in the absence of pre-existing psychopathology, it may result from the acquisition of a complex set of instrumental and classically conditioned responses and may therefore be a form of learned behaviour ;

"(8) that, even in the absence of underlying psychopathology, it may result from sociocultural pressures leading to heavy use of a drug, for example, alcohol ;

"(9) that any or all of these factors may play a role in the causation of drug dependence in a given individual."[1]

It will be noted that, for the most part, these hypotheses are non-specific with respect to drug use; that is, most of these factors may be operative with respect to many types of behaviour other than drug-taking. The same is also true of such precipitating factors as "*(a)* rejection by, or separation from, a person upon whom the individual was emotionally dependent ; *(b)* transition to a more demanding adult role, such as those involving occupational responsibilities, sexual relationships, marriage and parenthood ; and *(c)* serious adverse circumstances or physical illness." [1]

Facilitating and initiating factors

In addition to the factors noted above, there are others that have, or may have, a bearing on the initial use of a particular dependence-producing drug by a given person. Among these are *(a)* the ease with which dependence-producing drugs may be obtained in a given locality ; (b) social acceptance of the use of drugs to relieve discomfort or to modify mood or perception ; and *(c)* the geographical mobility now possible for persons, ideas, and objects. In addition, consideration must be given to the influence of the family, peers, and subcultures, as well as pro-

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 460, p. 12 (section 3.1.1.).

selytizing by confirmed users. The sources and quality of the available and accepted information about drug use are also of interest. Why drug use becomes indiscriminate and heavy for some users, remains experimental or controlled for others, and is totally rejected by still other persons, needs further examination.

Availability

Where certain drugs can be obtained only with great difficulty, the users of these drugs must be few. For example, fresh khat and coca leaves are widely available and used in certain limited regions of the world but are essentially lacking elsewhere. However, there are few, if any, regions where at least some forms of dependence-producing drugs are not available, even if they are limited to those produced locally. Nevertheless, despite the fairly ready availability of dependence-producing drugs, they are not used at all, or are not used in damaging amounts, by a great many persons.

Social acceptance

As well as living in areas where a number of dependence-producing drugs can be readily obtained, many persons live in cultures that facilitate positive attitudes towards drug use. Here, both young and old are exposed to cultural pressures to accept and value modification of mood and perception. These pressures may arise from mass media sensationalism concerning the non-medical use of drugs, particularly by widely known and popular figures. They may also stem from some types of advertising for an increasing variety of socially acceptable drugs (e.g., alcoholic beverages, tobacco, many medicaments). Underlying such advertising may be vested interests in governmental tax revenues as well as corporate or individual profits. All these influences may tend to foster the use of available mood modifiers, including those capable of producing dependence.

Mobility

The extent and rapidity of mass communication and transport now enable persons in one part of the world to learn quickly of the activities of others in distant places, to obtain drugs that do not deteriorate too rapidly, and to travel to many parts of the world. Such travel is now possible and acceptable for many younger, as well as older, persons. Travel facilitates contacts with social groups and subcultures that are not accessible to those

who must or do stay at home. Further, the effectiveness of external (as contrasted with internal) controls by parents, neighbours, acquaintances, and other sociocultural factors is diminished when persons are away from their immediate influence. This phenomenon is not limited to young people, but youth may be affected to a greater degree than older persons who have had a longer time in which to establish particular patterns of living. There also seems to be a ready supply of dependence-producing drugs in certain areas frequented by young travellers.

Peer groups

The interests and expectations of peer groups have an important bearing on whether or not a person will try a dependence-producing drug. The majority of youthful non-medical users of such drugs obtain those that are socially deprecated from persons of their own age, not from adults. Boys tend to receive drugs from other boys of about the same age, but girls tend to get them from boyfriends or men somewhat older than themselves. A friend or peer group is likely to be the source of information for drug-users about the availability of drugs and their alleged effects. Furthermore, a desire for acceptance and social interaction in a particular peer group may result in starting and maintaining the use of drugs if some influential members of that group happen to be intermittent or regular users. Joining a drug-oriented subculture is usually a sign that exploratory stages of drug use are over and that a commitment to heavier or less discriminating use is being made.

The "value" of the peer group to the infrequent or frequent drug-user should not be overlooked. Such groups provide a setting in which to learn how to recognize different drugs and to take them to achieve a desired effect. They also provide an opportunity to share information about new and interesting drugs and types or particular batches that are inactive or harmful. Group members may help a user during a bad reaction or some other emotional crisis. However, if a group member wishes to discontinue drug use, he may be dissuaded from doing so through pressure from other members or fear of losing contact with the group. Peer groups and drug-using subcultures also provide settings in which a user can examine and criticize his own style of life and that of others.

Pushers

The question of "pushing"[1] has been much discussed. In most countries, many users of dependence-producing drugs will give or sell drugs to their friends or associates at little or no profit. The more scarce and costly the drug, the less likely is it to be made available in this way. The use of cannabis is often a group undertaking in which sharing is an important ethic. It is believed that in most countries the majority of drug-users take the initiative (directly or indirectly) in connexion with their initial drug experience — i.e., they tend to seek the experience. "Pushing" of drugs to the extent that unwilling non-users are persuaded or forced to buy and use drugs is thought to be rather unusual. However, if a non-user wishes to join a drug-oriented peer group he may well be required to use drugs as a condition of becoming a member. Many young persons, but few older ones, are offered drugs at slight cost when they are plentiful. It would appear, however, that most dependence-producing drugs are distributed to those willing or wishing to take them and are not generally "pushed" upon the unwilling. Certain dependence-producing drugs are readily available in many localities, even if not actively "pushed". Because of curiosity, if for no other reason, many persons in these areas of ready availability appear to wish, or at least to be willing, to try them.

Sources and influence of information

Insufficient data are available about how different persons (non-users and users of all ages) obtain their information about drugs, or the influence of this information on their decisions to try or not to try a particular drug. One study has shown that users of marihuana and non-users who said they "might" use it tend to rely on their friends and on their own experiences for drug information.[2] However, these data were obtained from marihuana users after they had begun its use and not at the time when they were beginning to use it. On the other hand, confirmed non-users tend to rely for information on the mass media or schools and not necessarily on their friends.

A more important question concerns the accuracy of the drug information that is accepted. Studies in the Netherlands show that information believed by young users and non-users as well

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[1] As used here, "pushing" means the act of trying to recruit new drug customers (users or non-users) for profit or for any other reason.

[2] Smart, R.G. & Fejer, D. (1971) *Credibility of sources of drug information for high school students,* Toronto, Addiction Research Foundation (Substudy 7—7 and JO—71).

as by their parents to be true was often inaccurate.[1] The actual influence of holding accurate as opposed to inaccurate beliefs on the initiation of drug-taking behaviour has not been adequately assessed.

The family

The family may play a role in facilitating or initiating drug use or in deterring such use. There are many anecdotes about sons who became alcoholics like their fathers, or others who did not do so because they so abhorred the alcoholism of their fathers (or other relatives).

In a study of urban negro males, Robins et al. found "no difference in the probability of using *some* drugs (51% when the father was present and 49% when he was absent), but an increased risk of using drugs *other* than marihuana when the father was absent (17% versus 5% for heroin, 20% versus 11% for amphetamines, and 18% versus 9% for barbiturates)."[2]

Continuing use

Many persons may try a particular dependence-producing drug a few times (especially cannabis or alcohol) and then, their curiosity satisfied, give it up. For them, the initial experiences were either not very rewarding or they found other, more attractive, means of satisfying their needs.

However, a great many persons who try certain dependence-producing substances (again, especially alcohol or cannabis) may go on to use them on a casual or recreational basis. This is particularly characteristic of situations in which the "moderate" use of the substance in question is approved, accepted, or at least tolerated by the broad and/or immediate sociocultural groups to which the user belongs. With the exception of curiosity, most of the factors that may have been operative for a given person during his experimental use of the drug continue to be operative if he becomes a casual, intermittent, non-dependent user. Such persons take dependence-producing drugs primarily as evidence of friendship or goodwill or to experience a pleasant sensation (e.g., taste or relaxation). They are quite capable of obtaining and expressing goodwill, of relaxing, or of experiencing gustatory and other pleasures, without the use of drugs. In fact, their use of drugs plays a relatively minor role

[1] Buikhuisen, W., Dijksterhuis, F.P.H., Hemmel, J.J., Jongman, R.W., Smale, G.J.A. & Timmerman, H. (1970) *Drug-gebruik in Gieten : een veldonderzoek*, Groningen, Criminological Institute.

[2] Robins, L.N. & Murphy, G.E. (1967) *Amer J. publ. Hlth*, 57, 1951.

in their lives. However, the substantial symbolic value attributed by many persons to certain types of drug use (e.g., a shared drink or smoke) must not be overlooked. In such situations it is the symbolic act and not the drug effect that is of the greater importance.

When a drug-user becomes dependent on one or more drugs, not only are most of the personal and sociocultural factors that originally prompted him to try drugs still operative, but they often increase in intensity at the same time as additional ones come into play.

As the fact of his dependence is suspected or becomes apparent to those about him, he may experience new or increased rejection by many persons and institutions (e.g., old acquaintances or friends, members of his family, schools, places of employment). Such rejection often pushes drug-users deeper into their dependence on drugs rather than stimulating them to adopt an alternative way of living. The rejection phenomenon is most pronounced with respect to those who take drugs, the non-medical use of which is widely and strongly disapproved of in the locality. The rejection of users of certain drugs may occur when such use comes to light, whether or not the users have become dependent; e.g., students may be expelled from school for possessing or using a dependence-producing drug. Such actions may have a greater detrimental effect than the drug use *per se*.

Drug effects (e.g., clouding of consciousness, over-stimulation, or distortions of thinking or perception) often make it difficult if not impossible for drug users to discharge their personal and social responsibilities effectively and this may increase their rejection by other members of society.

Changes in the style of living (resulting from drug effects, rejection by certain segments of society, association with other drug-users, and sometimes participation in socially unacceptable or unlawful activities to obtain drugs) also enhance rejection and the closure of many avenues to alternative ways of living.

Finally, there is the problem of physical dependence associated with the regular, substantial use of opiates, barbiturates, or alcohol. After such dependence on drugs of these types has been established, the user will develop uncomfortable symptoms if he is unable to take his customary dose. The prevention or relief of such discomfort is a powerful incentive to continuing the use of these drugs. Unsupported withdrawal from even large doses of opiates is not ordinarily life-threatening, but such withdrawal from alcohol or barbiturates frequently is.

CHAPTER 5

Special features associated with age[1]

It has been noted that there are variations in the choice of drugs and their patterns of use in different geographical regions. There are, nevertheless, some noteworthy common features.

Most experimentation and initial use (and also much discontinuation) of the majority of dependence-producing drugs takes place during adolescence. For some individuals, experimentation starts earlier, for others somewhat later. The drugs most likely to be first tried during the pre-adolescent period are tobacco, alcohol, volatile solvents, and cannabis preparations. Drugs of the amphetamine, cocaine, barbiturate, and opiate types are most likely to be first tried during adolescence or later. In most parts of the world, cocaine and opiates are seldom the first drugs tried.

Personal motives for drug-taking also seem to be associated with age. Curiosity, a need to be accepted and to demonstrate independence of action, as well as a desire for pleasurable or thrilling experiences are particularly characteristic of the young and appear to be strongly associated with much of their use of drugs. If they become dependent, these motives usually continue to operate, though certain young persons may, from the outset, have had a desire for improved "understanding" or "creativity", or a need to escape. The use of dependence-producing drugs by adults is not often associated with curiosity : by the time they reach early mature years they have already tried most of those they are going to try. Rather, they are likely to be seeking a sense of ease, relaxation, pleasure, and "belonging" in their non-dependent use of such drugs. If they become dependent, escape often appears to be a prominent motive. When young persons use drugs to the extent of becoming dependent on them, this often represents an attempt to move nearer to certain stimuli, whereas, with adults, such use of drugs frequently appears to involve an effort to move away.

The interrelations between age, broad social acceptability, and the choice and manner of use of psychotoxic, dependence-producing substances are of interest. In general, adults tend to limit their use of such drugs to substances that are socially acceptable or tolerated in their locality — for example, alcohol

[1] The material in this section is taken from *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 516, pp 25—26 (section 4).

in some places, cannabis in others. This is not to say that adults who have become dependent in their earlier years on non-socially accepted drugs do not continue to use them. Conversely, much of the use (experimental or otherwise) or socially disapproved drugs is seen among younger persons. As drugs are ordinarily self-administered, the characteristic interval between their first non-medical use and the development of dependence on them varies substantially with the different types of drug. For example, opiate-users sometimes develop dependence in a few weeks and usually within 6—8 months, whereas those who become dependent on alcohol usually do so only after several years. The probability that a person will eventually become dependent varies not only with his characteristic and sociocultural milieu but also with the nature of the drug, and the route and frequency of administration. The intravenous use of drugs, as compared with other routes of self-administration, is more likely to result in dependence and serious medical complications. In one study of heroin-users in the USA, it was found that four-fifths of the men who had tried it once became dependent and all who reported using heroin more than 6 times became dependent.[1] The proportion of those who use alcohol and eventually become dependent on it is very much lower than with heroin and several other dependence-producing drugs, especially when the latter are taken intravenously. The foregoing facts, plus the special concern of adults for youth, tend to focus the attention of adults on the non-medical use by youth of all socially disapproved drugs.

It is essential to find means to reduce the present and future adverse effects among *all* age groups resulting from the non-medical use of all dependence-producing drugs. Account must be taken not only of the non-medical use of socially disapproved dependence-producing drugs by young persons but also the use of ethanol by adults. The availability and use of beverage alcohol is so widespread in most countries that the number of alcohol-dependent persons (alcoholics) is very large despite the fact that they constitute a relatively small proportion of those who drink. As a consequence, in most countries, the number of persons experiencing serious adverse effects from alcohol far exceeds the number adversely affected by the less available and less acceptable heroin and probably most other dependence-producing drugs. For example, there were reported to be 2 240 heroin-dependent persons in the United Kingdom in 1968[2] and over 200 000 alcoholics in England and Wales in 1961.[3] It is not only alcoholics who suffer from the adverse effects of alcohol — e.g., many non-alcoholics are involved in alcohol-related accidents.

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[1] Robins, L.N. & Murphy, G.E. (1967) *Amer. J. publ. Hlth*, 57, 1585.
[2] Spear, H.B. (1969) *Brit. J. Addict.*, 64, 247.
[3] Zacune, J. & Hensman, C. (1971) *Drugs, alcohol and tobacco in Britain*, London, Heinemann Medical Books, p. 81.

CHAPTER 6

Social attitudes and responses[1]

Broad sociocultural attitudes

The responses of society to the non-medical use of dependence-producing drugs will depend on how its individual members and institutions perceive the problems associated with such use. These perceptions and subsequent responses will also be much influenced by prevailing attitudes and beliefs about (1) why people take drugs, (2) the immediate and delayed effects of doing so, and (3) certain aspects of the society's broad value system. The latter have to do with such matters as (1) the relative worth of material possesions and spiritual, cultural, and traditional beliefs and experiences, (2) the respective importance of individual rights, prerogatives, and responsibilities, and those of society, (3) the nature of practices which are considered to be "good" or "evil", and (4) the meaning and value of life itself.

The section on underlying causes (p. 47) lists a number of hypotheses for the possible "causes" of drug dependence. These can be grouped under three broad "belief" headings so that such dependence, and the non-medical use of socially disapproved drugs, may be seen as stemming largely from (1) character problems peculiar to the drug-taker (see items 1 and 2), (2) mental and/or physical disorders of the individual (items 3, 5, and 7), or (3) sociocultural pressures or social ills (items 4, 6, and 8). Many persons tend to hold primarily one or other of these views, whereas others believe that some combination of the factors covered by at least two of these headings is almost always involved and that the relative importance of each varies with the individual drug-taker. The WHO Study Group on Youth and Drugs took the latter view, but stressed that a "knowledge of the pharmacological interaction between the drug and the organism and of the interaction between the organism and the environment is essential to an understanding of the nature of drug dependence."[2]

[1] The material in this section is taken largely from *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 516, pp. 27—38 (section 5).

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 460, p. 11.

Attitudes of selected groups

Professional personnel

The non-medical use of dependence-producing drugs is becoming a matter of increasing concern to members of professions who have important roles to play in the prevention management, and control of the associated problems — e.g., lawyers, educators, enforcement officers, judges, psychologists, sociologists, ministers of religion, welfare workers, and especially physicians. The broad sociocultural attitudes and the stereotypes discussed in the preceding section are common among members of these professions, as elsewhere in society. Some members of the medical and certain other professions may, moreover, express their concern in negative or hostile ways — e.g., by avoiding direct contact with, or giving help to, drug-users, even those who ostensibly seek assistance. Not a few professional workers would prefer others, in the same or a different profession, to assume responsibility for the management of drug-dependent persons, including their treatment and rehabilitation. Certainly, a substantial number of drug-users are not always straightforward in their dealings with "helping" personnel, who frequently find them to be unrewarding patients or clients. This is particularly true when negative attitudes are perceived by drug-users, whether or not their perceptions are accurate. Too many medical and other professional and non-professional persons have set themselves up as self-appointed experts on drug dependence without being well-versed in the field, and thus are prone to make ill-informed statements about drug problems. There are, of course, some who are knowledgeable about drug problems, have a sincere and continuing interest in them, and have contributed substantially to improving treatment, furthering research, and formulating control policies. It is clear that, if the pertinent knowledge were placed at the disposal of members of the above-mentioned professions, this would encourage them to acquire attitudes that would facilitate needed constructive, collaborative responses to problems associated with the non-medical use of drugs. Such responses include the prescribing practices of physicians, the individual treatment of patients, law enforcement, participation in the development and operation of needed community services of all types, and the establishment of sound public policies.

Adults and youth

In general, the majority of parents and of young people who do not take drugs have negative attitudes to drug use and tend to stigmatize drug-users, whom they view as stereotypes. Regardless of the nature of the drug, the amount, or the frequency of use, the user is often classified and denigrated for what is not infrequently temporary experimental or casual use. Such stigmatization tends to isolate the user and make him feel more of an outsider, and it may accentuate his deviant behaviour.

The use of traditional drugs within the usually acknowledged sociocultural bounds of a society tends to be viewed by most adults and younger persons as quite acceptable. A person who becomes dependent on such a drug will, in all likelihood, be an adult of mature years, and consequently be considered to be responsible for his own behaviour and "plight". He may, however, also be regarded as a sick person in need of treatment.

The non-medical use of any amount of a drug not traditionally used in a given region is generally viewed with greater disapproval by adults than by young persons. Certain drugs (e.g. heroin) are deprecated more than others (e.g., cannabis preparations), particularly by younger persons. The use of non-traditional drugs by a young person is likely to shock and frighten his own and many other parents. Some tend to believe that they have failed in their role of parents and have let their children down badly. Others may tend to blame society, inadequate housing, overcrowding, or social conditions in general.

Many adults believe that the current non-medical use of psychoactive drugs would be lessened if children adhered fully to the ethics, values, traditions, and/or religions of their elders.

The attitudes held by many professional and non-professional persons with respect to drugs or medicines in general, and not just those capable of producing drug dependence, are also of interest. Many people have an almost magical belief in the present or future existence of a natural or synthetic "medicine" to relieve or influence each of a wide variety of medical, psychological, and sometimes social problems. It is as though to have at hand the right pill or potion is to have the means to "solve" most human problems without needing to deal with them in other ways. Some think that this attitude may foster the self-administration of drugs, particularly those with a capacity to stimulate, depress, or disturb perception, mood, thinking, or behaviour — i.e., the dependence-producing drugs. It is widely believed, also, that such attitudes are enhanced by modern advertising, particularly of certain pharmaceuticals. Dependence-

producing drugs used for non-medical purposes stem from both illicit and licit production and manufacture. There is a growing interest on the part of many governments, groups, and individuals in improving the means by which the illicit production and manufacture of such drugs may be suppressed and their supply by licit means be limited to amounts that are needed in medical practice. [1] To determine legitimate medical needs is not, however, a simple matter.

Social responses

In general, various aspects of drug use evoke attitudinal and other responses when drug use is seen as a threat to society or to the individual user. Such threats to society include the presumed or demonstrated damage that the user may cause, for example to industry, the armed forces, his family, social institutions, or individuals with whom he may come in contact. Another threat may be perceived when the attitudes and behaviour of users, whether or not directly related to drug use, seem to be in opposition to prevailing values and the functioning of the social system as a whole. The drug-user is regarded as being personally threatened when it is believed that his actions may lead to his own injury or premature death or to a failure to achieve his full potential for self-realization.

Responses to a perceived threat associated with the non-medical use of dependence-producing drugs can be broadly classified under the following headings : (1) *laissez faire,* (2) making profits, (3) preventing or curtailing use, (4) punishment for using drugs or for acts associated with use, (5) treating the user or symptoms of use,[2] (6) modifying elements in the immediate and broader sociocultural environment of the user, and (7) adopting an inquiring attitude.

Laissez faire

"To do nothing is as much a responses as to do something."[2] A policeman may ignore a drunkard in the street ; cannabis may be smoked freely at pop festivals or in designated clubs ; licit over-production or illicit production and drug traffic may remain unchecked.

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[1] See, for example, United Nations Conference for the Adoption of a Protocol on Psychotropic Substances (1971) *Economic and Social Council Official Records,* Document E/CONF.58/6 ; United Nations Conference to Consider Amendments to the Single Convention on Narcotic Drugs, 1961 (1972) *Economic and Social Council Official Records,* Document E/CONF.63/9.

[2] Zacune, J. & Hensman, C. (1971) *Drugs, alcohol and tobacco in Britain,* London, Heinemann Medical Books, p. ix.

Making profits

A government may decide against a proposed increase in alcohol taxes intended to reduce consumption lest the increased cost to the consumer may inhibit sales to such an extent as to reduce total tax revenues. Profit motivates commercial activity. It is also involved in many criminal acts.

Preventing or curtailing use

These measures may consist in imposing controls on the supply of a substance by means of regulation, taxation, and enforcement; making efforts to discourage its use; and providing attractive alternatives to the use of drugs.

Controls on availability may range from total prohibition except for scientific research (e.g., as with heroin and lysergide (LSD) in most countries) to limiting and regulating availability to varying degrees (e.g., as with amphetamines, barbiturates, and alcohol in many countries). The preventive value of enforcement measures to repress the illicit traffic should not be overlooked, but their effectiveness is difficult to evaluate. Clearly, there is often more non-medical use of dependence-producing drugs in areas where they are readily available at relatively low cost on the licit or illicit market than in areas where they are much more costly and difficult to obtain.[1] Efforts to repress the sale or distribution of a drug often have unintended effects, such as increasing use of other, sometimes more dangerous, drugs, or the support of criminal subcultures. The possible consequences and means of meeting them should be well considered before initiating major policy or programme changes intended either to decrease or increase the local availability of different dependence-producing drugs.

With regard to persuasion and education as means of discouraging the use of dependence-producing drugs, the WHO Expert Committee on Drug Dependence observed in its eighteenth report that:

> The hope that simple, information-giving educational programmes will be sufficient to prevent drug dependence is frequently expressed; however, there is no evidence to support it and there are many reasons to doubt it. Knowledge in itself is not necessarily protective if the drug is readily available.

[1] However, there are a few places where some drugs (e.g., barbiturates and central nervous system stimulants) are readily available at a low cost, but are not used to any significant extent by the local population. Such localities are frequently utilized as a source of supply by drug users from other localities.

> Nevertheless, the dissemination of factual information about the effects and circumstances of use of drugs of dependence is necessary to satisfy the considerable demand for such data and to avoid the dissemination of inaccurate and even false information by the uninformed. In the first place, information is needed by professional personnel — particularly, for example, by educators, social workers, jurists, law enforcement officers, and health personnel. The general public should be well-informed so as to allow the promotion of necessary legislative, preventive, and management programmes.[1]

In communities where there is a significant risk of drug use by young people, formal education designed to help prevent such behaviour should be undertaken well before the beginning of adolescence and continued throughout the school years. This education should take place in small groups in order to provide an opportunity for the members of the groups to discuss their attitudes to drug use. In these discussions, the students should also be free to express and discuss their feelings about such other matters as their relationships with other persons and the kinds of experience they seek and find satisfying. The group sessions should be conducted in such a way as to foster independence of thought and an interest in the meaning and value of life. As the sessions progress, participants would spend less time on talking about drugs and more on discussing their personal problems and interests, and those of the society around them.

It is important to present only accurate, objective information about dependence-producing drugs and to avoid any semblance of an unsophisticated "scare" approach. The students should not merely be given facts and left to draw their own conclusions but should engage in supervised group discussions where their ideas and those of others can be challenged and clarified. A child inevitably acquires much of its health education from talking with and imitating its parents, who may require to be specially alerted to the need to provide an appropriate example as well as accurate information.

Attractive alternatives to the use of drugs (e.g., clubs, workshops, "teen centres", help-to-others activities) are intended primarily to provide ways in which young, as well as older, potential and experimental drug-users may satisfy their needs for, e.g., acceptance, independence, pleasure, and creativity. Substantially increased attention should be given to developing such resources in many communities.[2]

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[1] *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 460, p. 33.
[2] *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 460, p. 36

Punishment for using drugs or for acts associated with use

Society applies sanctions against unlawful behaviour and persons who take dependence-producing drugs are often involved in such behaviour. One or more of the following concepts may underlie such sanctions : (1) deterrence, (2) correction (treatment), (3) quarantine, and (4) retribution. Whether it is appropiate and effective to apply criminal sanctions on account of drug-taking behaviour is a difficult and controversial question. For example, is a *drug-dependent* person against whom penal sanctions have been applied deterred from reverting to drug use when the opportunity presents itself ? With some reservations about the particular person, the drug(s) he chooses, and his sociocultural situation, the answer with respect to most such persons is "probably not". This appears to be the case even when imprisonment is involved, particularly if treatment and rehabilitation resources within the prison are limited. It seems hardly logical that a drug-dependent person who only witnesses the punishment of another would generally be more affected than the punished person. However, the deterrent effect of punishment on a punished or unpunished, actual or potential "experimenter" or "casual user", as distinct from a drug-dependent person, is perhaps more difficult to assess. These questions deserve intensive study because many forms of punishment are widely used as deterrents. It seems logical to suppose that the threat of some form of punishment would tip the balance against drug use for a number of persons, but important questions remain — for example, what proportion of a given population will be deterred by the prospect of some form of punishment, in relation to (*a*) the type of drug and (*b*) the time and place of use ?

The questions raised by the concept of compulsory treatment or "correction" of criminal offenders are also very difficult to answer. The situation is somewhat analogous to that of civil commitment for compulsory treatment in a medical or medico-penal setting. The WHO Expert Committee on Drug Dependence, in its eighteenth report, expressed the view that "the clinical evidence was not sufficient either to support or to refute the case for various forms of compulsory treatment, but noted that, in spite of considerable experience, compulsory detention alone had not been shown to be beneficial. Recognizing that in numerous countries drug-dependent persons are incarcerated because of unlawful activity, the Committee was concerned that concepts of drug dependence as a form of ill health be taken into account in the penal setting, so that treatment for

such persons could be encouraged. In particular, the Committee recommended the setting up of well-staffed pilot units with built-in evaluation programmes that could contribute to knowledge in this field."[1]

Returning to the question of punishment *per se,* it is often difficult to distinguish between the user who may commit unlawful acts, including the selling of drugs, to obtain further drugs for his personal use and the user who is also a criminal entrepreneur, with profit as his primary motivation. Such distinctions are important and should be made where possible. Indeed, they are now being made in practice in some places even though there may be no statutory basis for such action.

The situation described above is not the only example of apparent discrepancies between a legislative or other publicly stated policy of a government on the one hand and adherence to the policy in actual practice on the other. Although some differences of this kind are to be expected and will always be present, discrepancies should be eliminated as far as possible, especially as regards punishment. A particularly troublesome discrepancy arises where criminal sanctions called for in legislation are not applied because enforcement or judicial personnel or the public consider them to be too strict — which is, of course, a value judgement. In relation to certain offences, some persons would consider any imprisonment at all as being "too strict", whereas others would apply this judgement only to substantial minimum sentences. It is important that discrepancies between an official public policy and its application be reduced to the greatest extent possible. Such a reduction can be achieved either by modifying the policy or by improving its implementation. In situations where punishment is used in the management of problems associated with the non-medical use of dependence-producing drugs, such punishment should be commensurate with the gravity of the offence in terms of its actual or potential harm to others or the offender himself.

In the light of the preceding observations on (1) the "efficacy" of punishment as a deterrent, (2) the desirability of reducing discrepancies between a policy and its application, and (3) the importance of fitting the penalty to the seriousness of the crime, the WHO Study Group on Youth and Drugs [2] took the view that imprisonment for the possession of small amounts of dependence-producing drugs for personal use did not appear to be appropriate in most instances. Furthermore, the Group believed

[1] *Wld Hlth Org. techn. Rep. Ser.,* 1970, No. 460, p. 28 (section 3.3.5).
[2] *Wld Hlth Org. techn. Rep. Ser.,* 1973, No. 516.

it to be highly desirable to bring drug-users and "helping personnel" into contact on a voluntary basis, and noted that as long as there were legal sanctions against the use of drugs *per se*, this would be difficult to achieve.

Treating the user or symptoms of use

It is important to assess the needs of each drug-dependent person in order to institute relevant treatment. This calls not only for consideration of the drug-user's present condition but also for an inquiry into the various internal and external factors, past and present, that have a bearing on his present and future situation.

Communities in different parts of the world vary substantially in the degree to which they provide resources for the management of medical complications occuring as a direct or indirect result of drug use. This is particularly so with respect to acute intoxications and related complications. Most developed and many developing countries have some medical resources for dealing with patients from whom drugs are being withdrawn ; in many localities, however, they are inadequately used or are insufficient to meet the needs. For example, there are not enough detoxification facilities especially for alcoholics ; persons with marked physical dependence on alcohol and other drugs are often not given the benefit of medical support when these drugs are withdrawn from them in gaol. Such practices are frequently life-threatening to those dependent on alcohol and barbiturate-type drugs. It should be noted that withdrawal is an essential part of treatment for the vast majority of persons who are dependent on psychotoxic, dependence-producing drugs as a consequence of their non-medical use. However, dependence on drugs of the opiate type presents a relatively new and special situation with regard to withdrawal *versus* maintenance. The latter alternative is discussed in the chapter on management (p. 67). There may also be minor exceptions to the need for withdrawal in the case of persons dependent on drugs *other* than those of the opiate type. Withdrawal is usually the simplest aspect of treatment and is only the beginning of a much more complex and lengthy treatment process. It is, nevertheless, essential in most cases, and resources for its accomplishment are inadequate in many parts of the world.

Modifying the environment

Responses of this type entail taking actions intended to reduce or eliminate environmental factors presumed to be related to the non-medical use of dependence-producing drugs, and to

provide attractive alternatives to such use. The former might include attempts to reduce social and/or economic stress, frustration, or blocked opportunity, or to reduce sociocultural pressures towards, and tolerance of, the non-medical use of a variety of drugs. The attractive alternatives to drug-use might include "teen centres" and other organizations interested in athletics, sports, music, public affairs, religion, artistic activities of various kinds, services to others needing help, and improvement of the environment through the prevention of polution.

Adopting an inquiring attitude

This is one of the more important, and perhaps less generally used, responses to perceived threats associated with the non-medical use of dependence-producing drugs. A threat that is perceived as being especially grave may understandably give rise to immediate reactions before a full inquiry into its seriousness can be made or alternative reactions explored. This is particularly so when the perceived threat evokes substantial emotion, as is the case with the use of certain dependence-producing drugs by youth. However, despite the emergence of new patterns of such use, (1) the taking of substances for their psychoactive properties is very old, (2) the perceived threat posed by the use of a particular drug is often viewed with greater gravity in one country than in another, and (3) a wide variety of approaches to the prevention and management of the problems associated with the taking of psychotoxic substances has not yet reduced these problems to acceptable proportions in most parts of the world. Further inquiry is therefore urgently needed (*a*) to determine as objectively as possible the severity and extent of the changing threat posed by the non-medical use of particular drugs by persons of various age and other groups in different parts of the world, (*b*) to evaluate the effectiveness of different policies, approaches, and methods in achieving explicit or implicit goals, and (*c*) to develop improved means for their achievement.

CHAPTER 7

Management[1]

It is advisable for those responsible for therapeutic and preventive activities not only to state their broad long-range goals, but also to state clearly their shorter-term and immediate objectives. It is also essential that intermediate, and especially immediate, objectives and approaches should be within the technical and economic capabilities of those responsible for the programmes. To proceed otherwise is to court disappointment and frustration, and to risk a loss of confidence in the programme and possibly its retardation.

Goals and objectives

Both long-range goals and, especially, more immediate objectives should be expressed as far as possible in quantifiable terms ; that, is, in a manner that will faciltate an objective evaluation of the extent to which they are being achieved. Examples of long-range goals might be :

(1) to reduce the extent and seriousness of problems associated with the non-medical use of dependence-producing drugs ;

(2) to reduce the prevalence and incidence of drug dependence ;

(3) to improve the personal and social functioning of drug-dependent persons ; and

(4) to develop an ongoing system for the continued planning, evaluation, and modification of programme activities, as indicated by changing needs and the results of appraisals of the effectiveness of different policies, approaches, and methods in use.

Examples of more immediate therapeutic and preventive objectives might be as follows :

(1) to bring drug-dependent persons into continuing contact with "helping" personnel ;

(2) to encourage those with whom contact is made to accept one or more types of help to improve their life situations ;

[1] This chapter is based on *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 460, pp. 9—37 (section 3).

(3) to improve the personal and social functioning of drug-dependent persons ;

(4) to reduce the number of medical complications associated with the unsupervised self-administration of illicit drugs ;

(5) to reduce the amount of unlawful or other socially unacceptable behaviour associated with obtaining and using drugs ;

(6) to help to reduce the diversion of licitly produced drugs to illicit channels for non-medical use by persons for whom they were not intended ; and

(7) to help to prevent the development, or reduce the extent, of a black-market in illicit drugs by reducing the demand for such drugs.

It is worth emphasizing that the immediate and intermediate programme objectives should be formulated in such a way as to facilitate an objective evaluation of the extent to which they are being met. Such assessements of short-range objectives may be the only feasible way to determine if progress is being made towards the achievement of the broader long-range goals because it is often difficult to devise feasible ways of assessing the latter.

The immediate therapeutic objectives noted above lend themselves to objective measurement. To help in formulating evaluation objectives in quantifiable terms, it is necessary to identify the broad criteria and the specific measures that are to be used. The following are some examples of the criteria and measures that might be utilized in assessing the previously listed immediate objectives.

The readiness with which drug users enter into and remain in treatment programmes

This criterion is pertinent to objective (1), above. Several types of data might be obtained in connexion with this criterion, e.g.,

(a) the number of drug-dependent persons in a given community participating voluntarily in treatment programmes during the year immediately before and after the introduction of a new policy or service ;

(b) the drop-out rate in various programme activities within stated periods after the first contact is made with the user ; and

(c) a comparison of the age of users and the duration of their dependence in case where contact is made in the year before and after a new service or policy is implemented.

The extent to which persons with whom contact is made enter into the different treatment activities available

This criterion is pertinent to objectives (1), (2), and (3), above.

The nature of social and interpersonal relations

This criterion is relevant to objectives (3) and (5), above. Under this heading the following types of information might be collected with respect to three time periods — namely, *before* and *during* dependence, and *after* entrance into a particular treatment activity :

(a) the average number of arrests and/or convictions per year by type of offence (drug related, offences against property, and against persons) ;

(b) the number of weeks per year employed or in school ; and

(c) relationships with famliy and peers ; for example, was the subject living with someone during each period ? If so, for how many months per year and with how many different persons ? For how many months per year was the subject self-supporting ?

The extent of medical complications associated with the non-medical use of drugs

This is relevant to objectives (3) and (4) and calls for information on the average number of medical complications per year, according to the type of complication and the average number of hospital admissions per year for such complications.

The extent of use of dependence-producing drugs

This is relevant to objectives (3), (4), and (5). Data would be needed for the three periods mentioned earlier, with respect to the amount and frequency of use of dependence-producing drugs and the route of administration. Such data might be obtained both from the subject himself and from other people familiar with his activities.

The extent to which drugs of both licit and illicit origin are available on the black-market

This is pertinent to objectives (6) and (7). Relevant information might be obtained from drug users, enforcement agency seizures, and other records, and by making periodic purchases on the black-market. Samples of drugs obtained by purchase or seizure could be analysed for their origin and content of active substances and contaminants. Price changes within a given community might also be significant.

The goals, objectives, and criteria outlined here are intended to be illustrative rather than comprehensive, and to stress the importance of making the terms as explicit and quantifiable as possible.

Approaches to treatment

General

The broad functions to be performed in the treatment and rehabilitation of drug-dependent persons do not differ significantly from those involved in the treatment of individuals suffering from many other disorders, especially chronic relapsing disorders in which deviant, and often socially unacceptable, behaviour is a prominent feature. These broad functions are (1) case finding ; (2) case evaluation or diagnosis ; (3) the establishment of immediate and longer-term objectives with respect to the person involved ; (4) the formulation of a management or treatment strategy, preferably with the participation of the patient or client ; [1] (5) the management of medical emergencies and complications associated with the basic problems ; (6) behaviour modifications ; (7) the provision of needed rehabilitation services (medical, vocational, or social for example) ; (8) the provision of other needed social services ; (9) continuing aftercare or follow-up services ; and (10) the periodic evaluation of the effectiveness of therapeutic activities, including rehabilitation.

There are a variety of approaches and methods that may be used in carrying out each of the above mentioned functions. Current treatment approaches and methods exist that, like the functions to be implemented, are applicable in most countries, whatever the standard and coverage of specialist services available. They include methods for treating individual patients who display, for example, alterations in mood, perception, and thought processes, as well as methods for modifying the patient's environment. In many cases, activities designed to influence the patient's family, his home and social situation, and/ or his occupational or educational skills are required. As a consequence of these approaches, certain facilities, such as hostels and halfway houses, have been utilized in some countries, and the disciplines of psychiatry, general medicine, psychology, sociology and social work, education, industrial rehabilitation, vocational guidance, etc., have been brought together in a holistic concept of treatment.

[1] To elicit the cooperation and active participation of a patient or client in the process of treatment and rehabilitation is always desirable, and it is particularly important to a successful outcome when working with drug-dependent persons.

Treatment has developed towards both individual therapy (e.g., the use of psychotropic drugs and individual psychotherapy) and also in the direction of group therapy and therapeutic communities. In the case of institutional treatment, the therapeutic community may be a unit within the institution or the entire institution may be involved. Interaction between patients and staff is part of the treatment process. There may be direct patient participation in the practical running of the community and also in decision-making.

These general developments are relevant, although not specific, to the treatment of drug-dependent persons, and the new methods can often be applied in the general treatment and care of drug-dependent persons, whether on an ambulatory basis or in a residential setting.

More recently, in the fields of both general psychiatry and, particularly, drug dependence, it has been realized that it is often difficult or even impossible to separate concepts of treatment from those of rehabilitation ; thus the term "treatment", as used here, includes rehabilitation. That is not to say that all rehabilitation procedures are necessarily to be carried out by health personnel. Many other disciplines and agencies must be involved.

It has already been noted that the definition of goals is necessary for a sound evaluation of the efficacy of treatment. The ideal goal, with total abstinence, independence, gainful employment, satisfactory social and personal adjustment, and emotional stability, is seldom achieved, though much effort and money has been expended in many countries in the quest for this ideal goal. Recently, intermediate goals have been formulated which do not insist on abstinence, but aim for improvement in the areas of economic stability and employment, social adjustment, and decreased criminality.

The treatment strategy that is followed in any given case of dependence is related to four distinct sets of factors :

(1) comprehensive evaluation of the individual ;

(2) the theories or hypotheses about the nature of the disorder held by the agency or persons responsible for treatment ;

(3) the short- and long-term goals and objectives established by the treating agency ;

(4) the range of treatment options available to those making the decisions about treatment.

In view of the multiple causality of drug dependence, it is clear that the four factors mentioned above will be closely

interdependent and that treatment, whether ambulatory or residential, will involve a wide range of governmental and other services, including health, education, law enforcement, social welfare, and vocational training, and that all these services have responsibilities for the provision of resources for the treatment of the drug-dependent patient.

The assessment of needs (diagnosis)

The term "diagnosis" is used here in the broad sense of a summary statement describing an individual's state at the time of examination and the various internal and external factors, past and present, that have led to this situation. Such a diagnostic appraisal is essential if adequate and relevant treatment is to be instituted.

It is important to determine which specific drugs the individual is using, in what amounts, over what period, and in which patterns. Since, in some circumstances, the patient may be unable or unwilling to provide such information, an account obtained from family, friends, and various agencies is also desirable. In some cases diagnosis may be facilitated by chemical analyses of breath, blood, or urine.

In no cases, however, does the presence or absence of a drug revealed by laboratory techniques alone indicate the presence of a degree of dependence requiring a medical response. The determination of the presence of dependence on drugs of all types and the estimation of its severity remain clinical procedures based on history, physical examination, and observation.

Attention must be given to the possible presence of complications and disease entities (such as malnutrition, infections, cirrhosis, injuries, etc.) commonly associated with various forms of drug dependence and described elsewhere in this manual. The assessment of psychopathology is an important part of the overall diagnostic effort. Failure to attend to such syndromes usually limits the possibility of successful treatment of the drug-dependent state.

A complete evaluation should also include an assessment of the role of the environment in the initiation and perpetuation of the drug dependence and the possibility of utilizing the family and secondary social institutions in the treatment process. The degree to which drugs are available outside licit channels has a bearing on choice of treatment methods. Thus, a wide range of skills is required to determine the treatment needs of any individual.

Medical complications

The non-medical use of drugs, including drug dependence, creates not only individual and social problems, but very often major medical complications that are quite distinct from the problems of dependence *per se*. The summary presented here is not intended to be exhaustive but merely illustrative of the range of problems with which treatment agencies may be obliged to concern themselves. It is not intended to discuss the techniques of treatment, which are well described in the professional literature.

1. *Acute intoxications and related complications*

Under conditions of self-administration, especially where intravenous use is involved, acute intoxications and serious overdoses are common. In drug-dependent persons acute overdose with drugs of the alcohol, barbiturate, or opiate (morphine) type, may be characterized by coma and marked respiratory depression. Respiratory depression caused by narcotics is often effectively reversed by the use of narcotic antagonists alone, but not uncommonly it is necessary to use the more conventional resuscitative techniques that are often required for use in connexion with overdoses of drugs of the barbiturate and alcohol types. Lesser degrees of intoxication with such drugs cause a loss of behavioural control and facilities for preventing self-injury or injury to others during the period of intoxication (sobering-up stations) may be required. Appropriate treatment, therefore, may range from emergency neurosurgical procedures and the specialized handling of extensive burns, to the management of stasis or aspiration pneumonia accompanying coma.

Stimulants such as cocaine, amphetamine, and related substances may produce states of anxiety, hyperactivity, and occasionally hyperpyrexia. More commonly the complications seen are due to repeated use of such drugs over a period of days or weeks and consist of varying degrees of psychotoxicity ranging from mild paranoid reactions to full-blown toxic psychoses with paranoid delusions, hallucinations, and lack of insight. This syndrome is similar to paranoid schizophrenia and requires comparable treatment resources.

Acute overdose of drugs of the cannabis type may also produce a syndrome characterized by feeling of panic, paranoid ideas, delusions, and occasionally hallucinations.

Reactions to drugs of the LSD-mescaline-psilocybin type range from acute episodes of anxiety, confusion, panic, paranoia,

and megalomania immediately following drug ingestion, to psychotic episodes or depressive syndromes that persist for weeks after the ingestion of the drug. Such acute reactions sometimes recur without further drug-taking. Adverse effects may be seen with very small doses. These various reactions require the same facilities that are used to manage other psychiatric emergencies.

2. *Other complications*

Included here are complications such as malnutrition due to *(a)* drug-induced anorexia (as seen sometimes in amphetamine users), *(b)* replacement by the drug of normal calorie intake (as in certain forms of alcoholism), and *(c)* the use of available funds to purchase drugs rather than food.

Included also are cirrhosis, neurological disorders, myopathy and myocardiopathy, and those complications that arise as a result of self-destructive or antisocial behaviour that occurs during the period of drug effect. Examples of the latter include automobile accidents or injuries sustained when engaged in aggressive or confused behaviour under the influence of amphetamines, alcohol, and other drugs of dependence.

Irrespective of the pharmacological nature of a substance, drug-users who fail to observe hygienic principles for hypodermic self-administration are likely to exhibit bacterial infections, both locally, at the sites of injection, and systemically (e.g., septicaemia, endocarditis and lung abscesses). Because of the widespread practice of sharing syringes and needles, viral hepatitis is common and occasionally needle-transmitted malaria is observed.

Parenteral use of substances intended solely for oral administration may cause yet other problems. Repeated parenteral administration of substances intended solely for oral administration may cause complications due to tissue reactions, i.e., reactions to the presence of the irritating substances contained in the oral preparation. Thus, sterile abscesses, sclerosis of veins, gangrene of the extremities, and inflammatory reactions of the lungs, kidneys, and other capillary beds occur.

The variety of these complications highlights the need for comprehensive services to deal with a wide range of mental and physical reactions and the need to consider their treatment within the total context of the long-term treatment of the drug-dependent individual. It also emphasizes the need for cooperation and coordination between the various special agencies concerned with treatment, as well as adequate liaison between general medical, surgical, and psychiatric facilities.

Special considerations

Withdrawal

In the past, early withdrawal of heroin and other drugs of the morphine type was considered vital in order to obtain the best chance of cure, although it was recognized that the presence of complicating illness, such as infections, hepatitis, and malnutrition, required that withdrawal be undertaken slowly. Unfortunately, some even regarded withdrawal as the whole treatment, a view that has also been held in relation to dependence on alcohol, barbiturates, and other drugs. More recently, the concept of early withdrawal, particularly of drugs of the opiate (morphine) type, has been challenged and it has been proposed instead that withdrawal should be undertaken only after attention has been given to other factors, such as the individual's social and occupational circumstances and his motivation. Where this course is followed, steps should be taken to stabilize and, if indicated, gradually reduce the dosage taken by the patient. It must be recognized that withdrawal is only one aspect of the total treatment programme and that it might be delayed in clinically justifiable circumstances.

The sudden withdrawal of drugs producing dependence of the barbiturate and alcohol types may be followed by serious effects, such as psychosis, status epilepticus, and cardiovascular failure. Because these complications may be fatal, withdrawal of these drugs must be undertaken with caution and with regard to the availability of emergency medical services. In general, however, there is no reason to delay withdrawal of these drugs, especially where heavy usage has resulted in complete incapacity to function.

The withdrawal of stimulants is achieved with few and unimportant physical symptoms. Psychological symptoms include depression, which can be serious enough to result in suicide. A particular form of depression is manifested by apathetic, anergic behaviour and requires treatment. Similar syndromes may be seen after withdrawal of other drugs.

Hospitalization for the withdrawal of drugs of dependence of many types is therefore advisable.

The WHO Expert Committee on Drug Dependence [1] emphasized that the drug-dependent person does not return to normal immediately after the drug has been withdrawn. Rather, at this stage, further long-term treatment (often intensive) and counselling should be undertaken.

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[1] *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 460.

Maintenance

As earlier noted, medicine has tradionally endeavoured to establish various treatment goals, ranging from full recovery to minimization of the progress of the disorder, alleviation of symptoms, prevention of complications, and the provision of comfort for the afflicted when nothing more is possible. There is thus nothing new in the concept of providing medical aid for an ill person when fully effective treatment is not available.

The syndrome of drug dependence of morphine, barbiturate, and other types exhibits some of the characteristics of a chronic relapsing disease. With respect to dependence of the morphine type, the ideal goal of complete recovery is achieved in only a very small proportion of persons, and then usually only after prolonged and heroic therapeutic efforts. As a consequence intermediate goals have been considered.

The concept of maintenance on a drug of dependence, such as heroin, or on a substitute drug of the same type, such as methadone, has been explored in order to determine if some of the pathological effects of drug dependence could be alleviated without necessarily achieving full recovery.

A fundamental concept common to all narcotic maintenance approaches is that the reduction of adverse consequences of the syndrome is an important responsibility of health agencies. This responsibility has been approached from different theoretical viewpoints and using different methods.

1. *The "British approach"*

Until recent years the problem of dependence on drugs of the morphine and cocaine types was small in the United Kingdom, less than 300 cases being known to the Home Office up to the end of 1962. The system of controls formerly applied to these drugs, often erroneously called the "British system" and reputedly designed to prevent dependence on them, had been adequate in the absence of a widespread demand for drugs of dependence. However, when—as in other countries—the younger age groups began to seek drugs, the system of controls was shown to be inadequate. Between 1964 and 1967, the number of known heroin and cocaine users increased from less than 500 to about 1 500. It was obvious that a new approach to the problem was required.

Inquiry by the Interdepartmental Committee of the Home Office and the Department of Health revealed that heroin was being prescribed in excessive amounts by a small number of

physicians, and that this factor was central in leading to the availability of the drug to those newly dependent on it.[1]

Based in part on subsequently enacted legislation, the new "British approach" recognizes the need of the individual for treatment and the need for society to maintain its own health. The principal provisions and goals of this new approach are as follows :

(1) the provision of special treatment facilities within the health service, both outpatient and inpatient, to treat drug-dependent persons ;

(2) the requirement that the patient who desires these drugs attend a clinic fortnightly, weekly, or more frequently if the physician so desires, for treatment and for evaluation of drug dose, thus decreasing the risk of overprescribing and providing a regular physician-patient relationship that might result in motivation to abstinence ;

(3) the provision of other services by the central social services and the local authorities ;

(4) an attempt to minimize illicit drug-seeking behaviour by supplying the drug legally ;

(5) the control of physicians by prohibiting them from prescribing heroin or cocaine to dependent persons unless necessary for the treatment of organic illness ;

(6) permission to prescribe heroin or cocaine to dependent persons to be granted only to those physicians who are in receipt of a special licence from the Home Office ;

(7) the requirement that individuals diagnosed by any physician as dependent on heroin, cocaine, and certain other drugs be notified to the Principal Medical Officer of the Home Office, in order to keep the size of the problem under constant review and to prevent patients attending at more than one clinic ; and

(8) to prevent the development of a criminal organization that supplies drugs, measures are aimed at reducing the need to seek illegal sources.

It is not possible to understand the rationale of this approach without appreciating the fact that *(a)* heroin is used in medical therapeutics in the United Kingdom, and *(b)* the inquiry revealed no evidence to suggest the presence of a criminal organization involved in the distribution of these drugs, since they were being manufactured and distributed legally and were diverted to drug-dependent persons by patients attending physicians.

Since the introduction of this approach, new cases of heroin dependence have been appearing much less frequently. However,

[1] Interdepartmental Committee on Drug Addiction (1965) *Drug addiction : the second report...*, London, Her Majesty's Stationery Office.

only a small proportion of continuing heroin users have become entirely self-supporting ; many seek heroin (which is now scarce) outside the clinics ; arrests for both drug-related and other crimes are common ; complications arising from the use of unsterile syringes are numerous ; and mortality is high. In addition, increasing numbers of persons dependent on methadone are appearing, some of whom have never used heroin. Methadone has not yet been controlled in the same way as heroin. These developments and the substantial amount of multi-drug use led to the enactment of a Misuse of Drugs Act, which provides additional powers for the control of drugs and physicians.

This approach to an acute problem has taken place in a social, medical, and national setting that is unlikely to exist in any other country at the present time.

2. *Methadone maintenance*

In North America and some other parts of the world, a methadone maintenance regimen for the management of drug dependence of the morphine type has been employed for a number of years with selected populations, and with substantial attainment of the stated goals of decreased criminal activity, decreased use of illicit drugs, and improved social and vocational adjustment. There have been, however, a variety of approaches loosely identified as methadone maintenance and a precise statement of the concept is desirabe. Some aspects of the programme have been clearly established ; many others are still on a research basis.

Methadone maintenance, as the term is used here, is the continuing daily oral administration of methadone under adequate medical supervision, the dose being adjusted *(a)* to prevent the occurrence of abstinence phenomena, *(b)* to suppress partially or completely any continuous preoccupation with the taking of drugs of the morphine type, and *(c)* to establish a sufficient degree of tolerance and cross-tolerance to blunt or suppress the acute effects of such agents.

Among the points established are :

(1) The degree of tolerance and cross-tolerance specified under *(c)* can be established and maintained without overt evidence of adverse effects.

(2) Some, but not all, persons with drug dependence of the morphine type will accept the regimen of methadone maintenance and will apparently desist from much or all criminal activity and attain a more acceptable degree of social and vocational adjustment.

Among the points on which there is not sufficient evidence and on which further research is urgently needed are :

(1) The characteristics of persons with drug dependence of the morphine type who will accept and continue in various types of programme utilizing different forms of methadone maintenance. The extent to which such factors as age, current social status, duration of dependence, and multiple drug-use are significant factors.

(2) The extent to which the difficulty of obtaining drugs (lawfully or unlawfully) influences entry into the programme.

(3) The basic criteria for admission to the programme.

(4) The tendency to continue with the drug of dependence or turn to other drugs, the effects of which are not interfered with by methadone.

(5) The extent of antisocial behaviour and/or criminal activity while on methadone maintenance, in different sociocultural settings.

(6) Optimal methadone dosage for various patients in different programmes.

(7) Alternative agents that might be used.

(8) Reliability of data collected.

(9) The degree to which various elements in methadone maintenance programmes (for example, methadone itself, counselling, professional and peer group support, social services, group therapy) contribute to the treatment outcome.

(10) Whether rehabilitation can be attained to a degree that will permit cessation of methadone administration. If so, in what circumstances ? Alternatively, is methadone maintenance, once established, a permanent way of life for social adaptation ?

Since methadone maintenance is a continuance of drug dependence of morphine type, it has been held that admission to such a programme should not be entertained unless there is clear evidence that the person is at that time drug dependent. If he is not, because of incarceration in an institution or for other reason, it has usually been accepted that he should be given every opportunity to continue without drugs, even though he has a history of dependence, with cycles of treatment and relapse, and in spite of a high probability that he will relapse and resume drug taking. Recently, however, it has suggested that selected prisoners and persons on parole who have such a history of drug dependence of morphine type and a high probability of relapse, might be admitted into a methadone maintenance programme on a research

basis in order to determine to what extent such treatment would forestall recourse to illegal drugs and the associated antisocial behaviour patterns. Other use of such a procedure is to be discouraged and must await the results of more extensive studies.

A methadone maintenance programme, because it needs the collaboration of a wide range of disciplines, should be under institutional auspices which can provide the required services. Thus, this method is inappropriate for use by the individual private physician who is unable to supply the complete range of services and controls.

3. *Comment*

It is not possible to make valid comparisons between the "British approach" to heroin and methadone maintenance and the methadone maintenance system used in North America because of the many differences in immediate objectives and methods used as well as in the populations treated and in, for example, the sociocultural factors, the practice of medicine, and the legal framework. Clearly, there are deficiencies in both approaches and neither pretends to provide effective therapy for all patients. One advantage of the methadone programme is that no drugs are prescribed for intravenous self-administration, so that complications resulting from unsterile intravenous injections are minimized. Another advantage of this programme lies in the fact that methadone, as properly used in this system, does not produce acute subjective effects. The two systems share the common goal of preventing or limiting the obtaining of illicit supplies of the drug by the patient : (*a*) in the methadone system the patient is not allowed to take the drug when he is outside the clinic until it is considered that he exhibits a positive attitude to socially acceptable behaviour and his urine specimens reveal no use of non-prescribed drugs for several weeks ; (*b*) the British system requires that the patient go daily (except at weekends) to a chemist and receive a supply of heroin for only that day.

There has been no development of a maintenance programme for patients dependent on drugs of other types, although some physicians maintain selected patients on stable doses of barbiturates or on small oral doses of amphetamines, provided that they are otherwise functioning adequately. There is no evidence to support the general use of this technique with these groups of drugs at the present time.

It should be noted, however, that in several countries the free and permissive prescribing of drugs of dependence has led to the

development of an increase in the incidence of drug dependence. No method of maintenance on dependence-producing drugs should be undertaken without strict supervision by trained medical personnel and the application of strict controls.

The WHO Expert Committee on Drug Dependence,[1] is of the opinion that great caution is advisable in connexion with the possible use of a maintenance method for sporadic users of drugs, or for young persons who have been using drugs for only a short time. It should be noted that in a very few countries opium is provided through official channels to selected long-term opium users. More information is needed to determine the impact of such programmes on the total pattern of use of drugs of the opiate (morphine) type and other dependence-producing drugs in those countries. The goals of this approach are largely "problem containment" and "the minimization of illicit drug traffic", as in the case of the two maintenance programmes just discussed.

Substitutive, blocking, and sensitizing agents

These three types of medication are sometimes used in the treatment of persons dependent on certain types of dependence-producing drugs. Methadone, a synthetic narcotic analgesic, is an example of the first type. Administered orally, it is more effective and longer acting than heroin or morphine, characteristics that make it attractive as a "substitutive" agent in the maintenance of narcotic-dependent persons. This approach has been described in a previous section.

Among the "blocking" agents are certain specific antagonists to drugs of the morphine type, the use of which is a relatively recent development in the treatment of persons dependent on narcotics. These antagonists will precipitate abstinence phenomena when given to such dependent persons. On the other hand, when given to patients who have no physical dependence on morphine-like drugs, they tend to block the acute effects that would otherwise result from the administration of drugs of this type. If antagonists are administered regularly they help to prevent the development of dependence and reduce the chance of a fatal overdose, should the patient attempt to use such drugs.

Cyclazocine, a specific opiate antagonist, has been subjected to clinical trials in persons dependent on heroin. It is effective orally, but it may produce some unpleasant subjective side-effects and its antagonistic action lasts only about 24 hours. Consequently, if a patient omits only one dose he may experience major effects from drugs of the opiate (morphine) type.

Naloxone, another specific opiate antagonist, is free from subjective side-effects, but financially prohibitive amounts are neces-

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 460.

sary to produce effective antagonistic effects by the oral route, and the duration of its activity is rather less than 24 hours.

Naltrexone, a congener of naloxone, is relatively free from subjective and other side-effects. It is orally effective, about twice as potent as naloxone, and its activity lasts longer. Because of its characteristics, doses of 30—50 mg per day of naltrexone, will give as much blockade as up to 3 000 mg of naloxone per day. Naltrexone, however, has a shorter active duration than cyclazocine.[1] Encouraging work is at present proceeding on the development of formulations of these drugs suitable for implantation, so that a single administration will remain effective for several weeks.

The number of subjects treated with these drugs is small, and published studies have not given an adequate assessment of control groups. Blocking agents are much more difficult to use than methadone, and less attractive to patients. As already, noted, narcotics must first be withdrawn from the patient, a process that many persons dependent on heroin are not eager to undergo, and the associated desire for narcotics may not be completely suppressed.

Nevertheless, the use of antagonists has a number of potential advantages. Since they do not produce dependence of the opiate (morphine) type, they can be given to persons who are experimenting with such drugs but have not yet become dependent. This may help to prevent the further extension of such experimentation, and the antagonists can readily be withdrawn without causing drug-seeking behaviour. Such withdrawal may be undertaken when it is clear that there is little probability that the patient (whether a former casual or regular user) will resume his pattern of drug use. The patient would thus be freed from the necessity to take any drug.

It is the opinion of some clinicians working with these drugs that the antagonists may eventually play an important role in the treatment of some individuals, particularly those who use drugs of the opiate (morphine) type but are not yet physically dependent, or those who, for various reasons, cannot be given other forms of treatment. It is not likely, however, that there will be an increasing use of the available antagonists, or that interest in their use will be renewed until longer-acting preparations are available.

Research has recently been carried out on the characteristics of substances that interfere with the effects of amphetamines

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[1] Martin, W.R., Jasinski, D.R. & Mansky, P.A. (1973) *Arch. gen. Psychiat.*, 28, 784—791.

and opiates. This work is in its early stages, and there is no evidence so far that such substances will be of practical use in the treatment of dependence of the amphetamine or opiate types.

In the realm of "sensitizing" agents, disulfiram is a well known compound. Taken by itself, it causes few, if any, symptoms. However, it alters the metabolism of alcohol so that, when the latter is ingested by a person who has previously taken disulfiram, "a syndrome characterized by nausea, vomiting, flushing and hypotension, anxiety and palpitations develops within minutes".[1] This medication may be prescribed for a willing subject as a deterrent to the use of alcohol.

Self-regulating communities

The use of the "therapeutic community" in psychiatric treatment has been noted in an earlier section (p. 71). Modifications of this technique have been used in many different situations, including schools and universities and penal and other institutions, where attempts are made to alter unacceptable behaviour patterns. These techniques have been adapted to the purposes of self-regulating communities for drug-dependent persons. Synanon, the pioneer organization, was founded in 1958 in California. Since then, Daytop Village, the Phoenix Houses, and many others have been founded in the USA and some other countries.

These programmes seem to be based upon the hypothesis that the use of drugs is a symptom of an underlying character disorder or emotional immaturity, and the programmes have as their main goal the restructuring of character.

Incoming members commence with the most menial of tasks and are given an opportunity to graduate to positions of status, responsibility, and privilege. No drug-taking or physical violence are allowed.

This organizational structures permits the community to reinforce conforming behaviour almost as soon as it occurs. Most communities have also evolved techniques, including expulsion from the community, for punishing deviant behaviour. A special form of group interaction is often obligatory, and participants must be willing to be direct and to expose each person's attitudes and unacceptable behaviour to probing, harsh, and verbally aggressive attack ; at the same time, there is a tenderness and con-

[1] Goodman, L.S. & Gilman, A. (1970) *The pharmacological basis of therapeutics*, New York, MacMillan, p. 306.

cern for the participants that would be difficult to duplicate in a non-residential situation. An approach of this kind is not acceptable in all cultures, however.

There are many variations in the applications of the techniques and in the size and physical surroundings of each community. The staff — administrative, maintenance, and clinical — includes former drug-user or alcoholics who have themselves passed through such a community. Some programmes cooperate with professional personnel, such as psychiatrists and other physicians, psychologists, and social workers ; in others the staff is firmly anti-professional, denying the possibility that anyone who has not used drugs can have insight into problems or play any role in helping drug-users.

As more data accumulate, it has become clear that most such communities have only a limited appeal. It is estimated that about two-thirds of those who make contact (in themselves a small self-selected group) with the communities become residents and of these probably only one-half to one-third remain residents for more than a few months, the rest leaving without the approval of the community. Whether or not those who leave revert to drug use is unknown, but it is generally assumed that they do. If long-term improvement does occur, it is probably limited to less than one-third of those who make an initial contact with such communities.

Whether character change is produced in such communities is not known. In any case, other methods of treatment of character disorders do not claim high rates of change. Most of the former drug-dependent "graduates" have become staff members of their parent organizations or some other organization utilizing similar procedures. Although pharmacological approaches to morphine-type dependence may offer useful alternatives to these programmes the same cannot be said for drug dependence of the barbiturate and amphetamine types. Furthermore, even if the sole benefit of such communities is the provision of an environment in which the participants can function, the benefit to society is great in that most of these persons are apparently no longer involved in illegal drug use or in criminal and other untoward behaviour. These programmes also demonstrate that some former drug-users can live together in an orderly and structured society.

Whether or not this approach is applicable to many countries other than the USA and Canada is problematical. Sociocultural patterns in some localities may preclude discussion about mem-

bers of the family or the use of the group techniques, while in others they may not provide the motivational pressures to seek help.

The role of compulsion in treatment

The concept of compulsion in the area of public health is not new. Throughout the world compulsory treatment or quarantine for those suffering from, or exposed to, contagious disease is a well-established principle.

Compulsory treatment in the field of mental health is also a generally accepted procedure, although it is still subject to debate, particularly with respect to the extent of and real need for its use. Detention for treatment may be justified by the presence of an illness that renders the patient dangerous to himself or others. Compulsory treatment (with or without detention) may also be justified when the illness for which treatment is indicated renders the patient incompetent to make a sound judgement about his need for treatment.

In principle, compulsion could be used in connexion with problems of drug dependence in three distinct ways :

(1) to provide care or treatment that the individual does not desire or a form of treatment other than that which he prefers ;

(2) to invoke the principle of quarantine by regarding the individual as a carrier of a communicable disorder that seriously threatens the health of the community (quarantining a person because he has a dangerous communicable disorder is an acceptable public health practice only if he is afforded such treatment as is reasonably available) ; and

(3) to require notification to medical authorities of the disorder of drug dependence in the same way as notification of other communicable disease (this, of course, is not compulsory treatment, but rather an obligatory epidemiological procedure).

As noted earlier, the WHO Committee on Drug Dependence in its eighteenth report[1] reviewed evidence relating to civil commitment for dependence on alcohol and other drugs and reviewed the arguments in favour of, and against, the use of compulsion in connexion with treatment.

The Committee considered that the clinical evidence was not sufficient either to support or to refute the case for various forms of compulsory treatment, but noted that, in spite of considerable experience, compulsory detention alone had not been shown to be beneficial.

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1970, No. 460.

Recognizing that in numerous countries drug-dependent persons are incarcerated because of unlawful activity, the Committee was concerned that concepts of drug dependence as a form of ill health be taken into account in the penal setting, so that treatment for such persons could be encouraged. In particular, the Committee recommended the setting up of well-staffed pilot units with built-in evaluation programmes that could contribute to knowledge in this field.

The Committee was of the opinion that in countries where compulsory treatment is used it is important that transfer from penal to health or other services should be possible in order that appropriate treatment could be provided.

The Committee also believed there is a strong case for the introduction of compulsory notification of drug-dependent persons to a health authority, provided that the personal identity of the individual is not available to law enforcement agencies. Such a breach of medical confidentiality could vitiate attempts at treatment.

The Committee finally noted that there is some evidence to indicate that some compulsion involving parole, after-care, and supervision might be of value, but that conclusive evidence is lacking. Further studies in this area were strongly encouraged.

Other special considerations

Apart from dependence of the alcohol and morphine types, there are no currently available treatment methods that could be considered as being specific in their action against particular forms of drug dependence. This is true of all the currently common types, including dependence involving cannabis, the potent hallucinogens, the stimulants and sedatives, and certain inhalants. Withdrawal and acute intoxication and other complications do, of course, require special management.

There are, however, some factors other than the nature of the drug(s) and complications involved that merit special consideration. These factors are the age and behaviour characteristics of the patient, the nature of his immediate sociocultural and family environment, and the availability of health, social, and other services.

The goals of treatment are to deal with existing symptoms, including the taking of single or multiple drugs, and to deal also with underlying and associated problems. The techniques used are derived from such related fields as the management of conduct disorder and delinquency, adolescent and adult psychiatry,

and learning theory (including classical and operant conditioning), and the patterns of treatment reflect these origins. Depending on circumstances, patients may be treated in self-regulating communities or residential centres, in standard psychiatric or other medical facilities, or in programmes for delinquent youth, but most of these patients may be treated in less formal surroundings. If drug involvement is minimal, individual and family counselling and rearrangement of patterns of living may be feasible ; if active treatment is needed, it may sometimes be carried out in outpatient installations, which may or may not be associated with formal or informal neighbourhood centres (adults or youth). These are usually strategically located, and may be operated by official agencies or may be "self-regulating" and under varying degrees of professional guidance and control. Such activities are most effective when they form part of a comprehensive system of services, including a residential facility, a general or psychiatric hospital for treatment of intercurrent episodes, a laboratory to monitor body fluids for drug use, hostels, and long-term after-care and follow-up services. Under these conditions the local facilities may serve to channel new cases to more definitive treatment and may also provide supportive after-care and facilitate successful return to the community.

Counselling, supportive, and other follow-up services to help avoid relapse to drug use are important parts of the total treatment programme. The duration of these services for a patient is to be measured in months and years, not days and weeks. It is also important that measures be taken to help a patient's family develop a reasonable understanding of the patient's problems and needs and ways in which the family may assist through modification of its attitudes and behaviour. Measures to foster the development of comparable understanding on the part of community leaders, employers, and others significant in the rehabilitation of drug-dependent persons are also an important part of after-care services.

It is apparent that the treatment of drug-dependent persons necessitates special knowledge and skills and that special facilities for their treatment may often be required.

It is also clear that many different "specialists" — e.g., psychiatrists, psychologists, social workers, general physicians, policemen, and correctional and parole officers — may be important in planning and executing soundly based treatment.

The paramount need is to establish sound and harmonious training and operational links between the various professions and social agencies concerned in order to provide effective treatment at a time when it is indicated.

Approaches to prevention [1]

Approaches to the prevention of drug dependence should have realistic aims. As previously noted, over-ambitious hopes of "eradicating" a drug problem in a short time are likely to lead to policies that are unrealistic and self-discrediting. Changes in cultural attitudes and alteration in relevant aspects of the environment can be brought about only slowly. Small and local gains are eminently worth striving for.

Prevention, particularly the use of legal controls on the distribution of drugs, when effectively applied, has been and remains an important approach in the management of drug dependence. Many other methods of prevention are being suggested and tried, and rationalization and coordination of these will be necessary in the future. The planning of these approaches could profitably be guided by detailed data about the manner of spread of drug dependence in a given community ; unfortunately, however, very little of the necessary organized body of knowledge exists as yet. The most pressing need is to understand the various mechanisms of spread — for example, the parts played by the confirmed users of various types of drug and by the proselyte, and the influence of the profit motive.

Methods of prevention are considered under three headings : (1) legal controls restricting the availability of drugs ; (2) educational measures providing information about drugs and influencing attitudes to drug use ; and (3) positive social measures providing alternatives to drug use for groups particularly "at risk" and follow-up of those who are no longer taking drugs.

Legal controls

Although legal controls on the distribution of drugs are sometimes considered to be the sole province of the legislator, the judiciary and the courts, and the customs and police authorities, they are necessarily also the concern of the health professional. In its sixteenth report, the WHO Expert Committee on Drug Dependence indicated that the "need [for], type and degree of . . . . control must be based on two considerations : (*a*) the degree of risk to public health, and (*b*) the usefulness of the drug in medical therapy."[2]

From the point of view of preventive public health measures, certain general questions should be raised whenever new legislative controls are contemplated :

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[1] The twentieth report of the WHO Expert Committee on Drug Dependence (*Wld Hlth Org. techn. Rep. Ser.*, 1971, No. 551) discussed approaches to prevention in some depth. The report was not available when this manual was prepared.

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1969, No. 407, p. 18.

(1) *The goals of legislation.* Controls may be designed to impose partial restrictions or to make a drug completely unavailable. The pressures for enactment of new legislation are complex; unnecessarily permissive or severe steps may be taken in response to public anxiety. Experts may have to suggest a rational basis for action and to anticipate possible untoward effects — e.g., the possibility that the rapid suppression of the use of opium might lead to the introduction of other drugs, such as heroin or drugs of the amphetamine, barbiturate, or other types.

(2) *Assessment of the effects of legislation.* Change in legislation should be seen as a welcome opportunity to introduce experimental method into public health. If it is believed that an alternation in legal controls will result in an altered prevalence of a particular problem, data should be gathered to confirm or refute this expectation. Any suggestion that the legislator must always act in accord with scientific dictates would, of course, be naive. Because of the many unpredictable variables that act on society after a particular piece of legislation is introduced, a cause-and-effect relationship can seldom be inferred confidently.

Legislation may be directed at controlling the manufacture, distribution, prescription, price, time of sale, or consumption of a substance. It may also be aimed at the user, curtailing his liberty or imposing other restraints upon him if he illegally possesses or uses the substance. The types of control and their value and limitations will not be discussed systematically here.

In general, when a drug is legally and readily available in a community, variations in the prevalence of dependence on the drug correspond directly to the extent of its use. The management of drug dependence may require that the factors that encourage drug use be brought under control. The excessive use of certain drugs and the related high prevalence of dependence on them in particular communities appear to have been associated with promotion by advertising. Furthermore, the advertising of pharmaceutical preparations in some countries may have had the result of encouraging the free and uncritical use of drugs in general.

The injudicious prescribing of dependence-producing drugs may also encourage increased drug use and dependence. The contribution of this factor to the drug dependence in a community may be established by monitoring the prescribing practices of physicians. Given this facility, the public health authority can seek an explanation for apparently excessive prescribing and if necessary deprive the small minority of irresponsible physicians of the right to prescribe particular dependence-producing drugs.

The control of prescribing habits can have only a limited effect. Controls directed at one particular drug may have very

little effect on overall drug dependence, since alternative drugs not subject to control are sought and used by the drug-dependent person. Furthermore, controls may be by-passed by the illegal diversion or manufacture of drugs.

Legal controls prohibiting the use of specific drugs have been used effectively in many situations. However, in countries affected by the widespread uncontrolled use of illicit drugs, prohibition may be seen in large measure as a failure. Such a situation raises the question as to what factors may be responsible for the difficulty. If major changes in the response system appear to be indicated, they should be preceded by a pilot study if at all feasible. Prohibition has been abandoned in certain communities because of the force of circumstances, but regrettably the opportunities for scientific observation and data collection have, for the most part, been missed.

The isolation of drug-dependent persons in closed communities may be used to prevent the spread of drug dependence, but as a measure applied on its own it has not been successful. As a policy, isolation carries with it the danger that, by putting the problem relatively out of sight, society may lose some of its sense of responsibility with respect to the care of the affected individuals and to the underlying problems in the community.

Education

As noted previously, the hope that simple, information-giving educational programmes will be sufficient to prevent drug dependence is frequently expressed ; however, there is no evidence to support it and there are many reasons to doubt it. Knowledge, in itself is not necessarily protective if the drug is readily available ; the fact that the incidence of dependence on restricted drugs is in many communities higher among members of the health professions than in the general population throws doubt upon the preventive value of knowledge about the dangers of drugs and emphasizes the importance of drug availability as a factor in the deviant use of drugs.

Nevertheless, the dissemination of factual information about the effects and circumstances of use of drugs of dependence is necessary to satisfy the considerable demand for such data and to avoid the dissemination of inaccurate and even false information by the uninformed. In the first place, information is needed by professional personnel — particularly, for example, by educators, social workers, jurists, law enforcement officers, and health personnel. The general public should be well-informed so as to allow the promotion of the necessary legislative, preventive, and

management programmes. Educational programmes, which could be available on demand, should avoid the danger of promoting an unnecessary and excessive interest in dependence-producing and other drugs.

Educational measures may be directed towards changing the attitudes of the community not only towards the use of dependence-producing drugs in particular, but also towards the use of drugs in general. Emphasis on the therapeutic value of drugs seems to have promoted the belief that for every illness and problem there is a "pill" that will bring relief. The didactic approach has so far failed to correct this naive belief. Education of the young may be planned to promote a sound and rational approach to the use of drugs in general.

Advanced techniques will be needed to influence the groups of the population particularly "at risk" of becoming drug-dependent — that is, adolescents, individuals in occupational groups having ready access to drugs, and those subject to identifiable stress that may precipitate drug dependence, for example during major role transition or bereavement. The "at risk" groups include persons with delinquent and sociopathic tendencies who have already resisted the formal educational forces of their social and cultural environment and who do not alter their behaviour even in the face of bitter experience. In some communities this group includes persons who are more knowledgeable about certain aspects of drug-taking than many educators. Unfounded *scare or fear tactics tend only to discredit* and therefore are not likely to be helpful and may be harmful. Even when factual material about the dangers associated with the use of dependence-producing drugs is made available, persons particularly attracted by risk-taking may be stimulated to try them, although many other persons might be deterred from their use.

The prevention of drug dependence in the young could be part of a wider programme of providing services for the disturbed child early in his school career. Attention should be directed to studying the ways in which the school experience could be used as a corrective influence ; the school class may even be developed as a special form of the "therapeutic community". Special attention to this and other "at risk" groups may be misinterpreted and resented. This problem could be anticipated by emphasizing that these educational efforts are a privilege and provide the child with special opportunities. The teachers faced with these tasks will need special training and may also need continued assistance from or consultation with skilled professionals.

The need for preventive education in the field of drug dependence has been greatly increased by the emergence in recent

years of pro-drug propaganda, which has been actively disseminated by a variety of media. This propaganda portrays drug-taking as having either positive values (e.g., "mind expanding" and "transcendental") or minimal risk. Such material can be highly misleading and requires that definite, counteracting information be made equally available.

Community approaches

As stated before, the non-medical use of drugs — individually as well as in its mass appearance — involves a complex interaction of drug(s), man, and his environment, including social, economic, cultural, political, and other elements of varying character and strength. The rapid changes taking place at the present time in relations between individuals, groups, and nations are also reflected in a rapidly changing pattern of drug use in many parts of the world (see Patterns of use, p. 19).

The world situation as far as drug dependence is concerned is sometimes described in epidemiological terms: such dependence may spread from "endemic" areas at irregular intervals and with varying strength in "epidemic" forms to other groups, countries, or even continents. "Episodes", "contagious individuals", and "carriers" (not suffering from the disease themselves) are other terms that are used from time to time.

The epidemiological model is useful in understanding many aspects of the present dynamic situation. For example, if a person is identified who must be characterized as a "contagious case", one may be primarily interested not in isolating him from the community but rather in rendering him "non-contagious" or in placing him in a situation where he presents the lowest possible risk to himself and others without invoking full quarantine measures.

With these considerations in mind, it is apparent that increasing emphasis should be placed on community approaches to producing drugs. This is of special importance in regard to youth (and even children) demonstrating aberrant behaviour, including the use of drugs. It is, for example, widely held that children coming from disrupted, disharmonious, super-authoritarian, or permissive families, "drop-outs", and "losers" in schools and universities, represent high-risk groups as far as drug use is concerned. In the same group one may find children who, for one reason or another, may be termed "emotionally undernourished" and others whose unusual intelligence, sensitivity, or special talents have not been recognized, leading to deviant behaviour.

The psychological and social mechanisms will vary, but the clinician often believes it highly probable that the vicious circle could have been broken if the local community had had at its disposal resources for meeting the needs of the youth for activity, outlet and participation, or at least understanding and appreciation.

A great variety of experiments have been carried out in this field over the last few decades. In urban settings with growing problems "contact teams", working especially at night, but in principle on a 24-hour day basis, have actively sought contact with youngsters at high risk who frequent particular "danger zone" areas of the city.

Various types of special facility for youth activity have been established and may serve to help prevent drug use — e.g., "teen centres" providing activities attractive to the adolescent who might otherwise drift into a drugtaking subculture. Such activities include the establishment of groups or organizations interested in athletics, sports, music, public policy, religion, artistic activities of various kinds, and improvement of the environment through the prevention of pollution.

Special contact might well also be sought with migrant or recently migrated workers and the unemployed, who often constitute high-risk groups.

It should be regarded as a responsibility of the local health, social, and education authorities — in cooperation, if necessary, with the police and voluntary health, religious, and other groups (for example, parent-teacher associations) — to undertake planning and to promote community action in these fields regardless of whether an articulate demand or claim has been forthcoming. A local coordinating body may serve a useful purpose in this connexion and also may help to foster follow-up services and the collection of data on the incidence and prevalence of drug abuse, and to identify changes in patterns and types of drug use.

Direct, open dialogue with the younger generations should be practised as far as possible to counteract the tendency of many older as well as younger persons to oversimplify — e.g., the categorizations "Establishment" and "Anti-Establishment".

As noted, the rehabilitation of former drug users, regardless of age, is in most cases a long and difficult process. Relapses must be expected and planned for. Success necessitates the adoption by the local community of mature and realistic attitudes and the avoidance of panic, moral condemnation, and discrimination. Facilities for vocational training, and sometimes the provision of sheltered work opportunities and hostels are useful in

rehabilitation and help to prevent relapse. Generally speaking, facilities for the registration, diagnosis, treatment, after-care, etc., of drug-dependent individuals and groups should be regarded as indispensable integrated parts of the health and social services structure of any community in which drug dependence exists.

Finally, it is suggested that when there is evidence of significant "alienation" among a group, especially of younger persons, it should be regarded as indicating the possible presence of actual or potential drug-takers, and should lead to an analysis of the situation and to such preventive or remedial action as may be indicated.

CHAPTER 8

Research[1]

Substantially increased research is required if there is to be any improvement, so urgently needed, in the capacity of health and other authorities at the local, national, regional, and international levels to understand and respond effectively to problems related to the non-medical use of dependence-producing drugs, including alcohol. Particular attention should be given to studies on (1) the nature and extent of the problems associated with drug-taking behaviour; (2) the evaluation of the effectiveness of different policies, approaches, and methods used in the management of these problems; and (3) the development of improved means to these ends.

The nature and extent of problems

Epidemiological approaches[2]

Further studies are needed on the extent and nature of drug use, the personal characteristics of users, and the sociocultural and other significant environmental factors associated with starting, continuing, and giving up the use of drugs. Data on trends are needed. Samples representative of major age groups in a population should be studied. Prospective cohort studies involving both users and non-users should be carried out with respect to the natural history of drug use in various localities.

Consequences of drug-taking

Further research on the immediate or delayed effects—direct and indirect—of drugs (especially their prolonged use) is needed. In both these situations, the consequences may be of a physical, mental, or social character, and society — in addition to the drug-taker — may be affected. Investigations are needed to clarify

[1] The material in this section is taken largely from *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 516, pp. 43—44 (section 6.3).

[2] For a further discussion of these approaches, see *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 526.

the degree to which any physical, mental, or social problems as may exist precede or follow drug use. Some studies, for example, have shown that heavy users of drugs tend to fail in school, but there are not sufficient data to determine whether the relationship is causal, related to another common factor, or merely incidental. Studies are also needed to determine the degree to which problems associated with drug-taking may result from pharmacodynamic factors, from social stigmatization of drug-users, or from particular legal provisions, such as those making drug dependence *per se* unlawful.

Evaluative studies

Careful evaluation of the effectiveness of preventive and therapeutic activities in this field is carried out all too infrequently ; yet evaluative studies constitute one of the most important steps towards improving the general effectiveness of a programme. As a result of such studies, the emphasis in future programmes could be placed on the policies and techniques shown to be of relatively greater effectiveness. The minimum requirements for evaluative studies include (1) clear operational definitions, (2) a precise statement of the programme goals to be evaluated, and (3) the criteria and particular measures to be used. It is especially important that evaluative studies should be undertaken in the following areas : (1) broad trends in the extent and patterns of drug use in relation to significant changes in the nature and/or application of major public policies or programmes ; (2) information and education programmes intended to influence the behaviour of specified target groups ; (3) the deterrent effects of various types of punishment on the persons punished and also on unpunished persons for whom the punishment of others was intended as an object lesson ; (4) the relative effectiveness of voluntary *versus* compulsory participation in a given treatment activity, e.g., withdrawal of drugs, vocational rehabilitation, or participation in a self-regulating community ; (5) the relative effectiveness of different treatment activities when participation in them is (*a*) voluntary, and (*b*) compulsory, (6) the effect of reducing the *per capita* consumption of alcohol, if achieved by a specified policy change, on (*a*) the proportion of drinkers who drink more than 150 ml of alcohol daily, and (*b*) the rate of alcohol-related accidents ; and (7) the effectiveness of various "attractive alternatives" to drug use in preventing people from starting or reverting to the use of dependence-producing drugs.

Improved means for treatment and prevention

In adition to epidemiological approaches, including those designed to clarify the natural history of drug-taking and the development of dependence, there are other important approaches to a better understanding of the causes, treatment, and prevention of drug-taking behaviour. Among these are (1) studies on the mechanisms of action of different dependence-producing drugs ; (2) the development for use in medical practice of effective analgesics, sedatives, and other drugs whose tendency to produce adverse effects associated with dependence is less than that of those currently available ; (3) the development of improved chemotherapeutic agents ; and (4) the development of improved techniques for modifying individual and group behaviour patterns.

Summary

The use of psychoactive, dependence-producing substances for recreational, social, and medical purposes probably goes back to prehistoric times. However, in many parts of the world, new patterns of use are emerging in that : (1) drugs traditionally taken in certain geographical regions are being increasingly used outside those areas ; (2) initial drug use is taking place at an earlier age in life than in the past ; (3) many or all socioeconomic classes are now involved in the non-medical use of dependence-producing drugs instead of only a few, as formerly ; (4) an increasing variety of such drugs is available and their multiple (simultaneous or sequential) use is becoming greater ; (5) in some countries a significant number of persons, particularly among the young, have developed a sense of alienation from the traditional sociocultural norms of society, and many have come to associate much of the current non-medical use of dependence-producing drugs with this situation, although no causal relationship can be shown ; and (6) the number of persons who have tried one or more dependence-producing drugs is growing.

The non-medical use of dependence-producing drugs does not necessarily result in drug dependence or harm to the individual. However, under certain circumstances of use (relating largely to the nature of the drug, the amount, the frequency and duration of use, and the route of administration), such drugs produce individual, public health, and social problems. The manner of use ("experimental", "casual", or "dependent") is therefore very important. Except for complications associated with intoxication, overdose, drug contaminants, and perhaps social stigmatization, major public health and social problems do not ordinarily occur until the user has become dependent on one or more drugs. Experimental and/or casual use are necessary precursors to dependence on drugs.

There are several different types of psychoactive dependence-producing drug, each of which produces a characteristic, dose-related, clinical syndrome. Under certain circumstances of use, each will produce some degree of psychic dependence.

Physical dependence and tolerance may or may not be present, depending on the type of drug ; this information is summarized in the accompanying table.

DEPENDENCE AND/OR TOLERANCE PRODUCED BY VARIOUS TYPES OF DRUG

Drug type	Psychic dependence	Physical dependence	Tolerance
alcohol	mild to marked	mild to marked	some
barbiturate and certain other sedatives	mild to marked	mild to marked	substantial
opiate (morphine)	moderate to marked	marked	marked
cocaine	mild to marked	none	none
amphetamine and certain other stimulants	mild to marked	little, if any	marked
khat	mild to moderate	little, if any	little, if any
hallucinogen (LSD)	mild to moderate	none	may be marked with some agents
cannabis (marihuana)	mild to moderate	little, if any	probably some at higher doses
volatile solvent (inhalant)	mild to moderate	little, if any	some with certain agents

Acute psychotoxic reactions occur not infrequently with very large amounts of drugs of the amphetamine, cocaine, barbiturate, and alcohol types. Such reactions also occur less frequently with the use of hallucinogens and volatile solvents and still less with cannabis and its preparations. However, such reactions may occasionally occur with very small doses of the latter. The relationship between the use of these drugs and other types of longer lasting mental and other disorders requires further study.

Abrupt and unsupported withdrawal of alcohol and barbiturate-type drugs from persons having a strong physical dependence on them can be life-threatening. Withdrawal of drugs of the opiate (morphine) type is rarely life-threatening, although it may be quite uncomfortable. The medical management of withdrawal from drugs producing strong physical dependence is a always indicated. The abrupt withdrawal of other

types of dependence-producing drugs is not attended by any hazard directly related to physical dependence but depression, with an attendant risk of suicide, may *per se*, be unmasked during withdrawal from central nervous system stimulants, especially those of the amphetamine type.

No single cause for drug dependence has been demonstrated. The chief etiological hypotheses attribute the "cause" mainly to : (1) characterological problems of the drug-taker, (2) mental and/or physical disorders in the person involved, or (3) sociocultural pressures or social ills.

The non-medical use of dependence-producing drugs, and *particularly drug dependence*, is ordinarily a symptom or result of many forces rather than of a single one. To attribute it exclusively to sociocultural pressures, social ills, or alienation as a sole force is to ignore the long history of traditional patterns of drug use and especially the fact that those destructively involved in the heavy use of dependence-producing drugs include a preponderance of both old and young persons with serious mental and personality disturbances. Similarly, to blame only personal pathology and/or social ills for most *experimental* and *casual* drug use is to ignore the substantial numbers of persons who have been or are involved in such use.

Knowledge of the pharmacological interaction between a particular drug and its user and between the user and his environment is essential to an understanding of the nature of drug dependence.

Among the more important factors that appear to facilitate the initiation of drug use are: (1) the ready availability of drugs; (2) general public acceptance of the use of mood modifiers ; (3) increasing mobility, particularly of youth ; (4) peer group pressures ; (5) an abundance of information about drug effects and sources ; and (6) an unstable or broken home.

Most experimental drug use begins during the pre-adolescent, and adolescent years. The more important personal motives are curiosity, a need for acceptance, and a desire for pleasure — all perfectly normal motives. Persons with substantial psychopathology may be motivated also by hostility, a desire for "understanding", or a need to escape from unpleasant internal or external stimuli. Other factors reinforcing the use of drugs may come into play as it continues and increases in frequency and/or regularity, e.g., drug effects, including psychic and physical dependence; changes in the style of life; and rejection by others. In addition, a desire for relaxation and a need to escape appear to be increasingly important motives for the use of drugs by

adults. In general, adults and young people both tend to use drugs traditionally accepted in their locality. The use of "newer", socially unaccepted, drugs is largely an activity of younger persons.

In most countries, the number of adults experiencing serious adverse effects from dependence on alcohol or another traditionally locally accepted drug probably far exceeds the number of young people similarly affected by their use of socially disapproved drugs. Consequently, means must be found to reduce the present and future adverse effects among *all* age groups resulting from the non-medical use of *all* types of dependence-producing drug.

Beliefs about the causes and consequences of the non-medical use of dependence-producing drugs are affected by sociocultural values of society as a whole, the community, family, and peer groups. These beliefs influence general attitudes towards drugs and those who use them. Professional personnel are not immune to these influences. On the whole, the non-medical use of a socially unaccepted drug is viewed with greater disapproval by adults than by younger persons, and the attitudes of both groups are more negative towards some drugs than towards others.

At present, the principal measures taken to reduce the problems associated with the non-medical use of dependence-producing drugs aim to (1) prevent or curtail the use of drugs by imposing controls on their availability, discouraging their use, and providing attractive alternatives ; (2) punish persons for using drugs and/or for acts associated with such use ; and (3) provide treatment for drug-users. Another possible, and very important, way of reducing these problems is to study their nature and extent with a view to improving the methods available for their management.

As far as preventive measures are concerned, the importance of enforcement measures to repress the illicit traffic in drugs should not be overlooked. However, measures taken chiefly to reduce the availability of a drug often have unintended effects, such as increasing the use of other, sometimes more dangerous, drugs, or the support of criminal subcultures.

Knowledge in itself does not necessarily protect against drug use, but it is essential that accurate information about the effects and circumstances of using drugs should be supplied, especially to members of the many professions concerned, in order to counter the effects of inaccurate or misleading information. Different informational programmes and approaches are required for target groups of many kinds. However, the age of the target group must always be taken into account. Objective information

is essential ; "scare" techniques often defeat their own objectives. Information is probably best given in small groups providing opportunity for discussion.

Punishment alone is not effective in deterring drug-dependent persons from using or reverting to the use of drugs. However, whether the punishment of regular users acts as a deterrent to non-users or to casual or experimental users requires further study, particularly as punishment is so widely used as a deterrent. Furthermore, any punishment should be commensurate with the gravity of the offence in terms of its actual or potential harm to others or the offender himself. It is highly desirable to bring drug-users and "helping personnel" into contact on a voluntary basis.

Maintenance programmes for narcotic-dependent persons and self-regulating communities for users of all types of drug are important recent developments in the field of treatment including rehabilitation.

"Maintenance", in this context, means the continuing, controlled, legal supply of drugs of the opiate type to selected persons dependent on them. There are substantial differences in some of the goals, approaches, and methods used in the maintenance programmes of different countries. However, they all share the common goals of problem containment and minimization of illicit drug traffic. Some programmes appear to be making substantial progress toward their particular goals. However, maintenance alone, in the absence of appropriate supporting services, has not been shown to be of value.

Self-regulating communities endeavour, with or without professional guidance, to create a microsociety in which the participants receive protection, help, and support from others as they learn to take increasing responsibility for themselves and those about them.

A variety of medical and social services beyond maintenance and self-regulating communities are necessary for the treatment and rehabilitation of drug-dependent persons and for providing long-term follow-up services. In most countries there is a continuing need for additional resources for detoxification and for managing the effects of drug withdrawal, especially for those persons exposed to the destructive effects of alcohol.

How can a community best meet the adverse effects associated with a continuing or increasing rate of drug-taking among both young and old ? To approach this problem, it must be recalled that drug-taking involves an interaction between three important elements ; the person taking the drug, his broad and immediate sociocultural environment, and the nature, amount,

and manner of drug use. It is also important to understand that, within this interacting system, drugs are taken by individuals having their own particular personal characteristics and ways of reacting to the joys and stresses of living as they feel them, including any dissatisfaction with the opportunities that they believe are open to them. Such behaviour will doubtless continue and new drugs and patterns of use are likely to appear. The problem is to learn how to reduce the destructive effects of the non-medical use of dependence-producing drugs to the lowest possible level without undue detriment to society. This implies "learning to live with drugs", i.e., helping people, particularly the young, to live in the presence of dependence-producing drugs without becoming dependent on them. There will also be a continuing evolution of value systems in which the traditional ideas will tend to be upheld by the older members of society whereas newer ideas tend to be held more by younger persons, who in turn eventually become the holders of the evolving value. Any new drugs or patterns of use will doubtless be caught up in this process, as existing patterns already have been.

A variety of services is needed to cope with the problems of drug-dependent persons. Among these are services for detoxification, medical rehabilitation, educational and vocational counselling and training, individual and group counselling and/or psychotherapy, maintenance, self-regulating communities, hostels, social services for patients and their families, family counselling and therapy, and long-term follow-up services. Whereas the comprehensiveness and professional quality of these services will necessarily vary widely in different communities, some basic services are essential if the treatment and rehabilitation goals established for certain patients are to be achieved. These services should be coordinated in such a way as to constitute a comprehensive, community-based programme which should include the following among its objectives : (1) to improve the personal and social functioning of drug-dependent persons ; (2) to help both users and non-users, young and older, "to learn to live with drugs" by developing ways of living in their presence ; and (3) to foster understanding and a meaningful dialogue between generations, especially concerning the bases of any differences in values, beliefs, and attitudes. These programmes should be so financed that, as services to people, they can be informal, "concerned", flexible, and not part of the enforcement agencies (though maintaining contact with them). Their staffs should not only have specialized professional competence but also be familiar with local factors ; they should be able to develop relations of mutual trust with drug-users as well as with parents, and have

broad community support and involvement, with links to the schools, preventive education programmes, and emergency treatment facilities. Furthermore, the programmes should be seen as trustworthy sources of drug information, and should be equipped not only to deal with young people but also to provide counselling services and guidance for parents, teachers, and other sections of the community. Finally, through their close local connexions, they should facilitate participation, especially of young persons, in constructive and satisfying activities.

Ideally, these various approaches to rehabilitation and to community services should be based on careful planning and valid principle. Among these should be the integrated use of the several disciplines, skills, and agencies involved in developing such a programme ; the training of personnel in advance of each phase of the programme ; and the use of pilot projects to initiate the various aspects of the programme, especially when services must be adapted to different regions, education systems, voluntary facilities, and law enforcement agencies. It is essential that those for whom these services are intended should be consulted with respect to their planning and conduct from the beginning, and it is equally important that provision should be made for the evaluation of each part of such a programme.

The means available at present for preventing, controlling, and reducing problems associated with the non-medical use of dependence-producing drugs, including alcohol, are far from satisfactory. Substantially increased research is required to achieve the urgently needed improvement in the capacity of health and social welfare authorities at the local, national, regional, and international levels to understand and respond effectively to problems related to such use of these drugs. The most urgently needed studies are those dealing with (1) the nature and extent of the problems associated with drug-taking behaviour ; (2) the evaluation of the effectiveness of different policies, approaches, and methods used in the management of these problems ; and (3) the development of improved means for their management.

ANNEX

Suggested reading

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