

The Heroin Problem: Policy Alternatives in Dealing with Heroin Use,

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The paper examines the social and private aspects of heroin use in the U.S. today and attempts to estimate the associated costs, both society's and the individual user's. Possible goals of any government policy are discussed. Twelve possible policy alternatives are examined, eight dealing with the demand for heroin, and four dealing with its supply. These alternatives are compared using a rough cost-benefit analysis in terms of costs and benefits to society at large. A more detailed comparison is made of therapeutic communities, methadone maintenance, and the British experience of prescription heroin maintenance as alternatives. The conclusion is reached that to minimize social cost while containing the spread of heroin usage a scheme of prescription heroin should be implemented; but if the spread of usage is seen as benign, the best policy is to sell the drug freely to any adult as alcohol is today.

THE CIVILIAN VIEW

THE HEROIN PROBLEM: POLICY ALTERNATIVES IN DEALING WITH HEROIN USE

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We have examined four possible alternatives in dealing with the supply of heroin and ten possible alternatives for dealing with the demand for heroin:

- (1) pre-emptive buying of the entire world opium crop—unlimited probable cost;
- (2) direct controls on foreign plantings of opium—very high cost and certain leakages;
- (3) tighter customs searches to prevent entry of heroin into the U.S.—very high cost and certain leakages if not domestic production;
- (4) increased enforcement to stop the drug once in the country from reaching the addict—success depends on an elastic demand for heroin and even then would be extremely expensive;
- (5) the deterrent of jail sentences and the health hazards of addiction—completely ineffective and of no practical use;
- (6) DT detoxification—almost a complete failure;
- (7) CC civil commitment—almost a complete failure and an extravagant waste of tax-payers' money in the past;
- (8) TC therapeutic communities—a very few noteworthy successes but expensive with no prospect of increasing the success rates;
- (9) OA outpatient abstinence—very little information but apparently little more than a boost for would-be abstainers, not very expensive, not important except possibly in an educational sense;

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(10) *AT* antagonist treatment—still experimental but with the disadvantage that the "hunger" for heroin is still present with no means of relief for the patient/addict;

(11) *MM* methadone maintenance—hopeful in the sense that it is substituting a more stable, legal drug for the faster acting illegal heroin. Net cost to the government is between \$150 and \$2150 per addict per year—the expensive program has no real advantage over the cheap one;

(12) *PH* prescription heroin—compared to *MM* the health of the addict is worse and the employment rate is slightly lower. The net cost to the government is \$185 per addict per year;

(13) *FH* and/or *FM* freely available heroin and/or methadone—the cost to the government would be very small, and the social costs associated with the black market would disappear with it, but the use of the two drugs would probably spread. It is possible that the abundance of cheap, pure drugs would lead to a reduction in the unhealthy practice of injecting the drugs;

(14) cheap methadone and more expensive heroin freely available—this would encourage people to use the more stable methadone and reserve use of the more expensive heroin for an occasional binge.

Conclusion: if the government is concerned about the spread of addiction and the health of the addicts then it should try a British-type solution with both heroin and methadone available to be used by registered addicts and administered professionally. If the government does not see the spread of addiction as a menace then one of the alternatives (13) or (14) should be tried, at very low cost to the taxpayer. The cost of the British-type solution would be about \$500 per addict per year directly but the indirect savings to the community would outweigh this.

The Present Problem

Any discussion must be qualified by the statement that in many aspects of this field important basic facts have not yet been determined and conclusions must depend on fragmentary information. Extensive reading has been undertaken and an analysis made and it is to be hoped that areas which will best repay future experimenting and research have become apparent. Even when figures are available experts can always be found to disagree on their meaning and significance. For this reason we have, where possible, quoted more than one source.

This paper is concerned with the use of heroin, which has long been found in slums and has recently been used among middle class youth. Since possession of the drug (or even of a syringe to administer it) is illegal, figures of total numbers of addicts in the U.S. are vague and range from a low of 140,000¹ to a high of 720,000.² For the purposes of this report a figure of 500,000 addicts will be used (which is close to the Bureau of Narcotics and Dangerous Drugs figure of 560,000³). By "addict" is meant people who use heroin on a daily basis, injecting a dose every six to eight hours as the effect of the previous dose wears off. They may spend anything from \$10 to \$100⁴ per day on heroin, depending on their dosage and tolerance, their economic ability to sustain the habit, the purity of the drug bought, and the price level of the city in which they live. The average quantity used per day is probably about 55 milligrams of pure heroin and at a price of 55 cents per milligram⁵ this results in a daily expenditure of approximately \$30 for the average addict.

How is the money for the habit obtained? A recent survey⁶ shows that 58% of the addict's average weekly income comes from "victimless" crimes, such as selling drugs to other addicts, prostitution, and gambling. In addition the study shows that less than 2% of an addict's income comes from crimes against the person, such as mugging. If other factors remain the same, the total social cost of heroin addiction will be less if the percentage of consumed heroin "earned" from the profits of dealing is higher.

A rough estimate of the direct cost of heroin addiction to the rest of society can

be made assuming that (1) addicts spend approximately 70% of the time using heroin,⁷ (2) there are 500,000 addicts in the U.S., (3) only 42% of the addict's average income comes from property crimes, (4) the addict receives only half the value of any stolen goods from the "fence," (5) the average cost per addict per day is \$30. These assumptions lead to a total of \$3.2 billion of property stolen per year.⁸ (A "social experiment" in Santa Barbara whereby all known addicts not on controlled rehabilitation programs were jailed for two months led to a 55% drop in crimes against property.⁹)

Assuming additionally that (6) 50% of all heroin is earned through dealing, heroin purchases in the U.S. must cost approximately \$1.9 billion annually.¹⁰ If the cost of a kilo of 100% heroin on the street is \$330,000,¹¹ then approximately 5,750 kilos of pure heroin are used in the U.S. per year.

The consumption of heroin imposes costs on the rest of the community, including the involuntary redistribution of \$3.2 billion of existing wealth per year through such crimes as stealing from trucks, shoplifting, stealing from offices, burglary, pick-pocketing, and forgery. Thus the community spends money to prevent crime and to apprehend, try, punish, and rehabilitate criminals: this includes both private spending and public expenditures on police, courts, and correctional systems. To the extent that these resources would be employed elsewhere in the absence of heroin addiction, they are properly counted as social costs of addiction. Social costs also include the medical expenses, foregone productivity, and premature deaths of addicts. Finally one must include the fear and anxiety, avoidance of normal activity, disruption of community life as unquantifiable but nonetheless real costs of crime and drug addiction.¹²

In addition to these costs, Packer¹³ lists the existence of a profitable black market which leads to the consolidation of organized crime, undesirable police practices including corruption, the regressive burden of the poor who live in areas of high addiction, the stultification of research dealing with illegal drugs, and the intimidation of doctors who might legitimately want to prescribe these drugs.

Figures for most of these costs are unobtainable or unavailable, but we can state some of them. Total federal expenditure for law enforcement in fiscal 1972 (enforcing laws against the illegal importation, manufacture, distribution, and possession of narcotics and dangerous drugs) was to be \$115,822,000,¹⁴ through the BNDD and the Law Enforcement Assistance Administration in the Department of Justice, and the Bureau of Customs and the Internal Revenue Service in the Treasury Department.

Half a million addicts not earning on average the median U.S. income of \$7000 would mean that the federal government was not getting approximately \$700 in income tax¹⁵ per addict per year, a total cost to the government of \$350 million per year, and would also mean a foregone productivity of \$3.5 billion per year. Thus the total cost to the U.S. is at least \$7.5 billion per year (including property damage, federal expenditures, foregone income taxes, and foregone productivity).

There is an urgency in dealing with heroin because of the increasing numbers of addicts. In three years the numbers of addicts on the NYC Narcotics Register almost quadrupled,¹⁶ which is a good indication of the national trend. The figures show that the acceleration might have stopped since, but the numbers of new addicts per year are still about 50,000 in NYC alone. An additional worry is the spread of the drug into middle-class suburbs but so far there are few reliable figures regarding the trend.¹⁷

The image of the heroin addict in the public mind is of a person who is physically and psychologically sick—this is often the case, but since it has been shown that the drug has few if any permanent physical or psychological effects^{18,19} (apart from addiction itself), it seems possible that most addicts would function normally if legally given a steady supply of good-quality drugs.^{20,21} Street heroin is always adulterated, sometimes with dilutants harmful to the addict,²² and sickness can also be caused by careless injection of the drug. It may be that previously psychologically disturbed people are more apt to become heroin users than the mentally balanced.

It is possible to view the problem of heroin addiction from either the individual

viewpoint of the addict, or the viewpoint of society. Any solution to the problem should be judged by its ability to deal with both aspects of the problem. Similarly, the problem can be viewed statically or dynamically. Since it has been the increase of addiction and the increase of accompanying social costs which have drawn the public's attention to the problem, the effects of possible alternative solutions on the dynamics of the problem should be considered.

Possible objectives for any solution should be considered. There is at present a prohibition on heroin use of any kind. This prohibition is ineffective. One goal might be to increase enforcement of the prohibition in an attempt to make it effective, ideally totally so. This is not really compatible with the notion of economic efficiency which leads to an "optimal" level of enforcement where the marginal cost of enforcement equals the marginal savings in social terms that the additional enforcement would bring. If society's preference were prohibition at any price, then the optimal level of enforcement would be that needed for total prohibition.

The "optimum" level goal is related to the goal of minimizing the damage to society and to the addict from heroin use, but this objective admits the possibility of dealing with the demand for the drug too. (Enforcement programs, except where the addict is jailed or otherwise deterred from using the drug, deal with the supply of the drug.)

We have discussed above the costs to society of the present situation. The costs to the individual are not so easily quantified, but it can be argued that the prohibition has increased those costs as well. The individual's costs include ignorance of the purity or amount of the heroin bought on the street,²² the risk of apprehension and jail,²³ the possibility of impoverishment, and the risk of infectious diseases from lack of hygiene and careless injecting. With a plentiful supply of legal, low-cost heroin, these costs would largely disappear: the drug would be pure and the amount known, the price (even if not subsidized) would be modest, and there would be no incentive to spread disease by sharing crude and unsterile syringes as at present when possession even of these is illegal. Indeed, when opiates are cheap and freely available, novice users prefer to eat, sniff, or smoke them, as an estimated 90 to 95% of U.S. heroin users did in Viet Nam in 1971.²⁴ (Only after an anti-drugs campaign did the price rise and with it the popularity of injecting, the users apparently trying to obtain the same effect with smaller quantities.²⁵)

In the U.S. today almost everyone must be aware of at least some of the results of pursuing the illegal habit, but given the addicting nature of heroin the user might decide too late that the price is too high. It is not clear how important the costs to the individual user should be in evaluating alternative policies.

Supply Solutions

We can consider the heroin problem as one of supply and demand, and this gives us a taxonomy for possible solutions. Four possible alternatives have been suggested for reducing the supply of heroin to the addict:

- (1) pre-emptive buying of the entire world opium crop
- (2) direct controls of foreign plantings of opium poppies
- (3) tighter customs searches to prevent entry of heroin into the U.S.
- (4) increased enforcement to stop the drug once in the country from reaching the addict.

Opium is legally grown in India, Turkey, the USSR, China, Iran, Yugoslavia, Pakistan, and Japan (the last three grow negligible quantities), and is illegally grown in Burma, India, Pakistan, Thailand, Laos, Afghanistan, Turkey, Mexico, and other countries in North Africa and the Near East.²⁶ The opium is the hardened milky fluid obtained from the pods of the opium poppy (*Papaver somniferum*) several days after flowering in June and July. It is estimated that between 175 and 250 man-hours are needed to obtain 1 kilo of opium,²⁷ which fetches from \$10 to \$60 legally for the farmer,

or between \$12 and \$400 illegally.²⁸ The yields range from 3 kilos/acre/year in Iran and India to 15 kilos/acre/year in the USSR.²⁹ Morphine is one of several natural alkaloids of opium (another is codeine).³⁰ The morphine content of opium varies from 4 to 13% and is highest in Turkey.³¹ On average, ten kilos of crude opium make one kilo of morphine base,³² and by heating morphine in the presence of acetic acid and other chemicals a little more than one kilo of heroin (diacetylmorphine) is produced.³³ It is estimated that 65% of the heroin entering the U.S. comes from Turkey, 25% from South East Asia, and 10% from South America.³⁴

(1) The proposal of pre-emptive buying is deceptively simple. The price offered to the farmer would have to be above that offered by the illegal traffickers. Unfortunately there is evidence that the demand for heroin is inelastic³⁵ and so the effect of such a policy would merely to raise the black market price, and hence the social cost of the addict-related crime. Even if the demand were elastic, the cost of any such scheme would be great: it is estimated that only 2% of the estimated world production of opium is needed to supply the U.S. market.³⁶ The highest price traffickers have paid in Turkey is \$35 a kilo,²⁸ and paying this would *ceteris paribus* mean a cost of \$85 millions to buy the entire world crop.³⁷ But the traffickers would pay much higher than this if they had to: in Iran the government support price is \$50-\$60 a kilo (set high to discourage illicit trading) and the traffickers still find it profitable to pay \$300-\$400 per kilo.²⁸ The supply of opium is elastic and the policy would lead to increased crops and higher prices to overbid the traffickers. The cost seems unlimited.

(2) The continuing enforcement of direct controls would be both costly and difficult, especially in countries with weak central governments, such as grow most of the world's opium. Moreover, there is widespread acceptance of opium use in many rural countries, and little desire to do anything to help the U.S. In Turkey, where there is little opium use, controls have been extremely unpopular because of both the loss of an important source of farm income and the rising anti-American sentiment.³⁸ Paying farmers not to grow opium would lead to any farmer in a suitable area claiming that he too needed "encouragement" not to switch crops, and hence unlimited cost. Even if there were resources and willingness to impose effective controls, the high profits involved might lead to clandestine crops: it is estimated that the entire U.S. market for heroin could be supplied from at most an area of 25 square miles.³⁹

The path followed by opium from Turkey until it is heroin on the street has been described as follows:⁴⁰ crude opium is supplied by Turkish farmers to opium brokers at \$25 a kilo. The brokers sell the crude opium at a 15% mark-up to laboratories in the Levant where it is converted into morphine base and sold at \$500 a kilo to heroin refining labs, which are simple and inexpensive and hence relatively mobile.⁴¹ (Ten kilos of opium make one kilo of morphine.) These labs sell their output of 85 to 90% heroin for \$2000 a kilo in quantities of more than 100 kilos, or for up to \$4500 for a single "key" to the dealer/smuggler. The landed price in the U.S. is between \$6000 and \$10,000 per kilo. The 100-kilo man in NYC will not usually sell in less than 10-kilo loads, and the man buying at this level will pay from \$10,000 to \$13,000 per kilo, and sell at from \$18,000 to \$25,000 per "uncut" (undiluted) kilo. From this point to the street-dealing level the picture becomes more complicated. The heroin is successively "cut" (diluted) with such things as quinine (to prevent malaria among addicts⁴²), milk powder, sugar, mannite, or other adulterants, and divided into smaller quantities, until the typical "bag" on the street weighs 5 grains (330 mg), contains 7% heroin by weight, and costs from \$2 to \$5. (Thus a kilo of 85% heroin can make 40,000 seven percent five grain bags, and be worth \$450,000 on the street at \$5 a bag.)⁴³ The adulterated heroin on the street has about as much opiate activity (10%) as the natural opium. The net effect of the whole opium-morphine-heroin-adulterated heroin cycle is thus to put the active opiate in its most concentrated form for the smuggling leg of its trip to market.⁴⁴

(3) The importation of heroin is prohibited, yet the prohibition is ineffective. Border

seizures amounted to less than 5% of the estimated amount of smuggled imports in 1970.⁴⁵ It is not hard to see why: we have estimated above that only five or six metric tons of heroin are needed to supply the U.S. annually. Yet total imports per year are about 100 million tons,⁴⁶ and every year approximately 250 million people, 65 million motor vehicles, 306 thousand planes, and 157 thousand ships enter the U.S.⁴⁷ Even if it were possible to search all these (recorded) entries, there is still the entire coastline and land frontier to be watched for smugglers—an impossible task.

But even if there were no flow of heroin into the U.S.—because of the success of one of the three preceding policy alternatives—opiate addiction could still exist inside the country. There are numerous synthetic opiates today which do not require opium as a raw material for their manufacture, and even heroin can be synthesized. Formulas of these synthetics are known and their synthesis is not difficult. Only the low relative price of opium today is stopping their profitable production.⁴⁸

(4) A more realistic goal is to attempt to tighten domestic law enforcement and to increase the risks and operating costs of those involved in the distribution system. Theoretically, the best allocation of police power is such that the incremental gains from enforcement actions (in terms of reduced social costs) are equal to the incremental costs of the enforcement efforts. How close is the law enforcement effort to reaching this social optimum? We can judge this by performing the sensitivity analysis of seeing what effect seizures have had on prices. (If the demand is inelastic, a rising price shows that the supply has been noticeable reduced.) During fiscal 1971 the quantity of heroin seized was much higher than in previous years,⁴⁹ yet the price of heroin remained steady.⁵⁰ In 1972 the BNDD received \$62 millions for law-enforcement, a doubling in two years⁵¹—it seems that only an expenditure of several times this amount will affect the supply. But we might be chasing a mirage: if the demand is inelastic and the supply is reduced then the price will rise, and with it both total and incremental social costs.

Several studies have been made of the domestic heroin distribution system.⁵² One of them⁵³ shows that the most likely structure for the distribution system is a monopoly or monopolistic competition, which, as well as maximizing profit while minimizing the risk of detection, could most efficiently (1) restrict the total supply of heroin to maintain high prices, (2) regularly and reliably supply an amount of heroin fairly close to the realized demand, (3) manipulate supply conditions in the system above with a minimum of explicit planning and negotiation, and (4) adjust to errors in supply with a minimum of negotiation and activity. But for a monopoly to exist, there must be some kind of leverage or barrier to entry, such as (1) special knowledge unavailable to others, (2) total control over some vital raw material, or (3) total control over the market so as to make the cost of entry prohibitive. For an illegal business, however, there are additional techniques of monopolization available, including violence and police corruption.⁵⁴ Gross profits include (1) the firm's opportunity cost, (2) a risk premium, and (3) a monopoly return. We could expect that law enforcement could raise the price of heroin by increasing the risks and operating costs, as well as by reducing the supply of heroin, but as long as the demand is inelastic a higher price will merely increase the social cost of addiction. And if effective, enforcement would increase competition by disrupting established distribution chains, and this would lead to lower prices and increased sales.

As stated above, there is evidence that demand is inelastic,³⁵ but it could be elastic for two reasons:⁵⁵ (1) the development of methadone has created a low-cost substitute (in certain ways) for heroin, and (2) there has been a long-term rise in the price of heroin against other consumer goods which might mean that the present prices are the highest many addicts can afford.

In conclusion, only if demand is elastic would a policy of increased enforcement have any chance of success, but even then the total cost is unknown but definitely much higher than current expenditures.

Demand Solutions

Demand-type solutions can fall into three categories: (a) deterrents, (b) cures, and (c) continuing programs. Deterrent solutions attempt to dissuade the addict from beginning or continuing to use the drug, either by the threat of the illegality of the possession of heroin, or by the threat of the ill-health and suffering that addiction is said to lead to. Cures attempt to treat the addict so that he no longer needs or wants the drug, but is, it is hoped, a socially useful person. Continuing programs attempt to enable the addict to lead a reasonably normal life while continuing to be being treated indefinitely, with no certain hope of eventual "cure," that is, eventual freedom from drug use or treatment.

Deterrents

The deterrent of a long prison-term has proved to be little or no deterrent at all: even with increased arrests the numbers of new addicts continue to grow,⁵⁶ and the total cost of apprehending, convicting, and detaining half a million law-breaking addicts⁵⁷ is too high to be considered as a reasonable alternative. Similarly, attempts to convince addicts or would-be addicts of the deleterious effects⁵⁸ of addiction have failed: the irony of this is that given pure heroin properly administered the addict suffers few if any side effects.^{18,19} On the other hand, the appearances at schools and colleges by apparently "cured" addicts might suggest that giving heroin up is easy, when in fact it really is an addicting drug.⁵⁹ It is possible that proper education might be a deterrent, but for this to be effective educators will have to win back the confidence of their audiences, people who are often very well informed on drugs and their effects, and the overriding message will have to be: heroin is an addicting drug, a drug that most users continue to take even though they want to stop, decide to stop, try to stop, and even succeed in stopping for days, weeks, months, or even years.⁶⁰

Why is it that the numbers of addicts rise despite the real consequences of the illegal use of heroin? One theory is that dealers give away samples to new users until they are addicted, and are captive buyers.⁶¹ But the evidence seems to be⁶² that turning people on with free samples is both too expensive and too dangerous to be seriously contemplated—confirmed addicts would lie to get the free dope, and the dealer would soon gain dangerous notoriety. It usually takes a couple of weeks of using two bags of good heroin a day (between 50 and 100 mg a day) to acquire any noticeable physical dependence,⁶³ but even then the probability of addiction to heroin is not 100% as witness the fact that it seems likely that most young blacks in the ghetto have tried heroin, and the majority who have experimented with it have not become addicted.⁶⁴

In experiments in which volunteers received injections of morphine, less than 10% liked the experience,⁶⁵ and in a controlled double-blind experiment in which heroin was injected, only about 10% of the subjects were enthusiastic or mildly pleased.⁶⁶ The researchers reached the conclusion that opiates are not inherently attractive, euphoric, or stimulant.⁶⁷

Another theory is the "contagion" model, whereby addiction spreads from addicted friends and acquaintances.⁶⁸ This leads to the necessity to "quarantine" those addicts in the "infectious" stages of addiction. But whereas one does not choose to catch a disease from a friend, one does choose to use heroin offered by a friend. There is considerable evidence that both the ready availability of the drug and a social milieu tolerating drug use are important factors.⁶⁹ But most importantly it seems that the danger of addiction lies in the person and not in the drug.⁷⁰ The potency of heroin makes it difficult to believe that large numbers of intermittent users never become addicted,⁷¹ and it seems safer to assume that they might.

Cure Treatments

Alternative cures considered are:

(1) DT: detoxification treatment—the addict is helped through withdrawal from the drug, in hospital or in a clinic, and then released;

(2) CC: civil commitment—the convicted addict is given the choice of prison or commitment in an institution to help him overcome his addiction. After treatment (sometimes of longer duration than an equivalent term in prison) he is released sometimes with an aftercare rehabilitation program of counseling. CC has been tried by the Federal government at Lexington since the 1930s and more recently by California and New York State (which spent \$250 million in 1967–70 on CC programs for capital construction and custodial salaries).⁷² Some addicts were allowed to enter the Lexington program on a voluntary basis.

(3) TC: therapeutic communities such as Synanon, Phoenix House, and Daytop Village, which operate on the basic assumption that a character defect causes drug use, and treat all drug users with encounter group therapy or a more gentle form of "rap session" therapy. The communities have high initial rejection rates and treatment can take several years of confinement within the community.

(4) OA: outpatient abstinence—programs which bolster abstinence by group therapy while the addict is living at home.

OA and TC account for about half the addicts in treatment programs (together with CC), MM accounts for the other half.⁷³ (Note that OA might be either a cure or a maintenance program, depending on what was intended.)

It is not entirely clear what the goals of treatment are, although the apparent goals are obvious: for the addict to stop using heroin and to stop committing crimes and instead to find a job, stabilize his personal life, generally improve his character, and become a useful and productive citizen.⁷⁴ But apart from the problem of getting data on the results of programs, information has tended to concentrate on whether the patient has stopped using heroin, with the concomitant belief that any lapse into heroin use means failure. But it has become apparent that this is a false position: after treatment, an addict might hold a job, support a family, refrain from criminal activity, and yet still occasionally use heroin; he might continue to commit crimes, but fewer than before; his physical health might improve although otherwise he is unchanged; or he might swap heroin use for alcoholism.

Because of these provisos, this report has attempted to obtain data on several aspects of the program's effectiveness, and then to weigh these measures by the prices society has imputed to the goods and services involved. In this way it is possible to compare different programs directly in terms of the value of their costs (or benefits) to the government or to society in general, as well as to the addict/patient. In the case of the cure treatments, the primary goal is to end heroin use, and what little data there are on the other aspects of the treatments' successes have been mentioned in the text.

A more fundamental problem is that since no one knows why people become narcotics addicts, no one knows either how to make them stop or what will happen if they do.⁷⁵ As mentioned above, the TC method of treatment is based on a theory that there are psychological factors underlying addiction, factors which can be altered by the therapy so that the addict no longer "needs" the drug. (That this theory is wrong is perhaps suggested by the low success rates of TCs.) The other theory is that taking heroin causes a permanent or long-term physiological change in the addict that makes him crave the drug after he becomes abstinent.⁷⁶ This theory is gaining favour with researchers,⁷⁷ but conclusive evidence is still lacking.

Results of the four "cure" treatments are shown in Table 1. The acceptance rate is the percentage of those wanting treatment who are accepted. The graduation rate is the percentage of those starting treatment who complete it. The abstinence rate is the percentage of graduates who manage to avoid taking heroin for some time.

Table 1 Results of "Cure" Programs

	DT	CC	TC	OA
acceptance rate	100% ^a	40-70% ⁸¹	10-50% ⁹⁰	100% ^a
graduation rate	10-20% ⁷⁸	9-100% ^{82c}	<15% ⁹¹	15-50% ^{97h}
cost of treatment	\$400-1000 ^a	\$10,-12,000 ^{83d}	\$3,-10,000 ^{90d}	na
length of treatment	5-10 days ⁷⁹	6 mos-5 yrs ^{84e}	1½-5 yrs ⁹²	na
abstinence rate	<5% ^{70b}	5-30% ^{85f}	90% ^{93g}	na
a author's estimate		e institutional stay followed by aftercare		
b for 1 month or more		f after 12 months aftercare		
c volunteers left against medical advice		g over 4 years		
d institutional cost per year		h after 6 months		

na not available/not applicable

Cures have not proved very successful.

(1) It seems that DT programs have virtually no long-term successes: almost all addicts relapse, with no change in crime rates.⁸⁰ It can confidently be asserted that only those heroin users who have small habits and are not really addicted benefit from DT programs, for which hospitalization is not necessary. (There is a minor benefit in that addicts lose some tolerance after DT and thus need less money to buy less heroin to achieve the same effect as before. The social cost is slightly reduced.)

(2) The actual cost of "successes" in CC programs is between \$40,000 and \$250,000, disregarding drop-outs and merely considering the performance of the graduates.⁸⁶ If the opportunity costs incurred by the government in terms of lost income taxes of the 15 months (on average) length of treatment are included the cost is closer to between \$41,000 and \$251,000.⁸⁷ But the figures only indicate the degree of inefficiency of the treatment (there is a 50% rise in other drug use among the "successes"). Even if these sums were spent on all addicts only very few would be "cured" by CC treatment, possibly only those who were not really addicted to begin with. In general CC programs have suffered from cumbersome legal machinery, restrictive admission requirements, inflexible terms of inpatient residence, expensive security, lack of adaptable programs, and active resentment among inmates because of the prison-like climate and poor treatment efforts.⁸⁹

(3) The TC attempts to deal with the supposed psychological roots of the problem. The actual cost per "success," assuming a three year stay on average, is between \$39,000 and \$128,000.⁹⁴ If the opportunity cost of the taxes foregone while the addict is being treated are included, the costs will rise by \$2100 on average per "success," but this is offset by an 84% rise in employment⁹⁵ corresponding to an increase in the income tax revenue of \$590 per addict cured per year.⁹⁶

(4) OA programs seem to have low success rates, and high drop-out rates. There are inadequate data to put a comparative cost on them, but the author feels that the low likelihood of much success with this modality means that more accurate figures are not urgent.

In conclusion, we can state that no effective cure for heroin addiction has been found—neither rapid nor gradual withdrawal, neither long terms of imprisonment since the 1914 Harrison Act, neither the CC programs, neither the TCs. Nor should we be surprised by this uninterrupted series of failures. For heroin really is an addictive drug.⁹⁸

Continuing Programs

Continuing programs are of two types: firstly, continuing dosage with heroin or another opiate (morphine or methadone) either in a maintenance program with the drug administered by someone medically qualified, or in a program where the drug is available to the addict on prescription as in Britain, or in a situation where the

drug is freely available to adults as was the situation in the U.S. before 1914 (possibly under the same restrictions as alcohol). The six possible programs are: MM methadone maintenance (the most popular method in the U.S. today), PM prescription methadone, FM free methadone, HM heroin maintenance, PH prescription heroin (close to the British system), and FH free heroin (the pre-1914 situation). There are reliable data only for MM, PH, and FH.

Secondly, treatment with an opiate antagonist (AT), a drug which, if administered before heroin is taken, blocks both the relief and the euphoric effect of the heroin, or, if administered after heroin is taken, precipitates withdrawal. In neither case does the narcotic antagonist ease the "hunger" for heroin, or allow the heroin, if taken, to satisfy the "hunger" itself.⁹⁹ The motivation for this type of treatment, which is still at the experimental stage, is the physiological theory of addiction, which was given a boost recently by the announcement¹⁰⁰ that "receptor sites" had been found in mammal brain cells into which both the opiate drug molecules and the antagonist molecules fit. The antagonists seem to block the opiates by displacing them in the nervous system. Use of the antagonists is still only experimental and will have to deal with the problem of the addict's "hunger" for heroin before becoming viable as an alternative for treating addiction.

Heroin is a derivative of morphine and reverts to morphine once in the body.¹⁰¹ Methadone is a synthetic opiate. All can be taken orally, through the nose, or by injection (subcutaneously, intramuscularly, or intravenously). All are analgesics, euphorigenics, and superb tranquilizers. All are highly toxic for the nontolerant user (100-200 mg of morphine will lead to fatal respiratory depression), but tolerance rapidly increases with use and there is no limit to the amount that can safely be taken by the tolerant individual. All are addicting—the likelihood of addiction varying, it is believed, with the drug, the route of administration, and especially with the frequency and duration of use. Addicts who take an opiate regularly develop "tolerance" to most of the effects of the drug; that is, the drug has little effect when taken regularly in a uniform dose—but lack of the drug produces in addicts a "withdrawal" that can be severe or even fatal in extreme cases, but is usually no more upsetting than a bout of flu, and lasts as long. There is cross-tolerance between the opiates, and the principle of methadone treatment is to substitute this drug for heroin, doses of 50 mg or more blocking heroin withdrawal and "hunger" (or long-term craving), and doses above 80 mg blocking any euphoria from heroin consumption.

The opiates vary in several ways affecting their attractiveness for the addict, their abuse potential, and the ability of a user to stabilize his dosage and lead a relatively normal existence. The major elements of variance involve the peak effect or maximum analgesic effect (thought to correspond to maximum euphoric effect), the duration of action or time before onset of withdrawal, the method of administration, and the potency and power, where the power is the upper limit of the absolute effects the drug can produce and the potency relates to the dosage necessary to produce a given effect.

The main difference between heroin and methadone is intensity and timing of the peak of maximum analgesic effect and the duration of action. For any drug these vary depending on mode of administration: intravenous administration ("mainlining") brings a higher peak more quickly and duration is shorter than with oral administration.¹⁰² In the U.S., methadone is only dispensed for oral administration, leading to blockage of heroin "hunger" and withdrawal, without itself leading to a euphoric effect. This gives a peak in four hours with a duration of 24 hours' slow decline. When taken orally, heroin peaks more slowly and has a duration of between 12 and 24 hours. Usually (as in Britain) heroin is injected which gives a peak in less than 30 minutes, a duration of between 4 and 6 hours and a rapid decline. See Figures I and II.¹⁰³

For these reasons, methadone (given orally, with no euphoria) is considered more convenient than heroin (given by injection): only one dose is needed a day as against

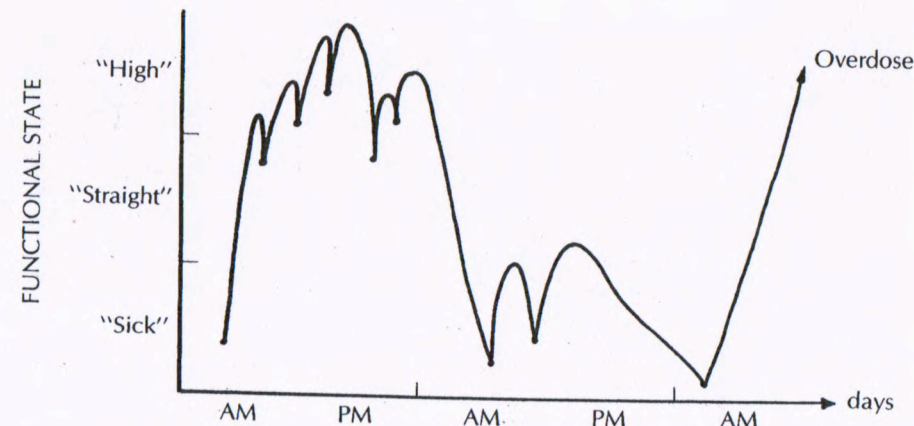


Figure I¹⁰³ Functional state of a typical "mainline" heroin user, with injections of heroin of uncertain dose, usually 10 to 30 mg. Note that the addict is hardly ever in a state of normal function ("straight").

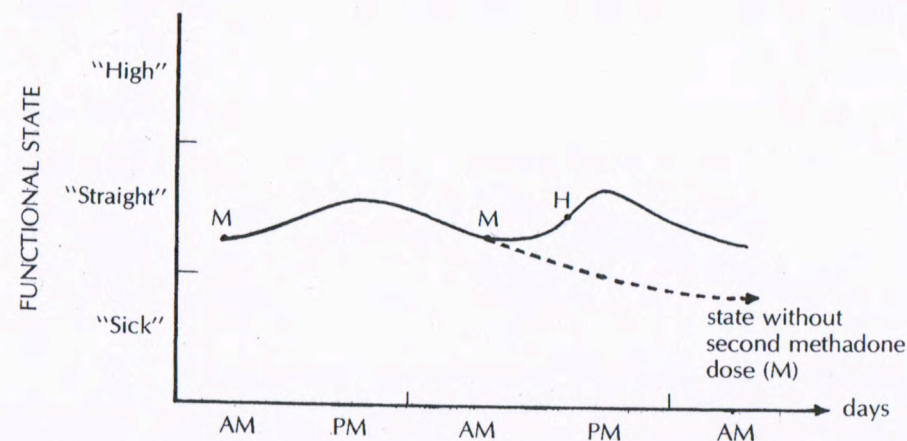


Figure II¹⁰³ Stabilization of the patient in a normal function state by blocking treatment. A single, daily, oral dose of methadone (M) prevents symptoms of abstinence ("sick") or euphoria ("high") even with shot of heroin (H).

four for heroin. As dispensed in the U.S. (in orange drink or in tablet form) methadone is not easily injected. The short duration and sharp peak characteristic of short-acting morphine and heroin make stabilization difficult: a dose insufficient for euphoria (and the stronger tranquilizing effects of the drug) soon results in withdrawal. Lack of stabilization leads to problems in leading a normal life for the addict, and this property of heroin implies that employment on heroin maintenance would be rare, an opinion shared by many doctors, especially those connected with MM programs. Figures partly bear this out: what results there are indicate that at least half of the addicts on heroin prescription programs in Britain are employed,¹⁰⁴ and the situation in the pre-1914 U.S. indicates this also.²⁰

Table II Results of Continuing Programs

	ATg	MM	HM	PHd	FEE
popularity rate	na	50% ^{106a}	na	na	100% ^f
acceptance rate	na	na	na	100% ^f	na
retention rate (12 months)	40% ¹⁰⁵	84% ¹⁰⁷	na	na	na
abstinence rate	na	100% ¹⁰⁸	na	na	na
drop in crime rate	na	90-95% ¹⁰⁹	na	30-90% ^{116c}	na
rise in employment rate	na	26 → 78% ^{110b}	na	5 → 50% ¹⁰⁴	>50% ²¹
physical health	na	good ¹¹¹	excellent ¹⁸	poor ¹¹⁷	na
mental health	na	good ¹¹²	good ¹⁹	good ¹⁹	good ¹⁹
rise in other drug use	na	nil ¹¹³	na	nil ¹¹⁸	na
cost per patient per year	\$3,-5,000 ¹⁰⁵	\$500-2500 ¹¹⁴	\$500-1000 ¹¹⁵	\$500 ⁴⁷	\$20 ^f
a alternative: black market heroin		e	swallowed or injected		
b of those remaining after 4 years		f	author's estimate		
c compared with illegal habit and with preaddiction		g	experimental		
d the British system		na	not available/not applicable		

The results from the five alternative continuing programs with any reliable data are tabulated in Table II. Because of the controversial nature of the relative merits of the alternatives, figures have been estimated (and clearly noted as such) only when the result has been thought obvious. The popularity rate of a program is the percentage of addicts who would voluntarily try the treatment available, and is important in deciding the relative merits of methadone and heroin treatments, which can be thought of as substitutes for each other to some extent. The acceptance rate is the percentage of those wanting treatment who are accepted. The retention rate is the percentage of those starting who remain after some time (mostly twelve months). The abstinence rate is the percentage of those remaining who are still abstinent. These rates can be multiplied to find total abstinence rates, the most common measure of programs not involving heroin, as discussed above.

Ideally to compare programs we should have a one-dimensional measure: this would enable sensitivity analysis to determine the most crucial figures, and might allow cardinal comparisons of three or more alternatives. However, the goals of treatment are not clear. Apparently they are for the addict to stop using heroin, and committing crimes, to get a job, to stabilize his personal life and generally improve his character, to become a useful and productive citizen.⁷⁴ But it is clearly possible to hold a job while addicted;^{104,21} a program might simply reduce the number of crimes without eliminating criminal acts^{109,116} (non-addicts commit crimes, too); the health of the addict seems dependent not on the drug used but on the conditions of use;^{18,19} and finally an addict might exchange addiction to one drug for addiction to another.⁸⁸ Thus the self-explanatory measures of change in crime rate before and during the program,

physical and psychological health during the program, and changes in usage of other drugs before and during the program. A further measure should be what effect the program has on the increase of addiction.

There are no figures for PM or FM since neither of these alternatives has been tried, but it is this writer's opinion that the type of program (maintenance clinic, prescription, or free) is more critical than the drug used (heroin or methadone).

In order to compare programs, the easiest and least contentious weighing of the different measures is the set of prices that society has imputed to the goods and services involved in comparison. We shall compare MM with PH since these are the only two alternatives with well documented results.

Crime:^{109,116} MM—a reduction of 90% means a saving to society of \$5850 per addict per year in property alone,¹¹⁹ assuming that property crimes are reduced by 90%; PH—a similar reduction of \$5850 per addict per year.

Psychological Health:^{112,119} both PH and MM good.

Physical Health:^{111,18,117} both drugs lead to excellent health when properly administered in a maintenance program, and there is no proof that either causes any organic damage to body or brain. Death through "overdose" might be because of respiration failure (heroin is a powerful suppressant of the nervous system) or might be because of a severe, unpredictable, allergic reaction to heroin.¹²⁰ The poor health of British addicts is explained by their lack of care and hygiene when injecting themselves with the drug, rather than because of heroin use as opposed to methadone. (High death rates were recorded among British addicts before the 1968 Act,¹¹⁷ but the changes since then might have reduced them.)

Employment: MM leads to an increase from 26% to 78% employed of those in the program,¹¹⁰ corresponding to an increase in productivity of \$3500 per addict per year on average, and an increase in tax revenues of \$350 per addict per year on average.¹²¹ However, these figures are possibly overestimates since the patients in the study were specially selected.¹²² They had to be at least 20 years old, have a five-year history of addiction, display no serious psychiatric problems and have no addictions to drugs other than heroin. PH leads to an increase from 5% to 50%,¹⁰⁴ corresponding to an increase in productivity of \$3150 per addict per year on average and an increase in tax revenues of \$315 per addict per year on average.¹²³

Other Drug Use: both of the programs show little change on other drug use besides a reduction in barbiturate usage.^{113,118} There is a high rate of other drug use in both programs.

Direct Costs: running costs of MM are between \$500 and \$1000 per¹¹⁴ with higher costs during the induction period of up to \$2500 per addict per year. No figures could be found for the costs of prescription heroin clinics, but staffing details¹²⁴ indicate a cost of \$500 per addict per year.

With respect to the government budget, the net cost of MM is either \$2150 or \$150 per addict per year, and the net cost of PH is \$185 per addict per year. With respect to the full employment social product, the net benefit of MM is either \$3350 or \$1350 per addict per year, and the net benefit of PH is \$2965.¹²⁵ Since the gains from crime are almost identical for each program, there is no need to consider the vexing problem of the value to society of the involuntary redistribution of wealth of property theft.

The pair of figures in each case for MM comes from the difference between the "bare bones" program (standardized doses, outpatient induction, cheap, random urinalysis, and only addict-run supporting services) and a more lavish program—results¹²⁶ indicate that the "bare bones" programs are no less effective in treating the addict than the more expensive programs. When the worse health of the self-dosing British addicts is taken into account, MM (or at any rate maintenance as opposed to prescription) is clearly preferable to PH in terms of social costs and benefits.

But MM has some drawbacks¹²⁷ (which might also apply to heroin): (1) there is

opposition from some groups in society who see MM as no better than heroin addiction, in fact a form of repression on the part of the "Establishment,"¹²⁸ but if detoxification from methadone is found to be any easier than detoxification from heroin, then MM should be more acceptable to these people. (Unfortunately, a phenomenon, the "20 mg Barrier," has been seen in attempts to "wean" addicts off methadone: daily methadone dosage below 20 mg sometimes brings on withdrawal symptoms,¹²⁹ and strangely craving not for methadone but for heroin;¹³⁰ (2) there will be leakage of methadone from the clinics which might lead to euphoric injections of distilled methadone, to new addicts to methadone not previously addicted to heroin, and to children being poisoned by the orange drink in the refrigerator.¹³¹

How do maintenance and prescription programs compare with programs of free opiates? Despite some leakage, both maintenance and prescription programs retard the rapid spread of addiction. However, a program of freely available heroin, possibly similar to the arrangements for selling alcohol, would have a higher rate of spread of addiction.¹³² It is also likely that the health of the addict would be worse if the heroin were free than if it were administered in clinics: the pleasure-seeking addict will prefer taking the drug by injection, which leads to the euphoric "rush," than orally,¹⁰¹ which merely eases the "hunger"—it is the unsupervised use of the needle which has caused much addict sickness in Britain,¹¹⁷ and the supply of once-only syringes has not helped the situation there. Even if the drug were dispensed in a form suitable only for oral administration, the addicts would use their obvious ingenuity (they manage to raise the money necessary for their habit) to develop means of converting it into injectible form as has happened with methadone in the U.S.¹³¹ The additional cost of properly administered prescription or maintenance drug need only be \$500 per addict per year, while the cost of a hospital bed is at least \$100 a day, so that if the average stay in a hospital were greater than five days per addict per year, maintenance or administration clinics (with free entry) would be more efficient economically. But evidence from addiction among servicemen in South East Asia, when the heroin was good, plentiful, and cheap,^{24,25} indicates that in these circumstances the user will prefer to smoke, snort, or drink the drug rather than inject it.

What of the effect of maintenance or prescribing on the black market? It is the hundred-fold increase in value of the heroin on entering the U.S. (partly due to the intensity of the supply measures mentioned above), that is the generator for the black market—if the black market did not disappear and if black market prices did not fall substantially, then there would still be substantial social costs involved. In Britain a cheap, although not necessarily unlimited, supply of good heroin through the clinics has not eliminated a black market which supplies both British and foreign heroin and methadone.¹³³ But it is not always easy for an opiate user to become registered in Britain,¹³⁴ and even when registered the addict has no choice how much licit heroin (or methadone) he gets.¹³⁵ The laws of supply and demand lead us to conclude that if the pure heroin is supplied cheaply and freely then there will be no demand for the more expensive, unreliable black market heroin.

Conclusion

So far we have rejected as either ineffective or too expensive all alternatives considered except MM and PH. MM is hopeful in the sense that it is substituting a more stable legal drug for the more turbulent illegal heroin. Compared to PH it has the edge in increase in employment rates, as would be expected by the more gradual characteristics of oral methadone. The net cost to the taxpayer of the "bare bones" MM programs is about \$150 per addict per year compared to the present situation, and these programs are equivalent in every sense to the more expensive programs costing the government up to \$2150 per addict per year. But a drawback to any MM program is the uncertain figure that without coercion only 50%¹⁰⁶ of heroin addicts would prefer MM to illegal heroin use.

PH has slightly lower employment rates compared with MM and in Britain at any rate the physical health of the addicts is worse on PH. This seems to be due to lack of care about health and hygiene of the self-administering addict, but could be reduced somewhat by the dispensing of once-only syringes and with better guidance on proper methods of injecting the drug.

It is possible that freely available, cheap, pure drugs would lead to a reduction in injecting and an increase in swallowing the drug, with an accompanying improvement in the addicts' health (analogous with the changes among serviceman users in Viet-nam), and it is almost certain that the black market associated social costs would vanish. (FH and/or FM.) But the numbers of users might well increase if there were no strong incentives not to try heroin (which is after all one of the most effective tranquilizers in a drug-oriented society).

Thus if the government is concerned about the future spread of heroin use, the best policy seems to be a combination of the "bare bones" MM programs and HM programs—the drug is professionally administered.

So far the ethical questions involved with addiction and telling others what they should and should not do have not been discussed, but Szasz¹³⁶ argues that every adult should have the right to self-administer whatever substances he pleases even if they are addicting, as long as he is subject to existing laws which preserve the rights of one person not to be hurt, physically or financially, by the actions of another. If the government takes this view, (and is unconcerned by the spread of heroin use and addiction) a possible alternative is to make heroin and methadone as available as alcohol is now (FH and FM).

A variation on this theme¹³⁷ would be to have very cheap government-controlled freely-available methadone, and to price government-controlled freely-available heroin sufficiently high that continual use of heroin were discouraged and yet sufficiently low that the black market were made unprofitable and collapsed. The relative prices in the British black market suggest that this alternative is feasible.

Topics for future research:

- (1) does the route of administration change as the price and availability of the drug change?
- (2) is the demand for heroin elastic or inelastic?
- (3) what proportion of heroin users on the street is MM unacceptable to?
- (4) are there antagonist chemicals which ease the "hunger" for heroin while blocking its effects, that are not themselves addictive?
- (5) can we learn to predict whether a person will become addicted to heroin (or an alcoholic for that matter)?

NOTES

Four books have proven particularly helpful in providing data, and many of the following studies are cited in them. They are: Ashley, R. *Heroin: the Myth and the Facts*, St. Martin's, 1972. Brecher, E. M. & the editors of *Consumer Reports, Licit and Illicit Drugs*, Little, Brown, 1972. The Drug Abuse Survey Project *Dealing with Drug Abuse, A Report to the Ford Foundation*, Praeger, 1972, which includes the staff papers: Wald, P.M. & Hutt, P.B. "Summary" pp 3; DeLong, J.V. "The Drugs and their Effects" pp 62; DeLong, J.V. "Treatment and Rehabilitation" pp 173; Holahan, J.F. "The Economics of Heroin" pp 255; Goldberg, P.B. & DeLong, J.V. "Federal Expenditures on Drug-Abuse Control" pp 302; May, E. "Narcotics Addiction and Control in Great Britain" pp 345. "Interim Report of the (Canadian) Commission of Inquiry into the Non-Medical Use of Drugs," Penguin, 1971.

¹Hudson Institute, First Draft of Final Report: *Policy Analysis for New York State on Drug Abuse*, May 1, 1970, pp 14. 1970 property crimes in NYC imply 70,000 street addicts; half of U.S. addicts in NYC implies 140,000 addicts in U.S.

²Holahan, J.F. *op. cit.* p 285. Ashley, R. *op. cit.* pp 44-8. 1971—205,000 names on NYC Narcotics

Register implies 410,000 addicts in NYC since a survey of deaths in NYC by M. Baden showed that only 50% of addicts were registered; subtract 50,000 for those in treatment, in jail, no longer in the city, or clean; 360,000 street addicts in NYC; 720,000 street addicts in the U.S. (twice NYC).

³Ambrose, M.J. quoted in Ashley *op. cit.* p. 43. The BNDD estimates 560,000 addicts at the end of 1971.

⁴Wald, P.M. & Hutt, P.B. *op. cit.* p. 4.

⁵Holahan, J.F. *op. cit.* pp. 290-1. That is, \$55 per 100 milligrams average. Chemist's shop price of heroin in Britain is 6.7 cents per 100 mg, in the U.S. street price is from \$50 to \$150 per 100 mg, depending on the place of sale and the quantity and quality of the drug.

⁶Ruth H., Woodrow Wilson School, Princeton, quoted in Markham, J.M., *New York Times Magazine*, pp. 39, March 18, 1973. Selling drugs — \$242 a week = 50% income; stealing from trucks — \$116 a week = 23% income; prostitution — \$29 a week = 6% income; shoplifting — \$25 a week = 5% income; stealing from offices, etc. — \$22 a week = 4% income; burglary — \$19 a week = 4% income; picking pockets — \$16 a week = 3% income; total — \$480 a week = 100% income; victimless crimes — \$279 a week = 58% income.

⁷Moore, M. *Economics of Heroin Distribution*, Vol. III of the Hudson Institute study, cited in Holahan *op. cit.* p. 289.

⁸ $\$30 \times .7 \times 365 = \7650 per addict per year — implies \$3.8 billion per year; implies \$1.6 billion from theft of property per year; implies \$3.2 billion worth of property per year; implies \$1.9 billion of street sales of heroin per year.

⁹*Life* 72(25) June 30, 1972, p. 53.

¹⁰Singer, M. in *Public Interest* No. 23 Spring, 1971, *passim*. Estimates that no more than \$500 million a year in NYC from burglary, shoplifting, pick-pocketing, robbery, and theft. Wald, P.M. & Hutt, P.B. *op. cit.* p. 6. Estimates of thefts in NYC range from \$250 million to \$1.9 billion.

¹¹Holahan, J.F. *op. cit.* p. 291. Ashley, R. *op. cit.* p. 29. Estimates range from \$225,000 to \$1,000,000 per kilo.

¹²Holahan, J.F. *op. cit.* p. 284.

¹³Packer, H.L. *The Limits of Criminal Sanction*, Stanford, 1968, cited in Ashley *op. cit.* p. 139; and "Decriminalizing Heroin" *New Republic* 166(23) p. 11, June 3, 1972.

¹⁴Goldberg, P.B. & DeLong, J.V. "Federal Expenditures on Drug-Abuse Control" in *Dealing with Drug Abuse*, *op. cit.* p. 302. Kaplan, J. "Marijuana, the New Prohibition" *World* 1970. pp. 37-8. In California in 1968 the drug laws consumed \$75 million of police resources.

¹⁵IRS *Instructions for Form 1040*, Dept of the Treasury 1972, pp. 20.

¹⁶Ashley, R. *op. cit.* p. 46. NYC Narcotics Register:

1968	58,095 including	12,000 new addicts
1969	94,699	36,604
1970	c. 150,000	c. 55,000
1971	c. 200,000	c. 50,000

¹⁷Sheppard, C.W., Gay, G.R., & Smith, D.E. "The Changing Patterns of Heroin Addiction in the Haight-Ashbury Subculture" *J Psychedelic Drugs*, 3 Spring, 1971, pp. 22-31.

¹⁸Light, A.B. & Torrence, E.G. "Opium Addiction" *Archives of Internal Medicine*, 43/44, 1929, cited in Ashley, p. 113. Other than those effects attributable to the addict life-style, long term opiate use was not characterized by either physical deterioration or impairment of physical fitness. Ball, J. & Urbaitis, J. "Absence of Major Medical Complications among Chronic Opiate Addicts" in Ball, J. & Chambers, C. (eds) *The Epidemiology of Opiate Addiction in the U.S.* C.C. Thomas, 1970, p. 306. While there is ample evidence that the aberrant way of life followed by most heroin abusers has both acute chronic medical consequences . . . there is insufficient scientific basis for maintaining that long-term use of opiates—in and of itself—is related to any major medical condition.

¹⁹*Interim Report of the (Canadian) Commission of Inquiry into the Non-Medical Use of Drugs*, *op. cit.* p. 151. There appears to be little direct permanent physiological damage from chronic use of pure opiate narcotics.

²⁰Kolb, L. *Drug Addiction, a Medical Problem* C.C. Thomas, 1962, p. 120, cited in Brecher, p. 29. Chronic psychoses as a result of the excessive use of opiates are virtually non-existent. Kolb, L. "Pleasure and Deterioration from Narcotic Addiction" *Mental Hygiene*, 9, 1925, pp. 711-713, cited in Brecher, p. 29. Individuals may take morphine or some other opiate for twenty years or more without showing intellectual or moral deterioration; criteria: continued employment

in useful occupations, the respect of associates, living in social conformity, avoidance of legal prosecutions except those brought about by violations of narcotics laws, undiminished mental activity, unchanged personality—as much as 900 mgrm of morphine daily without losing one day's work because of it.

Nyswander, M. *The Drug Addict as Patient* Grune & Stratton, 1956, cited in Brecher, p. 25. The incidence of insanity among addicts is the same as in the general population.

Stevenson, G.H. et al. *Drug Addiction in British Columbia: A Research Survey*, U.B.C. 1956, unpublished, in Brecher, p. 26. Neurological and psychiatric examinations have not revealed evidence of brain damage from the lengthy use of heroin.

²⁰Terry, C. & Pellens, M. *The Opium Problem*, Bureau of Social Hygiene, 1928, pp. 864-72, cited in Ashley, p. 113. Regular productive work was the rule rather than the exception for addicts pre-1914 (Harrison Act).

²¹Wald, P.M. & Hutt, P.B. *op. cit.*, p. 6.

Brecher, E.M. *op. cit.*, pp. 21-32.

²²Brecher, E.M. *op. cit.*, pp. 101-114.

Interim Report of the Canadian Commission, *op. cit.*, p. 151.

²³Wald, P.M. & Hutt, P.B. *op. cit.* p. 27. Studies show that almost all heroin addicts get arrested at least once every two years of active addiction and spend an average of 15% of their addicted life in jail.

²⁴National Heroin Symposium, San Francisco, 1971, cited in Brecher, p. 22n.

²⁵Zinberg, N.E. in *New York Times Magazine* Dec. 5, 1971, p. 116, and

Emerson, G. in *New York Times Magazine* Sept. 12, 1971, *passim*, in Brecher, pp. 190,1. The Army's anti-heroin campaign in Vietnam raised prices from \$2 or \$3 to \$12 per 250 mg, compared to about \$125 in NYC. Mainlining increased in popularity. When a widely used drug suddenly becomes more difficult to obtain, users will conserve their supplies for greatest effect.

²⁶BNDD Intelligence Staff *The World Opium Situation* (unpublished), Oct., 1970, p. 10, cited in Holahan, p. 259.

²⁷*Ibid.* p. 4, cited in Holahan, p. 258.

New York Times April 1, 1973, p. 17. A Reuters report on legal opium growing in Yugoslavia states that using a combine-harvester, one man can bring in 25 to 30 acres (a season) compared with thirty men per acre traditionally.

²⁸BNDD Intelligence Staff, *op. cit.*, p. 7 cited in Holahan, p. 261. In Turkey, licit opium \$11 a kilo, illicit \$25 a kilo; in Iran, licit opium \$50-\$60 a kilo, illicit \$300-\$400 a kilo. (In Iran the government support price is set high to discourage illicit trading.)

Ashley, R. *op. cit.*, p. 17. In Turkey, licit opium \$12 a kilo, illicit \$25-\$35 a kilo.

²⁹International Narcotics Control Board *Statistics on Narcotic Drugs for 1969*, U.M., 1970, p. viii, cited in Holahan, p. 260. Table gives acreages, harvests, and yields for India, Iran, Pakistan, and Turkey.

³⁰DeLong, J.V., *op. cit.*, pp. 71, 72.

³¹Holahan, J.F. *op. cit.*, p. 260.

³²Ashley, R. *op. cit.*, p. 19.

³³*Ibid.* p. 227.

Brecher, E.M. *op. cit.* p. 95.

³⁴Ashley, R. *op. cit.*, p. 23.

³⁵Arthur D. Little, Inc. "Drug Abuse and Law Enforcement" A Report to the President's Commission on Law Enforcement and Administration of Justice, Jan. 18, 1967, cited in Brecher, p. 94.

³⁶BNDD Intelligence Staff, *op. cit.*, pp. 10,13, cited in Holahan, pp. 256,259. Estimated licit production 1060-1085 tons per annum; estimated illicit production 1260-1395 tons per annum; estimated total production 2320-2480 tons per annum; estimated U.S. needs 4500-5500 kilos of heroin per annum; estimated U.S. needs 45-55 tons of opium per annum (1 ton = 1000 kilograms).

³⁷ $\$35 \times 2.48 \times 10^6 = \85 million.

³⁸Holahan, J.F. *op. cit.*, p. 265.

³⁹6000 kilos of heroin requires 60,000 kilos of opium @ 4 kilos per acre = 23.4 square miles of opium crop.

⁴⁰Ashley, R. *op. cit.*, pp. 19-21.

⁴¹*Heroin and Heroin Paraphernalia*, 2nd Report by the House Select Committee on Crime, NR No. 91 - 1808, 91st Congress, 2nd Session, June 2, 1971, p. 16 cited in Brecher, p. 92n. A factory for converting morphine to heroin in kilogram batches costs \$700.

⁴²Helpern, M. "Epidemic of Fatal Malaria Among Heroin Addicts in NYC" *Am J of Surgery* 26

1943, pp. 111, cited in Brecher, p. 110.

⁴³Ashley, R., *op. cit.*, pp. 29,30.

⁴⁴Brecher, E.M., *op. cit.*, p. 96.

⁴⁵*Heroin and Heroin Paraphernalia*, *op. cit.*, p. 20, cited in Brecher, p. 93.

Wald, P.M. & Hutt, P.B., *op. cit.*, p. 28. Fiscal 1970 customs officers seized 311 lb of heroin in an estimated total of 6600 lb smuggled into the U.S.

⁴⁶Brecher, E.M., *op. cit.*, p. 92.

⁴⁷House Select Committee on Crime, *op. cit.*, Serial 92 - 1 p. 3, 1971, cited in Ashley, p. 132.

⁴⁸Brecher, E.M., *op. cit.*, pp. 91,92.

⁴⁹BNDD Fact Sheet, quoted in Goldberg & DeLong, *op. cit.*, pp. 308, 309. Fiscal 1969, 140 lb heroin seized domestically; fiscal 1970, 427 lb heroin seized domestically; fiscal 1971, 226 lb heroin seized domestically.

⁵⁰Holahan, J.F., *op. cit.*, p. 283.

Ashley, R., *op. cit.*, p. 131.

Brecher, E.M., *op. cit.*, p. 61.

⁵²Arthur D. Little, Inc., *passim*.

Preble, E.A. & Casey, J.J., "Taking Care of Business—the Heroin User's Life on the Street," *Intl J of the Addictions*, 4, p. 7, March, 1969.

Moore, M., *passim*.

⁵¹Goldberg, P.B. & DeLong, J.V., *op. cit.*, p. 306.

⁵³Moore, M., *passim*, cited in Holahan, pp. 269, 284.

⁵⁴Schelling, T.S., "Economics and Criminal Enterprise," *Public Interest*, No. 7, pp. 61-78, Spring, 1967.

⁵⁵Moore, M., *passim*, cited in Holahan, p. 280.

⁵⁶Curran, P.J. in the *New York Law Journal* Dec. 6, 1971, p. 38, cited in Ashley, p. 135.

	arrests on felony narcotics charges	new names on the NYC Narcotics Register
1968	9,000	12,000
1969	20,000	36,604
1970	26,000	55,000

(in 1969 20,000 arrests led to 6000 indictments)

⁵⁷*Robinson v. California* 370 U.S. 660, 1962, cited in Brecher, p. 59. In 1962 the Supreme Court ruled that imprisonment merely for being an addict was cruel and unusual punishment prohibited by the Constitution, but possession of the drug or a syringe without a prescription is illegal, if being an addict is not.

⁵⁸*Ibid. passim* cited in Brecher, p. 21. Gives a graphic description of the physical deterioration said to be undergone by addicts.

⁵⁹Brecher, E.M. *op. cit.*, pp. 82,83.

⁶⁰*Ibid.* p. 84.

⁶¹DeRopp, R.S. *Drugs and the Mind* Grove, 1957, p. 150, and

Chapel, J.L. & Taylor, D.W. "Drugs for Kicks" in *Drug Abuse Law Review* 1 1971, p. 53, both cited in Ashley, p. 60.

⁶²Ashley, R. *op. cit.*, pp. 60,61.

⁶³*Ibid.* p. 61.

DeLong, J.V. *op. cit.*, p. 81. Tolerance develops rapidly, up to 500 mg of morphine within 10 days.

⁶⁴Wald, P.M. & Hutt, P.B. *op. cit.*, p. 5.

⁶⁵Beecher, H.K. *Quantitative Effects of Drugs: Measurement of Subjective Responses* Oxford, 1959, cited in the Interim Report of the Canadian Commission, *op. cit.*, p. 157.

⁶⁶Chein, I., et al. *The Road to H Basic*, 1964, *passim* cited in the Interim Report of the Canadian Commission, *op. cit.*, p. 157. N = 150 healthy male volunteers injected with morphine—only three were willing to allow repeated dosings and none would actively have sought more.

⁶⁶Lasagna, L., et al. "Drug-Induced Mood Changes in Man" *JAMA* 157 1955, pp. 1006-1020, cited in Ashley, p. 62. N = 9 given 2mg of heroin (injected) 1 enthusiastic; 2 slightly pleased but almost no effect felt; 3 found heroin neither pleasant nor unpleasant; 3 found heroin mildly unpleasant. N = 11 given 4 mg of heroin (injected) 2 found the experience mildly pleasant; 2 found no detectable effect; 7 found the experience distinctly unpleasant.

⁶⁷Chein, I., et al. *passim* cited in the Interim Report of the Canadian Commission, p. 157.

⁶⁸Wilson, J.Q., et al. "The Problem of Heroin" *Public Interest* 29 Fall '72, p. 10.

⁶⁹Interim Report of the Canadian Commission, *op. cit.*, p. 158.

⁷⁰Chien, I., et al. *passim* cited in the Interim Report of the Canadian Commission, p. 157.

⁷¹Wald, P.M. & Hutt, P.B. *op. cit.*, p. 5.

⁷²*Ibid.* p. 29.

⁷³*Ibid.* pp. 21,22. NYC (half the nation's addicts) 10% in treatment (40% TC, 60% MM); Washington, D.C. 15% in treatment (50% abstinence, 50% MM); Chicago (50% abstinence, 50% MM).

⁷⁴DeLong, J.V. *op. cit.*, pp. 178,9.

⁷⁵*Ibid.* p. 180.

⁷⁶*Ibid.* pp. 88-90, 212-213.

⁷⁷Martin, W.R. in *NY Law Journal* 166 Dec. 6, 1971, p. 34, and Hamilton, Russell M.A. "Cigarette Smoking: Natural History of a Dependence Disorder" *Brit J of Med Psychology* 44 1971, p. 2, both cited in Brecher, pp. 83,84.

⁷⁸Gay, G., Matzger, A., Bathurst, W., Smith, D. "Short Term Heroin Detoxification on an Outpatient Basis" *Intl J Addictions* 6(2), June 1971, pp. 241,259, cited in DeLong, p. 182. N = 450 — 56% dropped out before clean; 38% left after one visit; 12% reduced to once weekly "chipping;" 5½% clean for one month or so.

Smith, D., Gay, G., Ramer, B. "Adolescent Heroin Abuse in San Francisco" *Proc, Third National Conference on Methadone Treatment*, NY, Nov. 1970, U.S. Public Health Service Pub. No. 2172, GPO, 1971, cited in DeLong, p. 182. 74% drop out or relapse within 48 hours; 90% dropped out; 100% relapsed.

⁷⁹DeLong, J.V. *op. cit.*, p. 182.

⁸⁰Gearing, F.R. "Evaluation of Methadone Maintenance Treatment Program" 1969, 1970, cited in DeLong, p. 208, and Einstein, S. (ed) "Methadone Maintenance" (papers presented at the 2nd National Methadone Conference, Oct. 1969); Dekker, 1971, pp. 171-197.

Gearing, F.R. "Successes and Failures in the Methadone Maintenance Treatment of Heroin Addiction" *3rd Methadone Conference* 1970, cited in DeLong, p. 208, 3 years before: 131 arrests, 52 jailings per 100 man years; 4 years after: 134 arrests, 63 jailings per 100 man years.

⁸¹U.S. Bureau of Prisons "Narcotic Addict Rehabilitation Act: Progress Report" (mimeo.) Feb. 22, 1971, cited in DeLong, p. 190. NARA program Titles I & III 55-60% rejection rate; Title II 70% acceptance rate (n = 896).

⁸²U.S. Comptroller General *Limited Use of Federal Programs to Commit Narcotics Addicts for Treatment and Rehabilitation* Sept. 20, 1971, p. 6, cited in DeLong, p. 184;

Cole, J. "Report of the Treatment of Drug Addiction" in the President's Commission on Law Enforcement and Administration of Justice *Task Force Reports: Narcotics and Drug Abuse* GPO, 1967, pp. 135,40. Lexington 1935-1964, 70% voluntarily left against medical advice (n = 63,000) 15 months average.

⁸³DeLong, J.V., *op. cit.*, p. 190.

⁸⁴*Ibid.*, pp. 185-187. Duration of treatment at Lexington: six months to a year. Minimum institutional stay at Corona: six months. Average institutional stay at Corona: fourteen months, then three-year "community aftercare" or "parole." Entire NY NACC CC procedure: three to five years.

⁸⁵Cole, J. *op. cit.*, p. 140. n = 63,000 90% relapsed into heroin use "within a few years." Duster, T. "The Legislation of Morality" Free Press, 1970, p. 130fn.

Kramer, J.; Bass, R.; Berechochoe, J. "Civil Commitment for Addicts: the California Program" *Am J Psychiatry* 125, 1968, pp. 816, cited in DeLong, *op. cit.*, p. 185. 1962-1964 n = 1209 — 35% "in good standing" after 12 months; 35% used drugs in first year of parole; 13% committed crime in first year.

Hunt, G.H. and Odoroff, M.E. "Follow-up Study of Narcotics Drug Addicts After Hospitalization" *Public Health Reports* 77 1962, pp. 41, cited in Brecher, p. 68. n = 1912 6.6% remained abstinent throughout the follow-up periods of one to 4½ years.

Duvall, H., Locke, B., & Brill, L. "Follow-up Study of Narcotics Drug Addicts Five Years after Hospitalization" *Public Health Reports* 78 1963, pp. 185, cited in Brecher, p. 68. n = 453 less than 3% were abstinent at all three follow-ups of 6 months, 2 years, and 5 years after release.

Vaillant, G.E. "A Twelve-Year Follow-up of New York Narcotics Addicts: I. The Relation of Treatment to Outcome" *Am J Psychiatry* 122 1965, pp. 729, cited in Brecher, p. 70. n = 100 — 90 addicted within 2 years; (with aftercare) 2 of the unaddicted alcoholic; 3 of the unaddicted had never had more than 1 fix a day; 1 of the unaddicted an intermittent user; 3 of the unaddicted dead within 4 years. During 12 years — 350 prison terms; 200 hospitalizations; only 11 with year or more abstinence. At 12 years — 20 addicted, 23 "doing well."

Trussell, R.E. "Treatment of Narcotics Addicts in NYC" in Einstein, S. (ed) "Methadone Maintenance" (papers presented at the 2nd National Methadone Maintenance Conference, Oct 1969); Dekker, 1971, pp. 2,3. n = 247 — after 3 years only 8 alive unaddicted, unimprisoned, and unhospitalized.

⁸⁶cost = \$10,000 per year; length of treatment = 1.25 years (average); "success" rate = 5 - 30%; thus cost per "success" = $\$10,000 \times 1.25 \times 100/5 \times \$250,000 - \$10,000 \times 1.25 \times 100/30 = \$40,000$.

⁸⁷average income = \$7000 per year; appropriate Federal income tax rate = 10%; thus opportunity cost = $1.25 \times \$700 = \900 .

⁸⁸O'Donnell, J.A. *Narcotics Addicts in Kentucky* U.S. Public Health Service Pub. No. 1881, 1969, p. 33, cited in Brecher, p. 87. Of the years spent out of institutions and free of narcotics, more than half were spent on alcohol or barbiturates.

⁸⁹Wald, P.M. and Hutt, P.B., *op. cit.*, p. 30.

⁹⁰DeLong, J.V., *op. cit.*, pp. 191-196. 50-90% quit or rejected at initial stage. n = 700, 122 85% left in 12 months (80% voluntarily, 5% rejected).

⁹¹Dederich, C.E. quoted in Grafton, S. (ed) "Addiction and Drug Abuse Report" 2 June, 1971, p. 2, cited in Brecher, p. 78. 10% of those accepted to Synanon are eventually graduated to two or more years of abstinence.

Brecher, E.M. *op. cit.*, p. 79. n = 272 — 67 remained after 2 years; 183 dropped out; 22 graduated (11% of those who had left).

Nash, G., et al. *The Phoenix House Program: the Results of a Two-Year Follow-up* 1971, unpublished, cited in Brecher, p. 80. n = 157 — 40 remained after two years; 100 had dropped out; 17 had graduated (14% of those who had left).

⁹²Ashley, R., *op. cit.*, p. 174. Admittance phase — 2 weeks - 6 months; treatment phase — 1 year - 3 years; re-entry phase — 6 months - 1 year.

⁹³DeLong, J.V., *op. cit.*, pp. 191-196. n = 113 — 11% relapsed over 4 year period of study. Nash, G., et al. *passim*. n = 17 — 7 had been employed for less than 2 years (40% of grads); 8 abstinent; 2 relapsed (12% of graduates).

⁹⁴graduation rate = 15%; "success" rate = 90%; 3 years @ \$3000 = \$9000; 3 years @ \$10,000 = \$30,000; thus average cost = $(.85 \times 1.5 + .15 \times 3) \$9000/3 \times .9 \times .15 = \$39,000 - (.85 \times 1.5 + .15 \times 3) \$30,000/2.7 \times .15 = \$128,000$.

⁹⁵DeLong, J.V., *op. cit.*, pp. 191-196. n = 113 — 84% employed over 4 year period.

⁹⁶ $\$700 \times .84 = \590 .

⁹⁷Du Pont, R. statement in *Narcotics Research, Rehabilitation, and Treatment Hearings* before the Select Committee on Crime, HR, 92nd Congress, 1st Session, April, 26-28, June 2-4, 23, 1971, GPO, 1971, Part 2 pp. 144, cited in DeLong, p. 197. 15% remained in DC NTA abstinence program for 6 months.

D.C. Dept of Corrections *Performance of Corrections Referrals under three Narcotics-Addiction Treatment Modalities* Research Report 42, July, 1971, cited in DeLong, p. 198. n = 165 — 25% failed after 6 months; 25% escaped after 6 months.

⁹⁸Brecher, E.M., *op. cit.*, p. 83.

⁹⁹Wald, P.M. and Hutt, P.B., *op. cit.*, p. 24.

¹⁰⁰Snyder, S.H. and Pert, C.B. in *Science* 179, 1973, pp. 1011.

¹⁰¹DeLong, J.V., *op. cit.*, pp. 71-90.

Brecher, E.M., *op. cit.*, pp. 2, 21-32.

¹⁰²DeLong, J.V., *op. cit.*, pp. 77,78. Morphine: subcutaneously — peak in ½ to 1 hr, duration 4-6 hr, rapid decline; intravenously — peak sooner and greater; orally — peak 20-30% of subcutaneous, duration 12-24 hr; withdrawal — within 4-10 hr (depending on dosage), peak within 2nd day of abstinence, rapid decline, all obvious symptoms gone in 7-10 days. Heroin: very similar to morphine but possibly faster to brain and hence sooner peak. Methadone: subcutaneously — peak in 3 hr, duration 12 hr; intravenously — peak almost immediate, duration shorter; orally — peak 70% of subcutaneous in 4 hr, duration 24 hr, slow decline; withdrawal — no symptoms until 3rd day, peak on 6th-9th day at ⅓ of morphine intensity, then slow decline for 2 weeks — worse than morphine. Subcutaneously for same peak: morphine 10 mg; heroin 3 mg; methadone 10 mg.

¹⁰³DeLong, J.V., *op. cit.*, p. 87 after Dole, V.P., "Narcotic Blockade" *Archives of International Medicine* 118 pp. 304,305 Oct 1966.

¹⁰⁴Bewley, T.H., James, I.P., and Mahon "Effectiveness of Prescribing Clinics for Narcotics Addicts in the U.K. 1968-70" *Intl Symp on Drug Abuse*, Ann Arbor, Nov 9, 1970, cited in May, p.

390. The number of employed addicts at three London centres doubled in two years.

Zacune, J., quoted in May, pp.390. n = 25 — before 1 employed fulltime, after 13 ft, 4 part time.

O'Donnell, J.A., *op. cit.*, pp. 132, 226 cited in Brecher, p. 132. Three addicts who started receiving legal morphine — improvement of work pattern followed securing stable source. Fourteen addicted physicians: often deteriorated, but not always.

Vera Institute of Justice, Inc. "Heroin Research and Rehabilitation Program" Discussion Proposal, May, 1971, (mimeo), cited in Ashley, p. 162. 40% of all registered addicts are employed after one year in treatment at London clinic.

Lady Frankau, "Treatment in England of Canadian Patients Addicted to Narcotic Drugs," *Canadian Med Assoc J* 90(6) 1964, pp. 421, cited in Ashley, pp. 164. n = 50 — 18 detoxified and drug-free; 19 on heroin maintenance and fulltime employed (38%); 13 dead, lost, or in trouble with the police.

¹⁰⁵Fink, M., "Narcotics Antagonists in Opiate Dependence" *Science* 169 Sept 4, 1970, pp. 1005, cited in DeLong, p. 233.

¹⁰⁶Stewart, G. "A Survey of Patients Attending Different Clinics in New Orleans," *3rd Methadone Conference*, 1970, cited in DeLong, p. 233.

Goldstein, A. "Blind Dosage Comparisons and Other Studies in a Large Methadone Program" *Natl. Heroin Symp.* June 20, 1971, cited in DeLong, p. 233.

¹⁰⁷Gearing, F.R. cited in DeLong, pp. 205 and Einstein, *passim*. n = 1500 — 23% discharged after 21 months (voluntary and invol.); 34% discharged after 33 months; 42% discharged after 48 months; that is 10% discharged after 6 months and 16% discharged after 12 months.

DeLong, J.V., *op. cit.*, pp. 206-207. Claims that when involuntary discharges are discounted, there is a partial success rate of 93.2% after 48 months.

¹⁰⁸Gearing, F.R., cited in DeLong, pp. 205 and Einstein, *passim*. n = 4376 — none using heroin regularly; 8% with alcohol problems; 10% using amphetamines, cocaine, barbiturates.

¹⁰⁹*ibid. passim*. 3 years before: 120 arrests, 48 jailings per 100 man years; 4 years after: 4.5 arrests, 1.0 jailings per 100 man years.

Joseph, H. and Dole, V. "Methadone Patients on Probation or Parole" (mimeo) Rockefeller, U.P., 1970, p. 9 cited in DeLong, p. 207. n = 912 — 90% drop in criminal convictions in 4½ years.

¹¹⁰Gearing, F.R., cited in DeLong, pp. 205 and Einstein, *passim*. n = 1500 — on entry 26% employed; 6 months 57% remaining employed i.e., 51% original employed; 12 months 66% remaining employed i.e., 55% original employed; 48 months 78% remaining employed i.e., 45% original employed.

¹¹¹DeLong, J.V., *op. cit.*, p. 229. So far, clinical studies have found no evidence of birth defects and no indication of physical damage.

¹¹²Kramer, J., "Methadone Maintenance for Opiate Dependence" *Calif. Med.* 113(6) Dec 9, 1970, pp. 6, and papers at the 2nd and 3rd Methadone Conferences cited in DeLong, p. 224. No consistent psychopathology has been found.

¹¹³Goldstein, A., "Blind Controlled Dosage Comparisons with Methadone in 200 Patients" *3rd Methadone Conference* 1970, p. 35, cited in DeLong, p. 226. n = 200 — before 20%, during 20% overused alcohol; before 5-10%, during 5-10% used amphetamines; before 45%, during 45% used marihuana; before 30%, during 30% used nothing; before 20%, during 6% used barbiturates.

¹¹⁴*ibid. passim*, as cited in DeLong, p. 203.

Trussell, R.E., and Dole, V.P., in Einstein, *op. cit.*, p. 6 and p. 225.

"Treatment" (Canadian) Commission into the Non-Medical Use of Drugs, Ottawa, 1972, p. 103. Holton, L., statement before House Select Committee on Crime *op. cit.*, pp. 600-1, cited in DeLong, p. 203. \$500/patient/year min: standard doses, outpatient induction, cheap urinalysis, no further services. \$2000/patient/year max: individual doses, inpatient induction, frequent expensive urinalysis, ancillary services, (\$1000/patient/year once stabilized). Where methadone — 5 cents/addict/day; urinalysis — \$1-\$3 per test; inpatient induction \$200-\$1400 hospital expenses/addict.

¹¹⁵Hudson Institute, First Draft of Final Report: "Policy Analysis for New York State on Drug Abuse" May 1, 1970, pp. 104-106. Heroin dispensaries would cost about \$500-\$1000/addict/year.

¹¹⁶Zacune, J., quoted in May, pp. 390. n = 25 Canadian immigrant addicts in England in 1960s — before 25% of time in jail, after less than 2%; before 187 offenses, after 27 offenses.

Lady Frankau, *passim*, cited in Ashley, pp. 164. n = 50 — before 9 with criminal records; after 7 with criminal records (mainly illegal extra drugs).

James, I.P., "Delinquency and Heroin Addiction in Britain," *B J Criminology*, April, 1969, cited in May, p. 381. n = 50 addict-criminals: if one discounts drug convictions, there were fewer convictions after addiction than before.

Kosviner, et al. "Heroin Use in a Provincial Town" *The Lancet*, 1968, pp. 1182, cited in May, p. 382. n = 37 found a reduction rather than an increase after addiction.

O'Donnell, J.A., *op. cit.*, p. 115, cited in Brecher, p. 133. 4 of 45 on legal heroin committed crime (9%); 59 of 82 on illegal heroin committed crime (72%).

¹¹⁷Stimson, G.V. and Agbourne, A.C., *A Survey of a Representative Sample of Addicts Prescribed Heroin at London Clinics*, Addiction Research Unit, Institute of Psychiatry, London University, 1970, cited in May, p. 374. n = 111 — 39% had been in hospital for septicaemia, hepatitis, abscesses, ODs; 40% had suffered from hepatitis and ODs; 46% had suffered from abscesses. Bewley, T.H., ben-Arie, and James, I.P., "Survey of Heroin Addicts Known to the Home Office" *Brit Med J* 1968, pp. 727, cited in May, p. 386. n = 1271 — death rate in UK addicts twice that of US addicts; death rate in UK addicts 28 times that of UK at large.

¹¹⁸Stimson and Agbourne, *passim*, cited in May, p. 374. n = 111 — 84% had used other drugs in month preceding interview.

May, E., *op. cit.*, p. 374. Clinic doctors report increase in use of methylamphetamine and barbiturates in London addicts.

Michelson, M. et al. "Sedative Abuse by Heroin Addicts," *The Lancet* March 21, 1970, pp. 606-7, cited in May, p. 374. n = 65 — 80% had injected barbiturates at least once; 65% had taken barbiturates "for kicks."

Bewley, James, and Mahon, *passim*, cited in May, p. 374. While many addicts were taking more and different drugs than those prescribed, such misuse had been reduced over two years since 1968.

¹¹⁹From note 8. \$6400 worth of property stolen per addict per year — thus 90% reduction in crime implies \$5850 saving per addict per year.

¹²⁰Brecher, E.M., *op. cit.*, pp. 101-105.

Cherubin, C.E. "A Review of the Medical Complications of Narcotic Addiction" *Intl J of the Addictions* 3 1968, pp. 163-175, cited in the *Interim Report of the Canadian Commission*, *op. cit.*, p. 151.

¹²¹ $\$7000 \times (.78 - .26) = \3500 productivity gain; 10% of \$3500 = \$350 income tax revenue gain.

¹²²DeLong, J.V., *op. cit.*, p. 205.

¹²³ $\$7000 \times (.50 - .05) = \3150 productivity gain; 10% of \$3150 = \$315 income tax revenue gain.

¹²⁴May, E., *op. cit.*, pp. 358,9.

Lambeth: 96 active patients

1 1/14 doctor	= \$25,000
5/14 social worker	= \$ 5,000
1 nurse	= \$12,000
1 secretary	= \$10,000

\$42,500 implies \$500/addict/year

	MM	PH
crime decrease	\$5850	\$5850
productivity gain	\$3500	\$3150
tax increase	\$ 350	\$ 315
direct costs	\$2500 - \$500	\$ 500

then government cost = direct costs — taxes increase

and full employment social product benefit = productivity gain — government cost.

¹²⁶DeLong, J.V., *op. cit.*, pp. 215-220.

¹²⁷Wald, P.M. and Hutt, P.B., *op. cit.*, p. 23.

¹²⁸Kunnes, R., "The American Heroin Empire" Dodd, Mead, 1972, pp. 83-106.

¹²⁹Goldstein, A., 1971, *op. cit.*, p. 14, and

Vandevort, W., "Treatment of Drug Abuse in Adolescents" *Third Methadone Conf.* p. 87, both cited in DeLong, p. 221.

¹³⁰Dole, V.P., "Research in Methadone Maintenance Treatment" in Einstein, *op. cit.*, p. 24.

¹³¹Kunnes, R., *op. cit.*, p. 117.

¹³²Ashley, R., *op. cit.*, p. 222.

¹³³May, E., *op. cit.*, p. 379. 1970 black market prices — British heroin \$14.40/grain (\$22.20 per 100 mg); Hong Kong Heroin \$3.60/half-grain (\$5.55 - \$11.10/100 mg); methadone \$7.20 - \$12.80/grain (\$11.10 - \$19.80 per 100 mg).

¹³⁴*Ibid.*, pp. 361-364.

¹³⁵*Ibid.*, pp. 366-368.

¹³⁶Szasz, T., "The Ethics of Addiction" *J Drug Issues* 2(1) Winter, 1972, pp. 42.

¹³⁷Howard, R.A., in private conversation.