

## HEALTH CONSEQUENCES OF CHASING AND INJECTING: A COMPARISON

### Introduction

Drug use affects the human organism in several ways. A division can be made between psychoactive effects such as changes in perception, cognition, affect, and levels of anxiety or inhibition, and physical effects like increased or diminished heart function, lung function and muscle tension. It is primarily the former effects which make drugs desirable, and are a major reason for their use. Some of the physical effects --enhanced and/or enduring bodily performance from stimulants; muscle relaxation and/or sleep from tranquilizers-- are sought as well.

These psychoactive and physical effects are influenced by the dose, administration mode, psychological and/or physical condition of the consumer, and the social environment in which drugs are taken. (1) Many of the physical effects are termed --because they are secondary to the intended effect-- "side effects". Prolonged, and in some cases single, exposure to drug effects may result in harm or impairment. Some harm relates less, if at all, to the ingested drug itself, than to drug impurities; the mode of administration; or the circumstances in which drug use takes place. Because of the illegal nature of most drug use, and the resulting insecurities regarding the composition of the ingested substance, the actual cause of harm is often unclear.

This chapter will focus on the physical consequences of illicit drug use. More precisely, specific health consequences of the prevalent drug administration rituals will be compared. This comparison will not be extensive, and for the most part limited to injecting and smoking, particularly chasing. The risk of (fatal) overdose and other physical harm will be considered. Communicable diseases, such as hepatitis and HIV, will be only briefly addressed as there is little data available to compare the two administration modes. The chapter will conclude with a reflection on the relative safety of the different modes.

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## Overdose

### *Opiate Overdose*

Among drug users, death by overdose is generally linked to the opiates, particularly heroin and methadone. The classic depiction of an overdose involves opiate ingestion in an amount exceeding (individual) tolerance with resulting respiratory and central nervous system depression; miosis (pinned pupils); and consciousness levels anywhere from sedation to coma. Whether or not this "pharmacological overdose" is responsible for all deaths which occur following heroin administration has been questioned. Alternative hypotheses regarding allergic reactions, (2 3) toxic effects of heroin (4) or its diluents (5 6 7) and drug interactions, with particular reference to alcohol, (2 4 8) have been formulated. In an overdose study from Denmark, alcohol was a contributing factor in 40% of the cases (39% of which were due to morphine/heroin, injected 67% of the time). (9) A study of US soldiers stationed in Europe found that most "overdoses" were among experienced drug users who took (87% by injection) a familiar amount of heroin after a night of drinking, went to bed drunk, vomited in their sleep and aspirated some of the vomitus causing fatal (or near-fatal) asphyxiation. (10) In a Swiss retrospective study of emergency room admissions for overdose, the vast majority were attributed to heroin, but mixed poisonings, in which heroin was most commonly combined with flunitrazepam and alcohol, contributed to the clinical picture. (11)

A recent Amsterdam study applied the descriptive term, "sudden death after drug use." (12) This retrospective study of 175 lethal overdoses divided victims into two groups: persons who died shortly after their arrival in Amsterdam (almost all non-Dutch tourists), and those who had resided in Amsterdam a long period before death. Following Ruttenber and Luke, (6) the overdoses in the former group were classified as epidemic pharmacological overdoses -- tourists not accustomed to the higher potency of Amsterdam's heroin. The deaths among the resident group were classified as endemic; caused not so much by potency but by coincidence with other factors, such as additional drug use. (12) Poor physical health, a possible co-factor, was barely addressed. A recent German study related the increased number of local drug deaths (of whom 75% suffered inflammatory diseases and 15% were HIV seropositive) to a rise in purity and availability of heroin. The authors stated, "[t]he 'supply' of heroin has apparently become so copious that nearly all deaths are caused by overdosage with this substance," (13) thus suggesting pharmacological overdose. But, as the Amsterdam study shows, purity in and of itself, and high availability, are not sufficient explanations. The large number of foreign overdose fatalities in Amsterdam (64%) suggests a lethal combination of low tolerance and ignorance of (rising) drug purity levels. It can therefore be ascertained that (pharmacological) overdoses are more likely to occur at the start of a period of increasing purity (or) when purity is

highly unstable.

### *Administration Ritual and Overdose Prevalence*

A look at the administration ritual involved in overdose is interesting. While deaths due to oral administrations of methadone, and a combination of codeine and glutethimide (a hypnotic) have been reported, (14 15 16) the majority of illicit drug overdose studies refer to injected drugs. In the Amsterdam study, the mode of drug administration utilized prior to death could only be determined in a minority of cases. Only 54.3% of the autopsy reports mentioned signs of recent injecting. In 29.1% of the cases this could not be established, and in 16.6% this information was missing (N = 175). Testimonies were available in 42 of the heroin use prior to death cases. Among 34 (81%) the lethal dose was injected, in four the heroin was sniffed and in only one case it was chased. In the three additional cases the mode of administration could not be ascertained. (12) Although these numbers are hardly generalizable, they suggest that, at least when considering overdose, chasing is a low-risk administration ritual. This suggestion is supported by the relative absence of Surinamese and Moroccan users among the deceased (less than 6%, N=175). The prevalence of injecting in these user groups is very low, about 4%, in contrast with 37% of Dutch users and 67% of the foreign drug users in Amsterdam. (17) The likelihood of this suggestion is further confirmed by data from Rotterdam. Table 6.1 (chapter six) shows a similar injecting prevalence in Rotterdam --4% of the Surinamese and 6% of the Moroccan users in the ethnographic sample injected, in contrast with 43% of the Dutch. Nonfatal overdose of Rotterdam methadone clients is registered in the Rotterdam Drugs Information System (RODIS). In 1988, 27% of all methadone clients had a lifetime prevalence of overdose, on more than one occasion in 30% of these cases. (18) In 1989, this percentage had fallen to 23% and the results were broken down by ethnic group: overdose prevalence was 29% among Dutch users, 6% for Surinamese and Antillians and 10% for Moroccans. (19) The author wondered if the Moroccan clients (and those from Suriname and the Antilles) used their drugs in a safer way, but as he found no indications of lower levels of heroin use, he doubted that moderation could be an explanation for their lower overdose prevalence. Unfortunately, data on the mode of drug administration is not registered in RODIS and as a result, differences of administration ritual were not considered. Had this been done, the relationship between the low prevalence of injecting in these groups and their lower overdose prevalence might have become clearer.

The speed with which a drug's effects become noticeable differs per administration ritual: oral ingestion is characterized by a slow onset, with a slight increase from sniffing, a more rapid effect from chasing, and injecting generally producing the most rapid effects. (20) An exception is cocaine, which reportedly reaches the brain even faster when smoked than by injection, although technique undoubtedly plays a role. (21 22) It should be noted that there is some variety within the specific modes as well: an empty stomach absorbs drugs quicker than a full

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one, intravenous injection offers more rapid delivery than an intramuscular or subcutaneous one.

Overdose potential however, does not so much depend on onset speed, as on the total amount of drugs ingested over a given time period. A lethal dose can thus be built up in more than one ingestion. (4) Although injecting heroin carries the greatest risk for fatal overdose, oral ingestion and sniffing probably compete for second place. This can be explained by the fact that these two methods work with a buffer; a certain quantity is swallowed or sniffed in one go, and then crosses the mucous membranes of the stomach or nose slowly but definitely. When chasing, while effects are felt more rapidly than when swallowing or sniffing, the drug itself is administered quite gradually. Chasers reach their desired high by sequentially administering small quantities of the drug. In theory this could add up to a lethal dose, but in practice the chance seems small due to the steady and controlled titration inherent to this mode. Chasers may smoke themselves into a light state of unawareness --a nod-- but, as illustrated by the following statement, this gradual build-up normally prevents fatalities:

"When you nod, you nod. And you can't add on to that level anymore."

Moreover, when chasing, the actual absorption, or bio-availability, of heroin is much lower than when injecting, although this is dependent on the chemical form (hydrochloride or base) of the heroin, its processing impurities, diluents and the chaser's technique and skills. (23 24)

The theoretical possibility of smoking heroin from a "bong" --a pipe typically used to smoke cannabis or cocaine, with a chamber where smoke is collected and stored before it is all ingested in one inhalation-- as well as the anal route (suppositories, enemas), will be omitted from discussion because these methods are not prevalent in Holland.

### *Cocaine Overdose*

Despite the assertion made in a recent publication of the Netherlands Ministry of Justice (25) there is an overdose risk attached to cocaine, and fatalities do occur. At the physical level, cocaine elevates (while heroin decreases) heart rate, respiration and blood pressure. Overdose of either drug has a profound effect on the central nervous system: cocaine's is stimulation (22)

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and heroin's, depression. (8) Crudely put, in a heroin overdose breathing stops and the victim turns blue; breathing might also stop in a cocaine overdose, but probably not until after the flushed victim experiences a "heart attack" or seizure. (26 27 22 28) The physical process responsible for the intense "rush" associated with injecting and smoking of cocaine, may cause overdose so rapidly that treatment is not possible. (22) A recent American study describes cerebral hemorrhage, acute cardiac events, and ruptured dissections of the ascending aorta directly related to cocaine. (29) This study, as many others, did not analyze the mode of administration involved, making comparison of smoking and injecting in fatal cocaine overdose impossible. But fatalities following recreational sniffs, smokes, and shots of cocaine have been reported, and well as several in "body-packers". (27 30 31)

### *Nonfatal overdose*

The Amsterdam study discussed above found only a small proportion of the reported overdoses ( $\pm 10\%$ ) to be fatal. (12) Almost one in four clients of the Rotterdam methadone programs has experienced a nonfatal overdose, 38% more than once. (19) Overdose, thus, is not a rare phenomenon. Many (case) reports describe the clinical sequelae of nonfatal overdoses, which may induce considerable physical harm. Pulmonary edema is frequently related to non-fatal overdose of both heroin and cocaine. (32 26 33 34 35 36) Other disorders commonly associated with cocaine include (hemo)pneumothorax, pneumomediastinum and pneumopericardium; atelectasis (34 35 37) and diffuse alveolar hemorrhage. (38) Arrhythmias and myocardial infarction (in persons without coronary disease) have also been related to use of cocaine. (39 40) Non-fatal heroin overdose has been associated with acute renal failure caused by rhabdomyolysis, (8 41 42 36) acute transverse myelitis (43) and lesions of the central and peripheral nervous system. (36 44) Aspiration pneumonia, due to emetic properties of the drug itself plus impaired gag response common to heroin intoxication, is not uncommon. (8 36) Respiratory insufficiency caused by laryngeal edema has been reported, but is apparently atypical. (45) Allergic reactions, in one case to a first injection of heroin, (46) are suspected in a large number of these cases. (8 47 48) Less severe allergic responses with histamine production can be a nuisance or problem for injectors, sniffers, and smokers as will be illustrated in the following section. (49)

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### **Physical Harm Related to Regular Use of Illicit Drugs**

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Intensive and prolonged use of heroin and cocaine in non-toxic doses has also been related to several clinical syndromes. In the following, some of the consequences of smoking will be discussed, ensuing those related to injecting, and finally a brief overview of sniffing-related disorders.

### *Smoking*

Most smoking related pathology concerns, not surprisingly, the respiratory system. Thai Opium smokers, even at 60 or 70 years of age, were found to be in surprisingly good health in a recent American Refugee Committee study. Their only noticeable major complication, chronic obstructive lung disease, was thought to have been aggravated by tobacco smoking for which long pipes are utilized, requiring powerful sucking and presumably deep inhalation. (50) Heroin is the subject of only a few reports. Heroin inhalation has been related to cases of bronchospasm (51 8 52) --possibly due to foreign body reactions and/or allergies to heroin or added cuts-- and airway obstruction. (53) The deleterious effects of heroin inhalation on the condition of asthma patients is described by one report, (54) but another suggests a temporal relationship between onset of asthma and heroin use, irrespective of administration route. (3) In 1981, a small 'heroin'-leukoencephalopathy epidemic in Amsterdam and some other Dutch cities caused the death or irreversible impairment of several chasers. (55 56) What precipitated the illness has never been resolved, but one hypothesis related the syndrome to the formation of a toxic compound from a combination of unknown cuts during pyrolysis (heating). This compound may have been toxic in itself or in combination with other compounds occurring in the heroin used. (24)

Since the outbreak of crack smoking in America in 1984, the medical literature has produced many (case) reports on the adverse effects of cocaine smoking. While the massive area of absorbent alveoli in the lungs make smoking an efficient way of administering any drug, cocaine can potentially reach the brain faster by smoking than by injection. (22) The difference in onset speed may be only a matter of seconds, but is an important consideration for some users. (In emergencies and sporting events a few seconds difference is of vital concern, and the pursuit of intoxication is viewed by some users as having elements of either. Or both.)

Disorders commonly related to crack cocaine smoking are cough (sometimes with production of blood and/or carbonaceous sputum), shortness of breath, and chest pain. (35 57) Radiographic abnormalities associated with these symptoms are apparently uncommon (34) but include those pulmonary disorders listed in the non-fatal overdose. (35 33 26) Certain euphoria intensifying procedures, such as the Valsalva maneuver, reportedly contribute to development of pneumothorax and pneumomediastinum. (58) One case report related freebase cocaine

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smoking to reactive airway disease, (59) but the specific inciting agent (cocaine, its diluents, freebase impurities or concomitant use of tobacco) was unclear. A study into the respiratory effects of cocaine freebasing among habitual users of marijuana with or without tobacco, suggested that moderate cocaine smoking damaged both large and small airways, independent of concomitant marijuana use, but synergistic with the effects of tobacco. (57)

From these reports, it is not clear if disorders are solely the result of inhaling heroin or freebase cocaine vapors. Fumes containing unknown pyrolysis products from heroin cuts, from impurities of the freebasing process, or admixtures to the freebased cocaine provided prior to smoking, may also play a part. (24 59 3) In The Netherlands, most cocaine-smoking heroin users prepare base cocaine for smoking themselves, by heating cocaine hydrochloride with ammonia. The inhalation of ammonia residue may well affect the described states. Furthermore, chasing from aluminum foil, and smoking from a stem (a glass tube) with a steel wool or "brillo" filter, may lead to inhalation of metal (oxide) particles. The possibility also exists for upper respiratory problems secondary to the inhalation of excessive heat or butane from disposable cigarette lighters. (57)

### *Injecting*

Medical reports of injecting related problems are myriad, and varied enough to present themselves to almost every discipline of medical practice. Clear relationships between cause and effect are sometimes presented. However, due to the illegal status and resulting covert nature of injecting drug use, such evident causal relationships are often not traceable. (60) The drug-specific, technique-specific and lifestyle-specific variables which impact on users' health can be teased apart only with difficulty, if indeed at all, and are frequently confused or combined.

In the injecting drug use culture, intravenous injection --although somewhat more difficult to execute-- is the norm. This extra effort pays off in faster delivery of the drug effect, and less of the local tissue damage which can occur when injecting relatively impure black market drugs intramuscularly or subcutaneously. (61 62 27) Much of the harm related to injecting drug use often results from a synergistic combination of limited needle availability, poor hygiene surrounding self-injection and inadequate injection technique.

Injecting with dull needles produces larger punctures than necessary, causing skin, tissue and venous scarring in regular or frequent injectors. (63) Repeated use of damaged sites and

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improper injection technique may result in abscesses, ulceration, venous scarring, and circulatory damage when veins "clog" (thrombosis) or collapse. (64) Cocaine users are particularly susceptible to "missed" (outside the vein) injections due to the drug's local anesthetic properties. The same microscopic neurotransmitter effect responsible for cocaine's "freeze," cause peripheral veins and arteries to constrict. This decreases both flow of oxygenated blood to, and rate of absorption from, the injection site, increasing the chance of local tissue necrosis. (65 22) Edema --leakage of lymph fluid in the tissues-- commonly presenting as "elephant hand," is a consequence of too rapid introduction of (too much) liquid, misses, circulatory damage and over-used sites. This pool of fluid provides a favorable medium for bacterial growth, and is particularly susceptible to cellulitis. (66) Inept needle placement and manipulation may cause bone cells to grow on muscle fiber, resulting in hard tumorlike swellings (myositis ossificans); a phenomena referred to in one reference book as "drug abusers' elbow." (67) Because arterial blood leaves the heart under pressure and is housed in vessels with thicker muscle walls, arterial injections (usually accidental) are painful, require force, can cause severe bruising and, not infrequently, result in both "missed" injections and serious infections. (61 62) A tourniquet --employed to bring veins to the skin surface and facilitate injection-- used too tightly or too long leads, on short term to bruising, and on the long term to tissue damage which may be severe enough to cause gangrene. (68)

Unsterile skin, syringes, needles and other paraphernalia can introduce a wealth of infectious agents. (20 48) Blood-borne diseases such as viral hepatitis and HIV have received sufficient media attention to be linked to drug injecting by even a lay audience. Injecting traces of another person's blood is however, not the only risk. Organisms common to the skin surface can contribute to the development of bacterial infections. Endocarditis, because venous blood travels toward the heart taking any injected matter with it, is a particular risk. (69 48 70) Water used (among other things) to prepare drugs for injection may provide another source of bacteria, virus and other infectious agents. (71) Base "brown" heroin --ideal for smoking-- will not dissolve without the addition of an acid (commonly lemon juice, vinegar, or vitamin C powder), acids which can produce a certain amount of local irritation, even given a perfectly delivered injection. Lemon juice preparations are preferred by some to juice from real lemons; users' lore being that lemon fibers can cause blindness if they "get stuck" in the tiny capillaries of the retina. This is supported, at least in part, by the research as several outbreaks of systemic candida infection, and candidal endophthalmitis causing vision damage or loss, have been linked to old, contaminated lemon juice. (72) Idiosyncrasies of technique, such as licking the needle prior to injecting, may in themselves be responsible for infection. Wound botulism, septic arthritis, tetanus, and numerous other diseases both exotic and mundane, have been associated with unsterile injection. (43 13 73 74 20)

Even skilled injectors with sterile equipment and skin cannot prevent injecting the insoluble (and/or harmful) diluents and impurities most black market drugs contain. Talc and cornstarch emboli of the retinal vessels, pulmonary talcosis, and some of the granulomas and abscesses injectors develop are directly attributable to drug cuts. (13 8 48) Quinine, a heroin cut some

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users favor for the mucous membrane tingle it produces upon injection, has been implicated in damage to cardiac, skeletal and smooth muscle, the gastrointestinal tract and kidneys, (75 76) local tissue destruction, idiopathic thrombocytopenic purpura, (8) and may contribute to toxic amblyopia. (77) Furthermore, it has been hypothesized that cuts are also at least partly responsible for some of the neurological lesions, neuropsychological deficits and immunological abnormalities associated with drug (usually injected heroin) use. (60 78 79 70) Small wads of cotton or cigarette filter, employed to eliminate or reduce the amount of insoluble cut and other undesirable substances drawn into the syringe, can host bacterial growth --particularly in locales where cuts include lactose or other sugars. (79) These filters, if prepared with unwashed hands, or stored and re-used in "hard times", provide an additional infection source. (71) And tiny filter fibers may be injected along with the filtered drug contributing to the cut-related conditions. (66) The role of "needle sharing" in disease transmission is understood, but not all aspects of injecting have been equally well researched. Hence, the absence of consistent health education protocols for some injection preparation sequences. For example, research on the role assorted filter materials and heroin-dissolving acids may have on injectors' health is lacking, and existing recommendations are inconsistent. (80)

Should venous collapse and scarring limit easily accessible injection sites, some IDUs terminate injecting. Others adapt by injecting under the tongue, in the temples, fingers, forehead, groin neck or other less conventional locations. Injecting in these sites requires a higher level of skill, and thinner or --in the case of groin shots, where the vein is often deep and not easily visible-- longer needles. Some professional hitters or house doctors specialize in these spots. (81) A report linking attempted jugular injection with spinal cord injury --the Brown-Sequard syndrome-- implicates heroin, quinine diluent, or both as causal agent(s), not needle manipulation per se. (82) Head and neck surgeons, reporting on the uncommon phenomenon of vocal chord paralysis following clumsy injections in the jugular vein, stated that common complications of this practice are cellulitis, abscess, venous thrombophlebitis and potentially, pulmonary embolism and pseudoaneurysm of carotid and subclavian arteries. (83) Additional complications --Horner's syndrome (nerve paralysis), and neck fibrosis- - have been described by other reports. (84 85)

Malnutrition, sleep deprivation, poor personal hygiene, high stress levels, inadequate shelter, and poverty --characteristics many heavy drug users share-- have a negative impact on the immune system and frequently exacerbate all the previously described conditions. (86 87) In addition, the pain killing and cough suppressing properties of opiates work to mask symptoms of existing illness or injury. Minor respiratory infections, dental decay, and other common maladies may progress without notice or attention, until action is demanded by their severity. (88) Dissatisfaction with, or fear of, medical institutions has an additional negative effect on users' health. Fear of dentists and doctors is by no means experienced exclusively by drug users, but analgesics make it possible for them to postpone treatment longer than most non-users are generally able. This practice contributes to the loss of teeth and physical attractiveness, the development of serious complications necessitating more aggressive treatment, and the

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negative attitude of health care personnel. (89) "Addictophobia" is something all drugs users may be subjected to but, having more health risks and being more easily identified as illegal drug users, something to which (unskilled) injectors are particularly susceptible. It does not take much intuition to understand the role which being identified as a member of an, if not hated, at least not cherished minority, plays in presenting for treatment, or health status in itself.

### *Sniffing*

Sniffing is the dominant mode of cocaine administration in western countries. (90) In NYC and other areas where heroin smoking is a relatively rare activity, sniffing is also a common mode of heroin administration, often preceding injecting in a user's career. When a recent increase of NYC heroin sniffers was noticed, injection prevention/AIDS prevention interventions were designed and studied. (91) Anecdotal reports trace this rise in heroin sniffing to cocaine smokers trying to curb the negative side effects of their heavy cocaine use. (92) Given the results presented in chapters five and seven, this may well be a factor.

Even excluding the risk of viral infection, the potential physical harm of unskilled sniffing is much lower than that of unskilled injecting, but not entirely eliminated. As might be expected, physical problems attributed to sniffing typically involve the nose and sinuses. While no significant relationship has been demonstrated between cocaine sniffing and either lung disfunction or respiratory symptoms, (57) it has been associated with several other disorders, the most common of which is chronic sinusitis. Others include chronic rhinitis, perforation of the septum (93 27) and altered appearance of the nose (saddlenose). (94) However innocuous it sounds, cocaine sniffers' sinusitis has reportedly lead to botulism, optic neuropathy (95 96 97) and one reported case of Pott's Puffy Tumor; a potentially life-threatening bone marrow infection. (28)

Cocaine has both anesthetic and vasoconstricting properties. Besides a characteristic "high," when sniffed it numbs the nose and throat, and decreases blood flow through the nose and sinuses. Both these properties are implicated in the case of Pott's Puffy Tumor. Nasal tissue damage, caused by multiple insertions of a straw through which cocaine was sniffed went unnoticed, and decreased blood flow created conditions supportive to bacterial growth; bacteria which then spread via the veins draining the sinus. The risk of sinusitis and septal perforation is apparently increased by concomitant use of vasoconstricting nasal-inhalers, which may also decrease oxygen tension in the tissues and facilitate growth of anaerobic pathogens. (98) Like the high, the "freeze" which is part and parcel of the effects of intranasal cocaine, is subject to reversal once the dose has worn off. The high has a well-documented rebound depression (99) and the freeze, a rebound congestion making nasal decongestants understandably appealing. These decongestants are however, also subject to rebound reversals (98) --a nasty irony as

they apparently aggravate the very condition which they are used to relieve.

Literature describing the physical sequelae of heroin sniffing was hard to come by, but chronic granulomatous rhinitis is mentioned by one report. (13) Rhinitis, characterized by vasodilation of the nasal mucosa, nasal discharge and obstruction, is a symptom familiar to every sufferer of hayfever and colds. Allergic reactions to heroin have been well documented in overdose literature, and histamine reactions (itching, welts) are not unfamiliar to heroin injectors. It seems logical therefore, that similar reactions may occur when the drug is sniffed.

Rinsing the nostrils with water after use, and cautious, gentle insertion if a straw or tube is used, might prevent some of the harm caused when sniffing any drug. However the risk of introducing non-sterile irritating matter (and in the case of cocaine, one which diminishes blood flow) into the nose, throat and sinus remains.

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### **Communicable diseases**

There is no data available in the Netherlands comparing injecting and non-injecting drug use with respect to communicable diseases. Therefore it is hardly possible to relate drug administration rituals to the prevalence of communicable diseases. In RODIS a few indirect measures are available, wherein the same procedure as in section 10.2 is followed. Groups in which the prevalence of injecting drug use is low (the Surinamese/Antillian and the Moroccan group) are compared with the groups in which drug injection is far more prevalent (Dutch and foreign users). The lifetime prevalence of hepatitis in these groups, as reported by RODIS, is as follows: Dutch 25%, Foreigners 25%, Surinamese/Antillians 10% and Moroccans 11%. (19) This supports the rather obvious assumption that chasers are at less risk for contracting blood-borne diseases. Some caution however: when lifetime prevalence of gonorrhoea (Dutch 24%, Foreigners 19%, Surinamese/Antillians 31% and Moroccans 16%) and syphilis (Dutch 6%, Foreigners 11%, Surinamese/Antillians 10% and Moroccans 2%) are considered, the Surinamese/Antillian scores are considerably higher, with gonorrhoea in particular. This may be indicative of a higher frequency of (unsafe) sexual activity. Use of cocaine in this group is higher than average, (19) and several American studies have found links between cocaine use and HIV risk behavior. (100 101 102 103 104) This relationship, in a recent study in Amsterdam however, was not found. (105)

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## Discussion

There is no clear evidence that, even after prolonged use, pure opiates in and of themselves cause physical damage. (106) But effects of drug combinations, diluents and administration techniques; "pre-morbid" status; and the sleep/wake cycles, source and frequency of nutrient-intake, hygiene and housing quality, and other variables which have collectively become known as "lifestyle," create some distressing statistics. For example, "young opiate addicts" in one study had mortality rates an estimated sixteen times higher than age group norms. (107) Loss of fingers and toes to frostbite or infection is a common sight in some chillier or more ostracized IDU communities, and trackmarks are so solidly linked with needle use as to be used as proof of injecting --a requirement for getting supplied by many syringe exchange programs. (108 109 110)

While certain syndromes are related to administration mode and technique, the drug effect itself is responsible for others. Constipation and resultant hemorrhoids or fecal impaction associated with heroin use occurs irrespective of administration route. (66 70) Opiates decrease circulation, respiration, cough reflex and body temperature. (88 48) Given the conditions of inadequate housing and harsh winters, these factors increase the risk of pneumonia, frostbite and hypothermia. Use of tobacco, and the circulatory damage resulting from this and other activities, most notably injecting, add an additional physical strain. (88) Heroin-induced histamine reactions are not infrequently local --rhinitis after sniffing, itchy welts around injection site, and bronchial distress after smoking. As evidenced by field work in Rotterdam and New York City, histamine reactions are unpredictable. The same sample of heroin, used by the same individual in the same manner, may produce a histamine response on one occasion, and not on another. Because allergic responses to heroin are presumed to be responsible for a significant number of "overdose" cases, this unpredictability is a troubling finding. The appetite suppressing action of stimulants, and to some degree opiates, contribute (in combination with financial status and lifestyle factors) toward malnutrition and emaciation. Many psychoactive drugs cause "cotton mouth," and food particles tend to collect between the teeth and (less engorged) dehydrated gums. This makes scrupulous oral hygiene - -unfortunately far from commonplace-- a necessity if gum disease and tooth loss are to be avoided. Intoxicated female drug users may be troubled by inadequate vaginal lubrication, even during arousal. (111 90) Unless corrected with saliva or commercially available lubricant, this makes them more vulnerable to abrasion, infection and disease during penetrative sex. Stimulants are known to trigger yeast infections and herpes outbreaks in susceptible individuals, conditions which damage the integrity of skin and mucosa, and further increase vulnerability to (HIV and other sexually transmitted) infection during sexual

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activity. Furthermore, stimulants may cause sudden elevations of blood pressure (88) with symptoms ranging from spontaneous nosebleeds to coronary collapse.

As has been well documented elsewhere in the text, drug use is a social activity. Both the drugs consumed, and their consumption style, are influenced to a great extent by (sub)cultural norms. In this chapter, an attempt has been made to illustrate the physical risks inherent in the more popular modes of illegal drug administration, namely smoking and injecting. Sniffing, included because of its prevalence elsewhere, is fairly uncommon among most user groups in Rotterdam. Of the physical risks inherent in illegal drug use, the greatest is overdose. The possibility of overdose is significantly higher when injecting than smoking, for the simple reason that when smoking from foil or the typically utilized pipes the drug is administered gradually. The physical harm potential inherent to the different administration modes is a thornier issue. All drug use puts some strain on the organs filtering toxins from the body, the liver in particular. (48 70 88) Drug smoking affects the lungs and bronchial tubes. Many forms of skin, tissue and organ damage are the result of unsterile injections. The use of unsterile injecting equipment is also at the base of the spread of several serious communicable diseases, including HIV, whereas such a direct link is absent when drugs are smoked. But, when dose and purity are standardized, equipment sterile and sharp, and technique adequate, injecting may well be the less unhealthy alternative of the two. However, given the current conditions of drug prohibition, smoking seems less threatening to the health of drug users than injecting.

"Almost all of the deleterious effects ordinarily attributed to the opiates, indeed, appear to be the effects of the narcotics laws instead." (88)

Without dismissing the importance of preventing and reducing the abuse of psychoactive substances in general, considering (illegal) drug use within the larger framework of social and public health is of main importance. In such an approach it becomes feasible to determine and weigh "primary" consequences of drug use (those related to the distinctive effects of the drug itself) and "secondary" consequences (those related to the conditions under which drugs are consumed). This distinction has been a major determinant of Dutch drug policy since the 1970s. The importance of developing a drug policy in the context of a general health policy is becoming increasingly accepted, often spearheaded by the impact of the HIV epidemic among IDUs, (112 113 114 115) and has resulted in a rapidly growing international "harm reduction movement" among those involved in drug research, policy and practice. A major area of attention in this movement, is the development and evaluation of drug policy and practice which reduce both the primary and secondary harm of drug use. In this harm reduction framework, the aforementioned findings make an argument for stimulating policies which support the maintenance of non-injecting drug use patterns, such as chasing or sniffing and discourage injecting.

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## References

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