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The non-medical use of prescription drugs

Policy direction issues

DISCUSSION PAPER

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UNITED NATIONS OFFICE ON DRUGS AND CRIME
Vienna

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UNITED NATIONS
New York, 2011

This publication has not been formally edited.

Publishing production: English, Publishing and Library Section, United Nations Office at Vienna.

Acknowledgements

Many individuals contributed to the preparation of the present publication, *The non-medical use of prescription drugs: policy direction issues*. UNODC extends its deep appreciation to the following experts who participated in the technical consultation meeting and provided substantive comments to the draft document.

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UNODC extends its appreciation to the following Permanent Missions who generously gave of their time to review the draft publication in an informal process

Argentina
Canada
China

Costa Rica
Denmark
Ireland
Lithuania
Mexico
New Zealand
Norway
Philippines
South Africa
Sudan
Thailand

UNODC would also like to thank the following individuals who generously contributed to the review of the draft document.

Bo Mathiasen
UNODC Brazil

Chris van der Burgh
UNODC South Africa

UNODC also wishes to thank the staff of the Prevention, Treatment and Rehabilitation Unit of UNODC for their commitment, in particular Katri Tala, who coordinated the consultation and production process and provided substantive comments on the manuscript, as well as Giovanna Campello, who assisted in the facilitation of the technical consultation and provided substantive assistance throughout, as well as Loni Russell, Emily Pathe, Christina Mesa and Camelia Amghar, who during their internships contributed to this publication and to the organization of a technical consultation meeting, and to David Brown for general document coordination.

Contents

1. Introduction

The growing non-medical use of prescription drugs is a global health concern. Such usage can be defined as the taking of prescription drugs, whether obtained by prescription or otherwise, other than in the manner or for the reasons or time period prescribed, or by a person for whom the drug was not prescribed. The real scale of the problem is unknown, due partly to lack of data on the non-medical use of prescription drugs, and partly to the existence of many gaps in the monitoring of their legal use for medical purposes as prescribed by health-care professionals (which creates opportunities for the diversion of these drugs to people to whom they were not prescribed). Most studies on and monitoring instruments for substance abuse pertain to the use of illegal drugs, or alcohol and tobacco. However, the non-medical use of prescription drugs is a unique category of substance use in number of ways and requires attention at different levels.

Advances in the pharmaceutical industry have led to the production of powerful psychoactive medications, which when prescribed appropriately and taken in the manner intended, improve the quality of life of those with specific medical conditions, such as acute pain, palliative care, epilepsy, dependence on opioids and acute anxiety. However, when used inappropriately, these medications can have serious consequences for health and can lead to dependence. In recognition of the problems that may be caused by the inappropriate use of such medication, their use has been regulated by three major drug control treaties:

- The Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol, which was aimed at combating the use of illicit drugs by coordinated international action.
- The Convention on Psychotropic Substances of 1971, which established an international system of control for the use of psychotropic substances.
- The United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (adopted in 1988), which includes legislative and administrative measures against drug trafficking, including provisions against money-laundering and the diversion of precursor chemicals.

The overall aims of these treaties are to ensure the availability of these medications for medical and scientific purposes, and to prevent their diversion into illicit channels.

The most common types of prescription medication used in a non-medical context include the following: *(a)* opioids, such as hydrocodone, oxycodone, propoxyphene, hydromorphone, meperidine, and fentanyl; *(b)* other central nervous system depressants, including both barbiturates, such as pentobarbital sodium, and benzodiazepines, such as diazepam and alprazolam; and *(c)* central nervous stimulants, including amphetamines such as dextroamphetamine, and amphetamine-like stimulants, such as methylphenidate.

Increased non-medical use creates a greater demand for prescription medications, leading to new sources of diversion from medical to non-medical use or to the production of counterfeit drugs (United States, Office of National Drug Control Policy, 2008). In its 2006 report, the International Narcotics Control Board (INCB) noted that medications containing narcotic or psychotropic drugs are becoming the drugs of choice for many users, and that drug traffickers are responding to the demand through increased diversion and the production of counterfeit drugs. Prescription drugs can be obtained for non-medical purposes by various means. These include:

- Obtaining prescriptions or prescription drugs from family and friends
- Over prescribing by physicians
- Multiple prescriptions through a doctor
- Forged prescriptions
- Illegal online pharmacies
- Theft and burglary (from hospitals, residences, pharmacies)
- Unscrupulous physicians selling drugs

This paper responds to the Political Declaration of the Commission on Narcotic Drugs issued in 2009, in which Member States of the United Nations vowed: "…to tackle the world drug problem and actively promote a society free of drug abuse in order to ensure that all people can live in health, dignity and peace, with security and prosperity." (Political Declaration, paragraph 1). This paper is also a result of the drug-related resolution 53/4 of 2010 adopted by the Economic and Social Council (ECOSOC) and the Commission on Narcotic Drugs (CND), resolution that states: "… stressing the importance of promoting adequate availability of internationally controlled licit drugs for medical and scientific purposes while preventing their diversion and abuse, …" .

The non-medical use of prescription drugs is a complex issue that has many facets. It is not practical to attempt to provide comprehensive coverage of such a vast topic in a paper of this size. Instead, this paper has the following, more limited, aims: to briefly summarize research describing the scope of the problem worldwide; to offer examples of effective evidence-based interventions for prevention and treatment; to suggest directions for policy, and to highlight the need for further research. The paper is based on a review of relevant literature, discussions at the technical consultation on the non-medical use of prescription drugs, which took place on 22-24 June 2010 in Vienna, Austria, and on specific contributions of participants and other individuals and institutions that collaborate with UNODC on an ongoing basis.

The remainder of the paper is organized as follows. Section 2 presents the available data on the epidemiology and prevalence of the non-medical use of prescription drugs. Section 3

highlights some of the groups that are particularly vulnerable to the non-medical use of controlled prescription drugs (e. g. young people, older adults, health-care professionals and women), as well as some factors that have led to an increased non-medical use of prescription drugs. Section 4 presents the consequences of the non-medical use of prescription drugs for health, behaviour and society. Section 5 discusses the requirements of the International Drug Conventions and presents a framework for policy regarding the non-medical use of prescription drugs. Section 6 uses the policy framework to highlight the role of physicians, pharmacists and pharmaceutical companies. Sections 7 and 8 present and discuss advocacy and prevention interventions, as well as treatment policies. The paper concludes with some key recommendations. Definitions of key concepts used throughout the paper are included in annex 1.

2. Epidemiology

According to the World Drug Report 2010, "the misuse of prescription drugs, including opioids, benzodiazepines and synthetic prescription stimulants, is a growing health problem in a number of developed and developing countries". In some of the high-income countries, such as the United States, Canada, Australia, New Zealand, the United Kingdom, and Norway, over 1 per cent of the population used amphetamine-type stimulants in 2008. Particularly, in North America, South America and Southern Africa, a significant proportion of this use is constituted by the non-medical use of prescription stimulants (UNODC, 2010b).

Existing available information about the non-medical use of prescription drugs is insufficient to estimate the scale of the problem with accuracy. Prescription drugs are legally prescribed to patients to treat medical disorders and conditions, such as pain and numerous psychiatric conditions; hence, they are more widely available and accessible to the general public than illicit drugs, making it difficult for epidemiological research to capture the hidden target populations that may be using prescription drugs for non-medical purposes. Furthermore, many of the individuals using prescription drugs for non-medical purposes do not participate in a subculture of illicit drug use, and would not otherwise experience problems with compulsive and harmful drug use. These individuals are not typically identified in the current datasets established to monitor illicit drug use and injecting practices at the national or international levels. In addition, they may not seek help from established treatment services, so they are not easily identifiable with regard to their non-medical use of prescription drugs (see section 3 on risk and protective factors for vulnerable groups).

Research conducted in the United States provides interesting information on the differences between those using illicit drugs and those who use prescription drugs non-medically. Although most individuals who use prescription drugs non-medically seem to be polysubstance abusers according to the research, recent studies have reported that individuals who are over 18 years old and report having used prescription drugs non-medically but have not used other drugs, are more likely to be female, married, better educated, have higher incomes, and be 35 years of age or older (see section 3 on risk and protective factors for vulnerable groups) (CASA, 2005). However, it is important to keep

in mind that the population that uses prescription drugs non-medically seems to be heterogeneous: different subpopulations may be using different substances and there could be regional and country level variations in the subpopulations.

Apart from a few studies reporting the prevalence and patterns of non-medical use of prescription drugs, limited data are available on drug use from many regions of the world, such as Africa, the Middle East and Asia. In particular, there is limited data from countries with large populations, such as China and India. Furthermore, most studies focus on the use of illicit drugs and do not cover the non-medical use of prescription drugs. Only a few countries, such as the United States, Canada, some European countries and Australia monitor and report the non-medical use of prescription drugs. However, the review of the available evidence summarized below demonstrates clearly that there is cause for alarm. Not enough data exists to present regional information. The data presented below are from countries that have a written report or undertook studies on these substances.

Americas

In the United States, cannabis is the only illicit drug that is more widely used than prescription drugs (including analgesics, stimulants, sedatives, and tranquilizers) according to the 2009 National Survey on Drugs and Health. In 2009, Vicodin® (a hydrocodone product) was the most used substance after alcohol and marijuana among 12th grade students (MTF, 2009) and although its use fell significantly in 2010 to 8 per cent it remains one of the most widely used illicit drugs among 12th graders (for further information on prevalence rates among young people, see section 3). The SAHMSA 2009 National Survey on Drug Use and Health in the United States reported that 7 million citizens, or 2.8 per cent of population aged 12 and older, had used prescription drugs for non-medical purposes in the past month: an estimated 5.3 million had used analgesics, 2 million had used tranquilizers, 1.3 million had used stimulants, and 370 thousand had used sedatives non-medically in the past month.

In 2009, 0.6 per cent of Canadians aged 15 years and older reported having used a psychoactive pharmaceutical to get high during the past year. The use of prescription opioids to get high (0.4 per cent annual prevalence) overshadows the use of heroin (0. 3 per cent annual prevalence), and was greater than the use of stimulants to get high (0. 1 per cent), and sedatives and tranquilizers to get high (0. 2 per cent) (CADUMS, 2008). Among young people, 0.5 per cent of adolescents in grades 7 to 12 reported having used a psychoactive pharmaceutical to get high during the past year (YSS, 2009). Data on the demand for treatment from both the United States and Canada show an increase of problem drug users linked to the use of synthetic-opioid prescription medicines and a decline in heroin-related problem users (UNODC, 2010b).

In Mexico, the prescription drugs most frequently used for non-medical purposes are tranquilizers (0.15 per cent sedatives and 0.07 per cent other medicines). They are used principally by young men aged 26-34 and women over 35. The annual prevalence of prescription opiates in the general population is higher (0.06 per cent) than that of heroin (0.04 per cent) (ENA, 2008).

In South America, most countries report the use of opioids, rather than heroin. The non-medical use of prescription opioids accounts for most of the use of opioids, the highest

prevalence being reported in Costa Rica (2.8 per cent). The annual prevalence for prescription opiates in Brazil is reported at 0.5 per cent, while the annual prevalence of benzodiazepines is 2.1 per cent. Other countries in the region have low rates of opiate use, ranging from 0.1 per cent in Ecuador to 0.3 per cent in Bolivia. (UNODC, 2010b). According to a study conducted in Argentina in 2006, some 600,000 people reported self-medicating with prescription drugs (Observatorio Argentino de Drogas, 2010a). The 2009 National Study of Argentina shows that the lifetime prevalence for the use of stimulants without a prescription is 1.6 per cent and the lifetime prevalence of tranquilizer use without a prescription in the general population is 3.6 per cent (Observatorio Argentina de Drogas/Secretario de Programación para la prevención de la drogadictión y la Lucha contra el Narcotráfico, 2009).

Oceania

In Australia, the prevalence of the non-medical use of opioids in the last 12 months in the adult population (2.5 per cent) is higher than that of heroin (0.2 per cent) and that of cocaine (around 2 per cent) (National Drug Strategy Household Survey 2007, Australia). New Zealand reports a 1.1 per cent annual prevalence of opiate use (including prescription opiates/opioids) in the general population. The annual prevalence of the use of prescription sedatives is reported to be 0.6 per cent and the annual prevalence of the use of prescription stimulants is reported to be 0.5 per cent in the general population in New Zealand (2007-2008 NZ Alcohol and Drug Use Survey). Little information is available the Pacific Island States and territories on the non-medical use of prescription drugs.

Asia

With respect to East Asia, in a study conducted in Wuhan, China, 4 per cent of middle school students (grades 8 to 12) were found to use benzodiazepines (KQ et al., 2005).

Non-medical use of benzodiazepines has been reported in various countries in East and South-East Asia, including Brunei Darussalam, Indonesia, Malaysia, the Philippines and Singapore. The extent of this non-medical use of benzodiazepines is largely unknown, because few representative prevalence studies are carried out in the region (UNODC, 2009a). In the Philippines, benzodiazepines (diazepam, clonazepam, midazolam), nalbuphine hydrochloride, cough and cold preparations containing phenylpropanolamine/codeine, and ketamine are being used for non-medical purposes (DDB Annual Report-Most Commonly Abused Drug 2009, Facility-based). The pattern of abuse of nalbuphine HCL includes, among other things, “speedballing”, or the "milkshake-effect”, wherein methamphetamine HCl is diluted with nalbuphine and injected intravenously (p 37, DDB, A Follow-up Study on Nalbuphine Hydrochloride Abuse in the Philippines, 2009).

Bangladesh (where data is based on treatment demand) and Singapore also report the non-medical use of buprenorphine (UNODC, 2009). In Bangladesh, India, and Nepal, the illicit use of injected buprenorphine is common. In India, buprenorphine is the main drug of injection in most areas of the country (UNODC, 2007d).

In Pakistan, the non-medical use of prescription opioids, benzodiazepines and buprenorphine is observed among regular drug users (mainly heroin users). The preferred method

of use of benzodiazepines is oral. However, one quarter of respondents reported injecting (UNODC, 2008; UNODC 2007e).

In South and Central Asia, as reported in the table below, up to one third of opiate (heroin and opium) users also reported having used prescription drugs for non-medical purpose in the past 12 months (on average, some 20 per cent had also used benzodiazepines and some 10 per cent had used opioids and barbiturates) (UNODC, 2006a; 2006b; 2006c; 2006e).

Country	*Opioids*	*Barbiturates*	*Benzodiazepines*
Kazakhstan	11. 6	26. 7	7. 8
Kyrgyzstan	8. 1	16. 3	38. 3
Uzbekistan	2. 5	1. 9	4. 2
Pakistan	14. 9	1. 7	34. 6

Source: UNODC (2006a; 2006b; 2006c; 2006e)

In Afghanistan, the annual prevalence of prescription opioids is 0.5 per cent. Another report conducted in Afghanistan found that about 11 per cent of drug users participating in the study reported having used tranquilizers without a medical prescription. Women drug users were twice as likely to have used tranquilizers. In fact, all women who had ever used tranquilizers had used them in the past 12 months and the past 30 days, compared to two thirds of the men (it is important to note that 205 respondents in this study had recently used tranquilizers, of which 189 were men and 17 women) (UNODC, 2009b).

Finally, in the Gulf Region, available data indicate that non-medical use of prescription opioids is on the rise. (based on the presentation by Abed Al-Karkhi, 2010).

Europe

In Europe, the non-medical use of prescription drugs, except for opioid substitution drugs, has not been regarded as a major problem(EMCDDA, 2010). However, in terms of poly drug use, the use of benzodiazepines ranges between 11 per cent and 70 per cent among substitution treatment clients (EMCDDA, 2009). A decline in heroin use has been observed over the last 10 years, but reports of the non-medical use of synthetic opioids, such as fentanyl, reflects the increasingly multifaceted nature of drug use in Europe (EMCDDA Statistical Bulletin 2009).

Northern Ireland (UK) reports the highest annual prevalence of prescription opioids anywhere in the world at 8.4 per cent. The annual prevalence of sedatives and tranquilizers is reported at 9.2 per cent and anti-depressants at 9.1 per cent in the general population.

In France, buprenorphine is diverted to the illicit market and often ends up in Finland. Reports from France and Scandinavian countries indicate the non-medical use of pharmaceutical preparations (i.e. those containing benzodiazepines, buprenorphine and methadone) (INCB, 2009).

Africa

The non-medical use of prescription medicines, such as slimming tablets, analgesics and benzodiazepines (including diazepam and flunitrazepam) continues to be a problem in many African countries (INCB, 2009).

In South Africa, data from treatment centres shows that benzodiazepines, followed by analgesics, are the class of medicines for which users most often receive treatment. Of those whose primary drug of use was either over-the-counter or prescription drugs, 46.4 per cent were seeking treatment for the use of benzodiazepine and 44.8 per cent the use of analgesics (Myers et al, 2003) indicating that the non-medical use of prescription drugs is a problem.

3. Particularly vulnerable groups

There have been recent reports of decreasing trends in the use of illicit drugs and increasing trends in the use of prescription drugs in some countries, such as the United States (National Survey on Drug Use and Health 2007). It is unclear how these changing trends should be interpreted. It might be that populations are switching from using illicit drugs to using prescription drugs non-medically, or it might be that new risk populations are emerging, who primarily use prescription drugs and have never used illicit drugs.

Among different groups using prescription drugs for non-medical purposes, a rough distinction can be made between patients (those who have been prescribed prescription drugs by their doctor) and non-patients (those who have not been prescribed prescription medication themselves, but obtain them from somebody else). Yet within these general populations, there are many subgroups that are particularly vulnerable. Studies on risk factors for and the prevalence of non-medical use of prescription drugs seem to indicate that women and young girls are more likely to use prescription drugs for non-medical purposes (Simoni-Wastila et al., 2004a; ESPAD, 2007). Other vulnerable groups include young persons (SAMHSA, 2009), older adults (Colliver et al., 2006), and health-care professionals (Merlo, 2008).

Potential risk factors for dependent non-medical use of prescription drugs include being female, unmarried, aged over 34, being Caucasian, having completed high school, being in poor/fair health, and drinking alcohol daily. In contrast, full-time employment, being younger than 25, and having an income of less than US$40,000 p.a. are protective factors against non-medical use of prescription drugs (Simoni-Wastila et al., 2004a).

Nowadays, there seems to be broad environmental accessibility to and availability and acceptance of the use of prescription drugs. A “pill-popping culture”, where many life issues are seen as problems and treated with medication is becoming more common in the United States and there are concerns that the non-medical use of prescription drugs will also become a cultural norm in other countries. INCB notes in its report (2008, page 5) that: “Widespread recourse to so-called ‘lifestyle drugs’, relating to obesity, sexual performance and stress related conditions, has also caused health problems in many regions.

Individuals in all walks of life are increasingly looking to drugs, whether prescribed or illicitly acquired, as a palliative for the problems of the 'modern world'."

There are, however, certain groups that may be at greater risk of using prescription medications in this way. This section of the paper focuses on five groups that seem to be at greater risk of non-medical use of prescription drugs:

- Patients (Hermann-Stahl et al, 2006);
- Young persons (including children, adolescents, and young adults) (SAMHSA, 2009);
- Women (Simoni-Wastila et al., 2004a; ESPAD, 2007;);
- Older adults (Colliver et al., 2006);
- Health-care professionals (Merlo, 2008).

However, other groups are also vulnerable and are at risk of being overlooked due to a lack of epidemiological data:

- Incarcerated criminal offenders are more likely to have abused controlled prescription drugs than the general, non-institutionalized population (NHSDA, 1996 cited in CASA, 2005; Gaffney et al., 2010);
- Patients with acute or chronic pain are at greater risk of abusing opiate medication (see section 8) (Simoni-Wastila et al., 2004a, Compton et al., 2006; Morasco et al., 2008);
- Persons suffering from psychiatric or other health conditions or disorders (see section 8) (Hermann-Stahl et al., 2006);
- Individuals who are currently dependent on alcohol or illicit drugs or have a history of substance dependence are also at increased risk of using prescription drugs non-medically (Simoni-Wastila et al., 2004a; Edlund et al., 2010; Kreek et al., 2005).

Patients

Patients who have been prescribed medications to treat a health condition or disorder are at greater risk of using prescription drugs non-medically, due to the fact that the medication that has been prescribed is also available to be used for non-medical purposes. Non-medical use of prescription drugs is typically greater among patients than in the general population and the gap widens further for those patients who are mentally ill. Other characteristics that may put individuals at further risk of using prescription drugs non-medically are a personal or family history of substance use disorder (Edlund et al., 2010), genetic vulnerability (Kreek et al., 2005), and childhood abuse (Cutajar et al., 2010). For patients who are known to possess one or more of these characteristics, the treating physician makes a risk-benefit decision as to the consequences of prescribing certain drugs.

The wide acceptance of the use of prescription medications among the public and the common perception of their safety may result in some patients using prescription drugs to self-medicate with left-over medicines or to increase their doses without informing their treating physician. In the case of certain drugs, such behaviour can, in time, lead to patients

becoming dependent on their medication." Self-medication can be very difficult to detect by health professionals or family members, because there is an assumption that the patient will take their medication as prescribed and stop taking it when they are told to, so they will not monitor the patient's behaviour. Further, patients who misuse their medication in this way often do not report their usage. In addition to the problem of self-medication, there is the problem that patients might not take their medication as prescribed, perhaps skipping doses or taking the correct dose at the wrong time. For the same reasons as for self-medication, this behaviour is also difficult to detect. These deviant forms of behaviour with respect to the taking of prescription drugs further complicate the conducting of research on the non-medical use of prescription drugs (see section 2 for epidemiology and section 8 on treatment: addressing co-morbidity).

Another problem is that some patients who have been prescribed medication may share the drugs with, or sell them to, family members, friends, or others who may approach them (SAHMSA 2008 National Survey on Drug Use and Health; see section 6, figure 2). They may share their medication innocently, thinking they are helping a family member or a friend who is suffering from what appears to be a similar complaint by offering medication that has worked for them, or may knowingly sell their medication to people who will use it for non-medical reasons.

Young people

Some studies suggest that young people may be moving from the use of illicit drugs to prescription drugs (Johnston et al. , 2009). As stated in the 2009 World Drug Report, "The overall decline in illicit drug use among young people in the United States and in some European countries is an encouraging sign. However, there are a number of published reports, particularly in the United States indicating that the abuse of prescription drugs is on the rise among young people. More research is needed, but these reports suggest that young people may be shifting from illicit drugs to pharmaceutical drugs, which may be more easily accessible and socially acceptable". Recent research shows that young persons are being prescribed more controlled medication than was the case 15 years ago. Over 11 per cent of young people in the United States received or were prescribed medications, including slow-release morphine, oxycodone, hydrocodone, methylphenidate and sedatives in 2007, in comparison to 6 per cent in 1994 (Fortuna et al., 2010). Although the rise in the number of prescriptions made out to young persons does not necessarily mean that the drugs are used for non-medical purposes or diverted, it is important to remember that young persons normally obtain prescription medication for non-medical purposes from a family member or a friend who has had a prescription made out to him/her by a doctor (SAHMSA, 2008).

The non-medical use of prescription drugs particularly endangers children and young people and they may face additional factors that put them at an elevated risk of using prescription drugs non-medically. The trends of increased non-medical use of prescription drugs in adolescents are particularly problematic, because adolescence is the period of greatest risk, not only for drug experimentation, but also for developing addiction. In addition, at this stage, the brain is still developing and exposure to drugs could interfere with these developmental changes (Compton et al., 2006). The last part of the brain to fully mature is the prefrontal cortex, a region that governs judgment and decision-making functions. This may help to explain why adolescents are prone to taking risks and why high rates

of risky behaviour, including using alcohol and other drugs, have been reported among those who use prescription drugs for non-medical purposes. In addition, adolescents lack life experience and reliable information about risks linked to using prescription drugs non-medically.

The physical and psychosocial changes experienced during these transition years leave adolescents feeling insecure about themselves, which results in their seeking out a peer group as a way of developing a sense of identity. This period often coincides with changes in the physical environment, for example, changing schools, and may leave adolescents thinking that they need to improve their academic results or sport performance, or to preserve social and familial relations in order to have friends, to succeed in life, to acquire a physical appearance that may consider "ideal", or to get high. Older adolescents may begin using prescription drugs non-medically when competing for advance placement and honours courses in high school or for admission to college (DEA, 2008).

The use of prescription drugs may seem like a viable response to all of these problems that beset adolescents, in that they offer a means to get high, thereby avoiding the problems for a time. This is especially so, given that adolescents tend to assume that prescription drugs are safer than the common illicit drugs or "street drugs", because they are prescribed by health professionals, can be purchased from pharmacies, are often used by family members or friends (Compton et al., 2006), and information about their effects is widely available in package inserts and advertisements, and on the internet (DEA, 2008). This misconception as to the safety of prescription drugs leads a third of teenagers to believe there is nothing wrong with using them for non-medical purposes occasionally (Compton et al., 2006). Approximately 40 per cent of them agree that prescription drugs are much safer to use than illegal drugs, and a third of them think they are non-addictive (PATS, 2004).

Adolescents who report using prescription drugs non-medically are more likely to engage in other types of risk behaviour, such as skipping school, bringing drugs to school, getting high at parties, having friends who use marijuana, driving after binge drinking (CASA, 2005), and engaging in risky sexual behaviour when high on prescription medication, which increases the chances of contracting HIV. Although one study (Ford, 2008) found illicit drug use to be more strongly associated with self-reported delinquency and arrest than the non-medical use of prescription drugs, the results still indicated that the non-medical use of prescription drugs is associated significantly with self-reported delinquency and arrest.

One study found that adolescents aged 12 to 17 years who reported high family conflict and sensation-seeking were more likely than their peers to have used prescription stimulants for non-medical purposes in the past year (data from the 2002 United States National Survey of Drug Use and Health, NSDUH). Another study found that receiving treatment for mental health problems and the use of marijuana and other illegal drugs were correlated among adolescents with the non-medical use of prescription stimulants (Hermann-Stahl et al, 2006).

Rates of use among young people

In the United States, the use of several classes of psychotherapeutic drugs (including sedatives, tranquilizers and narcotics other than heroin) has become a larger part of the drug

use problem among young people (MTF volume I, 2009). The use of illicit drugs is often initiated during adolescence. In the United States in 2009, approximately 3.1 million people 12 years and over used drugs for the first time within the past 12 months. Of these people, 28.6 per cent initiated their drug use by using prescription drugs (17.1 per cent with pain relievers, 8.6 per cent with tranquilizers, 2 per cent with stimulants and 1 per cent with sedatives) (SAMHSA 2009).

The data presented in this section is mostly from the United States. Obviously, young people use prescription drugs non-medically in other countries as well. However, it is prudent to use data from the United States because more recent data about trends is available for this country than for many other countries, where the non-medical use of prescription drugs might not be monitored. However, as a caveat, it should be noted that it is not known how far the results from the United States are generalizable to other countries.

Among 12-17 year-olds in the United States, 3.1 per cent had used prescription drugs (psychotherapeutic drugs) non-medically during the past year (SAMHSA, 2009). In Canada, 5 per cent of Canadian young people in grades 7 to 9 reported having used a psychoactive pharmaceutical to get high during the past year. Stimulants were the most commonly used pharmaceutical used by young people to get high (3 per cent), followed by the use of opioid analgesics to get high (2.9 per cent) and sedatives or tranquilizers to get high (1.8 per cent) (YSS, 2009).

In Europe, only lifetime prevalence rates are available for the non-medical use of tranquilizers or sedatives among 15-16 year olds. These are relatively low and only France, Italy, Lithuania, Monaco and Poland reported prevalence exceeding 10 per cent in 2007, with girls being in the majority of users (ESPAD 2007).

For the past month, the rate of non-medical use of prescription drugs was 1.6 per cent for 12-13 year olds, 3.3 per cent for 14-15 year olds, and 4.3 per cent for 16-17 year olds in the United States. Among young adults (18-25 years of age), 6.3 per cent had used prescription drugs for non-medical purposes in the past month in 2009, increasing from 5.5 per cent in 2002, largely due to the non-medical use of analgesics. (SAMHSA, 2009).

The annual prevalence of the non-medical use of prescription drugs among 12th graders in the United States in 2010 was 15 per cent, higher than in 2009 (14.4 per cent), but still showing signs of a declining trend since 2005 (17.1 per cent). Lifetime prevalence for the non-medical use of prescription drugs among 12th graders was reported at 21.6 per cent (MTF, 2010).

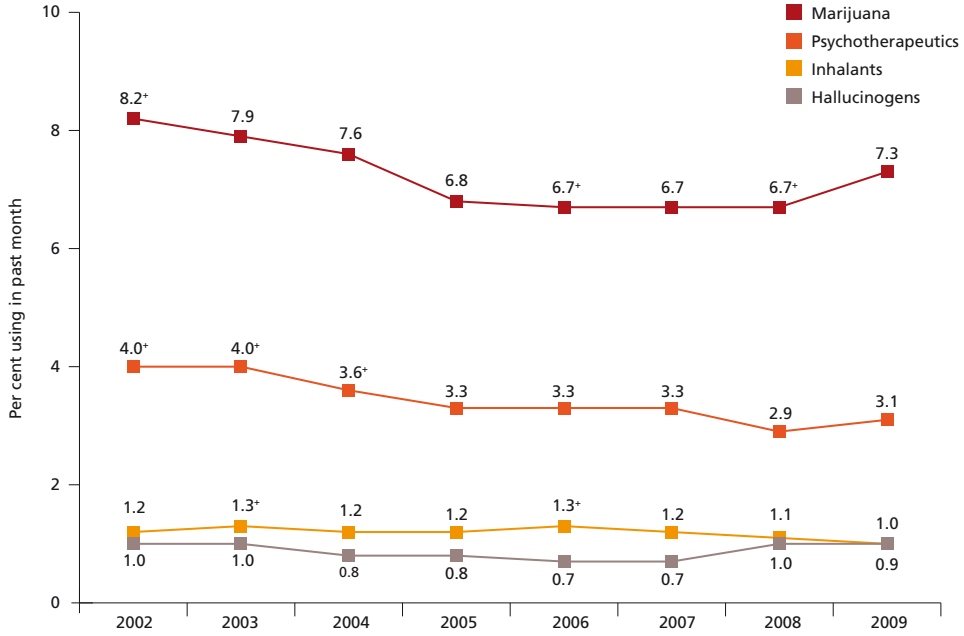
Among 12th graders in the United States, the use of narcotics other than heroin has leveled since 2004. The use of oxycontin, which is a narcotic prescription medication, has increased slightly since 2002 among 12th graders, with an annual prevalence of 5.1 per cent in 2010. Non-medical use of another narcotic prescription medication, Vicodin, has declined since 2002 among 12th graders, with an annual prevalence of 8 per cent in 2010 (MTF, 2010).

The annual prevalence for non-medical use of tranquilizers among 12th graders in the United States is currently near the peak levels of 5.6 per cent (MTF), whereas the non-medical use of sedatives (barbiturates), which peaked around 2005, seems to have declined by one third from this recent peak (MTF,2010).

Adolescents who use prescription drugs non-medically are twice as likely to use alcohol, five times more likely to use marijuana, 12 times more likely to use heroin, 15 times more likely to use ecstasy, and 21 times more likely to use cocaine than adolescents who do not use such drugs. Particularly dangerous is when young people indiscriminately mix prescription drugs, with alcohol or other drugs (The National Center on Addiction and Substance Abuse at Columbia University, 2005).

A study using the self-reported data from the 2008 National Survey on Drug Use and Health shows that in the United States, youth in rural areas are 1.26 times more likely to use prescription drugs for non-medical purposes than teenagers from urban or suburban areas: 13 per cent of rural teenagers use prescription drugs for non-medical purposes in comparison to 11.5 per cent for suburban and 10.3 per cent for urban teenagers (Havens et al. 2010).

Figure 1. Use of selected illicit drugs during the past month among 12-to-17 year-olds: 2002-2009



Adapted by UNODC from U. S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, NHSDA.

In its 2008 report, the INCB highlights the deaths amongst young people in the United States. In 2008, methadone was implicated as the principal drug in 27 per cent of drug-related deaths among 16-24 year-olds in the United Kingdom.

Sometimes, young users switch from one form of prescription medication to other forms. This phenomenon warrants detailed attention and highlights the fact that the non-medical use of prescription drugs among children and adolescents is a complex issue. It is important to include children as a significant risk population when developing screening tools to better identify those young persons who are at risk of using prescription drugs non-medically (McCabe et al., 2007). For example, items that assess the non-medical use of prescription drugs could be included in national surveys of risk behaviour among young people (Howard, 2009).

Higher education and the use of prescription drugs

Research from the United States shows that those who report using prescription drugs non-medically but not illicit drugs tend to be more highly educated than those who use illicit drugs (CASA, 2005) The non-medical use of prescription drugs serves a number of different purposes for people who are in higher education, including self-medication, socio-recreation, and academic functioning. University settings are often highly competitive and a person's academic performance influences students' career opportunities. University is also for many young people a time for experimentation.

Quintero and colleagues (2006) conducted an exploratory study to determine which socio-cultural factors contribute to the non-medical use of prescription drugs among United States college students. They found that United States college students perceive the use of prescription drugs as being comparatively safe in light of their personal and professional knowledge regarding prescription drugs, along with their widespread availability. The known composition and effects of pharmaceuticals make them attractive alternatives to other drugs and likely candidates for experimentation and polydrug use. In a cultural environment in which experimentation with drug use is often expected, prescription drugs appear to provide a relatively risk-free alternative to the use of harder drugs (Quintero et al., 2006). A recent study (Arria et al., 2010) has shown that college students who consume energy drinks are more likely to start using prescription drugs non-medically in the following year. The research group suggested that this might be because energy drinks and prescription drugs are perceived as being safer and/or more socially acceptable than illicit drugs.

College students may take stimulants without a medical need or prescription to improve their concentration, stay awake for long periods, or improve their academic performance, thereby giving them an edge over their peers (Volkow et al., 2009; Teter et al., 2005; Nature, 2007).

However, contrary to students' perceptions, this type of drug use can be detrimental to academic outcomes. Arria and colleagues, (2008) found that the non-medical use of prescription drugs is associated with poor academic outcomes. Non-medical users of both stimulants and analgesics skipped 21 per cent of their college classes, whereas non-users skipped 9 per cent. The results of another study by Ford and Schroeder (2009) indicate that the non-medical use of prescription drugs, academic strain and mental health issues might be related. These authors found that students who experience academic strain report higher levels of depression, which makes them more likely to report non-medical use of prescription stimulants.

How do young people obtain prescription drugs?

Young people rarely obtain prescription drugs using methods commonly associated with the diversion of pharmaceutical products from normal channels, such as pharmacy theft, prescription fraud, or visiting numerous doctors to obtain multiple prescriptions (doctor shopping). It is much more common for adolescents to obtain prescription drugs from peers, friends or family members. According to the SAHMSA National Survey on Drug Use and Health 2008 (United States), 55.9 per cent of persons aged 12 or over took prescription drugs from a friend or relative and 81.7 per cent of those medications were

prescribed to the friends or relatives by only one physician (see section 6). However, the variety of ways in which young persons are able to acquire or purchase prescription drugs is a source of concern (DEA, 2008). Law enforcement officers report that in some cases, particularly with regard to the stimulant ritalin, teenagers who have legitimate prescriptions sell the drug or give it away. Young people also acquire prescription drugs by stealing them, either from relatives and other individuals who have legitimate prescriptions, or from school medicine dispensaries.

Women

Research shows that women are more likely to use only prescription drugs, as opposed to a mixture of prescription drugs and illicit drugs, than men, while the majority of illicit drug users tend to be men. Women who use prescription drugs for non-medical purposes tend to use these substances only and are rarely poly-substance users (The National Center on Addiction and Substance Abuse at Columbia University, 2005), thus creating a possible new user population. Data from drug treatment centres in South Africa supports this view (Myers et al., 2003). One study found that patients checking into treatment whose primary substances of use were prescription drugs were more likely to be female (Myers et al., 2003) (See section 8 on treatment).

It is important to monitor women's non-medical use of prescription drugs, for several reasons. In her statement before the Subcommittee on Criminal Justice, Drug Policy, and Human Resources Committee on Government Reform United States. House of Representatives, Nora Volkow, director of NIDA, advised that "Prescription drug abuse must be carefully tracked among women because of their combined vulnerabilities. First, women are more likely than men to suffer from depression, anxiety, trauma, and victimization, all of which frequently appear with substance abuse in the form of co-morbidities. Second, girls and women report using drugs to cope with stressful situations in their lives. Third, studies suggest that women are significantly more likely than men to be prescribed an abusable drug, particularly in the form of narcotics and anti-anxiety medications."

A number of studies have found that women are more likely than men to be prescribed a drug that they may end up using for non-medical purposes, particularly narcotics and anti-anxiety drugs; in some cases, 55 per cent more likely (CASA, 2005). Research suggests that women are more likely to use narcotic analgesics and tranquilizers (e.g. benzodiazepines) non-medically.

Research identifying other predictors of non-medical use in women is sparse. One study found that lifetime post-traumatic stress disorder, other forms of substance use, and a history of drug or alcohol-facilitated rape are associated significantly with an increased likelihood of using prescription drugs non-medically (McCauley, 2009). There is significant justification for making efforts to reduce the risk of women who have experienced traumatic events and/or use substances using prescription drugs non-medically. Trauma-focused interventions for victims of drug- or alcohol-facilitated rape should include treatment or prevention modules that address specifically the non-medical use of prescription drugs (McCauley, 2009).

In the case of pregnancy, in addition to the health risk to the women themselves, there is a risk that the developing foetus will come to harm. In the service of reducing this risk, more research is needed on the extent and patterns of the non-medical use of prescription drugs during pregnancy. National projections from United States survey data collected in the period 2002-2004 suggest that 109,000 pregnant women in the United States used pain relievers for non-medical purposes in the past year. With respect to prescription psychotherapeutics, there is less non-medical use among women who are pregnant than among those who are not (6 per cent and 9. 3 per cent, respectively). However, this is not true for the subpopulation adolescent girls (15-17 years) who are pregnant. In this subpopulation, the prevalence of non-medical use of prescription drugs is greater than in those who are not pregnant (Volkow, 2006).

Research investigating predictors of non-medical use that are specific to women is needed to better understand what role the sex of the user plays in the non-medical use of prescription drugs. Preventing non-medical use of prescription drugs is particularly important during pregnancy. As mentioned above, women are more likely to use prescription drugs for non-medical purposes than men. Research is needed to tailor future prevention and treatment programmes to the needs of women. In addition, women who use prescription drugs for non-medical purposes may not consider or, having considered, realize that they may have become dependent and, for that reason, they may be less likely to seek treatment. In this case, health-care professionals and authorities should pursue other avenues for treatment and prevention programmes; these might include including implementing prevention programmes in the workplace, or intervention and treatment programmes at the community level.

At its thirty-eighth session, held in March 1995, the Commission on Narcotic Drugs discussed the issue of women and drug abuse and subsequently adopted Resolution 3 (XXXVIII): Resolution on Women and Drug Abuse. As part of the resolution, the "particularly dangerous effects of dependence-producing substances during pregnancy, as well as the harmful behavioural and social consequences of drug abuse for the family, and the need for States to include accordingly in their national policies and programmes drug abuse prevention programmes that specifically concern women" were noted. States are also urged in the resolution "to recognize, assess and take into account in their national policies and programmes the problems that drug abuse poses for women and in collaboration with non-governmental organizations, to develop and test activities to respond in an innovative way to the problems that drug abuse poses for women".

Older adults

Older adults are a risk group of particular concern regarding the non-medical use of prescription drugs. However, they are frequently overlooked in this context. Considering the ageing of the global population, the non-medical use of prescription medication among older persons could present a significant economic and social burden in the future (Colliver et al., 2006). As an example of the current burden, in the United States, individuals 65 years and older comprise approximately 13 per cent of the population but receive 60 per cent of the psychoactive prescriptions (The California State Task Force on Prescription Drug Misuse, 2009).

In common with most of the people aged 18 and over who use prescription drugs for non-medical purposes, older persons who use drugs non-medically tend to be polysubstance users (CASA, 2005). Although the rates of illicit drug use in older adults are very low, research suggests that older persons frequently mix their medication or consume it with alcohol, which can lead to adverse side effects. Elderly women, in particular, self-medicate with alcohol and/or prescription drugs to relieve chronic pain and insomnia. Alcohol interacts with many medications that are commonly prescribed for the elderly, including antihypertensives (Simoni-Wastila, 2003). Older patients are also more likely to be receive multiple and long-term prescriptions, which could, due to forgetfulness, lead to unintentional non-medical use of prescription drugs.

As a result of high rates of co-morbid illnesses among the elderly, changes in drug metabolism with age, and the potential for drug interactions, the non-medical use of prescription drugs can have more severe adverse health consequences among the elderly than in a younger population. For example, in younger adults, the system is clear of a dose of benzodiazephine within 24 hours, whereas it may take up to three times as long for the system to clear in an older adult. Elderly persons who take benzodiazepines are at increased risk of cognitive impairment, which can result in falls and accidents involving vehicles. However, there is good news: cognitive impairment may be reversible once the drug is discontinued (NIDA Research Report Series - Prescription Drugs: Abuse and Addiction. Trends in Prescription Drugs Use). In the context of the non-medical use of benzodiazapines, the knowledge of the prescribing physician is an issue. Not all physicians know that prescribing benzodiazepines to elderly people is contraindicated for the above-mentioned reasons. Therefore, as part of any effort to curb the abuse of prescription medications by the elderly, it is necessary to ensure that physicians are fully informed.

In nursing homes, prescription medications are sometimes used extensively to control behaviour. Some studies have indicated that elderly in-patients and even those residing in intermediate care facilities may be receiving either drugs that are not recommended at all for elderly persons or inappropriately high doses of some drugs, such as benzodiazepines. Thus, elderly persons are at risk of being over-medicated by their caregivers. This issue requires urgent attention (Collopy and Jennings, 1991).

To determine whether or not an elderly patient is using his/her medications for non-medical purposes, the physician screens patients carefully and monitors their use of the medications closely. In cases in which a patient has been found to be using medication non-medically, the physician needs to determine whether the patient has a biological disease, such as depression, that has acted as a causal factor in the non-medical use, or whether the non-medical use itself has produced a biochemical brain disorder, such as dementia or delirium. There must be an examination of the medical complications caused by the non-medical use of prescription drugs as well as medical problems that may have been made worse due to it. In this context, it should be noted that psychological distress due to a pre-existing medical condition is sometimes a causal factor in the development of drug dependence; however, to address the medical condition that is causing the distress, the physician may need to prescribe the same types of medication that the patient has been abusing (Simoni-Wastila, 2003).

Health-care professionals

Health-care professionals themselves are at an elevated risk of using prescription drugs non-medically, due to the ready access that this sector of the population has to these drugs. In general, rates of illicit drug use are lower among physicians than the general public, but rates of non-medical use of prescription drugs are often higher among physicians (Merlo, 2008). Members of certain medical specialties, including anaesthesiologists, emergency medicine physicians, family/general practitioners, psychiatrists and nurses are at particularly high risk of using prescription drugs non-medically (McLellan, et al., 2008; Trinkoff et al., 1999).

For example, nurses who have easy access to prescription drugs have been found to be more likely than others to use prescription drugs for non-medical purposes. However, other factors, such as the frequency with which drugs are administered to patients, are also important indicators of non-medical use among nurses (Trinkoff et al., 1999; CASA, 2005). The authors of a study of 50 pharmacists who were recovering from having used prescription drugs non-medically (Dabner and Hollinger, 1999) suggest that being and becoming a pharmacist presents a paradox of familiarity wherein technical knowledge and opportunity, in the absence of a proper appreciation of the risks of substance abuse, can delude pharmacists into believing that they are immune to the non-medical use of prescription drugs.

Another study suggested that health-care professionals may be particularly prone to using prescription medications non-medically for a number of reasons. Some of these are related to work, such as stress, bereavement, injury, or accidents at work. Others are related to conditions that result from the perception of the self or the life situation, such as anxiety, depression, personality problems and a nonspecific drift into drinking. Yet another reason is pain. It is a simple matter for such individuals to self-medicate because they have easy access to controlled drugs (Gallegos et al.,1988; Berge et al., 2009.).

Nurses who have high-stress jobs have been found to be more likely to be recent users of non-medical drugs than nurses in low-stress jobs (Storr, et al. 1998). Non-medical use often starts almost by accident as the stressed, distressed, tired, and sometimes depressed nurse takes a dose of pain medicine or a tranquillizer to relieve a temporary physical discomfort and discovers that there is an unexpected bonus effect in the relief of mental and emotional tension, the soothing of depression, and the augmentation of energy and drive. The user then actively pursues this effect by taking the no-longer-needed medication for a non-medical purpose, often with a gradual increase in the frequency of use and the dose taken until addiction sets in and the user becomes preoccupied with obtaining and using the medication in amounts far exceeding the normal dosage and for reasons not related to the proper therapeutic usage of the drug (Garrett, 2009).

4. Damage and consequences

There are multiple medical and behavioural consequences of the non-medical use of prescription medications. Persons who begin using prescription drugs non-medically at an early age are more likely to be diagnosed as having lifetime dependence, according to an analysis of data from a national household survey conducted in the United States. The survey revealed that an estimated 42 per cent of those who reported having started to use prescription drugs non-medically at age of 13 or younger went on to develop prescription drug abuse (DSM-IV criteria), in comparison to the 17.1 per cent of those who started to use prescription drugs non-medically at the age of 21 or above (McCabe et al., 2007). About 7 per cent of all persons who report using controlled prescription drugs non-medically also report experiencing emotional or mental health problems that were caused or worsened by their abuse of the drugs (CASA, 2005).

A large single dose of an opioid could cause severe respiratory depression that can lead to death, while long-term use can lead to physical dependence and addiction (NIDA, www.nida.nih.gov/ResearchReports/Prescription/prescription5.html).

During the first few days of taking a central nervous system depressant that has been prescribed for them, if the dose they are taking is too high, a person usually feels sleepy and uncoordinated. However, as the body becomes accustomed to the effects of the drug, when an individual stops taking it these feelings usually subside. When psychoactive prescription drugs are taken for a sustained period, especially when they are taken in high doses on a regular basis, tolerance can develop, which leads to a need to take larger doses to maintain the same effects. Continued use can lead to physical dependence as a physiological adaptation to the regular use of a drug and can result in tolerance to the drug and withdrawal symptoms when the use of drug is discontinued. When a psychoactive drug is used for a long period, the brain changes in adaptation to the constant presence of the drug (physiological dependence) and when the patient stops taking the medication abruptly, he or she can become hyperactive, which can lead to seizures when the drug in question is a sedative hypnotic and other harmful physical and psychological consequences (NIDA Research Report Series Prescription Drugs).

The repeated use of some stimulants over a short period can lead to feelings of hostility or paranoia. High doses of a stimulant may result in dangerously high body temperature and

irregular heartbeat, and may increase the likelihood of cardiovascular failure or lethal seizures (NIDA Research Report Series Prescription Drugs).

The injection of prescription medications that are intended to be taken orally or via the use of patches further complicates the consequences of using prescription drugs non-medically (Partanen et al., 2009). In addition to the active drugs, such medications often include materials that cause problems when they are injected into blood vessels or tissue. Furthermore, when needles are used several times and shared with other persons, administering drugs by injection puts the users at risk of being infected with blood-borne viruses, such as hepatitis B and C and HIV. In Australia, prescription opioids have replaced heroin in some parts of the country, where heroin is not as easily available in the street market (Face Up: Newsletter of the Sydney MSIC issue 9, 2009; IDRIS: Australia Drug Trends, 2006).

The non-medical use of prescription drugs has placed a significant burden on the United States health system. According to the United States Drug Abuse Warning Network (The DAWN Report, June 2010), data for 2004-2008 show that the estimated number of emergency department visits involving narcotic pain relievers rose from 144,644 in 2004 to 305,885 in 2008, a more than twofold increase in just four years. During the same period, oxycodone products, hydrocodone products and methadone were the most frequently listed narcotic pain relievers (The DAWN report 2010). In 2002, the use of prescription drugs accounted for at least 23 per cent of all drug-related emergency department mentions in the United States (CASA, 2005). Data for Australia shows a similar trend. Hospitalizations in Australia due to poisoning from opioids other than heroin increased from 32.6 per cent in 1999 to 80.3 per cent in 2008 (AIHW National Hospital Morbidity Database, from 1998-1999 to 2007-2008).

The problem seems to be particularly severe for older adults (50 years and older). In the period 2004-2008 in the United States, the number of emergency department visits by older adults has significantly increased. The most commonly used prescription drugs among the emergency department visits for this population were pain relievers (43.5 per cent), followed by drugs used to treat insomnia and anxiety (31.8 per cent) and antidepressants (8.6 per cent) (The DAWN report, November 2010).

The National Vital Statistics System data from the Centers for Disease Control in the United States (2010) show that, among the deaths attributed to drug overdose, opioid analgesics or pain relievers (including oxycodone, hydrocodone and methadone) are among the most common drugs, along with cocaine and heroin. In 2007, the number of deaths caused by drug overdose that involved prescription opioids was higher than for heroin and cocaine combined. Since 1980, the mortality from unintentional drug overdose has increased from 1 per every 100,000 deaths to 9 in the United States.

In the United States, it has been estimated that the direct costs of health care for people who use opioids for non-medical purposes alone are more than eight times those who do not use them for non-medical purposes. A conservative estimate of the cost of the non-medical use of prescription opioids to society was US$ 8.6 billion in 2001, which is 9.5 billion in 2005 dollars (The National Vital Statistics System data from the Centre for Disease Control in the United States, 2010).

Finally, the non-medical use of prescription drugs has been associated with crime. Property crime, drug dealing, violence, intoxicated driving, uninhibited and aggressive behaviour,

and feelings of invincibility have been attributed in particular to the non-medical use of benzodiazepines. Furthermore, the demand created by the non-medical use of prescription drugs has resulted in the formation of an illicit supply chain for prescription drugs. Prescription shopping, pharmacy thefts, on-selling from holders of legal prescriptions, and purchasing from unregulated sources of pharmaceutical products from the Internet are all used to supply prescription drugs for non-medical use (NDLERF, 2007).

5. The international drug conventions

Since 1912, Governments have ratified international treaties to control the manufacture, trade, and consumption of psychoactive drugs. The principal treaties in force today covering all pharmaceutical products that contain narcotic drugs, psychotropic substances and most of their precursors are:

- The Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol, establishing the control and use of psychotropic substances.

- The Convention on Psychotropic Substances of 1971, establishing an international system for the control of psychotropic substances.

- The United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (adopted in 1988), which includes legislative and administrative measures against drug trafficking, including provisions against money laundering and the diversion of precursor chemicals.

The substances controlled under the 1961 Convention comprise plant-based drugs, such as opium, morphine, codeine, cannabis and cocaine; and synthetic drugs, such as methadone and pethidine. The substances controlled under the 1971 Convention are stimulants (such as amphetamines, methylphenidate and phentermine), and sedative hypnotics/anxiolytics (such as barbiturates and benzodiazepines).

The provisions of both the 1961 and 1971 Conventions apply to base substances as well as pharmaceutical preparations. However, the 1988 Convention does not apply to pharmaceutical preparations.

If a Member State considers that a substance that is not currently included in the schedules is being abused as a psychoactive substance in its country, it can ask the WHO to assess its risk of harm and abuse. The inclusion of this specific substance in the schedules would then be discussed by the Commission on Narcotic Drugs on the basis of this assessment.

International Narcotics Control Board

The International Narcotics Control Board is an independent body established by the international drug conventions with a quasi-judicial scope, whose functions are to *(a)* monitor and promote the implementation of treaties, *(b)* prevent the diversion of controlled substances, and *(c)* administer the international system of control. The objectives of the control system are twofold: to ensure that controlled substances are available for the intended purposes and to limit the use of controlled substances to legitimate purposes. Therefore, with the cooperation of national competent authorities, the international drug conventions aim to maintain a balance between the availability of controlled substances and the control of their diversion through domestic channels and international trade.

While the aforementioned treaties obligate governments to create stringent control mechanisms, they contain provisions to ensure that the restrictions are not so rigid as to affect adversely patients' access to medications that they need.

The provisions of the same international drug conventions of 1961 and 1971 that list the substances that are under international control also establish an international control system, the aim of which is to limit the use of controlled substances to legitimate purposes and to ensure that controlled substances are available for legitimate purposes, thereby preventing any diversion from manufacture, international trade and domestic distribution channels. The provisions of the international drug conventions ask the nations to establish a number of control measures, and ask for close cooperation between national competent authorities and the Board.

In order to control the import and export of drugs, the international drug conventions require an import and export licence, unless it is carried by a state enterprise or enterprises (1961 Convention, 30.1*(a)*). The manufacturers involved in the distribution of drugs shall be under licence. They might also have the power of control, and to provide security measures be taken with regard to such establishment (1971 Convention, article 8). Those international drug conventions require that every party that permits the export or import of drugs shall require an authorization. In the field of prescriptions drugs, doctors must have a medical licence for the supply or dispensation to individuals (1961 Convention, article 30.2*(b)*(i) and 1971 Convention, article 9).

To determine the legitimate requirements for controlled substances, an estimate needs to be made. Concerning narcotic drugs, the 1961 Convention requires an estimate of the quantities that are to be consumed for medical and scientific purposes, to be utilized for the manufacture of other drugs or exempted preparations. With respect to psychotropic substances, the 1971 Convention does not include such provisions, but ECOSOC resolutions that have been adopted since then strongly recommend the establishment of an assessment of the total quantities required annually for medical and scientific purposes of any psychotropic substance.

6. The role of the medical and pharmaceutical sectors

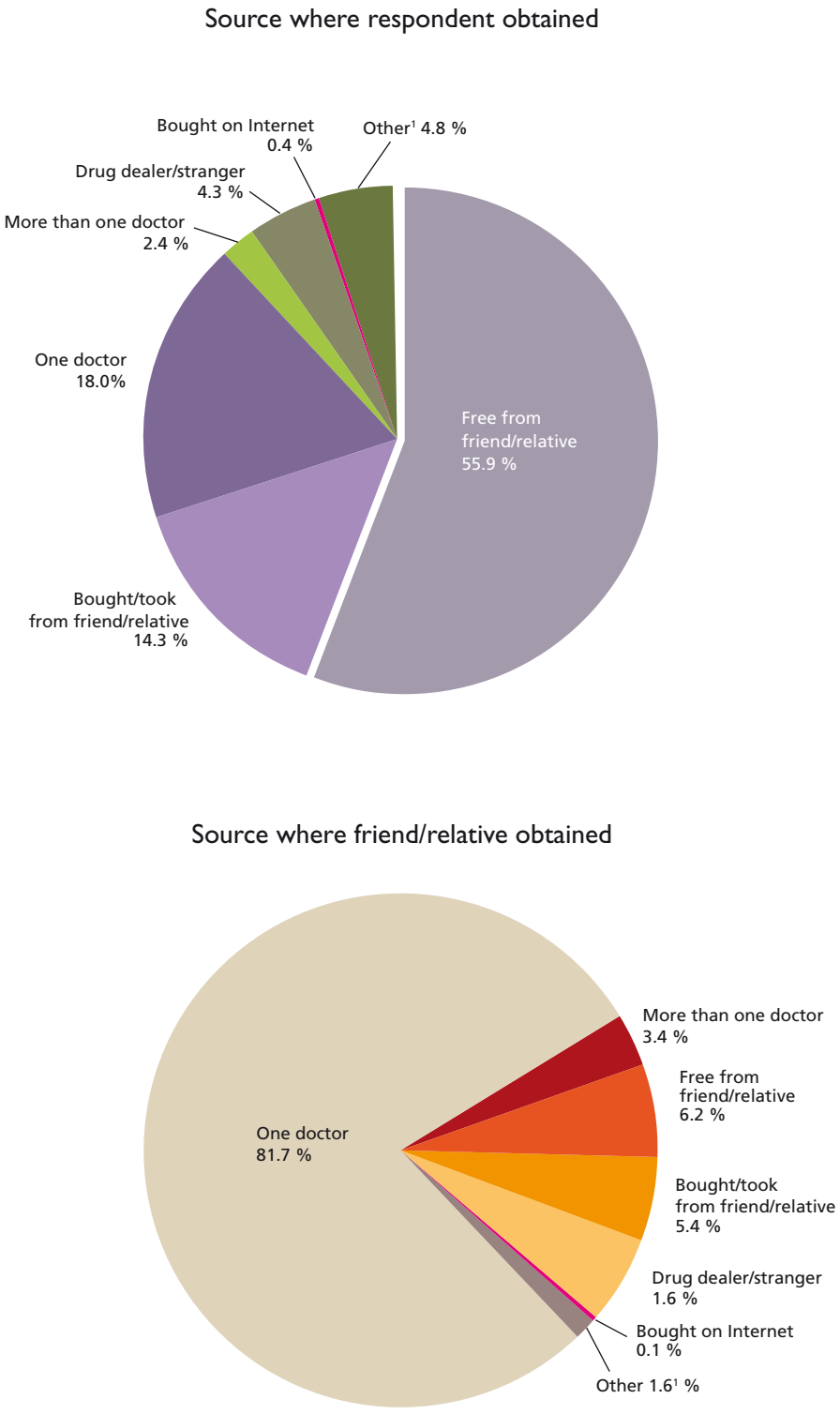
This section, along with sections 7 and 8, attempt to specify possible ways of addressing the non-medical use of prescription drugs. In this regard, it should be borne in mind that it will not be possible to provide an exhaustive specification of the options. Further, it is not to be expected that any State will be able to marshal an immediate response to the problem on all the levels described below. Rather, each State must make its own analyses of its own situation and select the most appropriate responses while increasing its capacity to respond.

Health-care professionals

Physicians, dentists, veterinary surgeons, and other health-care workers who have access to controlled prescription drugs can unintentionally contribute to the problem of non-medical use in a number of ways. Although they have a professional responsibility to abide by the laws governing controlled substances and to use them appropriately, guarding against non-medical use while ensuring that their patients receive the medications that they need is far from easy.

Health-care providers may become involved in diversion, whether they intend to or not. They may be deceived by patients, ill-informed, careless or dishonest, suffer from addiction themselves, or succumb to patient pressure to prescribe medication inappropriately (CASA, 2005; Kamien et al., 2004; Fountain et al., 1998; Kleinschmidt et al., 1995; Sheridan et al., 2008). Health-care professionals should not be blamed for the problem as a whole. However prevention efforts should also take into account the role of health-care professionals in the diversion and non-medical use of prescription drugs. In the United States, people obtain prescription drugs from peers, friends or family members in 56 per cent of the cases and 82 per cent of those medications were prescribed to friends or relatives by only one physician (SAHMSA, 2008). This means that doctor-shopping, often associated with non-medical use of prescription drugs, should not be of as much concern as has been expected and that efforts should be targeted to train health-care professionals to teach patients about safeguarding their medications to reduce the non-medical use of prescription drugs and to screen patients for any signs and symptoms of substance abuse, including non-medical use of prescription drugs.

Figure 2. Source of pain relievers for most recent non-medical use among past year users aged 12 and over



Source: SAMHSA, 2008 National Survey on Drug Use and Health

Note: Totals may not sum to 100 per cent because of rounding or because suppressed estimates.

[1] The Other category includes the sources: "Wrote fake prescription," "Stole from doctor's office/clinic/hospital/pharmacy," and "Some other way."

Furthermore, while some health professionals may contribute to the non-medical use of prescription drugs by prescribing them inappropriately, others may provide inadequate medication for pain and other conditions for fear that their patients will become addicted or that they will incur regulatory scrutiny (NIDA, 2008). Concerns about this within the medical profession are sufficiently high that some doctors prefer not to treat patients who have ongoing pain or a history of addiction. They also sometimes fear criticism from other doctors if they prescribe high amounts of pain medications (Hahn, 2009) (see section 8 for further discussion of this topic).

The role that opioids should play in the treatment of chronic non-malignant pain is as yet undetermined, and there is an absence of clear guidance on the use of opioids in this context. This uncertainty and lack of guidance contributes to the dilemma faced by medical practitioners. On the one hand, almost all patients will experience a significant reduction in pain in the short term (days to weeks), which will usually outweigh the adverse effects of opioids. On the other hand, this reduction in pain will diminish over time as patients become tolerant to opioids and the patients may even experience a hyperalgesic syndrome, in which pain is greater than before. At this point, many patients experience fluctuations in their pain due to fluctuating morphine levels, but no overall reduction in pain compared to the beginning of treatment. Further, the risk of adverse effects, including the risk of fatal opioid overdose, does not diminish.

The absence of clear guidance on this issue, for example from WHO, does not help the situation.

Distinguishing between real cases of patients who need treatment for a medical condition (for example, chronic non-malignant pain) and those who are pressuring for a prescription for other reasons is difficult and professionals often receive very little training in this area (Sheridan et al., 2008). Research on the medical education and training that is offered to physicians found that those physicians who had received instruction in dispensing controlled drugs, identifying addiction to prescription drugs, and/or preventing diversion while in medical school were significantly more likely to be confident of their ability to detect diversion and non-medical use than those without such training. However, while they are in medical school, and even less in continuing medical education, physicians and pharmacists often receive little or no instruction in identifying the non-medical use and diversion of prescription drugs (CASA, 2005). In a 2005 study, only 19 per cent of physicians reported receiving training in identifying prescription drug diversion in medical school (39 per cent of these received such training in residency and 34 per cent through continuing medical education). With regard to training in identifying the non-medical use of prescription drugs, the situation was better, but even so, only about a third (39.6 per cent) of physicians received it in medical school. Only about one third of physicians rated the training they received in preventing the non-medical use or diversion of controlled prescription drugs as good or excellent (CASA, 2005).

Most physicians (80 per cent) believe themselves to be qualified to diagnose non-medical use of prescription drugs and are confident in their ability to know when a person is attempting to obtain controlled drugs for purposes of diversion or non-medical use (81.9 per cent). However, other research calls this confidence into question. A survey of physicians conducted by CASA in 2000 found that 94 per cent of physicians failed to identify the symptoms of alcohol abuse or addiction, even when given five opportunities

to make a diagnosis. An earlier CASA survey, in which physicians were presented with a hypothetical case of an older female patient with symptoms consistent with long-term alcohol abuse or the non-medical use of prescription drugs, found that only 1 per cent offered substance abuse as one of five possible diagnoses. Moreover, almost half of physicians find it difficult to discuss the non-medical use of prescription drugs with their patients. Only about half (53.8 per cent) ask about non-medical use of prescription drugs when taking a patient's health history and only about half (54.5 per cent) either always or most of the time call or obtain records from the patient's previous (or other treating) physician before prescribing controlled drugs on a long-term basis.

Students who participate in health-care-related programmes need to be informed about drugs, treatment options for drug use, and dependence and alternative treatments to pharmacological therapy; they also need to be trained to conduct appropriate patient assessments to identify possible problems regarding substance use, selection and monitoring. For example, with regard to the latter, some of the strongest behavioural indicators of non-medical users of prescription drugs are the following: selling prescription drugs, forging prescriptions, stealing or borrowing drugs from another patient, injecting oral formulations, obtaining prescription drugs from non-medical sources, the concurrent abuse of related illicit drugs, multiple unsanctioned dose escalations, and repeated episodes of lost and/or stolen prescriptions. There are also a number of predictive behavioural indicators that are nevertheless useful: aggressive complaining about the need for higher doses, hoarding medications during periods of reduced symptoms, requesting specific drugs, obtaining prescriptions from multiple physicians, unapproved escalation of the dose or use of the drug, failure to report psychological side effects and the use of multiple pharmacies (Chou et al., 2009).

Physicians may use prescription drugs non-medically for a variety of reasons, such their easy availability and accessability, and stressful work (see section 3 for health-care professionals). In light of the fact that physicians are unlikely to self-report such use, it is important that their colleagues should report it if they identify it. To this end, physicians should receive adequate instruction on how to report an impaired work colleague. In a study of DesRoches et al. (2010) they found that although physicians have a professional obligation to report an impaired colleague, only 69 per cent of them reported being prepared to handle impaired colleagues effectively in their medical practices and 64 per cent reported being prepared to handle incompetent colleagues. Physicians working in hospitals or medical schools were more likely to do so. The most frequent reason that the physicians gave for not reporting an impaired or incompetent colleague was a belief that somebody else was taking care of the problem (19 per cent) or that nothing would happen as a result of the report (15 per cent) (DesRoches et al., 2010). Health-care professionals working in different settings should be informed of the need to report and supported when they do report colleagues whom they suspect of being impaired or incompetent. The process by which reports are made should be efficient and confidential.

Professional guidelines and codes of conduct to help health-care professionals meet their professional responsibilities and prevent the non-medical use of prescription drugs and their diversion have been developed by different professional organizations in the United States (American Academy of Pain Medicine, and American Pain Society, 1997; American Pain Society, 1999; Federation of State Medical Boards of the United States, 1998; American Society on Addiction Medicine, 1998 all cited in CASA, 2005).

Supervised daily dosing

One useful aid in ensuring the correct use of strong psychoactive medication is supervised daily dosing. As an example of the efficacy of this practice, the use of methadone is only able to reduce mortality from opioid overdoses in the treatment of opioid dependence because most doses are supervised. Supervised daily dispensing protects patients from taking more than the prescribed amount (whether deliberate or unintended) and protects the community from medication being easily diverted for sale or for abuse by other people. Supervised daily dispensing is recommended when starting treatment for opioid dependence (WHO guidelines), at least until an estimation of the risks to the patient and the community of less than daily supervised dosing can be estimated with some confidence and found to be acceptable, which is usually some months later at the earliest.

The absence in most health-care systems of supervised daily dosing outside clinics for treating opioid dependence may be one factor in why opioid overdose using prescription medications is so high. However, the implementation of supervised daily dosing does incur additional cost in terms of pharmacy time. This cost needs to be covered, either by the patient or some other mechanism.

When a physician wants to prescribe opioids or other strong psychoactive medication, but is concerned about diversion or taking the medication in greater amounts than prescribed, supervised daily dosing may help.

Pharmacists

A significant proportion of pharmacists (28.4 per cent) do not regularly check the prescribing physician's DEA number when dispensing controlled drugs. Others admit to dispensing a controlled drug without a written prescription order (but in response to a telephone order) or based on a prescription order in which required information is missing. Only about half of pharmacists receive training in identifying the non-medical use of prescription drugs and addiction (49.6 per cent) and in preventing diversion (48.1 per cent) after they graduate from pharmacy school. (CASA, 2005).

Preventing diversion whilst ensuring that prescription drugs are available to those who need them

The prevention of the non-medical use of prescription drugs needs to meet the constraint that the drugs are available to those who need them. Policies that meet the twin constraints of prevention and availability could be established and implemented at different levels. A number of options exist. A comprehensive policy would choose the most appropriate options for each country, taking into account the particular needs of the country in terms of both medications and its human, structural and financial resources. At a general level, any policy that is formulated should address the issue of the financial incentives given by pharmaceutical companies for practitioners to prescribe, rather than try to use other approaches.

A possible way to simplify policy might be to distinguish between high-risk low-value and high-risk high-value medications. High-risk low-value medications are those that have

intoxicating, sedating or euphoric qualities, have a rapid onset of effect, and are prescribed at high dosages, whereas they have low therapeutic value and in many cases could be replaced by satisfactory alternatives. It might be beneficial to restrict the use of such drugs or delete them from the list of prescription drugs altogether (Dobbin, 2010).

The situation is more complex with regard to high-risk high-value drugs. Such drugs are clinically important for treating specific illnesses, yet can produce dependence, often have an intoxicating effect, and can contribute to severe morbidity and mortality. They are often used for non-medical purposes and diverted, and are associated with criminal activities that are either pursued to obtain them or engaged in while under their influence. High-risk high-value drugs include opioids, benzodiazepines, and other sedatives, and precursor drugs (e.g., ephedrine, which is used to produce methamphetamine). The use of high-risk high-value drugs should be closely monitored at different levels by physicians, pharmacists, and other appropriate authorities. They are discussed in more detail below (based on a presentation by Malcom Dobbin, 2010).

Finally, the consequences of advances in drug formulation need to be considered. There now exist products that contain large amounts of controlled substances and that are designed to be delivered over a period of several hours or even days. New approaches need to be developed to assess the potential for abuse of these products, the characteristics that they have when they are abused, and what might be done to minimize the effects of abuse. It is particularly important to ensure that such formulations are designed to have characteristics that will deter abuse, such as a physical or pharmacological barrier that prevents access to the whole amount of the drug at once. However, it is important to note that altering dosages or the formulation (tablet, capsule, modified release, matrix formulation or other) can affect the prevalence of use, route of use and harms associated with use (Sheridan et al., 2008). Hence, care must be taken when designing formulations to deter abuse. For example, removing one benzodiazepine from the market can result in users switching to other similar prescription drugs and continuing to inject (Fountain et al., 1998 in Sheridan et al., 2008).

Monitoring systems and medication management

The lack of uniformity in and integration of processes for the management of prescription medications among patients, physicians, and distributors can lead to overprescribing, unsafe supply, “doctor-shopping”, the forging of prescriptions, and patients selling their medication (Sheridan et al., 2008). A lack of coordination in the management of medications means that stakeholders, including prescribers, pharmacists, wholesalers and retailers have insufficient information about high-risk high-value drugs. This can and should be addressed by improving communication and monitoring systems, as suggested below (presentation by Malcom Dobbin, 2010).

In some countries, pharmacists have much more information about their patients at their disposal, thanks to pharmacy computer systems and a proliferation of state online prescription-tracking databases. The availability of information about patients is expected to increase as electronic health records are adopted by more and more doctors. On the one hand, this newly available information raises issues about use and privacy. Consumers,

government officials and pharmacies themselves are increasingly asking what a pharmacy is legally and ethically obligated to do with this newly available information (Merrick, 2009). On the other hand, the new availability of information has clear benefits. For example, hospitals are beginning to introduce medication dispensers with integrated monitoring systems, with the aim of preventing diversion among patients and hospital workers. In addition, electronic monitoring and surveillance systems that collate information on prescriptions that are written and drugs that are dispensed have been found to be beneficial in terms of reducing the non-medical use of prescription drugs while ensuring patient confidentiality (Drugs and Crime Committee, 2007 cited in Sheridan et al., 2008).

Pharmacists can also play an important part in the management of prescription medication. For example, at a basic level, if they can recognize the handwriting of the prescribing physician, they can reject forged prescriptions. In addition, they can be requested to keep the contact details of physicians whose prescriptions they receive, so that they can call if they receive a prescription that arouses suspicion. At a more sophisticated level, computer-based and real-time analysis could be provided for prescribers and pharmacists at the time of both prescribing and dispensing. Such a system could identify health-care providers, drug-seekers and individuals at risk. It could also be available to regulators, so that they may detect injudicious supply and help to prevent patient selling. The system might allow the periodic review of people who are receiving long-term prescriptions for strong psychoactive medication (presentation by Malcom Dobbin, 2010).

The role of doctors and other health-care providers in identifying the non-medical use of prescription drugs is crucial. Health-care centres should incorporate measures into their registration process to assess how likely it is that medication issued to a particular patient will be used non-medically to identify adverse trends of use at an early stage. The selection and monitoring process of appropriate patients would include identifying those who are at higher risk of using prescription drugs non-medically, by evaluating their family and personal medical history, and would include setting rules of treatment from the beginning, to enable both patients and physicians to clarify their expectations regarding the course of treatment and sign a written agreement if necessary. Ensuring effective communication between the health-care provider and the patient could be one of the most successful strategies for preventing the non-medical use of prescription drugs (presentation by Malcom Dobbin, 2010).

As a more general preventive policy, physicians and health-care providers might be required to write prescriptions in both words and figures, as well as to cross out unmarked space, thus making it more difficult to alter them. In addition, they might be required to use prescription pads that have a uniform format nationwide for high-risk drugs. Moreover, to prevent patients from forging or altering prescriptions, a management system should use electronic or tamper-resistant prescription forms that require the specification of the number of items on script. However, it is important to note that while multiple-copy prescription pads appear to control or reduce the prescribing of benzodiazepines, using them may lead to a situation where a patient who has a medical need for these drugs is not being prescribed them (Simoni-Wastila, 2004b in Sheridan et al., 2008; presentation by Malcom Dobbin, 2010).

Looking at the accessibility of treatment overall, the costs of treating and caring for patients who suffer from drug dependence, including dependence on prescription drugs, should be covered by the national health insurance system, as for any other disorder, and treatment

services should be part of the primary system of health-care. In this context, physicians and dentists should be required to collaborate with pharmacists to prevent diversion and abuse (CASA, 2005).

To prevent domestic sharing and sourcing, and to reduce the risk of poisoning, both physicians and pharmacists might be trained and required to inform patients about the risks of using prescription drugs non-medically and to ensure safe storage. As part of such training, they may be told to provide patients with a limited quantity of the prescribed medication and to ask patients to return unused high-risk high-value drugs (presentation by Malcom Dobbin, 2010).

A further issue to be addressed is when criminal acts are committed to enable drugs to be diverted, such as stealing from pharmacies and warehouses, or trafficking. The use of secure storage by wholesalers, retailers and pharmacies would make it more difficult for such acts to be committed. Moreover, it might be requested that wholesalers, retailers and pharmacies keep medications in their original packing or that the drugs are packed in an indelibly marked way or embossed in blister packs. It might also be helpful to establish a hotline for pharmacy staff to call so that law enforcement agencies can track those people to whom the drugs were dispensed. Another preventive measure would be to create a coordinated medication management system to detect unusually high dose supplies (presentation by Malcom Dobbin, 2010).

At the warehouses and manufacturer's premises, measures can be taken to reduce the risk of diversion from the source. Such measures might include the following: vetting staff and transport companies before hiring; issuing staff with uniforms that do not have pockets; ensuring tight site security; assigning a dedicated staff that report directly to management that have responsibility in this area; incorporating regular stock checks, particularly of medicines at high risk of abuse; and making appropriate arrangements for the security and handling of waste and returns.

The purchase of prescription drugs from Internet pharmacies is often associated with the non-medical use of some prescription drugs. While purchasing pharmaceuticals online can be beneficial, especially in areas where hospitals and pharmacies are widely dispersed, rogue Internet pharmacies might be encouraging drug use among vulnerable groups. In the United States, where the non-medical use of prescription drugs by young adults has risen sharply since 2002, it was reported that 34 illegal Internet pharmacies had dispensed more than 98 million doses of hydrocodone products during 2006, and that in 84 per cent of cases a valid prescription was not required for purchase (INCB, 2008). Limited authorized research in which researchers attempted to purchase prescription drugs without a prescription on the Internet suggests that doing so is more difficult than is commonly assumed and these might be routes used more by traffickers than end users (Inciardi et al., 2010). Moreover, this source of availability does not appear to be a real problem in most countries where access to the Internet is limited (SAHMSA National Survey on Drug Use and Health: National Results, 2007). However, the potential risks for young people and other vulnerable groups are clearly high (INCB, 2008).

It is important to keep in mind that the non-medical use of prescription drugs is a public health issue that requires a response from the public health system, rather than from the law enforcement or criminal justice system (Beyer et al, 2002 in Sheridan et al., 2008).

7. Prevention programmes

Family, school and community programmes that are designed to specifically to prevent the non-medical use of prescription drugs are few and far between. The best current evidence regarding the prevention of the non-medical use of prescription drugs comes from research on programmes that were designed to prevent drug use in general. However, two programmes so far have been evaluated and found to be effective with regard to preventing the non-medical use of prescription drugs.

The interventions evaluated were the Iowa Strengthening Families Programme (ISFP) and Preparing for the Drug-Free Years (PDFY), both of which are family skills training programmes (see UNODC Compilation of evidence-based family skills training programmes, 2010 for more information about these programmes). The evaluation revealed that students who participated in the ISFP and PDFY and who were followed up 4 to 6 years after the programmes were implemented reported significantly lower past-year and lifetime non-medical use of opioids than the control group, with the ISFP programme proving the more effective. The results of the study also suggested that combining a school-based and a family-focused intervention is advantageous, though more studies in the vein of Spoth and colleagues are needed to investigate such interventions further and to examine whether programmes need to be adapted to the specific issue of prescription drugs (Spoth et al.,2008).

Neither programme evaluated by Spoth and colleagues had content that was specific to the prevention of the non-medical use of prescription drugs (Spoth et al., 2008). That the programmes were nevertheless effective is consistent with the scientific finding that non-interactive lecture-oriented prevention programmes that stress drug knowledge show small effects, whereas many effective programmes do not rely on explicit discussion of specific substances and instead address overarching risk and protective factors for drug abuse. Such programmes do have effects, with some demonstrating long-term effects (Tobler et al., 2000, Foxcroft et at., 2002, Faggiano et al., 2005, Gates et al., 2006). Addressing general risk and protective factors linked to substance use in the family, school, workplace and community (NIDA, 2003) via exercises to build interactive skills has been found to be much more effective in preventing a range of risky types of behaviour in children, families and schools (Griffin et al 2006, UNODC, 2009).

In light of the foregoing, it would seem wise to embed prevention interventions for the non-medical use of prescription drugs within effective mainstream prevention programmes for addressing risk and protective factors of young people and other vulnerable groups in a variety of settings (family, school, workplace and community) at a variety of levels of risk (the universal level, which targets the whole community, the selective targeting of groups that are more at risk, and, indicated level targeting individuals who are at high risk of using prescription drugs non-medically). These interventions should be evidence-based (NIDA, 2003; INCB, 2009). Prevention programmes that are carried out in the workplace could be of special importance for health-care professionals who are at an elevated risk of using prescription drugs non-medically. However, such programmes are not widespread (UNODC, 2010) and their strengthening, alongside the implementation of policies for managing the distribution of medication as discussed above, would constitute a first important step towards preventing the non-medical use of prescription drugs. In addition, it is important to keep in mind the specific needs of vulnerable groups, such as older adults, who could benefit from prevention programmes and messages regarding the dangerous combination of alcohol and pharmaceuticals (DAWN Report November 2010).

Further research is needed on interventions to address the following:

- Whether or not prevention interventions specific to the non-medical use of prescription drugs are actually necessary to address the complexity of this ever-increasing problem. Most people will encounter prescription drugs throughout their lives, because they are not substances to be avoided like illicit drugs, but are a part of everyday life and can improve quality of life for many people when they are used appropriately for their medical purpose.
- Whether or not specific interventions targeting parents should be developed and tested. These might include promoting simple safety measures about how to store prescription drugs safely, raising awareness about the dangers of providing their children with prescription drugs that have not been prescribed for them, and monitoring their child's use of prescription drugs for medical or non-medical purposes.
- Much of the research to date has focused on prevention programmes that seek to minimize use among children and young people. Research is also needed to focus on *(a)* the young adult population, with a special focus on the college population and the use of prescription drugs for cognitive enhancers, and *(b)* the adult population in general, with a focus on the workplace, and high-risk populations such as women and older adults.
- Research is needed to identify the components of effective prevention and treatment approaches targeted toward health professionals. Best practices and training protocols for health-care workers require research not only on approaches, but also on methods to transfer science into the pratice and into evidence-based prevention interventions. There is a need to develop and evaluate innovative science-based education approaches for health professionals (NIDA, 2008).
- Identification of the predictors of and risk and protective factors for the non-medical use of prescription drugs in health-care professionals.

8. Treatment

The non-medical use of prescription drugs presents a major challenge for those involved in treating substance abuse and in the planning and design of appropriate treatments.

Two main populations who seek treatment for the non-medical use of prescription drugs are *(a)* patients who are already suffering from a health condition or a psychiatric disorder that requires medication, and *(b)* those who are not seeking treatment for any other co-existing disorder or illness (non-patient group). Within these two groups, there are subpopulations that have special needs.

One of these subpopulations comprises patients who have been treated for a health condition or a psychiatric disorder and who have become dependent on their prescription drugs due to prolonged use of medication and may have started to take higher doses. They may still need their prescription medication to treat their primary health condition or disorder, thus making the treatment of the non-medical use itself a challenge for the treatment provider. For example, data from one psychiatric and clinical outpatient unit in Argentina shows that 60 per cent of the patients reported using prescription medications without a prescription (59.8 per cent, reported using psychotropics, of which 88.8 per cent were anxiolytics) (Franco, JA and Pecci, 2007).

Another subpopulation is polysubstance users, who may use prescription drugs for non-medical purposes without being prescribed medication themselves, together with illicit drugs and/or alcohol (CASA, 2005). It is worth bearing in mind that in the course of the treatment and assessment of their problems, some of these persons may be diagnosed as having co-morbid disorders that may require medication with prescription drugs in the future. It has been found that polysubstance users who also use prescription medication for non-medical purposes tend to be male and over 40 years of age (Myers and colleagues, 2003).

Research also suggests that certain risk populations, such as young people, the elderly, women, health-care professionals, incarcerated criminal offenders, patients with acute or chronic pain, and individuals with a history of previous substance abuse each require different approaches to treatment (Simoni-Wastila, 2003) (see section 3 for vulnerable groups). A study from South Africa focusing on treatment data found that patients with

prescription medicines as their primary drug of use were significantly more likely to be female, which highlights the need to provide treatment that are approaches more suitable for them (Myers et al., 2003) (see section 3 for vulnerable groups and women). It is also important to note that women are more likely to be prescribed medication that may easily lead to dependence, such as narcotics, anti-anxiety drugs and tranquilizers (e.g. benzodiazepines) (CASA, 2005) and that pregnant women need customized help to avoid withdrawal symptoms when they stop taking opioids, methadone and buprenorphine (WHO, 2009).

There is no explicit data on how many of those who need treatment for the non-medical use of prescription drugs receive it. However, it is estimated that in the United States, roughly 16 per cent of those who need treatment for having used prescription drugs non-medically receive any kind of substance abuse treatment and only 11 per cent of underage young people who need such treatment receive it (United States National Center on Addiction and Substance Abuse (2005). It is likely that this percentage is even lower in developing countries. In addition to these estimates, it is possible to derive information about the need for treatment by looking at the treatment admissions data.

In Canada, data on admissions to the Centre for Mental Health and Addiction shows a huge growth in the number of admissions for dependence on oxycodone from 3.8 per cent in 2000 to 55.4 per cent in 2004 (Sproule et al., 2009). In the United States, the number of admissions for pharmaceutical opioid dependence increased from 360,000 in 2002 to 601,000 in 2008 (SAHMSA 2008 National Survey on Drug Use and Health). In Australia, a higher rate of use of prescription opioids and benzodiazephines *not* prescribed to the person (66 per cent and 69 per cent, respectively) was found among those seeking drug dependence treatment than for similar drugs that were prescribed to the patient (35 per cent and 42 per cent, respectively) four weeks before beginning treatment for drug dependence (Nielsen, 2008).

In Europe, approximately 5 per cent of persons who enter drug treatment report opioids other than heroin (mostly buprenorphine) as their primary drug of use. In Finland, buprenorphine is recorded as the primary drug in 41 per cent of all demands for treatment, while in France the figure is 7 per cent. Methadone accounts for 18.5 per cent of all demands for treatment in Denmark, while other prescription opioids account for 5-15 per cent of all demands for treatment in Latvia, Austria, and Sweden. An estimated 4,250 problem buprenorphine users were reported in the Czech Republic in 2007 (EMCDDA, 2009).

Physicians and health-care providers may often pay attention to and focus on preventing and treating the individual's dependence on illicit drugs, which results in the under-recognition and under-treatment of the non-medical use of and dependence on prescription drugs. However, research has shown that addiction to any substance (licit, illicit or prescribed) is a biobehavioural disorder that, like other chronic diseases, can be treated effectively. To improve the situation with respect to the prevention of the non-medical use of prescription drugs and the treatment of conditions caused by it, physicians need to receive better education on the issue and better screening tools need to be developed. Many of the tools that are currently used to screen for substance abuse do not include items on the non-medical use of prescription drugs (Savage, 2009). CASA's survey of physicians found that when they suspect a patient of using prescription drugs non-medically or of

diverting the drugs, only 27.8 per cent usually required urine tests, 23.1 per cent conducted pill counts, and 36.9 per cent created a contract for the use of the medication (CASA, 2005).

Although a variety of treatments have been found to be effective, no single type of treatment is appropriate for all individuals who have become dependent on prescription drugs or illicit substances. Treatment must take into account the type of drug used and the needs of the individual. Successful treatment may need to incorporate several components, including psychosocial therapies and medication-assisted treatment (including detoxification and/or longer term pharmacological treatment). Multiple courses of treatment may be needed for the patient to make a full recovery (UNODC, 2009, Principles of drug dependence treatment; NIDA, 2009).

Further research is needed to determine the factors that may affect access to treatment for conditions that are caused by the non-medical use of prescription drugs, including treatment entry, readiness for treatment, retention in treatment, compliance with treatment, and treatment outcomes, especially among women, adolescents, older adults, and racial/ethnic minorities (NIDA, 2009).

Recognition and diagnosis

Screening for the non-medical use of psychoactive substances, including prescription medication, should be a part of regular medical checkups. The WHO ASSIST screen could be used for this purpose. This screening should include the examination of urine or blood samples, and non-threatening questioning. A positive result from screening should be followed by specialist evaluation, which should include the taking of a detailed history of addiction and psychiatric problems (verified by collateral informants, such as family and other medical professionals), and toxicology. After the evaluation has been completed, a detailed plan for the management of treatment can be developed that will permit vulnerable individuals to continue receiving benefits from medications while minimizing the risks that these agents will be abused. Individuals who have developed a substance use disorder can be referred to an addiction treatment programme, where a variety of treatment options, including both behavioural and pharmacological treatments, are available.

With respect to the screening of members of vulnerable groups, such as young people, women, and older adults, it is worth noting that such people may have special needs in terms of the assessment and recognition of the non-medical use of prescription drugs. Hence, physicians should take special care when working with these subgroups.

Addressing co-morbidity

Individuals who have pre-existing psychiatric or other addictive disorders are at particularly high risk of developing behavioural problems related to non-medical use of prescription. Ensuring that a primary psychiatric (e.g. anxiety, ADHD and insomnia) and medical (e.g. pain) problem is treated properly is the most important strategy for preventing the development of behavioural problems related to prescribed medications. Medications such as opioids, benzodiazepines and psychostimulants are very effective and

well-tolerated by patients in the treatment of several psychiatric and medical problems. Most individuals who receive these medications take them as prescribed, even at high doses and for an extended period of time. Due to the widespread prescribing of these medications, access to them is relatively easy and some individuals would take them to self-medicate without medical supervision, recreationally for its euphoric effects, or to enhance performance. It is not known how many individuals who use prescription drugs non-medically are dependent on them, but most likely the majority do not meet the criteria for drug dependence or addiction and are not interested in treatment. A small proportion of people who are prescribed these medications by physicians do develop excessive and compulsive use, become impaired, and would clearly benefit from treatment. Often, most of such individuals are already in treatment, which creates an opportunity to prevent possible non-medical use or to detect such use and to intervene early. Generally, all patients who receive medications that have the potential to be abused should be assessed briefly at each visit for signs of non-medical use of prescription drugs or dependence. Several self-report screening instruments are available (Butler et al., 2008).

Recognizing high-risk individuals who are at increased risk of developing dependence, such as those with a personal or family history of addiction and those using alcohol, tobacco or illicit drugs, should be identified early and monitored closely during treatment. Such individuals can be categorized as low-risk, moderate-risk and high-risk. Different levels of monitoring may be advisable for the various categories.

Low-risk patients, such as those who have a distant history of dependence or addiction and are not currently using psychoactive substances to treat a primary health condition or a disorder, could be advised of the risk of combining prescription drugs with other substances and warned about the dangers of diversion and abuse during a brief intervention before treatment is begun. Counselling for psychosocial problems or the abuse of individual drugs addresses possible substance use. It focuses on presenting strategies and tools that individuals can use to abstain and to maintain abstinence, and addresses related issues, such as employment status and family and social relationships. It is therefore recommended for any patient who has a distant history of dependence or any kind of problem related to substance abuse (NIDA,2009). Physicians can address the problems of low-risk patients by taking one or more of the following steps: when necessary, prescribing safer medications, which have a slower onset of action and longer period of effect, or more selective agents; prescribing small quantities at a time; and monitoring the amount of medication prescribed vs. the amount used (Parasrampuria et al., 2007; Sellers et al., 2006 both cited in Sheridan et al., 2008; INCB, 2006).

While prescribing medication to patients in the moderate-risk group, physicians should consider first trying agents with minimal liability for abuse (e.g. anticonvulsants, atomoxetine, and butorphanol). If the clinical response is inadequate, physicians could consider a brief trial of agents with greater liability for abuse, but increasing the frequency of office visits to enable closer monitoring to detect problematic use. Family, spouse/partner, and/or friends should be involved if such support is clinically indicated (presentation by Bisaga, 2010).

The high-risk group includes those who have a current disorder that is related to substance abuse. When prescribing medication for and monitoring individuals in this group, physicians should focus on treating the ongoing disorder(s) and consider beginning treatment

in inpatient settings for detoxification. If there are other co-existing psychiatric disorders, physicians could treat them with agents that do not have any liability for abuse and begin treatment with prescription drugs if the patient stabilizes and is considered to be of moderate or low risk.

For all risk groups, the following measures, taken while the patient is under treatment, may be helpful in detecting the non-medical use of medication or diversion: monitoring the clinical response of the primary target and symptoms; monitoring for adverse effects or indications of inappropriate or non-medical patterns of use; and conducting random urine screenings when it is thought to be necessary. Some indicators of the non-medical use of prescription drugs or diversion are as follows: symptoms of intoxication or withdrawal, demands for a particular medication, repeated lost prescriptions, discordant pill counts, and a preoccupation with securing a supply of medication. It is important to remember that the treatment of substance abuse is based on trust between the patient and treating physician. The patient should be informed at the beginning of the treatment regime what monitoring for the inappropriate use of prescription medication may entail.

As discussed above, a number of other tactics can be employed to address the non-medical use and diversion of prescription drugs: asking for a second opinion from another clinician, calling other physicians that the patient visits, and providing the patient with educational materials about the non-medical use of prescription drugs and addiction. While much medical attention is paid to prescribing drugs to treat health problems and reduce symptoms, physicians may be less likely to attend to the process of helping patients recognize signs that they may be becoming addicted to a drug or helping them to taper off a medication as conditions improve. Clinicians can also use medication contracts/agreements (although there is a lack of research on the usefulness of these contracts), testing urine, and pill counts.

The most successful prevention strategy is effective communication between the health-care provider and the patient and/or caregiver. When treatment regimens are complicated and/or the use of the drugs that are prescribed may have severe side effects, health-care providers should discuss with the patient the problems of adhering to the treatment regimen and dealing with the side effects. Physicians should also set clear expectations for the patients as to what the goal of the treatment is. If the patients have unrealistic expectations and these are not met (for example, if they expect to be completely pain free, but are not) they may start self-medicating. It is also important that the patients be open about their over-the-counter medications, herbs, and vitamins while taking prescription drugs, and that they understand the detrimental effects of mixing alcohol with prescription drugs and of mixing their medication, when this is applicable.

Behavioural treatment

Behavioural treatments include individual and group counselling. This may include psychosocial therapies (such as cognitive behavioural therapy), delivered both in inpatient and outpatient settings. Evidence-based psychosocial treatment interventions that may also involve family members have been described elsewhere and will not be discussed here (UNODC, 2009), but they should be part of an integrated treatment system addressing drug dependence. Treatments that have been developed for dependence on illicit

substances (opiates, stimulants) should be effective for treating dependence on prescription drugs. However, little research has been conducted to determine whether outcomes will differ for patients who are dependent on different kinds of prescription drugs. Discussed briefly below are specific interventions that have been found to be effective in treating dependence from specific prescription drugs.

Cognitive behavioural therapy (CBT) focuses on modifying the patient's thinking, expectations and behaviour, while increasing skills for coping with various life stressors. This method of therapy has been used successfully to help individuals to adapt to the discontinuation of benzodiazepines (Jamison et al., 2010; Lamb et al., 2010; Litt et al., 2010).

Psychosocial interventions that have been found effective for the treatment of dependence of illicit opiates would be effective in the treatment of dependence of prescription opioids as well. For opioid dependence in particular, the outcomes are improved if psychosocial interventions are used alongside pharmacological treatment (Amato et al., 2004 cited in WHO, 2009).

Similarly, the treatment of addiction to prescription stimulants, such as methylphenidate, is often based on behavioural therapies that have proven effective in treating addiction to cocaine. An example of such therapies is contingency management, which uses a system that enables patients to earn vouchers when a test of their urine is found to be drug-free, which can be exchanged for items that promote healthy living. Recovery support groups may be helpful in conjunction with behavioural therapy (NIDA, 2009).

It may also be beneficial to implement behavioural strategies that are aimed at reducing the risk of non-medical use prescription drugs, such as psycho-education, increasing motivation to abstain from using substances, managing skills for solving problems, and identifying and promoting changes in lifestyle that would reduce the desire for substance abuse.

Pharmacological treatments

Several options are available for treating prescription opioid addiction effectively. However, limited progress has been made in treating addictions to prescribed CNS depressants (with the exception of opioids) or stimulants via pharmacological therapies.

Dependence on prescription opioids might be a complication of the non-medical use of the substances in patients who have co-existing anxiety or depressive disorders. The options for treating opioid addiction are drawn from research on the treatment of heroin addiction, and include opioid antagonist medications, such as naltrexone, and opioid agonist medications, such as methadone and buprenorphine (NIDA, 2009).

The safest and most effective treatment of opioid dependence is opioid agonist maintenance, with supervised daily dosing.

Detoxification can be difficult and carries with it a significant likelihood of relapse, due to the pain that accompanies withdrawal. This is particularly true for patients who have chronic pain syndromes. However, detoxification can also result in reduced pain, once the symptoms of opioid withdrawal have subsided.

Agonist treatment may not be available in some countries. In such cases, the need for alternative treatment approaches is particularly pressing. The use of antagonists, such as naltrexone, is an alternative for patients who do not have access to agonist-based treatment. Naltrexone, particularly in the long-acting injectable form, is also a choice for patients who are not interested in agonists, those who wish to discontinue agonist treatment and are at risk of relapse, and patients who have been abstinent but are at increased risk of relapse due to external stressors (Grabowski (2001).

Dependence on sedatives is uncommon in those members of the general population who are treated with these medications, but it is frequent among patients with other disorders related to substance abuse. Slow and gradual tapering off of use and the possible use of adjunctive agents could be useful in achieving abstinence (Bisaga, 2008 in Galanter M. and Kleber, H Eds.; WHO mhGAP guidelines).

No medication has been approved for the treatment of dependence on prescription stimulants. WHO suggests straight detoxification, even as an outpatient, followed by psychosocial support (WHO mhGAP guidelines, 2009).

Finally, research is also needed to establish the optimal length of treatment and how the period of use of the prescription drugs as part of the treatment regime will end, in order to avoid an indefinitely continued intake.

Non-medical use of prescription drugs and the treatment of pain

It is estimated that 5 billion people living in countries with low or no access to controlled medication have no or insufficient access to treatment for severe pain. According to the WHO, 5.5 million terminally ill cancer patients and 1 million AIDS patients for whom all treatment options have been exhausted are suffering from inadequate pain relief. Many other medical conditions are accompanied by moderate to severe pain and many of them require treatment with opioids. However, the WHO estimates that every year, tens of millions are not treated for their pain because of the unavailability of these medicines.

The absence of data on the long-term consequences of the use of opioids in the treatment of chronic non-malignant pain syndromes makes it difficult to know in which situations the long-term prescription of opioids in the treatment of non-malignant pain will do more harm than good. In this situation, the old axiom “first, do not harm” would suggest that not prescribing long-term opioids for chronic non-malignant pain may be the more prudent strategy.

The international conventions recognize the use of controlled substances for medical and scientific purposes. While there are control mechanisms in place to prevent the potential abuse and diversion of these substances, these measures are not intended to interfere with the licit use of opioid agents under medical supervision. Because of the possible abuse of controlled substances, many governments and health professionals have focused their attention primarily on the abuse of these substances, which has led physicians to sometimes underestimate the prevalence of non-medical use of pain medication and to sometimes underprescribe those in serious need (Novak et al., 2009). This has often led to overly strict regulations and inappropriate implementation of the international drug control

treaties in many countries. By restricting the medical use of controlled medication, many States have not complied fully with their obligation under the conventions to ensure the availability of these substances for medical and scientific purposes.

National regulations for drug control, when interpreted in an overly restrictive manner, can hamper access to controlled medicines for therapeutic use. A balance must therefore be achieved between medical and regulatory requirements, or—in other words—supply and demand.

9. Conclusions and recommendations

The non-medical use of prescription drugs is a unique and complex issue. Due to a lack of epidemiological data, the exact extent of the problem worldwide remains unknown. On the one hand, data from North America and Australia show that as their availability increases, prescription drugs are rapidly becoming the non-medical drugs of choice for many segments of society. Treatment data from Africa, Asia, Europe and South America also show that the non-medical use of prescription drugs is a significant problem. On the other hand, governments cannot simply make these substances illicit, because for many people worldwide they are necessary for achieving and maintaining a good quality of daily life. Taking these contrasting desiderata into account, governments in both developed and developing countries can and should begin to take action to address the non-medical use of controlled prescription drugs. UNODC can provide assistance to governments, e.g. though the Global Synthetics Monitoring: Analyses, Reporting and Trends (SMART) Programme, which assists governments in key regions to generate, analyse and report data on synthetic drugs, including prescription medicines. This could be achieved in a number of ways:

- Collecting basic epidemiological data, on an ongoing basis, regarding the extent and patterns of non-medical use of prescription drugs and their consequences;
- Establishing a medication management system that ensures that medication is available to those who need it, while monitoring for and preventing possible diversion at all different levels: production, storage, health-care (prescribing physicians and pharmacists), patients, and the Internet;
- Raising awareness among policymakers and clinicians, parents, young people, and teachers;
- Training health-care professionals on an ongoing basis on how to prevent, recognize and manage the non-medical use of prescription drugs and related consequences;
- Taking an official stance by addressing the issue of non-medical use of controlled prescription drugs directly in drugs legislation;

- Researching whether and how to tailor prevention and treatment efforts for the non-medical use of prescription drugs;
- Researching how to treat polysubstance users and those with a co-morbid illness;
- Doing further research on the risk and protective factors for the non-medical use of prescription drugs, with particular attention to specific risk populations, such as young people, women, older adults and health professionals;
- Providing clear guidelines to physicians on good practices for prescribing the use of strong psychoactive medication, including both initiation and time limits;
- Using systems of supervised daily dosing for strong psychoactive medication when appropriate;
- Providing incentives for medical practitioners to not overprescribe strong psychoactive medication;
- Providing disincentives for the overprescription of strong psychoactive medication.

Annex 1. Some key definitions

Addiction
The terms "addiction" and "habituation" were abandoned by the WHO in 1964 in favour of "drug dependence". However, since those terms are still widely used and because the term "addiction" is used in the paper, below is a definition of "addiction". "Addiction" refers to the repeated use of a psychoactive substance or substances, to the extent that the user is periodically or chronically intoxicated, shows a compulsion to take the preferred substance (or substances), has great difficulty in voluntarily ceasing or modifying substance use, and exhibits determination to obtain psychoactive substances by almost any means (UNODC Terminology and Information on Drugs 2003).

The WHO Lexicon of Alcohol and Drug Terms defines addiction as repeated use of a psychoactive substance or substances, to the extent that the user (referred to as an addict) is periodically or chronically intoxicated, shows a compulsion to take the preferred substance (or substances), has great difficulty in voluntarily ceasing or modifying substance use, and exhibits determination to obtain psychoactive substances by almost any means. Typically, tolerance is prominent and a withdrawal syndrome frequently occurs when substance use is interrupted. The life of the addict may be dominated by substance use to the virtual exclusion of all other activities and responsibilities. The term "addiction" also conveys the sense that such substance use has a detrimental effect on society, as well as on the individual; when applied to the use of alcohol, it is equivalent to alcoholism. Addiction is a term of long-standing and variable usage. It is regarded by many as a discrete disease entity, a debilitating disorder rooted in the pharmacological effects of the drug, which is remorselessly progressive. From the 1920s to the 1960s, attempts were made to differentiate between addiction and habituation, a less severe form of psychological adaptation. In the 1960s, the World Health Organization recommended that both terms be abandoned in favour of dependence, which can exist in various degrees of severity. Addiction is not a diagnostic term in ICD-10, but continues to be very widely employed by professionals and the general public alike.

Analgesic
A substance that reduces pain, whether or not it has psychoactive properties (UNODC Terminology and Information on Drugs 2003).

Benzodiazepine
One of a group of structurally related drugs that are used mainly as sedatives/hypnotics, muscle relaxants, and anti-epileptics. They were once referred to by the now-deprecated term "minor

tranquillisers". They include halazepam, triazolam, alprazolam, flunitrazepam, nitrazepam, lorazepam, temazepam, oxazepam, etc. (WHO Lexicon of Alcohol and Drug Terms).

Controlled substances
In the international context, and therefore in the context of this paper, the term is used to refer to psychoactive drugs and precursors covered by the international drug conventions.

DEA number
A DEA number is a series of numbers assigned to a health-care provider in the United States (such as a medical practitioner, dentist, or veterinarian) that is allowed to write prescriptions for controlled substances. Legally, the DEA number is to be used solely for tracking controlled substances. However, the DEA number is often used by the industry as a general "prescriber" number that identifies uniquely anyone who can prescribe medication.

Dependence
The WHO Lexicon of Alcohol and Drug Terms defines dependence syndrome (F1x.2) as a cluster of behavioural, cognitive and physiological phenomena that may develop after repeated substance use. Typically, these phenomena include a strong desire to take the drug, impaired control over its use, persistent use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and a physical withdrawal reaction when drug use is discontinued.

According to ICD-I0, dependence syndrome should be diagnosed if three or more of six specified criteria were met by the patient within the past year. The dependence syndrome may relate to a specific substance (e.g. tobacco, alcohol or diazepam), a class of substances (e.g. opioids), or a wider range of pharmacologically different substances.

The DSM-IV (the Diagnostic and Statistical Manual of Mental Disorders-IV) discusses substance dependence in terms of its etiology, symptoms, treatment, and prognoses. In DSM-IV, the etiology of substance dependence is not characterized definitively, but the following conjectures are presented: *(a)* there is evidence that genetic factors play a role in both dependence and abuse; *(b)* there is also evidence that underlying factors, such as psychosis, relationship issues, and stress, play a causal role in the initiation and maintenance of substance abuse. On the second view, the dependence on or abuse of a substance is more of a symptom than a disorder in itself. In DSM-IV, the symptoms of substance dependence are presented as follows: "Substance use history which includes the following: (1) substance abuse (see below); (2) continuation of use despite related problems; (3) increase in tolerance (more of the drug is needed to achieve the same effect); and (4) withdrawal symptoms."

Depressant
A substance that suppresses, inhibits or decreases some aspects of central nervous system (CNS) activity The group of CNS depressants includes benzodiazepines, barbiturates, methaqualone, meprobamate and others (for example alcohol, anaesthetics, and opiates and their synthetic analogues) (UNODC Terminology and Information on Drugs 2003).

INCB—International Narcotics Control Board
The International Narcotics Control Board (INCB) is the independent and quasi-judicial control body for the implementation of international drug conventions.

International drug conventions
In the international context, and therefore in the context of this paper, international drug conventions comprise the three major international drug control treaties: the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol; the Convention on Psychotropic Substances of 1971; and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988.

Narcotic
In medicine, a chemical agent that induces stupor, coma or insensibility to pain (also called narcotic analgesic). In the context of international drug control, "narcotic drug" means any drug defined as such under the 1961 Convention (UNODC Terminology and Information on Drugs 2003).

The WHO Lexicon of Alcohol and Drug Terms defines a narcotic as a chemical agent that induces stupor, coma or insensibility to pain. The term usually refers to opiates or opioids, which are called narcotic analgesics. In common parlance and legal usage, it is often used imprecisely to mean illicit drugs, irrespective of their pharmacology. For example, narcotics control legislation in Canada, the United States, and certain other countries includes cocaine and cannabis as well as opioids *(*see also International drug conventions). Because of this variation in usage, the term is best replaced by one with a more specific meaning (e.g. opioid).

Narcotic drug
In medicine, a chemical agent that induces stupor, coma, or insensibility to pain (also called narcotic analgesic) (UNODC Terminology and Information on Drugs 2003).

Non-medical use (of prescription drugs)
In the context of this paper, "non-medical use of prescription drugs" refers to the use of a prescription drug, whether obtained by prescription or otherwise, other than in the manner or for the time period prescribed, or by a person for whom the drug was not prescribed. Although terms such as "use", "misuse" and "abuse" are also commonly used in this respect, their definitions are not scientifically and/or legally distinct and have not been used in this paper.

Older adults
There is no generally agreed definition for older adults. The WHO uses "older adults" to refer to persons 65 years and older. In much of the scientific literature, a variable "older adults" is used and refers to persons of 55 years of age and older. If not otherwise specified, the paper refers to WHO's definition.

Opiate
Any of a group of alkaloids derived from opium poppy (*Papaver somniferum*), such as morphine and codeine, including their derivatives, such as heroin (UNODC Terminology and Information on Drugs 2003).

Opioid
"Opioid" is a generic term used to refer to opiates and their synthetic and semi-synthetic analogues, which have actions similar to those of morphine, in particular the capacity to relieve pain. They include such substances as fentanyl, dextropropoxyphene, methadone and pethidine (meperidine) (UNODC Terminology and Information on Drugs 2003).

Over-the-counter drug
The WHO Lexicon of Alcohol and Drug Terms uses the terms "pharmaceuticals" and "over-the-counter drugs" interchangeably and defines them as drugs available from pharmaceutical sources, i.e. manufactured by the pharmaceutical industry or made up by a pharmacist. Industry terminology categorizes drugs as ethical drugs, which are available only on prescription, and over-the-counter or proprietary drugs, which are advertised to the consumer and sold without a prescription. The list of drugs requiring a prescription varies considerably from country to country; most psychoactive pharmaceuticals are available only by prescription in industrialized countries. Caffeine, antihistamines, codeine (an opiate) and alcohol are the most common psychoactive constituents of over-the-counter drugs in such societies.

Psychotropic substance
Any chemical agent that affects the mind or mental processes (i.e. any psychoACTIVE drug). In the context of international drug control, "psychotropic substance" means any substance, natural or synthetic, or any natural material in Schedule I, II, III or IV of the 1971 Convention. (UNODC Terminology and Information on Drugs 2003).

The WHO Lexicon of Alcohol and Drug Terms defines "psychotropic substance" as, in its most general sense, a term that has the same meaning as "psychoactive", i.e. affecting the mind or mental processes. Strictly speaking, a psychotropic drug is any chemical agent whose primary or significant effects are on the central nervous system. Some writers apply the term to drugs whose primary use is in the treatment of mental disorders: anxiolytic sedatives, antidepressants, antimanic agents and neuroleptics. Others use the term to refer to substances that are strongly liable to be abused because of their effects on mood, consciousness, or both, such as stimulants, hallucinogens, opioids and sedatives/hypnotics (including alcohol). In the context of international drug control, "psychotropic substances" refers to substances controlled by the 1971 Convention on Psychotropic Substances.

Prescription drug
In the context of this paper, a prescription drug is a psychoactive substance that is included in the Schedules of the 1961 Single Convention on Narcotic Drugs, 1971 Convention on Psychotropic Substances as requiring a prescription before it can be obtained.

Sedatives/hypnotics
Any of a group of central nervous system depressants with the capacity to relieve anxiety and induce calm. Major classes of sedatives/hypnotics include the benzodiazepines and barbiturates (UNODC Terminology and Information on Drugs 2003).

Any of a group of central nervous system depressants with the capacity to relieve anxiety and induce calm and sleep, including such substances such as benzodiazepines, barbiturates alcohol, buspirone, chloral hydrate, acetylcarbromal, glutethimide, methyprylon, ethchlorvynol, ethinamate, meprobamate and methaqualone (WHO Lexicon of Alcohol and Drug Terms).

Self-medication
The use of a prescription drug without a prescription to *(a)* obtain the intended benefit of that drug, or *(b)* compensate, counteract or alleviate some of the impairments produced by an underlying disorder, or *(c)* help to deal with anxiety or other negative feelings and stressful life situations.

Stimulant
In reference to the central nervous system, any agent that activates, enhances or increases neural activity. Such substances are also called psychostimulants. They include amphetamines, cocaine,

caffeine and other xanthines, nicotine, and synthetic appetite suppressants, such as phenmetrazine or methylphenidate. Other drugs have stimulant actions that are not their primary effect but that may manifest at high doses or after chronic use: these include antidepressants, anticholinergics and certain opioids (WHO Lexicon of Alcohol and Drug Terms).

Substance abuse

The term "substance abuse" is defined differently in different contexts. DSM-IV (the Diagnostic and Statistical Manual of Mental Disorders-IV) discusses substance abuse in terms of its etiology, symptoms, treatment and prognoses. In DSM-IV, the etiology of substance dependence is not characterized definitively, but the following conjectures are presented: *(a)* there is evidence that genetic factors play a role in both dependence and abuse; *(b)* there is also evidence that underlying factors, such as psychosis, relationship issues and stress, play a causal role in the initiation and maintenance of substance abuse. On the second view, the dependence on or abuse of a substance is more of a symptom than a disorder in itself. In DSM-IV, the symptoms of substance dependence are presented as follows: "A pattern of substance use leading to significant impairment in functioning. One of the following must be present within a 12 month period: (1) recurrent use resulting in a failure to fulfill major obligations at work, school, or home; (2) recurrent use in situations which are physically hazardous (e.g., driving while intoxicated); (3) legal problems resulting from recurrent use; or (4) continued use despite significant social or interpersonal problems caused by the substance use. The symptoms do not meet the criteria for substance dependence as abuse is a part of this disorder."

The WHO Lexicon of Alcohol and Drug Terms defines substance use disorders, i.e. substance abuse, as a group of conditions related to alcohol or other drug use. In the ICD-I0, section FI0-F19, the category ''mental and behavioural disorders due to psychoactive substance use", contains a wide variety of disorders of different severity and clinical form, all having in common the use of one or more psychoactive substances, whether or not they were obtained by prescription. The substances specified are alcohol, opioids, cannabinoids, sedatives or hypnotics, cocaine, other stimulants including caffeine, hallucinogens, tobacco and volatile solvents. The clinical states that may occur, though not necessarily with all psychoactive substances, include acute intoxication, harmful use, dependence syndrome, withdrawal syndrome (state), withdrawal state with delirium, psychotic disorder, late-onset psychotic disorder, and amnesic syndrome.

Tranquilizer

A calming agent. The term covers several classes of drug that are employed in the management of the symptoms of various mental disorders. Tranquilizers differ from sedatives/hypnotics in that they dampen psychomotor processes without (except at high doses) interfering with consciousness and thinking (WHO Lexicon of Alcohol and Drug Terms).

Young people

For statistical purposes, the United Nations, defines "youth" as those persons between the ages of 15 and 24 years, without prejudice to other definitions by Member States. This definition was made during preparations for the International Youth Year (1985), and endorsed by the General Assembly (see A/36/215 and resolution 36/28, 1981).

Annex 2. List of narcotic drugs under international control in accordance with the single Convention on Narcotic Drugs of 1961 and the 1972 Protocol amending that Convention.

1 NARCOTIC DRUGS UNDER INTERNATIONAL CONTROL

Section 1

Drugs Included in Schedule I of the 1961 Convention

Narcotic drugs	*Description/Chemical name*
Acetorphine	3-*O*-acetyltetrahydro-7α-(1-hydroxy-1-methylbutyl)-6,14-*endo*-ethenooripavine
Acetyl-*alpha*-methylfentanyl	*N*-[1-(α-methylphenethyl)-4-piperidyl]acetanilide
Acetylmethadol	3-acetoxy-6-dimethylamino-4,4-diphenylheptane
Alfentanil	*N*-[1-[2-(4-ethyl-4,5-dihydro-5-oxo-1*H*-tetrazol-1-yl)ethyl]-4-(methoxymethyl)-4-piperidinyl]-*N*-phenylpropanamide
Allylprodine	3-allyl-1-methyl-4-phenyl-4-propionoxypiperidine
Alphacetylmethadol	α-3-acetoxy-6-dimethylamino-4,4-diphenylheptane
Alphameprodine	α-3-ethyl-1-methyl-4-phenyl-4-propionoxypiperidine
Alphamethadol	α-6-dimethylamino-4,4-diphenyl-3-heptanol
Alpha-methylfentanyl	*N*-[1-(α-methylphenethyl)-4-piperidyl]propionanilide
Alpha-methylthiofentanyl	*N*-[1-[1-methyl-2-(2-thienyl)ethyl]-4-piperidyl]propionanilide
Alphaprodine	α-1,3-dimethyl-4-phenyl-4-propionoxypiperidine
Anileridine	1-*p*-aminophenethyl-4-phenylpiperidine-4-carboxylic acid ethyl ester
Benzethidine	1-(2-benzyloxyethyl)-4-phenylpiperidine-4-carboxylic acid ethyl ester
Benzylmorphine	3-benzylmorphine
Betacetylmethadol	β-3-acetoxy-6-dimethylamino-4,4-diphenylheptane
Beta-hydroxyfentanyl	*N*-[1-(β-hydroxyphenethyl)-4-piperidyl]propionanilide
Beta-hydroxy-3-methylfentanyl	*N*-[1-(β-hydroxyphenethyl)-3-methyl-4-piperidyl]propionanilide
Betameprodine	β-3-ethyl-1-methyl-4-phenyl-4-propionoxypiperidine
Betamethadol	β-6-dimethylamino-4,4-diphenyl-3-heptanol
Betaprodine	β-1,3-dimethyl-4-phenyl-4-propionoxypiperidine
Bezitramide	1-(3-cyano-3,3-diphenylpropyl)-4-(2-oxo-3-propionyl-1-benzimidazolinyl)piperidine
Cannabis and cannabis resin and extracts and tinctures of cannabis	Indian hemp and resin of Indian hemp
Clonitazene	2-(*p*-chlorobenzyl)-1-diethylaminoethyl-5-nitrobenzimidazole
Coca leaf	
Cocaine	methyl ester of benzoylecgonine*
Codoxime	dihydrocodeinone-6-carboxymethyloxime
Concentrate of poppy straw	the material arising when poppy straw has entered into a process for the concentration of its alkaloids when such material is made available in trade
Desomorphine	dihydrodeoxymorphine
Dextromoramide	(+)-4-[2-methyl-4-oxo-3,3-diphenyl-4-(1-pyrrolidinyl)butyl]morpholine
Diampromide	*N*-[2-(methylphenethylamino)propyl]propionanilide
Diethylthiambutene	3-diethylamino-1,1-di(2'-thienyl)-1-butene
Difenoxin	1-(3-cyano-3,3-diphenylpropyl)-4-phenylisonipecotic acid
Dihydroetorphine	7,8-dihydro-7 α-[1-(*R*)-hydroxy-1-methylbutyl]-6,14-*endo*-ethanotetrahydrooripavine
Dihydromorphine	
Dimenoxadol	2-dimethylaminoethyl-1-ethoxy-1,1-diphenylacetate
Dimepheptanol	6-dimethylamino-4,4-diphenyl-3-heptanol
Dimethylthiambutene	3-dimethylamino-1,1-di(2'-thienyl)-1-butene

Narcotic drugs	*Description/Chemical name*
Dioxaphetyl butyrate	ethyl-4-morpholino-2,2-diphenylbutyrate
Diphenoxylate	1-(3-cyano-3,3-diphenylpropyl)-4-phenylpiperidine-4-carboxylic acid ethyl ester
Dipipanone	4,4-diphenyl-6-piperidine-3-heptanone
Drotebanol	3,4-dimethoxy-17-methylmorphinan-6 *β*,14-diol
Ecgonine	its esters and derivatives which are convertible to ecgonine and cocaine
Ethylmethylthiambutene	3-ethylmethylamino-1,1-di(2'-thienyl)-1-butene
Etonitazene	1-diethylaminoethyl-2-*p*-ethoxybenzyl-5-nitrobenzimidazole
Etorphine	tetrahydro-7 *α*-(1-hydroxy-1-methylbutyl)-6,14-*endo*-ethenooripavine
Etoxeridine	1-[2-(2-hydroxyethoxy)ethyl]-4-phenylpiperidine-4-carboxylic acid ethyl ester
Fentanyl	1-phenethyl-4-*N*-propionylanilinopiperidine
Furethidine	1-(2-tetrahydrofurfuryloxyethyl)-4-phenylpiperidine-4-carboxylic acid ethyl ester
Heroin	diacetylmorphine
Hydrocodone	dihydrocodeinone
Hydromorphinol	14-hydroxydihydromorphine
Hydromorphone	dihydromorphinone
Hydroxypethidine	4-*m*-hydroxyphenyl-1-methylpiperidine-4-carboxylic acid ethyl ester
Isomethadone	6-dimethylamino-5-methyl-4,4-diphenyl-3-hexanone
Ketobemidone	4-*m*-hydroxyphenyl-1-methyl-4-propionylpiperidine
Levomethorphan*	(-)-3-methoxy-*N*-methylmorphinan
Levomoramide	(-)-4-[2-methyl-4-oxo-3,3-diphenyl-4-(1-pyrrolidinyl)butyl]morpholine
Levophenacylmorphan	(-)-3-hydroxy-*N*-phenacylmorphinan
Levorphanol*	(-)-3-hydroxy-*N*-methylmorphinan
Metazocine	2'-hydroxy-2,5,9-trimethyl-6,7-benzomorphan
Methadone	6-dimethylamino-4,4-diphenyl-3-heptanone
Methadone intermediate	4-cyano-2-dimethylamino-4,4-diphenylbutane
Methyldesorphine	6-methyl-Δ^6-deoxymorphine
Methyldihydromorphine	6-methyldihydromorphine
3-methylfentanyl	*N*-(3-methyl-1-phenethyl-4-piperidyl)propionanilide
3-methylthiofentanyl	*N*-[3-methyl-1-[2-(2-thienyl)ethyl]-4-piperidyl]propionanilide
Metopon	5-methyldihydromorphinone
Moramide intermediate	2-methyl-3-morpholino-1,1-diphenylpropane carboxylic acid
Morpheridine	1-(2-morpholinoethyl)-4-phenylpiperidine-4-carboxylic acid ethyl ester
Morphine	
Morphine methobromide and	other pentavalent nitrogen morphine derivatives including in particular the morphine-*N*-oxide derivatives, one of which is codeine-*N*-oxide
Morphine-*N*-oxide	
MPPP	1-methyl-4-phenyl-4-piperidinol propionate (ester)

*__Dextromethorphan__ ((+)-3-methoxy-N-methylmorphinan) and __dextrorphan__ ((+)-3-hydroxy-N-methylmorphinan) are isomers specifically excluded from this Schedule.

Myrophine	myristylbenzylmorphine
Nicomorphine	3,6-dinicotinylmorphine
Noracymethadol	(±)-*α*-3-acetoxy-6-methylamino-4,4-diphenylheptane
Norlevorphanol	(-)-3-hydroxymorphinan
Normethadone	6-dimethylamino-4,4-diphenyl-3-hexanone
Normorphine	demethylmorphine
Norpipanone	4,4-diphenyl-6-piperidino-3-hexanone
Opium*	
Oripavine	
Oxycodone	14-hydroxydihydrocodeinone
Oxymorphone	14-hydroxydihydromorphinone
Para-fluorofentanyl	4'-fluoro-*N*-(1-phenethyl-4-piperidyl)propionanilide
PEPAP	1-phenethyl-4-phenyl-4-piperidinol acetate (ester)
Pethidine	1-methyl-4-phenylpiperidine-4-carboxylic acid ethyl ester
Pethidine intermediate A	4-cyano-1-methyl-4-phenylpiperidine
Pethidine intermediate B	4-phenylpiperidine-4-carboxylic acid ethyl ester
Pethidine intermediate C	1-methyl-4-phenylpiperidine-4-carboxylic acid
Phenadoxone	6-morpholino-4,4-diphenyl-3-heptanone
Phenampromide	*N*-(1-methyl-2-piperidinoethyl)propionanilide
Phenazocine	2'-hydroxy-5,9-dimethyl-2-phenethyl-6,7-benzomorphan
Phenomorphan	3-hydroxy-*N*-phenethylmorphinan
Phenoperidine	1-(3-hydroxy-3-phenylpropyl)-4-phenylpiperidine-4-carboxylic acid ethyl ester
Piminodine	4-phenyl-1-(3-phenylaminopropyl)piperidine-4-carboxylic acid ethyl ester
Piritramide	1-(3-cyano-3,3-diphenylpropyl)-4-(1-piperidino)piperidine-4-carboxylic acid amide
Proheptazine	1,3-dimethyl-4-phenyl-4-propionoxyazacycloheptane
Properidine	1-methyl-4-phenylpiperidine-4-carboxylic acid isopropyl ester
Racemethorphan	(±)-3-methoxy-*N*-methylmorphinan
Racemoramide	(±)-4-[2-methyl-4-oxo-3,3-diphenyl-4-(1-pyrrolidinyl)butyl]morpholine
Racemorphan	(±)-3-hydroxy-*N*-methylmorphinan
Remifentanil	1-(2-methoxy carbonylethyl)-4-(phenylpropionylamino)piperidine-4-carboxylic acid methyl ester
Sufentanil	*N*-[4-(methoxymethyl)-1-[2-(2-thienyl)ethyl]-4-piperidyl]propionanilide
Thebacon	acetyldihydrocodeinone
Thebaine	
Thiofentanyl	*N*-[1-[2-(2-thienyl)ethyl]-4-piperidyl]propionanilide
Tilidine	(±)-ethyl-*trans*-2-(dimethylamino)-1-phenyl-3-cyclohexene-1-carboxylate
Trimeperidine	1,2,5-trimethyl-4-phenyl-4-propionoxypiperidine

AND the isomers, unless specifically excepted, of the drugs in this Schedule whenever the existence of such isomers is possible within the specific chemical designation;
the esters and ethers, unless appearing in another Schedule, of the drugs in this Schedule whenever the existence of such esters or ethers is possible;
the salts of the drugs listed in this Schedule, including the salts of esters, ethers and isomers as provided above whenever the existence of such salts is possible.

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* For the calculation of estimates and statistics in accordance with the terms of the 1961 Convention, all preparations made direct from opium are considered to be opium (preparations). If the preparations are not made direct from opium itself but are obtained by a mixture of opium alkaloids (as is the case, for example, with pantopon, omnopon and papaveretum) they should be considered as morphine (preparations).

Section 2

Drugs Included in Schedule II of the 1961 Convention

Narcotic drugs	*Description/Chemical names*
Acetyldihydrocodeine	
Codeine	3-methylmorphine
Dextropropoxyphene	*α*-(+)-4-dimethylamino-1,2-diphenyl-3-methyl-2-butanol propionate
Dihydrocodeine	
Ethylmorphine	3-ethylmorphine
Nicocodine	6-nicotinylcodeine
Nicodicodine	6-nicotinyldihydrocodeine
Norcodeine	*N*-demethylcodeine
Pholcodine	morpholinylethylmorphine
Propiram	*N*-(1-methyl-2-piperidinoethyl)-*N*-2-pyridylpropionamide

AND the isomers, unless specifically excepted, of the drugs in this Schedule whenever the existence of such isomers is possible within the specific chemical designation;
the salts of the drugs listed in this Schedule, including the salts of the isomers as provided above whenever the existence of such salts is possible.

Section 3

Drugs Included in Schedule IV of the 1961 Convention

Narcotic drugs	*Description/Chemical names*
Acetorphine	3-*O*-acetyltetrahydro-7 *α*-(1-hydroxy-1-methylbutyl)-6,14-*endo*-ethenooripavine
Acetyl-*alpha*-methylfentanyl	*N*-[1 *α* -methylphenethyl)-4-piperidyl]acetanilide
Alpha-methylfentanyl	*N*-[1-(*α*-methylphenethyl)-4-piperidyl]propionanilide
Alpha-methylthiofentanyl	*N*-[1-[1-methyl-2-(2-thienyl)ethyl]-4-piperidyl]propionanilide
Beta-hydroxy-3-methylfentanyl	*N*-[1-(*β*-hydroxyphenethyl)-3-methyl-4-piperidyl]propionanilide
Beta-hydroxyfentanyl	*N*-[1-(*β*-hydroxyphenethyl)-4-piperidyl]propionanilide
Cannabis and Cannabis resin	
Desomorphine	dihydrodeoxymorphine
Etorphine	tetrahydro-7 *α*-(1-hydroxy-1-methylbutyl)-6,14-*endo*-ethenooripavine
Heroin	diacetylmorphine
Ketobemidone	4-*m*-hydroxyphenyl-1-methyl-4-propionylpiperidine
3-methylfentanyl	*N*-(3-methyl-1-phenethyl-4-piperidyl)propionanilide
3-methylthiofentanyl	*N*-(3-methyl-1-[2-(2-thienyl)ethyl]-4-piperidyl]propionanilide
MPPP	1-methyl-4-phenyl-4-piperidinol propionate (ester)
Para-fluorofentanyl	4'-fluoro-*N*-(1-phenethyl-4-piperidyl)propionanilide
PEPAP	1-phenethyl-4-phenyl-4-piperidinol acetate (ester)
Thiofentanyl	*N*-[1-[2-(thienyl)ethyl]-4-piperidyl]propionanilide

AND the salts of the drugs listed in this Schedule whenever the formation of such salts is possible.

2 PREPARATIONS OF NARCOTIC DRUGS EXEMPTED FROM SOME PROVISIONS AND WHICH ARE INCLUDED IN SCHEDULE III OF THE 1961 CONVENTION

1. Preparations of: Acetyldihydrocodeine,
Codeine,
Dihydrocodeine,
Ethylmorphine,
Nicocodine,
Nicodicodine,
Norcodeine and
Pholcodine

when compounded with one or more other ingredients and containing not more than 100 milligrams of the drug per dosage unit and with a concentration of not more than 2.5 per cent in undivided preparations.

2. Preparations of: **Propiram** containing not more than 100 milligrams of **propiram** per dosage unit *and compounded with* at least the same amount of methylcellulose.

3. Preparations of: **Dextropropoxyphene** for oral use containing not more than 135 milligrams of **dextropropoxyphene** base per dosage unit or with a concentration of not more than 2.5 per cent in undivided preparations, provided that such preparations do not contain any substance controlled under the 1971 Convention on Psychotropic Substances.

4. Preparations of: Cocaine containing not more than 0.1 per cent of cocaine calculated as cocaine base; and

Preparations of: Opium or morphine containing not more than 0.2 per cent of morphine calculated as anhydrous morphine base *and compounded with one or more other ingredients* and in such a way that the drug cannot be recovered by readily applicable means or in a yield which would constitute a risk to public health.

5. Preparations of: **Difenoxin** containing, per dosage unit, not more than 0.5 milligram of **difenoxin** and a quantity of atropine sulfate equivalent to at least 5 per cent of the dose of **difenoxin**.

6. Preparations of: **Diphenoxylate** containing, per dosage unit, not more than 2.5 milligrams of **diphenoxylate** calculated as base and a quantity of atropine sulfate equivalent to at least 1 per cent of the dose of **diphenoxylate**.

7. Preparations of: *Pulvis ipecacuanhae et opii compositus*
10 per cent opium in powder
10 per cent ipecacuanha root, in powder well mixed with
80 per cent of any other powdered ingredient containing no drug.

8. Preparations conforming to any of the formulas listed in this Schedule and mixtures of such preparations with any material which contains no drug.

Annex 3. List of narcotic drugs under international control in accordance with the single Convention on Psychotropic Substances of 1971.

International Narcotics Control Board

Green List

(24th edition, May 2010)
Annex to the annual statistical report on psychotropic substances (form P)

List of Psychotropic Substances under International Control

In accordance with the Convention on Psychotropic Substances of 1971

The frequent introduction of new preparations of psychotropic substances and the withdrawal of old ones by the pharmaceutical industry makes the updating of the present "Green List" necessary for the effectiveness of controls. In pursuit of this objective, the International Narcotics Control Board (INCB) maintains a database containing a list of such preparations. Governments are kindly requested to notify INCB of any additions, deletions or amendments that should be made to the present list.

The Green List has been prepared by the International Narcotics Control Board to assist Governments in completing the annual statistical report on psychotropic substances (form P) and the quarterly statistics of imports and exports of substances in Schedule II of the Convention on Psychotropic Substances of 1971 (form A/P). For information on the names used for substances under international control and preparations containing such substances, as well as on chemical and structural formulae and other technical information, see *Multilingual Dictionary of Narcotic Drugs and Psychotropic Substances under International Control*.[1]

The Green List is divided into four parts:

Part one. Substances in Schedules I, II, III and IV of the Convention on Psychotropic Substances of 1971;

Part two. Names, synonyms and trade names of psychotropic substances, their salts and preparations containing psychotropic substances under international control;

Part three. Pure drug content of bases and salts of psychotropic substances under international control;

Part four. Prohibition of and restrictions on export and import pursuant to article 13 of the Convention on Psychotropic Substances of 1971.

[1] United Nations publication, Sales No. M.06.XI.16.

Part one. Substances in Schedules I, II, III and IV of the Convention on Psychotropic Substances of 1971

Psychotropic substances under international control are presented in the schedules below. Where an international non-proprietary name (INN) is available for a substance, that INN is given in the left-hand column. Where no INN is available, the non-proprietary or trivial names of the substance are given in the second column of the table. Where a trivial name is commonly applied to a substance with a given INN, then the trivial name is also given in the second column. Salts of all the substances covered by the four schedules, whenever the existence of such salts is possible, are also under international control.

The following interpretation guidelines[2] concerning the stereoisomers of substances in Schedules II, III and IV of the 1971 Convention[3] were developed, pursuant to Commission on Narcotic Drugs decision 42/2, in order to clarify the scope of control of stereoisomers of substances in those schedules:

(a) When the substance listed can exist as stereochemical variants the following should apply:

(i) If the chemical designation of the substance used in the 1971 Convention (or in a subsequent scheduling decision of the Commission on Narcotic Drugs does not include any stereochemical descriptors or indicates a racemic form of the substance:

a. If the molecule contains one chiral centre, both the *R*- and *S*-enantiomers and the *RS*-racemate are controlled, unless specifically excepted by a decision of the Commission on Narcotic Drugs;

b. If the molecule contains more than one chiral centre, all the diastereoisomers and their racemic pairs are controlled, unless specifically excepted by a decision of the Commission on Narcotic Drugs;

(ii) If the chemical designation used in the 1971 Convention (or in a subsequent scheduling decision of the Commission on Narcotic Drugs) for the substance which contains one chiral centre in the molecule includes a stereochemical descriptor indicating a specific enantiomer, the racemic form of the substance is also controlled, unless specifically excepted by a decision of the Commission on Narcotic Drugs, while the other enantiomer is not controlled;

(iii) If the chemical designation used in the 1971 Convention (or in a subsequent scheduling decision of the Commission on Narcotic Drugs) for the substance which contains more than one chiral centre in the molecule includes stereochemical descriptors indicating a specific diastereoisomer, only that diastereoisomer is controlled;

(b) When one enantiomer is controlled, then a mixture of that enantiomer with the other enantiomeric substance is controlled;

(c) The chemical designations and INNs used in the scheduling decisions to define substances in Schedules II, III and IV of the 1971 Convention were considered appropriate at the times when such decisions were made. It should be understood that:

(i) Alternative chemical designations constructed according to modified chemical nomenclature rules may be used in official documents as long as they preserve the stereospecificity when appropriate;

(ii) If any subsequent modification of an INN definition uses a chemical designation which is different to that in the scheduling decision, such an INN should be omitted from official documents.

In order to facilitate rapid identification of all scheduled psychotropic substances, CAS (Chemical Abstracts Service) registry numbers were included for the most traded substances (Schedule II, III and IV substances) and their salts. The list is not exhaustive and the absence of a CAS number does not mean that it does not exist but rather that it was not available at the time of the update of the list. CAS numbers were included in the following cases:

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[2] The guidelines are also applicable to the stereoisomers of substances in Schedule I, whenever the existence of such stereoisomers is possible within the specific chemical designation, which are under international control unless specifically excepted by a decision of the Commission on Narcotic Drugs.

[3] *WHO Expert Committee on Drug Dependence: Thirty-second Report*, WHO Technical Report Series No. 903 (Geneva, World Health Organization, 2001), annex.

(i) The substance under international control exists in the base form and stereoisomer variants do not exist, i.e., it is a unique CAS number.

(ii) If stereoisomers exist within the specific chemical designation: if stereoisomers and racemic mixture are already listed and related CAS numbers are available (example: amphetamine, dexamfetamine and levamfetamine).

Substances in Schedule I

IDS codes	*International non-proprietary name*	*Other non-proprietary or trivial names*	*Chemical name*
PD 009	BROLAMFETAMINE	DOB	(±)-4-bromo-2,5-dimethoxy-*α*-methylphenethylamine
PC 010	CATHINONE		(–)-(*S*)-2-aminopropiophenone
PD 001		DET	3-[2-(diethylamino)ethyl]indole
PD 007		DMA	(±)-2,5-dimethoxy-*α*-methylphenethylamine
PD 003		DMHP	3-(1,2-dimethylheptyl)-7,8,9,10-tetrahydro-6,6,9-trimethyl-6*H*-dibenzo[*b,d*]pyran-1-ol
PD 004		DMT	3-[2-(dimethylamino)ethyl]indole
PD 008		DOET	(±)-4-ethyl-2,5-dimethoxy-*α*-methylphenethylamine
PP 003	ETICYCLIDINE	PCE	*N*-ethyl-1-phenylcyclohexylamine
PE 006	ETRYPTAMINE		3-(2-aminobutyl)indole
PN 005		*N*-hydroxy MDA	(±)-*N*[*α*-methyl-3,4-(methylenedioxy)phenethyl]hydroxylamine
PL 002	(+)-LYSERGIDE	LSD, LSD-25	9,10-didehydro-*N,N*-diethyl-6-methylergoline-8*β*-carboxamide
PN 004		MDE, *N*-ethyl MDA	(±)-*N*-ethyl-*α*-methyl-3,4-(methylenedioxy)phenethylamine
PM 011		MDMA	(±)-*N,α*-dimethyl-3,4-(methylenedioxy)phenethylamine
PM 004		mescaline	3,4,5-trimethoxyphenethylamine
PM 019		methcathinone	2-(methylamino)-1-phenylpropan-1-one
PM 017		4-methylaminorex	(±)-*cis*-2-amino-4-methyl-5-phenyl-2-oxazoline
PM 013		MMDA	5-methoxy-*α*-methyl-3,4-(methylenedioxy)phenethylamine
PM 020		4-MTA	*α*-methyl-4-methylthiophenethylamine
PP 001		parahexyl	3-hexyl-7,8,9,10-tetrahydro-6,6,9-trimethyl-6*H*-dibenzo[*b,d*]pyran-1-ol
PP 017		PMA	*p*-methoxy-*α*-methylphenethylamine
PP 012		psilocine, psilotsin	3-[2-(dimethylamino)ethyl]indol-4-ol
PP 013	PSILOCYBINE		3-[2-(dimethylamino)ethyl]indol-4-yl dihydrogen phosphate
PP 007	ROLICYCLIDINE	PHP, PCPY	1-(1-phenylcyclohexyl)pyrrolidine
PS 002		STP, DOM	2,5-dimethoxy-*α*,4-dimethylphenethylamine
PM 014	TENAMFETAMINE	MDA	*α*-methyl-3,4-(methylenedioxy)phenethylamine
PT 001	TENOCYCLIDINE	TCP	1-[1-(2-thienyl)cyclohexyl]piperidine
PT 002		tetrahydrocannabinol, the following isomers and their stereochemical variants:	
			7,8,9,10-tetrahydro-6,6,9-trimethyl-3-pentyl-6*H*-dibenzo[*b,d*]pyran-1-ol
			(9*R*,10a*R*)-8,9,10,10a-tetrahydro-6,6,9-trimethyl-3-pentyl-6*H*-dibenzo[*b,d*]pyran-1-ol
			(6a*R*,9*R*,10a*R*)-6a,9,10,10a-tetrahydro-6,6,9-trimethyl-3-pentyl-6*H*-dibenzo[*b,d*]pyran-1-ol
			(6a*R*,10a*R*)-6a,7,10,10a-tetrahydro-6,6,9-trimethyl-3-pentyl-6*H*-dibenzo[*b,d*]pyran-1-ol
			6a,7,8,9-tetrahydro-6,6,9-trimethyl-3-pentyl-6*H*-dibenzo[*b,d*]pyran-1-ol
			(6a*R*,10a*R*)-6a,7,8,9,10,10a-hexahydro-6,6-dimethyl-9-methylene3- pentyl-6*H*-dibenzo[*b,d*]pyran-1-ol
PT 006		TMA	(±)-3,4,5-trimethoxy-*α*-methylphenethylamine

The stereoisomers of substances in Schedule I are also controlled, unless specifically excepted, whenever the existence of such stereoisomers is possible within the specific chemical designation.

Substances in Schedule II

IDS Codes	*CAS Number*	*International non-proprietary name*	*Other non-proprietary or trivial names*	*Chemical name*
PA 003	300-62-9	AMFETAMINE	amphetamine	(±)-α-methylphenethylamine
PA 007	57574-09-1	AMINEPTINE		7-[(10,11-dihydro-5*H*-dibenzo[*a*,*d*]cyclohepten-5-yl)amino]heptanoic acid
PB 008	66142-81-2		2 C-B	4-bromo-2,5-dimethoxyphenethylamine
PD 002	51-64-9	DEXAMFETAMINE	dexamphetamine	(+)-α-methylphenethylamine
PD 010		DRONABINOL[a]	*delta*-9-tetrahydro-cannabinol and its stereochemical variants	(6*aR*,10*aR*)-6*a*,7,8,10*a*-tetrahydro-6,6,9-trimethyl-3-pentyl-6*H*-dibenzo [*b*,*d*]pyran-1-ol
PF 005	3736-08-1	FENETYLLINE		7-[2-[(α-methylphenethyl)amino]ethyl]theophylline
PL 006	156-34-3	LEVAMFETAMINE	levamphetamine	(–)-(*R*)-α-methylphenethylamine(amphetamine (-)isomer
PL 007	33817-09-3		levomethamphetamine	(–)-*N*,α-dimethylphenethylamine
PM 002	340-57-8	MECLOQUALONE		3-(*o*-chlorophenyl)-2-methyl-4(3*H*)-quinazolinone
PM 005	537-46-2	METAMFETAMINE	methamphetamine	(+)-(*S*)-*N*,α-dimethylphenethylamine
PM 015	7632-10-2	METAMFETAMINE RACEMATE	methamphetamine racemate	(±)-*N*,α-dimethylphenethylamine
PM 006	72-44-6	METHAQUALONE		2-methyl-3-*o*-tolyl-4(3*H*)-quinazolinone
PM 007	113-45-1	METHYLPHENIDATE		methyl α-phenyl-2-piperidine acetate
PP 005	77-10-1	PHENCYCLIDINE	PCP	1-(1-phenylcyclohexyl)piperidine
PP 006	134-496	PHENMETRAZINE		3-methyl-2-phenylmorpholine
PS 001	76-73-3	SECOBARBITAL		5-allyl-5-(1-methylbutyl)barbituric acid
PZ 001	34758-83-3	ZIPEPROL		α-(α-methoxybenzyl)-4-(β-methoxyphenethyl)-1-piperazineethanol

[a] This international non-proprietary name refers to only one of the stereochemical variants of *delta*-9-tetrahydrocannabinol, namely (-)-*trans*-*delta*-9-tetrahydrocannabinol.

Substances in Schedule III

IDS Codes	*CAS Number*	*International non-proprietary name*	*Other non-proprietary or trivial names*	*Chemical name*
PA 002	57-43-2	AMOBARBITAL		5-ethyl-5-isopentylbarbituric acid
PB 006	52485-79-7	BUPRENORPHINE		2l-cyclopropyl-7-α-[(S)-1-hydroxy-1,2,2-trimethylpropyl]-6,14-endo-ethano-6,7,8,14-tetrahydrooripavine
PB 004	77-26-9	BUTALBITAL		5-allyl-5-isobutylbarbituric acid
PC 009	492-39-7	CATHINE	(+)-norpseudoephedrine	(+)-(*S*)-α-[(*S*)-1-aminoethyl]benzyl alcohol
PC 001	52-31-3	CYCLOBARBITAL		5-(1-cyclohexen-1-yl)-5-ethylbarbituric acid
PF 002	1622-62-4	FLUNITRAZEPAM		5-(*o*-fluorophenyl)-1,3-dihydro-1-methyl-7-nitro-2*H*-1,4-benzodiazepin-2-one
PG 001	77-21-4	GLUTETHIMIDE		2-ethyl-2-phenylglutarimide
PP 014	55643-30-6	PENTAZOCINE		(2*R**,6*R**,11*R**)-1,2,3,4,5,6-hexahydro-6,11-dimethyl-3-(3-methyl-2-butenyl)-2,6-methano-3-benzazocin-8-ol
PP 002	76-74-4	PENTOBARBITAL		5-ethyl-5-(1-methylbutyl)barbituric acid

Substances in Schedule IV

IDS Codes	*CAS Number*	*International non-proprietary name*	*Other non-proprietary or trivial names*	*Chemical name*
PA 005	52-43-7	ALLOBARBITAL		5,5-diallylbarbituric acid
PA 004	28981-97-7	ALPRAZOLAM		8-chloro-1-methyl-6-phenyl-4*H*-*s*-triazolo[4,3-*a*][1,4]benzodiazepine
PA 001	90-84-6	AMFEPRAMONE	diethylpropion	2-(diethylamino)propiophenone
PA 006	2207-50-3	AMINOREX		2-amino-5-phenyl-2-oxazoline
PB 001	57-44-3	BARBITAL		5,5-diethylbarbituric acid
PB 002	156-08-1	BENZFETAMINE	benzphetamine	*N*-benzyl-*N*,*α*-dimethylphenethylamine
PB 003	1812-30-2	BROMAZEPAM		7-bromo-1,3-dihydro-5-(2-pyridyl)-2*H*-1,4-benzodiazepin-2-one
PB 007	57801-81-7	BROTIZOLAM		2-bromo-4-(*o*-chlorophenyl)-9-methyl-6*H*-thieno[3,2-*f*]-*s*-triazolo[4,3-*a*][1,4]diazepine
PB 005	77-28-1	BUTOBARBITAL	butobarbital	5-butyl-5-ethylbarbituricacid
PC 002	36104-80-0	CAMAZEPAM		7-chloro-1,3-dihydro-3-hydroxy-1-methyl-5-phenyl-2*H*-1,4-benzodiazepin-2-one dimethylcarbamate (ester)
PC 003	58-25-3	CHLORDIAZEPOXIDE		7-chloro-2-(methylamino)-5-phenyl-3*H*-1,4-benzodiazepine-4-oxide
PC 004	22316-47-8	CLOBAZAM		7-chloro-1-methyl-5-phenyl-1*H*-1,5-benzodiazepine-2,4(3*H*,5*H*)-dione
PC 005	1622-61-3	CLONAZEPAM		5-(*o*-chlorophenyl)-1,3-dihydro-7-nitro-2*H*-1,4-benzodiazepin-2-one
PC 006	23887-31-2	CLORAZEPATE		7-chloro-2,3-dihydro-2-oxo-5-phenyl-1*H*-1,4-benzodiazepine-3- carboxylic acid
PC 007	33671-46-4	CLOTIAZEPAM		5-(*o*-chlorophenyl)-7-ethyl-1,3-dihydro-1-methyl-2*H*-thieno[2,3-*e*]-1,4-diazepin-2-one
PC 008	24166-13-0	CLOXAZOLAM		10-chloro-11b-(*o*-chlorophenyl)-2,3,7,11b-tetrahydro-oxazolo-[3,2-*d*][1,4]benzodiazepin-6(5*H*)-one
PD 005	2894-67-9	DELORAZEPAM		7-chloro-5-(*o*-chlorophenyl)-1,3-dihydro-2*H*-1,4-benzodiazepin-2-one
PD 006	439-14-5	DIAZEPAM		7-chloro-1,3-dihydro-1-methyl-5-phenyl-2*H*-1,4-benzodiazepin- 2-one
PE 003	29975-16-4	ESTAZOLAM		8-chloro-6-phenyl-4*H*-*s*-triazolo[4,3-*a*][1,4]benzodiazepine
PE 001	113-18-8	ETHCHLORVYNOL		1-chloro-3-ethyl-1-penten-4-yn-3-ol
PE 002	126-52-3	ETHINAMATE		1-ethynylcyclohexanolcarbamate
PE 004	29177-84-2	ETHYL LOFLAZEPATE		ethyl 7-chloro-5-(*o*-fluorophenyl)-2,3-dihydro-2-oxo-1*H*-1,4-benzodiazepine-3-carboxylate
PE 005	457-87-4	ETILAMFETAMINE	*N*-ethylamphetamine	*N*-ethyl-*α*-methylphenethylamine
PF 004	1209-98-9	FENCAMFAMIN		*N*-ethyl-3-phenyl-2-norbornanamine
PF 006	16397-28-7	FENPROPOREX		(±)-3-[(*α*-methylphenylethyl)amino]propionitrile
PF 001	3900-31-0	FLUDIAZEPAM		7-chloro-5-(*o*-fluorophenyl)-1,3-dihydro-1-methyl-2*H*-1,4-benzodiazepin-2-one
PF 003	17617-23-1	FLURAZEPAM		7-chloro-1-[2-(diethylamino)ethyl]-5-(*o*-fluorophenyl)-1,3-dihydro-2*H*-1,4-benzodiazepin-2-one
PG 002	591-81-1		GHB	γ-hydroxybutyric acid
PH 001	23092-17-3	HALAZEPAM		7-chloro-1,3-dihydro-5-phenyl-1-(2,2,2-trifluoroethyl)-2*H*-1,4-benzodiazepin-2-one
PH 002	59128-97-1	HALOXAZOLAM		10-bromo-11b-(*o*-fluorophenyl)-2,3,7,11b-tetrahydrooxazolo[3,2-*d*] [1,4]benzodiazepin-6(5*H*)-one

IDS Codes	*CAS Number*	*International non-proprietary name*	*Other non-proprietary or trivial names*	*Chemical name*
PK 001	27223-35-4	KETAZOLAM		11-chloro-8,12b-dihydro-2,8-dimethyl-12b-phenyl-4*H*-[1,3]oxazino[3,2-*d*][1,4]benzodiazepin-4,7(6*H*)-dione
PL 001	7262-75-1	LEFETAMINE	SPA	(–)-*N,N*-dimethyl-1,2-diphenylethylamine
PL 003	61197-73-7	LOPRAZOLAM		6-(*o*-chlorophenyl)-2,4-dihydro-2-[(4-methyl-1-piperazinyl) methylene]-8-nitro-1*H*-imidazo[1,2-*a*][1,4]benzodiazepin-1-one
PL 004	846-49-1	LORAZEPAM		7-chloro-5-(*o*-chlorophenyl)-1,3-dihydro-3-hydroxy-2*H*-1,4-benzodiazepin-2-one
PL 005	848-75-9	LORMETAZEPAM		7-chloro-5-(*o*-chlorophenyl)-1,3-dihydro-3-hydroxy-1-methyl-2*H*-1,4-benzodiazepin-2-one
PM 001	22232-71-9	MAZINDOL		5-(*p*-chlorophenyl)-2,5-dihydro-3*H*-imidazo[2,1-*a*]isoindol-5-ol
PM 010	2898-12-6	MEDAZEPAM		7-chloro-2,3-dihydro-1-methyl-5-phenyl-1*H*-1,4-benzodiazepine
PM 012	17243-57-1	MEFENOREX		*N*-(3-chloropropyl)-*α*-methylphenethylamine
PM 003	57-53-4	MEPROBAMATE		2-methyl-2-propyl-1,3-propanedioldicarbamate
PM 018	34262-84-5	MESOCARB		3-(*α*-methylphenethyl)-*N*-(phenylcarbamoyl)sydnone imine
PM 008	115-38-8	METHYLPHENOBARBITAL		5-ethyl-1-methyl-5-phenylbarbituric acid
PM 009	125-64-4	METHYPRYLON		3,3-diethyl-5-methyl-2,4-piperidine-dione
PM 016	59467-70-8	MIDAZOLAM		8-chloro-6-(*o*-fluorophenyl)-1-methyl-4*H*-imidazo[1,5-*a*][1,4]benzodiazepine
PN 001	2011-67-8	NIMETAZEPAM		1,3-dihydro-1-methyl-7-nitro-5-phenyl-2*H*-1,4-benzodiazepin-2-one
PN 002	146-22-5	NITRAZEPAM		1,3-dihydro-7-nitro-5-phenyl-2*H*-1,4-benzodiazepin-2-one
PN 003	1088-11-5	NORDAZEPAM		7-chloro-1,3-dihydro-5-phenyl-2*H*-1,4-benzodiazepin-2-one
PO 001	604-75-1	OXAZEPAM		7-chloro-1,3-dihydro-3-hydroxy-5-phenyl-2*H*-1,4-benzodiazepin-2-one
PO 002	24143-17-7	OXAZOLAM		10-chloro-2,3,7,11b-tetrahydro-2-methyl-11b-phenyloxazolo[3,2-*d*][1,4]benzodiazepin-6(5*H*)-one
PP 020	2152-34-3	PEMOLINE		2-amino-5-phenyl-2-oxazolin-4-one
PP 004	634-03-7	PHENDIMETRAZINE		(+)-(2*S*,3*S*)-3,4-dimethyl-2-phenylmorpholine
PP 008	50-06-6	PHENOBARBITAL		5-ethyl-5-phenylbarbituric acid
PP 009	122-09-8	PHENTERMINE		*α*,*α*-dimethylphenethylamine
PP 015	52463-83-9	PINAZEPAM		7-chloro-1,3-dihydro-5-phenyl-1-(2-propynyl)-2*H*-1,4-benzodiazepin-2-one
PP 010	467-60-7	PIPRADROL		1,1-diphenyl-1-(2-piperidyl)methanol
PP 016	2955-38-6	PRAZEPAM		7-chloro-1-(cyclopropylmethyl)-1,3-dihydro-5-phenyl-2*H*-1,4-benzodiazepin-2-one
PP 019	3563-49-3	PYROVALERONE		4'-methyl-2-(1-pyrrolidinyl)valerophenone
PS 003	125-40-6	SECBUTABARBITAL		5-*sec*-butyl-5-ethylbarbituric acid
PT 003	846-50-4	TEMAZEPAM		7-chloro-1,3-dihydro-3-hydroxy-1-methyl-5-phenyl-2*H*-1,4-benzodiazepin-2-one
PT 004	10379-14-3	TETRAZEPAM		7-chloro-5-(1-cyclohexen-1-yl)-1,3-dihydro-1-methyl-2*H*-1,4-benzodiazepin-2-one
PT 005	28911-01-5	TRIAZOLAM		8-chloro-6-(*o*-chlorophenyl)-1-methyl-4*H*-*s*-triazolo[4,3-*a*][1,4] benzodiazepine
PV 001	2430-49-1	VINYLBITAL		5-(1-methylbutyl)-5-vinylbarbituric acid
PZ 002	82626-48-0	ZOLPIDEM		N,N,6-trimethyl-2-*p*-tolylimidazo[1,2-*a*]pyridine-3-acetamide

References

AIHW National Hospital Morbidity Database. Separation, patient day and average length of stay statistics by principal diagnosis in ICD-10-AM, Australia, 1998-99 to 2007-08. From: http://d01.aihw.gov.au/cognos/cgi-bin/ppdscgi.exe?DC=Q&E=/AHS/pdx0708

Al-Karkhi, M.D. A. (2010). Non-Medical use of prescription drugs: Awareness and preventions. Delivered at the Technical Consultation Meeting organized by UNODC in June 2010. Presentation accessed at: www.unodc.org/docs/treatment/PDmtg/Mohamed.pdf

Amato L., Minozzi S., Davoli M., Vecchi S., Ferri M. and Mayet S. (2004). Psychosocial and pharmacological treatments versus pharmacological treatments for opioid detoxification. Cochrane Database Systematic Review.(4): CD005031

Arria A. M., Caldeira K. M., O'Grady K. E., Vincent K. B., Johnson E. P., Wish E.D. Non-medical use of prescription stimulants among college students: Associations with attention-deficit-hyperactivity disorder and polydrug use. *Pharmacotherapy*. 2008;28(2):156–169.

Arria A. M., Caldeira K. M., Vincent K. B., O'Grady K. E. and Wish E. D. (2008). Perceived harmfulness predicts non-medical use of prescription drugs among college students: Interactions with sensation-seeking. *Prevention science: the official journal of the Society for Prevention Research,* 9(3):191-201.

Arria, A. M., Caldeira, K.M., Kasperski, S. J., O'Grady, K. E., Vincent, K. B., Griffiths, R. R., and Wish, E.D. (2010). Increased Alcohol Consumption, Non-medical Prescription Drugs use, and Illicit Drug Use Are Associated with Energy Drink Consumption Among College Students. *Addiction Medicine* 4(2): 74-80.

Australian Government Australian Institute on Health and Welfare. (2007). National Drug Strategy Household Survey 2007, Australia.

Basca, B. (2008). Youth Prescription Drug Abuse: A Growing Problem. *Prevention Tactics,* 9 (1): 1-8

Berge, K. H. MD; Seppala, M. D. MD; Schipper, A. M. JD. (2009). Chemical Dependency and the Physician. Mayo Clinic Proceedings. July 2009; 84 (7): 625-631.

Beyer, L., Crofts, N. and Reid, G. (2002). Drug offending and criminal justice responses: practitioners' perspectives. *International Journal of Drug Policy,* 13, 203-211.

Bisaga, A., 2008. Benzodiazepines an other sedatives and hypnotics. In: Galanter, M., Kleber, H. (Eds.), *Textbook of substance abuse treatment.* Fourth edition. American Psychiatric Publishing, Washington, D.C., London, England. pp. 215-236.

Bisaga, A. (2010). Presentation: Helping physicians diagnose and treat addiction to prescription drugs. Delivered at the Technical Consultation Meeting organized by UNODC in June 2010. Presentation accessed at: www.unodc.org/docs/treatment/PDmtg/Bisaga.pdf

Butler, S. F., Fernandeza, K., Benoita, C., Budmana, S.H., Jamison, R.B. (2008). Validation of the Revised Screener and Opioid Assessment for Patients with Pain (SOAPP-R). J Pain. 2008 April ; 9(4): 360–372.

The California State Task Force on Prescription Drug Misuse, 2009 (2009). Summary Report and Recommendations on: Prescription Drugs: Misuse, Abuse and Dependency. California Department of Alcohol and Drug Programmes.

CASA, National Center on Addiction and Substance Abuse (2005). Under the Counter: The Diversion and Abuse of Controlled prescription drugs in the U. S.

Chou R., Fanciullo G. J., Fine P. G., Miaskowski C., Passik S. D., Portenoy R. K. Opiods for chronic non cancer pain: prediction and identification of aberrant drug-related behaviors: a review of the evidence for an American Pain Society and American Academy of pain Medicine clinical practice guideline. *Journal of Pain*, 2009. Feb: 10 (2): 131-146.

J.D., Compton W. M., Gfroerer J. C., Condon T. Projecting drug use among aging baby boomers in 2020. *Annals Epidemiology.* 2006 April: 16 (4): 257-65).

Collopy, P. B. , Jennings, B. (1991). New Directions in Nursing Home Ethics The Hastings Center Report, 21: 1-8

Colliver, Compton, Wilson M., Volkow, Nora D. (2006) Commentary: Major increases in opioid analgesic abuse in the United States: Concerns and strategies. *Drug and Alcohol Dependence.* Volume 81, Issue 2, 1 February 2006, Pages 103-107

Compton, W.M. and Volkow, N.D. (2006). Abuse of prescription drugs and the risk of addiction. *Drug and Alcohol Dependence* 83S (2006) S4-S7.

Cutajar M.C., Mullen P.E., Ogloff J.R. et al. Psychopathology in a large cohort of sexually abused children followed up to 43 years. *Child Abuse Negl.* 2010 Nov;34(11):813-22.

Dabner, D. A. and Hollinger, R. C. (1999) Illicit Prescription Drug Use among Pharmacists. *Work and Occupations*, 26(1):77-106

Dangerous Drugs Board Annual Report 2009. Most Commonly Used Drugs/Substances (Facility-based).

Dangerous Drugs Board. (2009). A Follow-up Study on Nalbuphine Hydrochloride Abuse in the Philippines, 2009.

DesRoches, C.M., Rao, S.R., Fromson, J.A., Bimbaum, R.J., Iezzoni, L., Vogeli, C. and Campbell, E.G. (2010). Physicians' perceptions, preparedness for reporting, and experiences related to impaired and incompetent colleagues. *Journal of American Medical Association* 2010. July 14: 304 (2): 187-93.

Dobbin, M. (2010). Presentation: Pharmaceutical drugs: maintaining appropriate use while preventing Diversion. Delivered at the Technical Consultation Meeting organized by UNODC in June 2010. Presentation accessed at: www.unodc.org/docs/treatment/PDmtg/Malcom.pdf

Drug Abuse Warning Network. Dawn Report June 18 2010. Trends in Emergency Department Visits Involving Non-medical Use of Narcotic Pain Relievers.

Drug Abuse Warning Network. Dawn Report November 25 2010. Drug-Related Emergency Department Visits Involving Pharmaceutical Misused and Abuse by Older Adults.

Edlund M.J., Martin B.C., Fan M.Y. et al. Risks for opioid abuse and dependence among recipients of chronic opioid therapy: Results from the TROUP Study. Drug Alcohol Depend. 2010;112:90-8.

EMCDDA Annual Report 2009. Accessed at: www.emcdda.europa.eu/publications/annual-report /2009

EMCDDA Statistical Bulletin 2009. Accessed at: www.emcdda.europa.eu/stats09 Instituto Nacional de Salud Pública. (2008) Encuesta Nacional de Adicciones. Gobierno Federal.

Enhancing, not cheating. *Nature.* 2007; 450 (7168): 320

EMCDDA, Poly Drug Use: Patterns and responses, selected issues, 2009.

EMCDDA Annual Report 2010. Accessed at: www.emcdda.europa.eu/publications/annual-report /2010

ESPAD (2007). The 2007 ESPAD report. Substance use among students in 35 countries. Accessed at: www.espad.org/documents/Espad/ESPAD_reports/2007/The_2007_ESPAD_Report-FULL _091006.pdf

Face Up: Newsletter of the Sydney MSIC issue 9, 2009.

Faggiano F., Vigna-Taglianti F., Versino E., Zambon A., Borraccino A., Lemma P. (2005). School-based prevention for illicit drugs' use. Cochrane Database of Systematic Reviews 2005, Issue 2. Art. No.: CD003020. DOI: 10.1002/14651858.CD003020.pub2.

Ford, J. A. and Schroeder, R. D. (2009). Academic Strain and Non-Medical Use of Prescription Stimulants among College Students. *Deviant Behavior*, 30(1):26-53

Ford, J. A. (2008). Non-medical Prescription Drug Use and Delinquency: An analysis with a national sample. *Drug Issues*, 38(2): 493-516

Fortuna, R.J., Robins, B.W., Caiola, E., Joynt, M., Halterman, J.S. (2010).Prescribing of Controlled Medications to Asolescents and Young Adults in the United States. *Pediatrics.* November 29. 2010.

Fountain, J., et al., Diversion tactics: How a sample of drug misusers in treatment obtained surplus drugs to sell on the illicit market. *International Journal of Drug Policy*, 1998. 9(3): p. 159-167.

Foxcroft D., Ireland D., Lowe G., Breen R. Primary prevention for alcohol misuse in young people (2002). Cochrane Database of Systematic Reviews 2002, Issue 3. Art. No.: CD003024. DOI: 10.1002/14651858.CD003024.

Franco J. A., Pecci C. (2007), Self-medication, the new silence epidemic. Studies in patients of clinical practice and mental health, *Vertex*. 2007 Sep-Oct;18(75):344-53.

Gaffney A. et al., Drug use monitoring in Australia: 2008 annual report on drug use among police detainees, Australian Institute of Criminology 2010

Gallegos K. V., Browne C. H., Veit F.W., Talbott G.D. Addiction in anesthesiologists: drug access and patterns of substance abuse. *QRB Qual Rev Bull.* 1988;14(4):116-122.

Garret, F. P. (2009) www. bma-wellness. com/papers/Prescription_Abuse. html

Gates S., McCambridge J., Smith L.A., Foxcroft D. (2006). Interventions for prevention of drug use by young people delivered in non-school settings. Cochrane Database of Systematic Reviews 2006, Issue 1. Art. No.: CD005030. DOI: 10.1002/14651858.CD005030.pub2.

Grabowski, J., Rhoades, H., Schmitz, J., Stotts, A., Daruzska, L. A., Creson, D., Moeller, F. G. Dextroamphetamine for Cocaine-Dependence Treatment: A Double-Blind Randomized Clinical Trial. *Journal of Clinical Psychopharmacology:* October 2001 - Volume 21 - Issue 5-pp 522-526 Brief Reports.

Griffin K. W., Botvin G. J., Nichols T.R. (2006). Effects of a school-based drug abuse prevention program for adolescents on HIV risk behavior in young adulthood. Prev Sci. 2006 Mar; 7(1):103-12.

Hahn, K. L. (2009). The role of pharmacists in pain management. *Journal of Pain and Palliative Care Pharmacotherapy,* 23(4): 414-418

Hahn, K. L. (2009). The Roles of Pharmacists in Pain Management. *Journal of Pain and Palliative Care Pharmacotherapy,* 23(4): 414-418

Havens, J. et al. (2010). Archives of Pediatrics and Adolescent Medicine.

Herman-Stahl, M. , Krebs, C. Kroutil, L. Heller, D. Risk and Protective Factors for Non-medical use of Prescription Stimulants and Methamphetamine among Adolescents. *Journal of Adolescent Health*, 39(3): 374-380

Howard, M. M.,Weiler, R. M. and Haddox, J. D. (2009). Development and Reliability of Items Measuring the Non-medical use of prescription drugs for the youth Risk Behavior Survey: Results From an Initial Pilot Test, *Journal of School Health,* 79 (11): 554-560.

Hsu, L. N. and du Guerney, J. (1995). Towards a gender-sensitive approach to drug demand reduction: a process within the United Nations system. Retrieved from: www. unodc. org/unodc/en/data-and-analysis/bulletin/bulletin_1995-01-01_1_page003. html

Ignatoff, A. (2005). Preventing Drug Misuse in Seniors. Retrieved from http://seniorjournal. com/NEWS/Health/5-07-13DrugMisuse. htm on January 8, 2010. Retreived from http://www. science-blog. com/cms/blog/3167-understanding-prescription-drug-misuse-older-adults-17026. html, January 10, 2010

IDRIS: Australia Drug Trends, 2006

Inciardi J. A., Surratt H. L., Cicero T. J., Rosenblum A., Ahwah C., Bailey J. E., Dart R. C., Burke J. J. *Drug and Alcohol Dependence*. Prescription drugs purchased through the internet: Who are the users? 2010 Jul 1;110(1-2):21-9

The International Narcotics Control Board (2006) Annual Report, retrieved from www. incb. org/incb/en/annual_report_2006. html.

The International Narcotics Control Board (2008) Annual Report, retrieved from www. incb. org/incb/annual-report-2008. html

The International Narcotics Control Board (2009) Annual Report, retrieved from www.incb.org/incb/en/annual-report-2009.html

Jamison, R. N., Ross, E. L., Michna, E., Chen, L. Q., Holcomb, C., and Wasan, A.D. (2010). Substance misuse treatment for high-risk chronic pain patients on opioid therapy: A randomized trial. *Pain*, 150(3), 390-400.

Johnston L. D., O'Malley P. M., Bachman J. G., et al. Monitoring the Future National Survey Results on Drug Use: Overview of Key Findings. Bethesda, Md: National Institute on Drug Abuse; 2008.

Johnston L. D., O'Malley P. M., Bachman J. G., Schulenberg J.E. Monitoring the Future National Survey Results on Drug Use, 1975–2005, Volume II: College Students and Adults Ages 19–45. Bethesda, MD: National Institute on Drug Abuse; 2006. NIH Publication 06–5884.

Johnston, L. D., O'Malley, P. M. , Bachman, J. G., and Schulenberg, J. E. (December 14, 2009). "Teen marijuana use tilts up, while some drugs decline in use. " University of Michigan News Service: Ann Arbor, MI. Retrieved from www. monitoringthefuture.org, January 14, 2010.

Kamien, M., "Doctor shoppers": at risk by any other name. *Medical Journal of Australia,* 2004. 180(5): p. 204-5

Kleinschmidt, R., J. Price, and K. Caught, Doctor Shopping. *Australian Family Physician*, 1995. 24(6): p. 1037-41.

Kreek M. J, Nielsen D. A., Butelman E. R., LaForge K. S. Genetic influences on impulsivity, risk taking, stress responsivity and vulnerability to drug abuse and addiction. *Nature Neuroscience*. 2005 Nov; 8(11):1450-7.

Lamb, S. E., Hansen, Z., Lall, R., Castelnuovo, E., Withers, E.J., Nichols, V., Potter, R., and Underwood M.R. (2010). Group cognitive behavioural treatment for low-back pain in primary care: randomised controlled trial and cost-effectiveness analysis. *Lancet*, 13; 375(9718):916-923.

Levenson, M. R. and Aldwin, C. M (2001). Prevention Tactics, 5 (1): 1-8

Litt, M.D., Shafer, D.M. and Kreutzer, D.L. (2010). Brief cognitive-behavioral treatment for TMD pain: Long-term outcomes and moderators of treatment. *Pain*, 151(1): 110-116.

Maryland Drug Early Warning System (DEWS), Center for Substance Abuse Research (CESAR) (2005), "New Student Drug Research (SDR) Survey Examines Prescription Stimulant Misues Amng College Students", DEWS Investigates.

McCabe S. E., West B., Wechsler H. Trends and college-level characteristics associated with the non-medical use of prescription drugs among U.S. college students from 1993 to 2001. *Addiction.* 2007;102:455–465.

McCabe, S. E., Brady, T. W., Morales, M., Cranford, J. A. and Boyd, C. J. (2007). Does early onset of non-medical use of prescription drugs predict subsequent prescription drug abuse and dependence? Results from a national study, *Addiction*,102(12):1920-1930.

McCauley, L. et al. (2009). Mental health and rape history in relation to non-medical use of prescription drugs in a national sample of women. *Addictive Behaviors*, 34(8): 641-648.

McLellan A. T., Skipper G. S., Campbell M., DuPont R. L.: Five year outcomes in a cohort study of physicians treated for substance use disorders in the United States. *BMJ* 2008; 337:2038

Merlo, L. J. (2008). Prescription Opioid Abuse and Dependence Among Physicians: Hypotheses and Treatment. *Harvard Review of Psychiatry*, 16 (3): 181 – 194

Merrick, A. (2009) The Wall Street Journal. Case Spurs Pharmacies' Fears of Lawsuits Over Drug Abuse retrieved from http://online.wsj.com/article/SB125668736789811845.html, January 11.

Monitoring the Future: National Survey Results on Drug Use, 1975-2009. Volume I: Secondary Students 2009. National Institute on Drug Abuse, National Institutes of Health, U.S. Department of Health and Human Services.

Monitoring the Future: National Results of Adolescent Drug Use. Overview of Key Findings 2009. National Institute on Drug Abuse, National Institutes of Health, U.S. Department of Health and Human Services.

Morasco B. J., Dobscha Steven K. (2008). Prescription medication misuse and substance use disorder in VA primary care patients with chronic pain *General Hospital Psychiatry* Volume 30, Issue 2, March-April 2008, Pages 93-99

Myers, B., Siegfried, N., and Parry, C. D. H. (2003). Over-the-counter and prescription medicine misuse in Cape Town-findings from specialist treatment centres. *South African Medical Journal*, 93(5): 367-370.

National Household Survey on Drug Abuse (NHSDA) (1996). United States Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. Office of Applied Studies. www.icpsr.umich.edu/icpsrweb/SAMHDA/studies/02391 cited in CASA, National Center on Addiction and Substance Abuse (2005). Under the Counter: The Diversion and Abuse of Controlled prescription drugs in the U. S

The National Center on Addiction and Substance Abuse (CASA) at Columbia University. (2005) Under the Counter: The Diversion and Abuse of Controlled prescription drugs in the U. S.

The National Center on Addiction and Substance Abuse (CASA) at Columbia University. (2003) Under the Counter: The Diversion and Abuse of Controlled prescription drugs in the U. S.

The National Center on Addiction and Substance Abuse at Columbia University. Under the Counter: The Diversion and Abuse of Controlled prescription drugs in the U. S. New York, NY: The National Center on Addiction and Substance Abuse at Columbia University; 2005.

National Institute on Drug Abuse (NIDA), NIDA Community Drug Alert Bulletin – prescription drugs, retrieved from www.nida.nih.gov/PrescripAlert/, January 22, 2010.

National Institute on Drug Abuse (NIDA). Research Report Series - prescription drugs: Abuse and Addiction, retrieved from www.drugabuse.gov/ResearchReports/Prescription/prescription7.html# TreatingJanuary 25, 2010.

National Survey on Drug Use and Health (2009). Trends in Non-medical use of Prescription Pain Relievers: 2002 to 2007, retrieved from www.oas.samhsa.gov/2k9/painRelievers/non-medicalTrends.htm, January 25, 2010.

The National Vital Statistics System data from the Centre for Disease Control In United States, July 2010. Unintentional Drug Poisoning in the United States.

New Zealand 2007-2008 Alcohol and Drug Use Survey (www.moh.govt.nz/moh.nsf/indexmh/drug-use-in-nz-key-results-of-the-0708-nzadus)

NDLERF (2007). Benzodiazepine and pharmaceutical opioid misuse and their relationship to crime. An examination of illicit prescription drug markets in Melbourne, Hobart and Darwin. Monograph series No.21. Funded by the National Drug Law Enforcement Research Fund. An initiative of the National Drug Strategy.

NIDA (2003). Preventing Drug Use among Children and Adolescents: A Research-Based Guide for Parents, Educators, and Community Leaders, Second Edition, National Institute on Drug Abuse, USA.

NIDA Research Report Series - Prescription Drugs: Abuse and Addiction. Trends in Prescription Drugs Use. Accessed at: www.drugabuse.gov/ResearchReports/prescription/prescription5. html, January 10, 2010

National Institute on Drug Abuse (NIDA), NIDA Community Drug Alert Bulletin – prescription drugs, NIDA website: www.nida.nih.gov/PrescripAlert/.

National Institute on Drug Abuse (NIDA), NIDA Community Drug Alert Bulletin – prescription drugs, NIDA website: www. nida. nih. gov/PrescripAlert/.

NIDA (2009). Principles of Drug Addiction Treatment. Research-Based Guide. National Institute on Drug Abuse National Institutes of Health U.S. Department of Health and Human Services. Second Edition (2009).

Northern Ireland Regional Drugs Task Force (Ireland) and Health and Social Services Board. Drug use in Ireland and Northern Ireland, 2006/07; Drug prevalence survey: Regional Drugs Task Force (Ireland) and Health and Social Services Board (Northern Ireland) Results.

Novak, S. P. , Herman-Stahl, M. , Flannery, B. and Zimmerman, M. (2009). Physical pain, common psychiatric and substance use disorders, and the non-medical use of prescription analgesics in the United States. *Drug and Alcohol Dependence*, 100(1-2): 63-70

Observatorio Argentina de Drogas. (2010) Psicofármacos: ¿tratamiento o automedicación? Boletin Informativo. Año 2 - Nº19 - Noviembre '10. 2010.

Observatorio Argentina de Drogas/Secretario de Programación para la prevención de la drogadicción y la Lucha contra Narcotráfico (2009). Estudio nacional sobre el consumo de sustancias psicoactivas y su relación con la comisión de delitos en población privada de libertad. Argentina 2009.

Odejide, A. O. (2006) Status of Drug Use/Abuse in Africa: A Review. *International Journal of Mental Health and Addiction,* 4(2): 87-102.

Parasrampuria, D., et al., Assessment of pharmacokinetics and pharmacodynamic effects related to abuse potential of a unique oral osmotic-controlled extended-release methylphenidate formulation in humans. *Journal of Clinical Pharmacology,* 2007. 47(12): p. 1476-1488

Partanen T. A., Vikatmaa P., Tukiainen E. et al. Outcome after injections of crushed tablets in intravenous drug abusers in the Helsinki University Central Hospital. *European Journal of Vascular and Endovascular Surgery:* The official source 2009 Jun;37(6):704-11.

Partnership Attitude Tracking Survey Teen Report (2004). Generation Rx: National Study Reveals New Category of Substance Abuse Emerging: Teens Abusing Rx and OTC Medications Intentionally to Get High. The Partnership for a Drug Free America.

Patterson, L. (2003). Prescription Drug Abuse and Misuse in the Elderly. National Institute of Mental Health. Center Grants P30 MH 49693, MH45131. Retrieved from www.nihm.gov on January 8, 2010.

Patterson, T. L. and Jeste, D. V. (1999). The potential impact of the baby-boom generation on substance abuse among elderly persons. *Psychiatric Services*, 50, 1184-1188.

Prescription for Danger: A report on the troubling trend of prescription and over-the-counter drug abuse among the nation's teens, office of national drug control (2008). Retrieved from www.theantidrug.com/pdfs/prescription_report.pdf, January 22, 2010.

Prescription for Disaster: How Teens Abuse Medicine. (Dec 2008). DEA: Get Smart About Drugs. Retrieved from www. getsmartaboutdrugs. com, January 22, 2010

Quintero, G.; Peterson, J.; and Young, B. "An Exploratory Study of Socio-cultural Factors Contributing to Prescription Drug Misuse among College Students. " *Journal of Drug Issues* 22: 903–926, 2006.

Report of the International Narcotics Control Board for 2000 (United Nations publication, Sales No. E. 01. XI. 1), para. 33 (d).

Richard A. D. et al. (2008). Addressing the Intersecting Problems of Opioid Misuse and Chronic Pain Treatment. *Experimental and Clinical Psychopharmacology*, 16(5): 417-428.

SAHMSA 2006 National Survey on Drug Use and Health. Results from the 2006 National Survey on Drug Use and Health: Volume I. Summary of National Findings. U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES Substance Abuse and Mental Health Services Administration Office of Applied Studies

SAHMSA 2007 National Survey on Drug Use and Health. Results from the 2007 National Survey on Drug Use and Health: Volume I. Summary of National Findings. U.S. Department Of Health And Human Services Substance Abuse and Mental Health Services Administration Office of Applied Studies retrieved from http://oas.samhsa.gov/nsduh/reports.htm#2k7

SAHMSA 2008 National Survey on Drug Use and Health. Results from the 2008 National Survey on Drug Use and Health: Volume I. Summary of National Findings. U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES Substance Abuse and Mental Health Services Administration Office of Applied Studies retrieved from http://ncadistore.samhsa.gov/catalog/productDetails.aspx?ProductID=17934

SAHMSA 2009 National Survey on Drug Use and Health. Results from the 2009 National Survey on Drug Use and Health: Volume I. Summary of National Findings. U.S. Department Of Health And Human Services Substance Abuse and Mental Health Services Administration Office of Applied Studies retrieved from http://oas.samhsa.gov/NSDUH/2k9NSDUH/2k9Results.htm

Savage S. R., Joranson D. R., Covington E. C., Schnoll S. H., Heit H. A. and Gilson A.M. Definitions Related to the Medical Use of opioids: Evolution towards universal Agreement. *Journal of Pain and Symptom Management.* 26:655-667, 2003.

Savage, S. R. (2009) Management of opioid medications in patients with chronic pain and risk of substance misuse. *Current Psychiatry Reports* 2009: 11(5) 377-384.

Sellers, E., et al., Relative abuse potential of opioid formulations in Canada: a structured field study. *Journal of Opioid Management,* 2006. 2(4): p. 219-227.

Shand F.L., Degenhardt L., Slade T., Nelson E.C.. Sex differences amongst dependent heroin users: Histories, clinical characteristics and predictors of other substance dependence. *Addictive Behavior* 201;36:27-36.

Sheridan, J. and Butler, R. 2008. Prescription Drug Misuse: issues for primary care. University of Auckland, School of Pharmacy. Accessed at: www.ndp.govt.nz/moh.nsf/indexcm/ndp-publications -prescriptiondrugmisuse?Open.

Simoni-Wastila L. and Strickler G. (1997). Gender and the non-medical use of prescription drugs. Abstr Book Assoc Health Serv Res Meet, 14: 91-2.

Simoni-Wastila, L. (2003). Prescription Drug Non-medical use and Abuse in Older Women. National Institute of Drug Abuse. Retrieved from http://search2. google.cit.nih.gov/search?q=ELDER+DRUG+MISUSE&site=NIDA&c. . . on January 8, 1010.

Simoni-Wastila, L. (2004a). Gender and Other Factors Associated with the Non-medical use of Abusable prescription drugs. *Substance Use and Misuse*, 39(1): 1-23

Simoni-Wastila, L., et al., (2004b). A retrospective data analysis of the impact of the New York triplicate prescription program on benzodiazepine use in medicaid patients with chronic psychiatric and neurologic disorders. *Clinical Therapeutics,* 2004b. 26(2): p. 322-336.

Spoth, R. , Trudeau, L. , Shin, C. and Redmond, C. (2008). Long-term effects of universal preventive interventions on prescription drug misuse. *Addiction* 103, 1160–8.

Statement on Prescription Drug abuse by Nora D. Volkow, M. D. Director, National Institute on Drug Abuse National Institutes of Health, U. S. Department of Health and Human Services before The Subcommittee on Criminal Justice, Drug Policy, and Human Resources Committee on Government Reform U. S. House of Representatives, Wednesday, July 26, 2006, retrieved from www.hhs.gov/asl/testify/t060726a. html, January 22 2010

Storr, C. L., Trinkoff, A.M., and Anthony, J.C. (1999). Job strain and non-medical drug use. *Drug and Alcohol Dependence*, 55(1/2), 45-51.

Substance Abuse and Mental Health Services Administration. Non-medical use of Prescription Pain Relievers. The NSDUH Report. Office of Applied Studies. 2004. [(accessed 10 August 2005)]. Available at: http://oas.samhsa.gov/2k4/pain/pain. pdf.

The Drug Abuse Warning Network (DAWN), Drug-related visits to hospital emergency departments, 2000-2002, retrieved from https://dawninfo. samhsa. gov/data/default. asp, January 12, 2010.

Teter C. J., McCabe S. E., Cranford J. A., Boyd C. J., Guthrie S. K. Prevalence and motivations for the illicit use of prescription stimulants in an undergraduate student sample. *Journal of American College Health* 2005; 53:253-262.

Trinkoff A. M., Storr C. L., Wall M. P. (1999). Prescription-type drug misuse and workplace access among nurses. *Journal of Addictive Diseases* 1999;18(1):9-17.

Tobler, Nancy S., Roona, Michael R., Ochshorn, Peter, Marshall, Diana G., Streke, Andrei V., Stackpole, Kimberly M. (2000). School-Based Adolescent Drug Prevention Programs: 1998 Meta-Analysis. *The Journal of Primary Prevention*, Volume 20, Number 4, 275-336, DOI: 10.1023/A:1021314704811.

The Treatment Episode Data Set (TEDS) September 23 2010. Characteristics of Substance Abuse Treatment Admissions Reporting Primary Abuse of Prescription Pain Relievers: 1998 and 2008.

Trinkoff, A. M., Storr. C. L., Wall, M. P. 1999). Job strain and non-medical drug use. *Drug and Alcohol Dependence,* 55 (1): 45-51

United Nations (2010), Youth at the United Nations, retrieved from www.un.org/esa/socdev/unyin/wpaydrug. htm, January 11, 2010

United Nations Office on Drugs and Crime (2009). World Drug Report 2009. Retrieved from www.unodc.org/documents/wdr/WDR_2009/WDR2009_eng_web.pdf, December 20, 2010.

United Nations, Report of the International Narcotics Control Board for 2008, retrieved from www.incb.org/incb/annual-report-2008.html, January 12, 2010.

United States, Office of National Drug Control Policy, Current State of Drug Policy: Successes and Challenges(Washington D. C. , March 2008), p.7.

UNODC (2004). Schools: school-based education for drug abuse prevention. United Nations Office on Drugs and Crime, Austria.

UNODC (2007a). Problem Drug Use in Uzbekistan. National Assessment for Drug Abuse 2006.

UNODC (2007b). Problem Drug Use in Kyrgyzstan. National Assessment for Drug Abuse 2006.

UNODC (2007c). Problem Drug Use in Kazakhstan. National Assessment for Drug Abuse 2006.

UNODC (2007d), Rapid Situation and Response Assessment of drugs and HIV in Bangladesh, India, Nepal and Sri Lanka, A Regional Report, United Nations Office on Drugs and Crime, New Delhi.

UNODC (2007e) Global Assessment Programme on Drug Use/Ministry of Narcotics Control of the Government of Pakistan, Anti-Narcotics Force of the Government of Pakistan, Problem Drug Use in Pakistan, Results from the year 2006 National Assessment, Tashkent, 2007.

UNODC and the Paris Pact Initiative (2008), Illicit Drug Trends in Pakistan, April 2008.

UNODC (2009), Guide to implementing family skills training programmes for drug abuse prevention, United Nations Office on Drugs and Crime, Austria.

UNODC (2009a) Patterns and trends of amphetamine-type stimulants and other drugs in East and South-East Asia and neighbouring regions. a report from the global SMART Programme, Thailand)

UNODC (2009b), Drug Use in Afghanistan: 2009 Survey Executive summary. United Nations Office on Drugs and Crime.

UNODC (2010a), New Challenges, Strategies And Programmes In Demand Reduction, Conference Room Paper to the Commission on Narcotic Drugs, Commission on Narcotic Drugs, Fifty-third session, Item 3 of the provisional agenda, Vienna, 8-12 March 2010, E/CN.7/2010/CRP.3.

UNODC (2010b), World Drug Report, United Nations Office on Drugs and Crime, Austria.

Volkow, N. D., M.D. Director National Institute on Drug Abuse National Institutes of Health

U.S. Department of Health and Human Services Statement (2006). by (Volkow, N D.olkow, N D.) on Prescription Drug Abuse before The Subcommittee on Criminal Justice, Drug Policy, and Human Resources Committee on Government Reform U.S. House of Representatives

Volkow, N. D., Fowler, J. S., Logan, J., Alexoll, D., Zhu, W., Telange, F., W., G-J., Jayne, M., Hooker,

J. M., Wong, C., Hubbard, B., Carter, P., Warner, D., King, P., Shea, C., Xu, Y., Muench, L. and Apelskog-Torres, K. (2009).Effects of Modafinil on Dopamine and Dopamine Transporters in the Male Human Brain Clinical Implications. *JAMA*, March 18, 2009-Vol 301, No.11

Weaver, M.F. and Schnoll, S.H., Drug overdose and withdrawal syndromes. *Current Opinion in Critical Care* 2: 242-247, 1996

World Population Ageing: 1950-2050, United Nations Population Division, Department of Economic and Social Affairs, retreived from www.un.org/esa/population/publications/worldageing 19502050/, January 10, 2010

World Programme of Action for Youth on Drug Abuse (1995). Retrieved from www.un.org/esa/socdev/unyin/wpaydrug. htm, January 10.

World Programme of Action for Youth to the Year 2000 and Beyond, Retrieved from www. un.org/esa/socdev/unyin/documents/wpay. pdf, January 25, 2010.

Youth and the United Nations, retrieved from www.un.org/esa/socdev/unyin/wpaydrug.htm, January 25, 2010

Youth and the United Nations, retrieved from www. un. org/youth, January 25, 2010

World Health Organization (2009). Guidelines for the Psychosocially Assisted Pharmacological Treatment of Opioid Dependence. Geneva. Accessed at: www.who.int/substance_abuse/publications/opioid_dependence_guidelines.pdf

World Health Organization (2009).mhGAP Interventio: Guide for mental, neurological and substance use disorders in non-specialized health settings. Accessed at: http://whqlibdoc.who.int/publications/2010/9789241548069_eng.pdf

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V.11-82714—September 2011