The Internet and Adolescent Non-Medical Use of Prescription Drugs

Background

Sales of psychoactive prescription drugs over the Internet are becoming a major enterprise, presenting new challenges to drug abuse prevention and treatment. Adolescent non-medical use of highly addictive prescription opioid drugs, such as Vicodin and Oxycontin; sedatives, such as Ambien; and tranquilizers, such as Valium and Xanax, is increasing (Johnston et al 2005, SAMHSA 2005). These increases are occurring in the face of the otherwise encouraging news that among youth ages 12 to 17, past month illicit drug use overall has declined 19% since 2001 (SAMHSA 2005). Although the reasons for increasing adolescent non-medical use of addictive prescription drugs are not known, we do know that they are widely advertised and sold over the internet without prescription. Ready availability through "non-prescription websites (NPWs)" may be one important contributing factor to increasing adolescent use of these drugs (Kissinger 2004).

The Director of the National Institute on Drug Abuse (NIDA), the Director of the Office of National Drug Control Policy (ONDCP) and the Administrator of the Drug Enforcement Administration (DEA) all believe that "rogue online pharmacies" have become a significant source of drugs for adolescents (Volkow 2004, Office of National Drug Control Policy 2004). The global reach of the internet now makes it as easy for an adolescent to buy drugs as it is to buy a book or CD with a credit card, PayPal, or even cash. Some sites provide drugs initially for free without immediate payment. Unlike many scams on the internet, there is ample evidence that these drugs of abuse are real, potent, and actually delivered to buyers. Of particular concern is the role that NPWs might play in initiating opioid and other non-medical drug use among adolescents, the age group that most frequently uses the internet. For example, a sixth grader researching a school paper might enter the term "Vicodin" in any major search engine, like Google or Yahoo, and see a majority of the retrieved websites aggressively advertising to sell these drugs without prescription (Forman 2003, Forman in press).

Prevalence of Adolescent Substance Abuse

Two major federally funded annual surveys provide information on adolescent drug, alcohol and tobacco use nationwide. *Monitoring the Future* (*MTF*), begun in 1975, interviews

approximately 50,000 8th, 10th, and 12th grade students (Johnston et al 2005). The *National Survey on Drug Use and Health (NSDUH)*, begun in 1971, interviews approximately 70,000 randomly selected individuals aged 12 and older in order to provide national and state-level estimates of past month, past year, and lifetime drug, alcohol and tobacco use (Substance Abuse and Mental Health Services Administration 2005). The *NSDUH* collects data by age group (12-17; 18-25; 26 and older) rather than by grade level.

Both national surveys confirm that non-medical drug use is pervasive among American adolescents. According to *MTF*, 50% of 12th graders, 38% of 10th graders and 21% of 8th graders reported in 2005 that they had used an illicit drug at least once in their lifetime (Johnston et al 2005). The *NSDUH* reported that 11% of youths ages 12-17 (over 2.6 million adolescents) said they had used an illicit drug in the month prior to the survey, and 1.3 million youth ages 12-17 said they had abused or were dependent on an illicit drug at some point during the previous year (SAMHSA 2005). In 2004, a majority (58%) of the approximately 2.8 million persons who reported using an illicit drug for the first time within the year prior to the survey were younger than age 18 when they first used (SAMHSA 2005**)**.

The *MTF* survey reported that there was almost a 19 percent decline in past month use of any illicit drug by 8th, 10th, and 12th graders between 2001 and 2005. This trend is driven largely by decreasing rates of marijuana use among these students: since 2001, past month marijuana use has fallen by 28 percent among 8th graders and by 23 percent among 10th graders (Johnston et al 2005). The *NSDUH* reported that between 2002 and 2004, past month marijuana use by males ages 12 to 17 declined (9.1 percent in 2002, 8.6 percent in 2003, and 8.1 percent in 2004), but remained level for female youths (7.2, 7.2, and 7.1 percent, respectively) during the same time period. The *NSDUH* survey also found that current rates of illicit drug use among teens in 2004 varied significantly by major racial/ethnic groups. Native American or Alaska Native youths reported the highest rates (26 percent), compared to12 percent for youths identified with two or more races. White youths reported 11 percent; Hispanic youths, 10 percent; African-American youths, 9 percent, and Asian youths, 6 percent.

In 2004, approximately 2 million people reported using marijuana for the first time within the past year (SAMHSA 2005). The *NSDUH* also found a significant decline in the number of recent marijuana initiates between 2002 and 2003 (about ten percent). Of the 2 million recent marijuana initiates, almost two-thirds (64 percent) were younger than age 18 when they first used.

The *NSDUH* reported that about one million people used cocaine for the first time within the past 12 months. About one-third of these recent cocaine initiates were under 18 when they first used. The survey shows growing use of psychoactive drugs for non-medical purposes: an estimated 2.8 million people reported using these drugs for the first time in the year prior to the survey. In 2004, 2.4 million people reported using prescription pain relievers without prescription; 1.2 million used tranquilizers; 793,000 used stimulants, and 240,000 used sedatives. The number of new non-medical users of OxyContin was 615,000, with an average age at first use of 24.5 years.

Non-Prescription Use of Pharmaceutical Drugs by Adolescents

Non-prescription use of opioids, sedatives and tranquilizers by adolescents is increasing. Of particular concern is the rapid rate of initiation of Oxycontin and Vicodin use among adolescents (Johnston et al 2005). Physicians generally prescribe these opiates to relieve severe pain, but they now are becoming widely used for non-medical purposes by young people. The 2005 *MTF* survey reported that 5.5% of 12th graders, 3.2% of 10th graders, and 1.8% of 8th graders said they used Oxycontin at least once in the past year—a 29 percent increase since 2002. It is important to note that questions regarding Oxycontin and Vicodin use were not added to *MTF* until 2002 so that earlier information on the prevalence of adolescent non-medical use of these drugs is not available. Even higher rates of annual use were reported in 2005 for Vicodin: 9.5% of 12th graders, 5.9% of 10th graders, and 2.6% of 8th graders said they used Vicodin without prescription in the previous year. (In 2005, 68.6% of 12th graders reported alcohol use and 33.6% reported marijuana use.) Vicodin is now the third most widely reported drug used by 12th graders. Heroin, by way of contrast, has an annual prevalence rate of less than 1 percent among 12th, 10th, and 8th graders (Johnston et al 2005).

The *NSDUH* reported that in 2004, 14% of youths ages 12-17 said they had tried psychotherapeutics for non-medical use at least once in their lifetime, including 1.2% using OxyContin, 3.2% using tranquilizers, 6.9% using Vicodin, Lortab or Lorcet, 2.5% using hydrocodone, and 2.8% using codeine (SAMHSA 2005). According to *MTF,* students also reported significant rates of non-prescription use of sedatives and tranquilizers. The annual *MTF* survey asks only 12th graders about barbiturate use: in 2005, 7.2% of 12th graders reported using non-prescribed barbiturates in the previous year, more than double the rate reported in 1992 (2.8%). Similar increases in non-prescribed use of tranquilizers were reported by 12th graders (6.8% in 2005 vs 2.8% in 1992) (Johnston et al 2005).

Nearly one in five teens (19 percent) report non-medical use of prescription medications, according to a recent survey by the Partnership for a Drug-Free America (PDFA 2006). As for prescription painkillers, around 18 percent of teenagers reported using Vicodin, and one in ten reported using OxyContin. More than one third of teenagers (37 percent) said they have close friends who have used prescription painkillers such as Vicodin, OxyContin and Tylox, without prescription. One in 10 teenagers, or 2.3 million young people, have tried prescription stimulants, such as Ritalin or Adderall without a prescription (PDFA 2006).

A 2003 study conducted via a web-based survey examined non-medical use of prescription drugs in a sample of 1,017 public school students ages 10-18 in the Detroit metropolitan area (Boyd et al 2006). The study found that 22% of girls and 10% of boys reported non-medical use of a pain medication at least once in their lifetime, while 15% of girls and 7% of boys reported such use within the year prior to the survey. The students reported that the single largest source for drugs was family members, followed by friends and dealers. The study did not include any youths who had obtained prescription drugs on the Internet. Furthermore, a 2006 study investigating non-medical use of prescription medications among undergraduate students found that college men are more likely than women to obtain prescription opioid medications for non-medical use from peer sources, while women are more likely to get them from family members (McCabe, Teter and Boyd 2006).

The *NSDUH* is the most recent source of information on the demographic characteristics of adolescents in drug treatment nationwide. The survey reports that in 2004, 276,000 youth ages 12-17 received treatment for non-medical use of an illicit drug during the previous year (SAMHSA 2005). Non-medical use of prescription drugs is the reason why many youth are in treatment: 15% of youths who received treatment reported use of pain relievers, 7% reported use of tranquilizers, and 3% reported use of sedatives.

Perceptions of Non-Medical Prescription Drug Use Among Adolescents

According to a 2005 survey by the Partnership for a Drug Free America, two in five teens, or around 9.4 million, said they believe that getting high from prescription medications is "much safer" than street drugs (PDFA 2005). Thirty one percent of adolescents, or 7.3 million, believe there's "nothing wrong" with using prescription drugs without a prescription "once in a while". Nearly three out of 10, or 6.8 million, believe that prescription painkillers, even if taken without a prescription, are not addictive. The majority of teens (13.4 million) agreed that prescription drugs are easier to get than illegal street drugs, and that prescription painkillers are "available everywhere".

Ease of Finding Internet Drug Pharmacies

With more than 200 million internet users in the United States, the web is a vital medium for communication, entertainment, and commerce (Clickz Network Statistics 2006). The Pew Internet & American Life Project reported that 87% of 12-17 year olds, and 82% of 18-24 year old go online at least monthly. Similarly, 43% of teens and two-thirds of adult internet users go online to make purchases, and a large number of adults (79%) use the internet to look for health and medical information (Fox and Madden 2005, Lenart 2004). The digital divide between African-Americans, Hispanics and whites appears to be closing. A 2006 Pew national survey reports that 74% of whites, 61% of African-Americans and 80% of English-speaking Hispanic-Americans go on-line (Marriott 2006). By comparison, a 1998 Pew survey found that 42% of whites and only 23% of African-Americans used the internet.

About half of all adult Americans take a prescription medication regularly, and one in four have used the internet to learn about prescription medications. The majority of Americans have greater confidence in their local pharmacy than internet-based pharmacies, and only about 4% report having purchased medications online (Fox 2004). A wide range of controlled substances is offered for sale online including stimulants, steroids, sedatives, hallucinogens and marijuana (SAMHSA 2003). In addition to the many legitimate online pharmacies that operate in accordance with state and federal laws, hundreds of websites have appeared offering to sell controlled substances such as Vicodin and Oxycontin without prescription. No prescription websites (NPWs) are online pharmacies that supply consumers with controlled substances without a valid prescription. There are two general categories of NPWs: *Retail* NPWs directly offer to sell opioid medications without prescription while *Portal* NPWs provide multiple links to Retail NPWs. The majority of the NPWs identified in monitoring studies conducted since 2003 were classified as Portals (Gordon et al 2006).

While legitimate online pharmacies require a valid prescription from the consumer's physician, there are hundreds of NPWs that sell prescription medications based solely on an online questionnaire, a telephone interview, or a simple online order without any interaction with a physician or other licensed healthcare professional. To assess the relative availability of NPWs versus websites that offered addiction health information (e.g. WebMD), during the first two weeks of August 2004, Gordon et al (2006) conducted 27 Google searches using a wide variety of opioid search terms. Two search terms - *no prescription Vicodin*, and *no prescription hydrocodone* –yielded 80-90% NPWs and no links to addiction health information websites. On the other hand, searches for several opioid medications, including Fentanyl, Duragesic,

buprenorphine, and Subutex – with and without the no prescription prefix – yielded a majority of addiction health information websites and few or no NPWs.

Beyond qualitative examinations of typical NPWs, there has been no systematic study of the content of current Retail NPWs. Forman and Block (Manuscript) looked at fifty NPWs by examining links within the top three portal NPWs identified during a search in June 2005. During the coding process, any website found to be a legitimate retailer that only sold medications to customers with a doctor's prescription was eliminated from consideration and replaced by the next linked website until a total of fifty NPWs was reached. Nearly all (92%) of the NPWs contained an implied legitimacy or credibility claim of some kind. Over 80% of NPWs contained a medical legitimacy claim (82%). Fewer NPWs displayed a retailer legitimacy claim (24%). 88% of NPWs accept payment via one of the major credit cards and over half (52%) mention delivery through a reputable carrier like FedEx or DHL. These findings suggest that working with credit card and shipping companies may be a viable mechanism for identifying ownership of NPWs and potentially suspending their credit card contracts. Approximately half (52%) of NPWs require some kind of online questionnaire to be filled out by the patient; a much smaller percentage offer a telephone consultation, either for free (8%) or a fee (20%).

Research conducted since 2002 by the Treatment Research Institute (TRI) (Forman, 2003; Forman et al in press) has identified more than 300 unique websites offering to sell non-prescription opioid drugs. In over 50 Internet monitoring replications in which search terms such as *codeine*, or *Vicodin* were used, more than 50% of the links returned for these terms led to websites offering to sell opioid medications without a prescription (Forman et al in press). When the search prefix "*no prescription*" was added to the drug term (e.g. *no prescription Vicodin*), the proportion of NPWs obtained increased to 60-80%. During a one week investigation, the National Center on Addiction and Substance Abuse (CASA 2004) identified 495 web sites that offered to sell drugs listed on Schedules II-IV of the Controlled Substances Act requiring a prescription and found that only 10 percent of those websites required prescription verification.

Difficulty in Shutting Down These Websites

Legitimate online pharmacies (e.g., www.drugstore.com, www.caremark.com) provide convenience and efficiency to consumers while complying with state and federal regulations that require a valid prescription from the consumer's physician. The American Medical Association (AMA) and the National Association of Boards of Pharmacy (NABP) have issued policy statements that support the internet as a medium for processing legitimate prescriptions. However, hundreds of websites now sell prescription medications based solely on an online

questionnaire, a telephone interview, or a simple online order without any interaction with a licensed healthcare professional (See Forman et al in press). This has been recognized as a threat to public health (American Medical Association Policy H-120.956 – 3, American Medical Association Policy H-120.949, National Association Boards of Pharmacy 2003).

The benefits of the internet apply equally to everyone, including individuals who commit unlawful acts such as software piracy, virus releases, identity theft, espionage, the sale of child pornography, illegal weapons, and controlled substances (White House Executive Order). Online stores can be hosted and registered anywhere in the world, advertising, selling, and delivering products internationally with relative anonymity and convenience – and with little regard for the laws of other countries. The United States Controlled Substances Act (CSA 2006) prohibits the sale of Schedule I drugs such as marijuana, heroin, crack cocaine, and ecstasy and regulates access to Schedule II-V drugs, including opioid analgesics, sedatives, tranquilizers, stimulants and steroids by requiring a valid prescription from an appropriately licensed healthcare professional (U.S. Department of Justice 1970). However, many countries have drug policies that differ from those of the United States, or have similar laws but less enforcement.

The fluidity and virtual reality of cyberspace are ideally suited to illicit drug transactions, creating a complex challenge for law enforcement, policy makers and the general public (White House Executive Order 1999, U.S. General Accounting Office 2004). Businesses wishing to circumvent the U.S. Controlled Substances Act may do so by establishing multiple websites, in multiple countries, under multiple online identities (Forman and Block Manuscript). Many of the websites selling drugs are hosted outside the United States, and drug suppliers guarantee to (and actually do) replace any drugs intercepted by U.S. Customs or other law enforcement agencies. Recent studies indicate that Pakistan, Russia, Ukraine, and southern Asian countries are emerging as key locations for drug sales websites. For example, a "no prescription website" can be physically located on a computer in Uzbekistan; registered to a business address in Mexico; ship its drugs from Pakistan; deposit payments to a Cayman Island bank - while the owner resides in Miami. Importantly, all links in this online enterprise can be quickly dismantled and resurrected under a new set of virtual identities. The effect of this was seen following the April 2005 report of the DEA's Operation "CyberChase" which resulted in the arrest of 20 individuals in eight U.S. cities and four foreign countries, operating over 100 websites (U.S. Department of Justice 2005a, 2005b). However, this widely publicized DEA operation did not have any measurable impact on the availability of non-prescription controlled substances over the internet (Forman et al. personal communication based on May through October 2005 searches of NPW sites).

Intercepting NPW Deliveries

Since it is illegal to purchase prescription opioids and other controlled substances without prescription, there are limited data on the actual delivery rate of NPWs. It is easy to think that, like so many other internet "scams," there is no reality to the offers of sale from these websites. However, the U.S. General Accounting Office (GAO) recently conducted an investigation in which they attempted 11 purchases of opioids without prescription (including hydrocodone and oxycodone). Of those 11 attempted purchases, 10 (94%) were delivered. The GAO also found that many internet suppliers promise to replace any drugs intercepted by U.S. law enforcement agencies and they actually do so. (GAO 2004). In June 2005, the Miami DEA announced the arrest of eight operators of illegal drug sales websites. Seized records showed these websites delivered over 28,000 orders for controlled substances without prescription per week, particularly hydrocodone (Vicodin).

On July 30, 1999, U.S. Deputy Attorney General Ivan Fong testified before the Subcommittee on Oversight and Investigations, Commerce Committee, United States House of Representatives, that "…online pharmacies allow consumers to purchase prescription drugs without any pretense of a prescription" and that these websites introduce "potential risks to public health and safety" (Fong 1999). A week later the White House issued Executive Order 13133 creating the "Working Group on Unlawful Conduct on the Internet" leading to the publication of "*The Electronic Frontier*" (Attorney General's Office 2000). The Drug Enforcement Administration (DEA) subsequently published guidance (Department of Justice 2001) which specified four conditions under which legal prescriptions can be issued over the internet: a) a patient presents a medical complaint; b) a medical history is obtained; c) a physical examination is performed; and d) some logical connection exists between the medical complaint, the medical history, the physical examination, and the drug prescribed. Prescriptions based on telephone interviews or online questionnaires are not considered valid. In support of these guidelines, the American Medical Association subsequently issued guidance for physicians on internet prescribing that largely parallels the DEA's position (American Medical Association Policy (Policy H-120.949).

Enforcement

Since 2001, the sale of controlled substances over the internet has been cited in U.S. Justice Department reports (National Drug Intelligence Center 2001, 2002; DEA 2002) and has led to criminal investigations for internet sales of non-prescription drugs such as ecstasy, gamma hydroxyl butyrate (GHB) and methamphetamines, (Drug Enforcement Administration News

Release 2002, 2003; National Drug Intelligence Center 2003) and the illicit sale of prescription drugs online (NDAS 2001, National Drug Intelligence Center 2003, U.S. Department of Justice 2002, Hutchinson 2002). Similarly, the U.S. Food and Drug Administration (FDA) has provided testimony (Hubbard 2002), and reports (Henney 2000, FDA 2003, Center for Drug Evaluation and Research 2003) on the risks of online prescription practices. In conjunction with U.S. Customs, the FDA participated in an investigation of illicit prescription drug sales originating overseas (FDA 2003). On March 1, 2004, the White House Office of National Drug Control Policy (ONDCP issued the 2004 National Drug Control Strategy Update (White House 2004) which for the first time described plans to monitor illicit internet drug offers (p. 28). Concurrent with the issuance of this strategy update, ONDCP issued a press release (ONDCP 2004) entitled "*U.S. Drug Prevention, Treatment, Enforcement Agencies Take on 'Doctor Shoppers,' 'Pill Mills'*" and a fact sheet entitled "*Reducing Prescription Drug Abuse*" (ONDCP 2004) which announce initiatives to stop illicit online prescription drug sales. There are four potential "choke points" for NPW enforcement efforts: a) search engines that list NPWs when searches are conducted; b) credit card companies with which NPWs and their customers have accounts; c) package delivery companies; and d) internet service providers (ISP) where NPWs files are hosted (Forman and Block Manuscript).

The existing regulation of Internet prescription drug sales is very clear on paper, but quite murky in practice. At its most basic, the purchase of any prescription drug must be done through a properly accredited Internet site, which requires a valid prescription. To oversee this regime, the National Association of Boards of Pharmacy (NABP) has established a certification program to enable the approved sales of prescription medications over the Internet. The program, known as Verified Internet Pharmacy Practice Sites (VIPPS) certification, allows merchants in the United States to sell prescription medications over the Internet. To achieve VIPPS accreditation, a pharmacy site must comply with the licensing and inspection requirements of the state in which it does business, and must demonstrate to the NABP compliance with certain specified criteria, including patient rights to privacy, authentication and security of prescription orders, maintenance of quality assurance and improvement program, and provision of meaningful consultation between patients and pharmacists.

Even with certification, there are limits on what a pharmacy can sell based on Federal regulation. These rules apply equally to physical and virtual pharmacies. Physicians can prescribe and pharmacies can dispense drugs listed in the Controlled Substances Act Schedules II through V, which are defined as drugs with a legitimate medical purpose, but dangerous if not properly controlled. Drugs listed in Schedule I are considered to have no legitimate medical

purpose and are illegal to sell under any circumstance, such as heroin. The powerful drugs currently most prone to abuse are Oxycontin (Schedule II) and Vicodin (Schedule III). Schedule II drugs cannot be provided legally over the Internet, while Schedule III drugs can prescribed through a VIPPS Internet pharmacy.

Despite this regulatory regime and the fact that purchasing controlled substances overseas is illegal, traditional enforcement efforts towards illicit purchases have generally been lax. This is because of the overwhelming volume of pharmaceuticals entering the United States and the political controversy around individuals attempting to purchase cheaper prescription drugs for legitimate medical problems overseas. As a result, despite a clear regulatory regime, the actual flow of prescription drugs (legal and illegal) into the United States continues to accelerate.

Increasing Awareness of Drug Availability Online

Beginning in the fall of 2003, the popular press began reporting on the availability of prescription opioids over the internet without prescription (Forman et al in press). The earliest newspaper report on NPWs was published on October 18, 2003, in the *New York Times* (Harris 2003) in an article describing a joint DEA/FDA taskforce targeting "rogue online pharmacies" that sold prescription drugs without a prescription. Two days later the *Washington Post* released a five-part series detailing the results of a one-year investigation into the availability of prescription drugs without a prescription (Gaul and Flaherty 2003a, b, c, d, e, f). A month after the *Washington Post* series, *USA Today* (Rubin 2003) reported on the "uncontrolled sale of controlled substances" over the internet and then, in December 2003, news coverage about NPWs became widespread with the *Los Angeles Times*, *Philadelphia Daily News*, *Boston Herald*, *Miami Herald*, *Denver Post*, *San Jose Mercury*, and the *Chicago Tribune* publishing stories about the online availability of controlled substances without a prescription (Anderson 2003, Caywood 2003, DeWolf 2003, Frates 2003, Gaul 2003, Healy 2003, Higgins 2003). Since then, press and broadcast coverage of this phenomenon has accelerated. A recent example is the front page story in *USA TODAY* on June 13, 2006, "Prescription Drugs Find Place in Teen Culture." The press reports that the term "pharm party" where youth swallow fistfuls of prescription drugs is now widespread.

Future Research Directions

A. Need for Accurate Information on Extent of Controlled Substances Availability Without Prescription over the Internet

In contrast with the many reports in the law enforcement literature and popular press, there are few publications in the public health or medical literature concerning the availability of prescription opioids without prescription over the internet. In a recent Medline search using combinations of terms including "online," "opioids," "internet," and "narcotics" only one publication addressing the availability of prescription opioids over the internet was found: the principal investigator's preliminary research report (Forman 2003). This, and other searches conducted using Medline and PsychINFO, identified general articles about topics such as online pharmacy prescribing practices, the internet as a source of drug information, and the online sale of sexual performance enhancement drugs, but no articles were found about websites selling prescription opioids without a prescription.

The European Union has funded the Psychonaut 2002 Project which is searching the Internet for drug-related websites using a controlled search methodology (www.psychonaut2002.org). Its primary aim is to collect and analyze the information available on these websites, and to develop an Early Warning System for professionals providing information and suggestions concerning emerging drug markets, new drugs and new trends in drug use. This is a multi-site research project involving 15 centers from nine European countries and to date has analyzed more than 4.000 sites in 8 languages. Investigators in this project have published articles about the availability of controlled substances on the internet (Schifano et al 2003, Salman & Schifano 2000) (Littlejohn et al Under Review, Schifano et al Under Review, Schifano et al 2004), and have presented their findings at two international scientific conferences (Schifano et al 2003, Schifano & Deluca 2003).

B. Need for Data on Role of Internet in Supplying Non-Medical Prescription Drug Users

There is an overall lack of information about who is using the internet to obtain psychoactive prescription drugs without a prescription. The original impetus for TRI's research on NPW websites came from reports in AA meetings and to clinicians that advertisements for drugs on the internet were becoming an important cause of relapse. To explore this carefully, a study was undertaken in 2004 in a collaborating private adult residential treatment program outside Philadelphia (Gordon, Forman and Siatkowski 2006). One hundred consecutive adult patients were interviewed concerning how they had obtained the drugs they had used 30 days prior to entering treatment. Nine percent reported having purchased their drugs online and an additional 2% stated they had found their dealer online. In addition, 29% indicated that they knew they could purchase drugs over the internet without prescription and 11% reported they had used the internet either to buy drugs or locate a drug dealer. Among the respondents who knew the internet was a drug source, reasons given for not using it were: it was too expensive;

the desired drug could not be obtained (e.g. cocaine); and fear of being identified by authorities or other family members using the same computer. The results of this preliminary study suggest that the internet has become a source of controlled substances for some addicted individuals (Gordon et al 2006).

Although we have anecdotal evidence of the internet's role in distributing drugs, we still do not have solid information about the amounts of controlled substances that are being purchased without a prescription over the internet, both by adults and adolescents. There has not yet been research based on actual interviews with non-medical users of controlled substances. Neither of the two annual drug use surveys, *MTF* and *NSDUH*, contain questions asking non-prescription drug users where they obtain their drugs (e.g., friends, internet, doctors, dealers, family medicine cabinets), although they could do so in the future.

Relatively little is known about how demographic and socioeconomic factors as well as race, gender and ethnicity relate to adolescent non-medical prescription drug use. Some research indicates that female adolescents have significantly greater severity of substance use (Stevens et al 2003, Warner and Leukefeld 2001), in particular non-medical use of prescription drugs. (SAMHSA 2005). In terms of location, it has been observed that drug use patterns among adolescents from rural areas may be different from those of non-rural youth (Gordon and Caltabiano 1996, Warner and Leukefeld 2001, Ruiz et al 2005). However, some publications show rural youth exceed urban youth in their drug use and some find the contrary (Ruiz et al 2005). The role of the internet as a source of drugs for these groups has not been explored. For example, could the internet be a more important source for rural youth than for urban youth who have more immediate access to dealers? Or, would female adolescents (who already show greater non-medical use of prescription drugs) be more likely than males to use the internet to purchase these drugs, since the internet does not involve direct contact with dealers and purchases can be made in privacy rather than on the street?

C. Need for New Treatment and Prevention Strategies

Most adults do not realize that many adolescents and even younger children may find it easier to buy drugs online than on street corners. Even at very young ages, they can navigate easily among websites, which offer information, entertainment, consumer goods and now drugs. Websites aggressively advertise controlled substances, so that a seventh-grader researching a paper for health class might enter the term "Vicodin" in any major search engine and see sites that sell these narcotics, without a prescription, on a majority of the listings provided. Even

websites that claim they require prescriptions often allow users to generate a "prescription" by simply checking off a series of quick questions; no direct interaction with a physician is required.

Although media coverage of the misuse of pharmaceutical drugs by adolescents is increasing, many parents and youth do not believe that these drugs are a threat. A recent national survey by the Partnership for a Drug Free America (2005) reported that almost half of teens said they believe that prescription drugs, even if not prescribed by a doctor, are much safer than street drugs and almost a third said that prescription pain killers, even if not prescribed, are not addictive. The survey also reported that adults and youth do not view controlled substances such as Vicodin as equally "dangerous" as narcotics that can be bought from street dealers or classmates, especially since these drugs are widely prescribed by doctors for legitimate medical purposes. The ease with which these drugs are obtained over the Internet, their packaging, and their appearance of legitimacy can contribute to the belief that such drugs are relatively safe when in fact these drugs can be lethal when taken in high doses or in combination with alcohol. The risk for overdose and dependence derives from the dosage, potency of the drug and the vulnerability of the person using it – not the source of the drug or its brand name.

There are some indications from treatment centers that internet drug availability may play a role both in developing drug dependence and in relapse. For both adolescents and adults who purchase drugs over the Internet, the computer seemingly can become a relapse trigger, which may need to be avoided until a stable recovery has been secured. More research is needed regarding the effect that internet access and the ubiquity of computers have on relapse, both in terms of the client being confronted with unsolicited offers for prescription drugs via email, and the role of NPW's in facilitating access that can lead to relapse.

The powerful addictive properties of some of these drugs further complicate treatment and prevention. Given the rapid path to addiction and the fact that many adolescents are using opioids such as Vicodin and Oxycontin as their first or second drug of abuse, there is less time for intervention. Given the ubiquity of computers with internet access, treatment for adolescents purchasing drugs over the internet may require more comprehensive and long-term intervention than treatment for traditional gateway drugs. Even more pressing is the substantial risk for overdose and death resulting from the use of prescription opioids and sedatives obtained over the Internet.

Treatment, intervention and prevention efforts face new challenges related to the emergence of the Internet as a drug source. Current drug education and prevention programs, designed largely for classroom use, may have little impact on the emerging phenomenon of

Internet drug sales to youth, since parents, teachers, and the students themselves do not view drugs obtained over the Internet as equally "dangerous" as those bought from street pushers or even classmates. The skills taught in most school drug education curricula may not prove relevant in the very new technological context of the isolated world of the Internet, where children can buy drugs without physical contact with sellers or peers. A 14-year old can now access over the internet a tremendous amount of information about dangerous drugs, including how to purchase them without a prescription. New prevention strategies will be required to deal with this new reality, including ways to use internet technology to teach prevention.

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