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MESSAGE FROM THE EDITOR

This edition is the start of a series of changes aiming to continue to improve the quality of our Journal at a sustainable cost.

We have two peer-reviewed papers including the start of a regular contribution from Dr. D. Crockford focusing on Concurrent Disorders (Addiction and Mental Health). Dr. Crockford is nationally recognized as a teacher and researcher on the subject, including several presentations at our CSAM annual meetings, and we look forward to benefit from his insights. Dr. Ling’s report on Drug-Related Deaths in Nova Scotia, reminds us that Addiction can indeed be a fatal disease and that it affects all age groups.

For the first time also, we have selected a number of abstracts of potential relevance to our practice from the last ISAM conference held in Geneva 2012. They present a world view about new drug epidemics of potential relevance to Canada, international news on classifications and comorbidities as well as further insights on medications and other treatment models. Canadian attendants at the ISAM meetings have enjoyed the range of presentations as well as the warm hospitality of colleagues from around the world. We will also of course reserve an edition to the abstracts of our own CSAM conference. See you in Vancouver, September 27-29, 2013.

We are also revamping our Editorial Board as well as corresponding with noted figures in the field to write editorials. We are discussing potential contributions from the Canadian Centre of Substance Abuse, among others. With the majority of our distribution now over the internet, we are able to markedly reduce the cost of each edition making your association’s Journal more sustainable.

As usual, your comments on the content or other aspects of the Journal are more than welcome. Stay tuned!

Yours truly,

Nady el-Guebaly, MD
Chief Editor

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PREGABALIN ABUSE AMONG INTRAVENOUS DRUG USERS IN SOUTH WESTERN FINLAND

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Introduction: Pregabalin is an anticonvulsant, also prescribed for neuropathic pain and generalized anxiety disorder. Recently, anecdotal information and case reports about pregabalin abuse case have been published.1-3

Objectives: To study prevalence, motives, and routes of administration of pregabalin abuse among intravenous (i.v.) drug users attending a needle exchange program in Turku, Finland.

Methods: Information about pregabalin abuse during past 12 months was collected anonymously using a questionnaire in 2008 (n=112, 68% male), and in 2011 (n=107, 71% male).

Results: In 2008, 28% of the responders reported pregabalin abuse (2% daily, 6% weekly, 12% monthly, and 10% more seldom) In 2011, 65% reported pregabalin abuse (10% daily, 15% weekly, 23% monthly, and 17% more seldom). Abuse per os (100%), snorting (22%), and i.v.-use (13%) were reported. Of abusers, 80% reported using pregabalin as a booster drug, most commonly with buprenorphine (73%) and benzodiazepines (58%). Motives for abuse were anxiolytic (69%), euphoric (59%), and sedative (22%) effects of pregabalin.

Conclusion: Pregabalin has an abuse potential. Pregabalin abuse is common, and it has taken root among i.v.-users in south-western Finland. Pregabalin is often used as a booster drug in combination with opioids and benzodiazepines. Physicians should be aware about the abuse potential when prescribing pregabalin, especially for polydrug i.v.-users.

REFERENCES:
1. Schifano et al. Is there a recreational misuse potential for pregabalin? Analysis of anecdotal online reports in comparison with related gabapentin and clonazepam data. Psychother Psychosom 2011;80:118-22

VARIATIONS IN INFLUENCE OF CANNABIS USE ON SUBSEQUENT USE WITH OTHER ILLICIT DRUGS ACCORDING TO PERIOD OF LIFE AND GENERATION: A FRENCH NATIONALWIDE RETROSPECTIVE COHORT STUDY

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Introduction: Gateway theory acknowledges that tobacco or alcohol uses may lead to cannabis use, which may itself lead to initiation of other illicit drugs (OID).

Objectives: This study aimed to explore the influence of cannabis use on OID initiation over life periods and generations.

Methods: A French nationwide retrospective cohort study was conducted in 2005 on 30,514 subjects aged from 12 to 75. A Markov multi-state model was fitted, which modelled all possible transitions between four use-states (1: no use; 2: cannabis initiation; 3: initiation of OID; 4: initiation of both substances). Model was adjusted for time and cultural generation.

Results: The risk for OID initiation appeared 116 times greater among cannabis users than among non users. Cannabis initiation occurred mainly between ages 15 and 19 (hazard ratio (HR)=4.0 compared with ages 0-14) and over generations 1966-1977 (HR=3.0 compared with 1946-1965) and 1930-1945 (HR=1.1). OID initiation without cannabis previous use concerned more periods 12-14 years and 20-29 years. No influence of time or generation was observed on gateway sequences (transitions 2 to 4 and 3 to 4).

Conclusion: Results of this study are compatible with
the gateway theory. The higher trend in cannabis initiation observed in extreme generations could reflect an increased availability for the younger and a «hippy effect» among the older. If period of life seems to influence cannabis and OID uses, we did not demonstrated any influence of time on gateways sequences.

THE DUTCH GHB MONITOR: MONITORING THE GHB DETOXIFICATION PROCESS

B. Dijkstra1,2,*, C. De Jong1 and The Dutch GHB monitor project chaired by Prof. Cor de Jong1 • NISPA, Nijmegen, 2Novadic-Kentron, Vught, Netherlands

Introduction: GHB is an emerging drug of abuse in the Netherlands. Every year more patients are admitted to addiction care for GHB detoxification.

Objectives: This presentation will give a short overview of the last developments in the Netherlands based on a survey in addiction care.

Methods: The nationwide GHB monitor was developed by the Nijmegen Institute for Scientist Practitioners in Addiction (NISPA), financed by the Ministry of Health, Welfare and Sport. The main goal was to develop and monitor a practical guideline for safe and comfortable detoxification. Detoxification is performed by means of titration with pharmaceutical GHB and tapering of the GHB. Scientific interest focuses on co-occurring SUD and psychiatric comorbidity.

Results: 174 patients were enrolled till March 2012. The mean age is 30 years and 70% is male. Results will be presented on GHB use, living situation, education, reasons to use GHB, GHB supply, comorbidity, complications and contacts with police.

Conclusion: GHB abusers are complex and vulnerable patients with high care consumption and special needs in comparison with other SUD populations.

REFERENCES


TRAMADOL USE IN EGYPT: EMERGENCE OF A MAJOR NEW PUBLIC HEALTH PROBLEM.

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Introduction: The availability and use/abuse of Tramadol has dramatically increased in Egypt since 2008. Tramadol is an opiate-type pain killer that is among the most widely used pain killer in many parts of the Middle East. In some parts of the world that have a variety of potent pain killers (eg. the US, Europe), Tramadol, (marketed in the US as Ultram), is considered to have a relatively low abuse potential and it is rarely associated with abuse/dependence. In Egypt, however, Tramadol has emerged over the past 5 years as the drug associated with a very substantial percentage of admissions into Egyptian addiction treatment centers. The presentation will review data extracted from 500 patient charts from 3 major addiction centers in Egypt from 2009-2011. Demographic characteristics of Tramadol users, current drug use amounts and self dosing patterns, routes of administration and drug use histories will be examined. Major concurrent medical and psychiatric diagnoses will be reviewed, with particular attention given to the number and proportion of patients to have experienced a seizure episode during their use of, or withdrawal from Tramadol. Egypt is currently experiencing a very large increase in the use/abuse/dependence of Tramadol. The presentation will provide new information on the effects of this drug on users who enter treatment.

DRUG USE AMONG PATIENTS SEEKING TREATMENT AT PUBLIC STI CLINICS IN US

L. Haynes,*, D. J. Feaster, L. R. Metsch • Medical University of South Carolina, Charleston, Miller School of Medicine, University of Miami, Miami, United States

Introduction: Identifying subpopulations at high risk for substance abuse in settings where there is opportunity to intervene is an important early step in developing strategies for screening and brief interventions.

Objectives: We examine the substance use of individuals presenting for STI testing and the relationship of substance use to the prevalence of STI.
Methods: 5012 participants were recruited between April and December 2010 among patients seeking treatment at public STI clinics. All participants were tested for chlamydia, gonorrhrea, syphilis, HIV and HSV-2; women were tested for trichomoniais. Self-reported alcohol and drug use in the prior 6 months were collected using Audio Computer Assisted Self Interview. Severe drug use was defined by a DAST-10 score >3.

Results: The sample included heterosexual men (38.1%), MSM (27.9%) and women (34%). Most participants, 55.2%, reported using an illegal drug in the prior 6 months; over one-fourth (28.7%) reported drug use other than marijuana and 17.0% reported stimulant use. About a quarter of the sample, 24.7%, had DAST-10 scores consistent with severe drug use and 6.1% reported IDU. There were 16.2% of participants who drank to intoxication. Women had higher prevalence of any STI at 55.7% than either males (38.1%) or MSM (37.2%). Amphetamine use was associated with a higher prevalence of STI for MSM. Crack cocaine use was associated in higher prevalence of STI in all groups. Drinking to intoxication was also associated with higher STI prevalence in MSM and women. Current IDU was associated with an increased risk for STI across all three subgroups.

Conclusion: Severe drug use is common in this sample of STI clinic patients and is associated with higher prevalence of STI. Alcohol and drug abuse screening and brief intervention may be useful in this setting.

NON-MEDICAL USE OF PRESCRIPTION OPIOIDS (POS) AND HCV TRANSMISSION AMONG INJECTION DRUG USERS (IDUS).

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Introduction: The non-medical use of POS, including intravenous use, has increased among North American and Australian street-based drug users. Ethnographic work carried out in Montréal, Canada, has shown that preparing these medications for injection may leave residue in containers and filters used by IDUs.

Objectives: To examine the relationship between HCV transmission and 1) PO injection, and 2) the practice of injecting someone else’s drug residue.

Methods: The Montréal St-Luc IDU cohort study database (2004-2009) was used for the first objective, and the Montréal street youth cohort study database (2001-2005) for the second. Predictors of HCV seroconversion were identified using Cox proportional hazards regression analyses.

Results: Of the 246 St-Luc study participants (81.6% male; mean age 34.5 years), 83 seroconverted to HCV. Compared to non PO injectors, PO injectors were more likely to become infected (Adjusted Hazard Ratio (AHR): 1.9 (95% CI: 1.2, 3.0)). Of the 175 street youth cohort IDU participants (60% male; mean age 20.7 years), 57 seroconverted to HCV. Residue injection increased the risk of seroconverting during follow-up by two, although with marginal statistical significance.

Conclusion: PO injection is an independent predictor of HCV transmission. Risks related to PO injection may be conditioned by specific drug practices, including injecting residue. Public health authorities must maintain surveillance of changing risk behaviours among IDUs. Supplied sterile drug injection equipment and prevention messages must be revised in order to be adapted to the needs of IDUs.

PREGABALIN ADDICTION AND WITHDRAWAL SYNDROME _ GEORGIAN EXPERIENCE

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Introduction: In the last 5 years the dramatic increase of pregabalin abuse has occurred in Georgia. Pregabalin (Lyrica) is a GABA metabolite and agonist with central nervous depressive activity. Pregabalin is abused with or without other narcotic/psychoactive substances. Information about pregabalin abuse is limited.

Objectives: The objectives of our study have been to identify the characters of pregabalin abuse, which drugs are mainly used together with it, the development of dependency and withdrawal syndrome and identification of effective detoxification treatment methods.

Methods: 32 pregabalin abusing inpatients have been studied during the treatment of withdrawal syndrome. The withdrawal symptoms were monitored with SWS, OWS and VAS. Depression rate was measured with BDI and anxiety level with SAI. In clinic all patients were subjected to detoxification therapy (14 days on the average) using: analgesics, antidepressants, neuroleptics, clonidin, tranquilizers, transfusion and vitamin therapy.

Results: The study showed the main drugs co-abused with pregabalin are opioids and homemade stimulants (methcatinons), rarely alcohol and sedatives. There are important differences in the severity of the pregabalin
addiction and withdrawal syndrome with and without co-occurring abuse. During withdrawal syndrome has been occurred severe craving to pregabalin, high level of anxiety and depression, algesic symptoms, vegetative dysfunction, sleep disorders

Conclusion: Pregabalin showed high addictive potential, especially in former or active drug users. It can cause dependency and withdrawal that are particularly strong if pregabalin is using together with other narcotic-psychoactive substances. Taped doses of gabapentin in complex with symptomatic measures are most effective in the treatment of pregabalin withdrawal syndrome.

EPIDEMIOLOGICAL STUDY OF ADDICTIVE DISORDERS IN "HIDDEN" POPULATIONS: METHODS

J. J. Westermeyer 1,*, P. Psychiatry & Anthropology, University of Minnesota, Minneapolis, United States

Introduction: Addictive disorders in "hidden" populations can stymy public health officials and community leaders. Typically, knowledge to assess the nature and extent of associated problems is not available.

Objectives: To identify "hidden" addictions that may pose a major public health problem, proceed with data collection on the nature and extent of addiction, and develop cost-effective interventions.

Methods: These data are based on three decades of work on addiction in two "hidden" populations: i.e., opium smoking among Southeast Asians; and (2) alcohol drinking among American Indians.

Results: These series of studies over three decades have demonstrated that addiction in "hidden" populations can be understood using a combination of clinical description, ethnography, and epidemiological principles, leading to appropriate public health and/or clinical interventions.

Conclusion: The epidemiology of "hidden" addictions begins with clinical description of characterestic cases surfacing to clinical awareness, coupled with ethnographic study of non-clinical users and addicts. This lays the foundation for an epidemiological surve, using targeted random samples (since random samples are rarely feasible in this situations). Interentions can be developed.

RECENT DEVELOPMENTS IN CLASSIFICATION OF SUBSTANCE USE DISORDERS AND BEHAVIORAL ADDICTIONS

J. Rehm 1,*, W. Compton 2, V. Poznyak 3, T. Babor 4, G. Reed 5


Objectives: Important developments are currently taking place in preparing the next revisions of the two major classification systems of mental and behavioral disorders: Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and the chapter on mental and behavioral disorders of ICD (International Classification of Diseases (ICD-11). This symposium will provide an opportunity for the conference participants not only to learn about the most recent developments in classification of disorders due to psychoactive substance use, behavioral addictions and concepts of “dependence” and “addiction”, but also to interact actively with a panel of experts on the most critical issues related to classification of mental and behavioral disorders such as public health and clinical utility of classification, diagnostic thresholds across the lifespan, economic and service provision implications of the suggested changes in classification of substance use disorders and behavioral addictions.

SPEAKERS:

J. Rehm. Concept of addiction from epidemiological and legal perspectives.

Abstract: The presentation will focus on the intermediate results produced by the international group of researchers within the working package on classifying addiction under the umbrella of the ALICE RAP project currently being implemented with a support from the European Commission. The key questions for this working package concerned the concept of addiction in different frameworks including non-medical frameworks. For example, in the monitoring systems of EMCDDA for Europe or globally of UNODC, the focus is on problem drug use, which is highly overlapping with but not the same as addiction. Implications of different conceptualizations of different definitions for monitoring, calculation of substance-related harm, and health systems are discussed.
W. Compton. Description and rational for major changes in DSM classification of substance use and related disorders.

Abstract: Proposed major changes to DSM-5 include: (i) consolidating abuse and dependence into a single dimensional category (with deletion of “recurrent legal problems” and addition of “craving”), (ii) adding cannabis and caffeine withdrawal, (iii) additions to tobacco criteria, and (iv) modifications to remission specifiers. Additionally, two severity approaches are envisioned - one for case severity that tallies diagnostic criteria and a second that measures substance use frequency. Finally, Gambling Disorder is added to the same section of DSM and Internet Gaming Disorder is identified as a condition in need of further study.

V. Poznyak. Classification of disorders due to substance use and related behavioural disorders in the process of ICD-10 revision: an update from WHO

Abstract: The World Health Organization (WHO) is currently working on the revision of the ICD-10, and the eleventh revision of International Classification of Diseases (ICD) is scheduled to be submitted to the World Health Assembly for approval in 2014. Development of the ICD-11 classification of mental and behavioral disorders is being led by the WHO Department of Mental Health and Substance Abuse. For this purpose a number of working groups were established including the group for developing proposals for classification of disorders due to psychoactive substance use and behavioral addictions. The presentation will focus on the current suggestions from the group including the concepts and diagnostic criteria of substance dependence, harmful use and acute intoxication as well as proposals for the subtypes of major diagnostic categories related to substance use and behavioral addictions.

7 YEARS TRENDS OF TEMPERAMENT AND CHARACTER PROFILES IN HIGH RISK INTERNET ADDICTION ADOLESCENTS IN KOREA

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Introduction: Many psychiatrists have been concerned about the possibility of internet addiction in Korea. So, several plans and policies by the Korean government basis have proceeded to prevent for Internet addictive problems in adolescents and young adults since 10 years.

Objectives: This study was attempted to look into the 7 years trends of status, temperament and character profiles (TCI) and mood state of high risk internet addiction adolescents in the Korean middle school students and to compare with other substance use.

Methods: A cross-sectional study was used, with middle school students aged 14 to 15. Surveys on their addictive behaviors (internet, smoking and drinking), temperament and character and mood state in 2005 and 2012 were carried out in same city. About five hundreds adolescents were involved in each year study. Comparison the seven dimensions of TCI, depressive severity and prevalence rates of high risk internet addiction in different years.

Results: The high risk internet addiction prevalence was 11.5% in 2007 and 6.5% in 2012. There have been no changes for thee temperament and character patterns in drinking and smoking groups since 7 years. In 2007, the high risk internet addiction group had significantly higher score of harm avoidance, and lower reward dependence, cooperativeness and high score of depression than other groups, however in 2012, showed higher scores of novelty seeking, depressive score and lower score of harm avoidance than other groups.

Conclusion: Our results suggested that the temperament and character of the high internet addictive adolescents seems to be changed to the similar patterns from other substance-using group. It means that internet addictive behaviors in adolescents will be similar psychological, biological background from substance addictions.

A POPULATION BASED COHORT STUDY OF ANXIETY, DEPRESSION, SLEEP AND ALCOHOL OUTCOMES AMONG BENZODIAZEPINE AND Z-HYPNOTIC USERS

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Introduction: The majority of studies of benzodiazepine outcomes have been conducted in small clinical samples with low temporal follow-up. Very few studies have examined temporal associations of benzodiazepine prescriptions on subclinical anxiety, depression, sleep and alcohol outcomes in large population-based samples over long temporal periods.

Objectives: The study aimed to examine anxiety, depression, sleep and alcohol outcomes among individuals who were prescribed benzodiazepines or z-hypnotics in a Norwegian population-based sample (n = 58 967).
**Methods:** This 13 year historical cohort study obtained baseline measures of self-report anxiety, depression, sleep difficulties and alcohol use from the Nord-Trøndelag Health Study (HUNT 2, 1995-1997). Information about outcomes was collected from the third wave (HUNT 3, 2006-2008) of the same epidemiological study. Prescription records of benzodiazepines and z-hypnotics were obtained from the Norwegian prescription database (NorPD, 2004-2008) and were linked to the HUNT 2 and HUNT 3 questionnaire data.

**Results:** Among the 58,967 respondents who were eligible for the study, 13,774 (23%) received at least one prescription of benzodiazepines or z-hypnotics in the period 2004-2008. General benzodiazepine use and high dose use were associated with a higher risk of severe anxiety, depression and sleep outcomes. The assumption that benzodiazepine use is prospectively associated with a higher risk of alcohol consumption was not supported.

**Conclusion:** Consideration and discussion of the future place of benzodiazepines in treatment of anxiety and sleep difficulties in Norway could be warranted. Benzodiazepines may be efficient in reducing symptoms in the short term, but evidence from this long temporal follow-up study indicates limited positive influences in the long term.

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**THE RELATIONSHIP BETWEEN ATTENTION DEFICIT HYPERACTIVITY DISORDER AND MATERNAL ALCOHOL USE DURING PREGNANCY**

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**Introduction:** Attention Deficit Hyperactivity Disorder (ADHD) is a major neurodevelopmental disorder in children and adolescents. Some possible environmental factors related with development of ADHD have been reported. Among these factors, maternal alcohol use during pregnancy has drawn interest as an education preventable factor.

**Objectives:** Thus, we investigated the relationship between maternal alcohol use during pregnancy and the development of ADHD in offspring.

**Methods:** The participants were from two elementary schools and one middle school in Pusan, Korea. Maternal alcohol use during pregnancy was investigated by self-report. The participants were evaluated by the parental responses to the Korean version of the ADHD Rating Scale (K-ARS). A total of 900 participants were classified into two groups according to K-ARS score; ≥18 (HSc group), or < 18 (LSc group). The two groups were compared using a logistic regression model to examine the relationship between maternal alcohol use and K-ARS score.

**Results:** The mean age of the 900 participants was 11.0 ± 2.55 years. There were 411 boys (45.7%) and 489 girls (54.3%). Thirty-seven participants (4.1%) were classified as HSc, and 863 participants (95.9%) as LSc. In total, 819 (91%) mothers reported that they never drank alcohol during pregnancy, whereas 81 mothers (9%) had drunk alcohol during pregnancy. The analysis showed that the HSc group was significantly more likely to have been exposed to alcohol in utero than that of the LSc group (odds ratio, 3.643; p = 0.003).

**Conclusion:** The results showed a significant relationship between maternal alcohol use during pregnancy and ADHD symptoms. We strongly suggest against maternal alcohol use during pregnancy as it may lead to the development ADHD in children.

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**EXPLORING THE MANAGEMENT OF CANNABIS USE AMONG WOMEN AND DURING PREGNANCY**

F. Alharbi 1,*, 1KING FAHAD NATIONAL GUARD HOSPITAL, Riyadh, Saudi Arabia

**Objectives:** Exploring the potential management of cannabis among women and during pregnancy, an expanding public health issue.

**Methods:** A Medline search from 1982 – 2012 for articles highlighting drug abuse among women and during pregnancy, with particular emphasis on cannabis/ marijuana use during pregnancy, delivery and its management as well as the drug impact on the fetus.

**Results:** Cannabis is the most commonly used illicit drug among youth and pregnant women in western societies. Historically, cannabis has been used to alleviate nausea during pregnancy. In reviewing the literature on the use of medication as well as psychosocial approaches in women and pregnancy, clinical guidelines emerge as
well as a research agenda including prevalence estimates through urine screening. The implication of a positive test should not be punitive. Clinical trials on pregnant samples should also be conducted. The impact of THC and other cannabinoids should be further investigated as well as support of the newborn and developing child.

**Conclusion:** Compared to the preventive efforts targeting alcohol and tobacco use during pregnancy, the increasingly common use of cannabis is relatively neglected and in need of further specific investigations.

**TRAUMA LOAD PREDICTS FIRST TREATMENT IN LIFE AMONG ALCOHOL PATIENTS**

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1 Department of Psychology, University of Konstanz, Konstanz, Germany

**Introduction:** Trauma is a frequently reported experience by alcohol patients, but its effects on treatment has only received little attention. We have previously shown that trauma load has an effect on drop-out from alcohol detoxification treatment (Odenwald & Semrau, 2012).

**Objectives:** Here we studied the effect of trauma experiences on treatment seeking.

**Methods:** In a retrospective study, we recruited 66 alcohol in-patients. We assessed number and age of trauma experiences using the Trauma History Questionnaire (THQ), trauma symptoms using the Posttraumatic Diagnostic Scale (PDS) and depressive symptoms using the Center for Epidemiological Studies Depression Scale (CES-D). Lifetime treatment seeking and substance use was assessed using the Addiction Severity Index. We compared patients with high versus low trauma load.

**Results:** Both groups had the same average age, proportion of females and educational levels. Patients with high trauma load reported more posttraumatic (p=.001) and depressive symptoms (p=.04). Patients with high trauma load had used more substances in their life (p=.015) and had a shorter time between begin of substance abuse and first substance use treatment, i.e. 15.2 years (SD=10.5) vs. 9.5 years (SD=9.2; p=.036). But both groups did not differ in number of previous treatment attempts (9.6, SD=14.2). In multivariate models controlling for all other variables, trauma load was the most important predictor for time between begin of abuse and treatment.

**Conclusion:** Trauma experiences and psychological suffering are associated to earlier alcohol treatment seeking in life. Further studies are needed to better understand this association. Trauma and its consequences need to be addressed in prevention and alcohol treatment.

**REFERENCES:**

Trend Analysis on Drug-Related Deaths in Nova Scotia: A Study on Prescription and Illicit Drugs

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ABSTRACT

OBJECTIVES
This study is a trend analysis on drug-related deaths in Nova Scotia from the years 2007-2010 with an interest in comparing drug-related deaths associated with prescription drugs, illicit drugs and alcohol and over-the-counter drugs. This was done to assess the prevalence of drug abuse/misuse.

METHODS
Data was collected from the office of the Chief Medical Examiner in Nova Scotia. All deaths where drugs were listed in the final cause of death or under the ‘significant conditions’ that may have led to the final cause of death were included.

RESULTS
During the period of 2007-2010, neither prescription drug, illicit drug or alcohol and over-the-counter drug-related deaths have shown a statistically significant trend. Illicit drug-related deaths have the lowest average rate of 1.76*. Both prescription drug-related deaths and alcohol and over-the-counter drug-related deaths have a significantly higher average rate of 7.86*(|z|=1.97) and 10.4*(|z|=2.50) respectively.

The median age of illicit-drug related deaths is 36 years, and the median age for prescription and alcohol and over-the-counter drug-related deaths is 46 and 56 respectively.

Males take up a greater percentage of total deaths in all three categories throughout the four years, with the highest percentage in the alcohol and over-the-counter drug related deaths (8%), followed by illicit drug-related deaths (74.2%) and finally prescription drug-related deaths (66.4%).

CONCLUSIONS
This study urges policy makers to make changes to the illicit drug centric and youth centric anti-drug strategy in Canada, to increase the focus on prescription drug abuse/misuse and to also target the middle-aged demographic.

Key words: Drug-Related Death Trends, Prescription Drug Related Deaths, Illicit Drug Related Deaths, Canadian Drug Trends, Nova Scotian Drug Trends

INTRODUCTION

While thorough research has been done on the abuse of illicit drugs in Canada, little attention has been given to the emerging trend of psychoactive prescription drug abuse in Canada (1). According to the 2010 Psychotropic Substance Publication by the International Narcotics Control Board (INCB), Canada ranked highest in the ‘per-capita use’ of oxycodone, fifth ‘per-capita use’ of sedative-hypnotic, and had one of the highest rates of butalbital use, a physically and psychologically addictive barbiturate (2). While INCB's report is not a direct investigation on prescription drug abuse, the extremely high consumption of prescription drugs in Canada causes concern for the possible abuse of such drugs.

Recent studies on the abuse of prescription drugs indicate a staggering increase in prescription drug abuse in the US (3). In a 2007 report, the International Narcotics Control Board warned that the global abuse of prescription drugs will overtake the abuse of illicit drugs (4). Despite the indication that there is a rise in psychotropic prescription drug abuse, research in this area in Canada is scarce and is usually limited to a specific family of drugs (5,6), a certain group within a population (eg. patients currently prescribed with drugs) (5,6), or limited to a specific year of interest (7).

The purpose of this research was to construct a trend analysis of drug-related deaths in Nova Scotia over the past four years (2007-2010) to determine whether there has been a change in Nova Scotia's drug-abuse fatality

* per 100,000 population in Nova Scotia
pattern over time. Drug-abuse trends of both illicit and psychotropic prescription drugs were documented and compared to investigate whether there is a shift from the use of illicit drugs to prescription drugs, as well as to reflect the severity of drug abuse in Nova Scotia. In this study, it was hypothesized that there was an increase in the rate of prescription drug related deaths, and a decrease in the rate of illicit drug related deaths from the years 2007-2010. The two hypotheses were tested by means of a hypothesis test with a Poisson link, with $|z| \geq 1.96$ rendering significant results.

This study was a retrospective review (2007-2010) of drug-related-deaths in Nova Scotia. Data from the Office of the Chief Medical Examiner in Nova Scotia was used to gauge the prevalence of drug abuse in that province. Drug-related-deaths are a useful indicator to assess the severity of drug abuse problems within a population (8), the effectiveness of anti-drug efforts in the community and identify the flaws in current drug policies. The death-related approach also eliminated the problem of over or under reporting drug use as seen in survey based studies that is commonly used to monitor drug-abuse in a population (9,10,11). This approach allowed the study to branch beyond the question of recreational drug abuse, and investigated drug-related suicides, deaths caused by drug withdrawal and deaths caused by drug impairment: elements that provided a more comprehensive reflection on the damage to public health and safety caused by drug abuse/misuse.

**MATERIALS & METHODS**

Ethics permission to conduct this research was granted by the University of Toronto at Mississauga’s (UTM) Research Office. No data was collected prior to approval of the Ethics Review Committee, and the approval from the Office of the Chief Medical Examiner’s Office in Nova Scotia. The personal information on vital records in Nova Scotia is protected under provincial and territorial laws against unwarranted or indiscriminate disclosure (12). Files from the Office of the Chief Medical Examiner were only accessed and viewed in the Office of the Chief Medical Examiner. All raw data collected was treated as confidential.

This study reviewed all case files in the Office of the Chief Medical Examiner in Nova Scotia on a year to year basis starting from the most recent year (2010) to the least recent year (2007). While alcohol and over-the-counter drugs are not considered to be prescription or illicit drugs, data was collected for deaths associated with these substances to allow comparison and to ensure that the total drug-related deaths were as comprehensive and representative as possible. To ensure maximum representativeness, all drug-related deaths were recorded in each year and there was no sampling. An online database of death records was accessed to identify cases of drug-related deaths, using the ‘Primary Cause of Death’ and ‘Significant Conditions’ columns for reference. If drugs were listed in either of these headings, the case number was recorded for full file review later. This identification number was used to ensure that all persons without access to the records from the Office of the Chief Medical Examiner in Nova Scotia could not identify the individual associated with the case identification number.

Once all the case files were reviewed and all the drug-related cases were identified, a full file review of each recorded case commenced. Full file reviews involved the examination of toxicology and autopsy information. The objective of each full file review was to identify and record age at death, sex, manner of death, cause of death and drugs involved (as listed in ‘Primary Cause of Death’ or ‘Significant Conditions’) and recorded in an Excel datasheet. The data collected were further categorized and grouped within the respective years for analysis and exported to a Minitab program for statistical analysis by drug categories (prescription/illicit/alcohol and over-the-counter drugs), age groups and sex. Age groups were recorded as follows: 0-14, 15-24, 25-34, 35-44, 45-54, 55-64, ≥65, to allow easy comparison to similar research (8,13). Prescription drugs were further categorized into its drug class: antidepressants, narcotic analgesics, benzodiazepines, drug for major psychiatric or neurological disorders, hypnotics and sedatives and other prescription drugs, these categorizations were adopted from a past study on drug-related deaths in Nova Scotia (13). Illicit drugs were further categorized as follows: Cocaine (Crack), Amphetamine (Speed), Ecstasy, Methamphetamine and Heroin, this categorization was adapted from the Canadian Alcohol and Drug Use Survey (9). Alcohol and over-the-counter drugs were categorized as one group since both are readily available to the public.

The rates of death of the three drug categories were calculated with respect to the estimated Nova Scotian population in the respective years, as recorded by Statistics Canada (14). The data used for the total population in respective years is an estimate based on previous census records. As such, the resultant proportions have incorporated estimation errors from population estimates. However, with the data at hand, such errors were an inevitable limitation of the study (15,16). The hypothesis test with a Poisson link was used to compare the rates of deaths of each drug category in respective years to determine increasing/decreasing trends. The rates-of-death were modeled based on the Poisson regression so as to calculate and compare the annual incidence rates of
drug-related-deaths in various drug categories between 2007-2010. This test was done manually, and cross-checked to ensure accuracy. A Z-value greater than 1.96 (|z|≥1.96) rejected the null hypothesis that the two rates are equal (giving a 95% confidence), and supports the alternative hypothesis that the two rates are not equal. The same test was also used to compare the average rate of deaths between each drug category.

A two-proportion hypothesis test was done to identify whether there was a significant difference between multi-drug deaths and single-drug deaths among drug groups, and to compare the different drug-related-death rate between male and female. A P-value of less than 0.05 was considered a significant difference.

Percentages were calculated for other variables such as sex, age-at-death and the manner of death and were tabulated or graphed with Excel. The median for the age-at-death variables were calculated using a Minitab program.

RESULTS

PATTERNS AND TRENDS

Over the four-year period (2007-2010), a total of 617 deaths were categorized as a drug-related-death in Nova Scotia. Of the 617 deaths, 295 (47.8%) deaths were prescription drug-related deaths, 394 (63.9%) deaths were alcohol/over-the-counter drug-related deaths and 66 (10.7%) deaths were illicit drug-related deaths. Results of a hypothesis test with a Poisson link indicated that the rate-of-death of prescription drug, illicit drug and alcohol/over-the-counter drug-related deaths remained stable throughout the years, showing no significant increase or decrease in the four-year period (|z|≤1.96).

Illicit drug-related deaths have the lowest average rate-of-death (1.76 per 100,000 population). Compared to illicit drug-related deaths, both prescription and alcohol/over-the-counter drug-related deaths have a significantly higher average rate of 7.86 per 100,000 population (|z|=1.97), and 10.4 per 100,000 population (|z|=2.50) respectively. The average rate of prescription drug-related deaths is more than four times as great as the average rate of illicit drug-related deaths, and the average rate of alcohol/over-the-counter drug-related deaths is approximately six times as great as illicit drug-related deaths. There is no significant difference between the average rate of prescription drug-related deaths and alcohol/over-the-counter drug-related deaths.

As indicated by Fig 1, a significantly greater proportion of drug-related-deaths are associated with multi-drug toxicity (prescription drugs p=0.001, illicit drugs p<0.001), with the exception of alcohol/over-the-counter drugs where single-drug deaths are significantly greater than multi-drug deaths (p<0.001). Multi-drug deaths involved cross-categorical drugs (eg. Prescription drugs and illicit drugs), as well as single-categorical drugs (eg. Multiple prescription drugs). It is interesting to note that the inflation of single-drug deaths in alcohol/over-the-counter drug related deaths is due to ethanol, where it contributed to 93.9% of the 70.6% of alcohol/over-the-counter single-drug deaths. This indicates that the niche of alcohol abusers, unlike abusers/misusers of prescription drugs or illicit drugs, is less likely to experience multi-drug abuse/misuse.

As indicated by Fig 2, prescription drug suicides account for more than a quarter of the total prescription drug-related deaths. This high percentage of suicides is consistent throughout the four years and the unusually high percentage of suicides is only seen in prescription drug-related deaths.
drug-related deaths. In comparison, alcohol/over-the-counter drugs show a much higher percentage in natural deaths. Of these natural deaths, the single-drug-use of ethanol attributed to 97% or more of the natural deaths.

Table 1 classifies the number of prescription-drug-related deaths associated with each prescription drug class. Throughout the four years, there was no significant increase/decrease in the respective prescription drug classes ($|z|≤1.96$).

Of all the antidepressant related deaths, 71% were suicide deaths. Of the 27.5% accidental deaths, tricyclic antidepressants were implicated in 47.4% of these cases, selective serotonin reuptake inhibitors (SSRI) were also implicated in 36.8% of these cases. Other antidepressant drug classes that were implicated include: tetracyclic antidepressants, serotonin norepinephrine reuptake inhibitors (SNRI), norepinephrine dopamine reuptake inhibitor (NDRI), serotonin antagonist reuptake inhibitors (SARI).

Throughout the four-years, ethanol consistently ranked first as the top drug associated with drug-related-deaths as indicated in Table 2. Out of the top ten drugs, eight of them are prescription drugs. Five out of the eight prescription drugs are narcotic analgesics, two of which are benzodiazepines and one of which is an anti-depressant. Cocaine is the sole representative of illicit drugs in the list. It is important to note that while methadone is listed as a Top 10 drug, only 22.8% of the total methadone deaths were accidental single-drug deaths, this makes up approximately 2.1% of the total drug-related deaths as reported in this study. The majority of methadone implicated deaths were due to poly-drug accidental deaths which accounted for 70% of the total methadone-related-deaths. Of the poly-drug methadone-related accidental deaths, 57.5% were associated with a benzodiazepine. However, only 15% of the poly-drug methadone-related accidental deaths were solely associated with the methadone-benzodiazepine combination. While diazepam is the only benzodiazepine mentioned in Table 2, other benzodiazepines were also implicated these methadone-benzodiazepine deaths. These include, but are not limited to: clonazepam, oxazepam and triazolam.

**DEMographics**

Individuals who died from an illicit drug-related death ranged from 17 to 58 years (median age 36 years). Those who died from a prescription drug-related death ranged from 1 to 84 years (median age 46 years). Individuals who died from an alcohol/over-the-counter drug-related death ranged from 17 to 58 years (median age 56 years). Males constituted a significantly greater percentage (P<0.001) in all three categories as indicated in Fig 5.

**Discussion**

Since the prescription drug-related death rate has remained greater than the illicit drug-related death rate between the years 2007-2010, there is insufficient information to conclude whether prescription drug-related deaths had overtaken illicit drug-related. With the information from this study, there are two possible scenarios: either prescription drug-related death rates had always been greater than illicit drug related death rates, or prescription drug related death rates had overtaken illicit drug related death rates before the year 2007.

Throughout the four years, prescription drug-related deaths constituted a greater proportion of drug-related deaths than illicit drugs. This trend is further demonstrated the large proportion of prescription drugs in the top 10 drugs associated with drug-related deaths (Table 1). The prevalence of prescription drug-related deaths reflects the serious issue of prescription drug abuse in Nova Scotia, and according to the stable trend of prescription drug-related deaths, this problem has continued unabated between the years 2007-2010.

This study also corroborates previous findings of the high incidence of multi-drug abuse, misuse and overdose (17,18). With the exception of alcohol/over-the-counter drugs, the majority of prescription and illicit drug-related deaths involved poly-drug toxicity. In terms of recreational abuse of drugs, this reflects the dangers of a lack of understanding of potential drug interactions that may cause death.

In terms of manner of death, alcohol/over-the-counter drug-related deaths are associated with a high percentage of natural deaths (Fig 3). The single-drug-use of ethanol attributed to 97% or more of the alcohol/over-the-counter natural deaths each year. Drug-related natural deaths are often caused by lethal damages to the body due to prolonged abuse/misuse of a drug. Therefore, such high
percentages of alcohol-related natural deaths indicate severe chronic alcohol abuse problems in Nova Scotia.

In terms of manner of death, it is important to note the high percentage of prescription drug suicides compared with illicit drug suicides (Fig 4) or alcohol/over-the-counter suicides (Fig 3). According to a recent study, restricting access to the means of suicide is an effective way to lower suicides (19). This is evidenced by a study in Finland, where the risk of suicides was found to increase with the availability of prescription tricyclic antidepressants (20). Such high numbers of prescription drug abuse suggests that the public has easy access to prescription drugs and indicates flaws in the current prescription drug policies.

Canada’s national anti-drug strategy focuses on illicit drug abuse and lists ‘youth’ as its only target population under the strategy’s Prevention Action Plan (21). Based on the data in this study, the strategy’s narrow focus runs the risk of neglecting a substantial population that is deeply affected by drug abuse and misuse.

This population includes the middle-aged demographic, and the abusers of prescription drugs and alcohol. While illicit drug abuse continues to be an issue in our society, prescription drug abuse and alcohol abuse pose a great threat to the public, a threat that is not fully acknowledged by the current anti-drug strategy. This study urges policy makers to broaden the scope of the current anti-drug strategy to include the middle-aged demographic as a target population, and to address the issues of prescription drug abuse and alcohol abuse.

In terms of prescription drug availability, a more stringent mechanism should be designed to lower the ease of access to prescription drugs. According to studies, prescription drugs can be purchased easily through online pharmacies based outside of Canada (22), obtained from physicians through a process known as ‘doctor shopping,’ on the illicit drug market, or from family and friends (23). Therefore it is important to develop a mechanism to combat online drug-pharmacies, apply stricter guidelines for physicians on drug prescriptions and initiate campaigns to raise public awareness of the dangers of sharing prescription drugs with family or friends. Special attention should be paid to narcotic analgesics, anti-depressants and benzodiazepines, the top three prescription drug classes that are associated with the bulk of prescription drug-related deaths.

The use of epidemiological data in this study provides a good overview of the current drug-abuse situation in Nova Scotia and eliminates the possibility of over or under reporting on drug use by participants (10). However, the use of epidemiological data limits the scope of this study to the most severe scenario of drug abuse/misuse, where non-lethal cases of drug abuse/misuse would not have been accounted for in this study.

ACKNOWLEDGEMENTS
Dr. Tracy Rogers, Editorial Advisor
Dr. Matthew Bowes, Research and Scientific Advisor
Emily Holland, Editorial Advisor
Eveline Gallant, Scientific and Technical Advisor
Shauna Curley, Scientific and Technical Advisor
Margaret Coffin, Scientific and Technical Advisor

REFERENCES


# TABLES

## TABLE 1: PERCENTAGE OF PRESCRIPTION DRUGS IMPLICATED IN DRUG-RELATED DEATHS IN NOVA SCOTIA (2007 – 2010)

<table>
<thead>
<tr>
<th></th>
<th>2007 *n=80</th>
<th>2008 *n=62</th>
<th>2009 *n=83</th>
<th>2010 *n=70</th>
<th>4-Year Total *n=295</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Depressants (%)</td>
<td>27 (33.8)</td>
<td>23 (37.1)</td>
<td>16 (19.3)</td>
<td>30 (42.9)</td>
<td>96 (32.5)</td>
</tr>
<tr>
<td>Narcotic Analgesics/Opioids (%)</td>
<td>49 (61.3)</td>
<td>51 (82.3)</td>
<td>67 (80.7)</td>
<td>62 (88.6)</td>
<td>229 (77.6)</td>
</tr>
<tr>
<td>Benzodiazepines (%)</td>
<td>40 (50.0)</td>
<td>42 (67.7)</td>
<td>44 (53.0)</td>
<td>48 (68.6)</td>
<td>174 (56.0)</td>
</tr>
<tr>
<td>Drugs for Neurological/ Psychiatric Disorders (%)</td>
<td>3 (3.8)</td>
<td>3 (4.8)</td>
<td>6 (7.2)</td>
<td>6 (8.6)</td>
<td>18 (6.1)</td>
</tr>
<tr>
<td>Hypnotics/Sedatives (%)</td>
<td>3 (3.8)</td>
<td>5 (8.1)</td>
<td>3 (3.6)</td>
<td>1 (1.4)</td>
<td>12 (4.1)</td>
</tr>
</tbody>
</table>

*n=Total Prescription Drug-Related-Deaths in Respective Years  
(%)=Percentage of deaths with respect to total Prescription Drug-Related-Deaths/Year

## TABLE 2: TOP 10 DRUGS MOST COMMONLY ASSOCIATED WITH DRUG RELATED DEATHS IN NOVA SCOTIA (2007 – 2010)

<table>
<thead>
<tr>
<th></th>
<th>2007 *n=181</th>
<th>2008 *n=148</th>
<th>2009 *n=149</th>
<th>2010 *n=139</th>
<th>4-Year Total *n=617</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol (%)</td>
<td>112 (61.9)</td>
<td>85 (57.4)</td>
<td>75 (49.7)</td>
<td>82 (59.0)</td>
<td>354 (57.4)</td>
</tr>
<tr>
<td>Diazepam (%)</td>
<td>22 (12.2)</td>
<td>19 (12.8)</td>
<td>20 (13.4)</td>
<td>21 (15.1)</td>
<td>82 (13.3)</td>
</tr>
<tr>
<td>Cocaine (%)</td>
<td>17 (9.4)</td>
<td>19 (12.8)</td>
<td>21 (14.1)</td>
<td>8 (5.8)</td>
<td>65 (11)</td>
</tr>
<tr>
<td>Hydromorphone (%)</td>
<td>12 (6.6)</td>
<td>11 (7.4)</td>
<td>20 (13.4)</td>
<td>16 (11.5)</td>
<td>59 (10.5)</td>
</tr>
<tr>
<td>Methadone (%)</td>
<td>11 (6.0)</td>
<td>17 (11.5)</td>
<td>12 (8.1)</td>
<td>17 (12.2)</td>
<td>57 (9.2)</td>
</tr>
<tr>
<td>Morphine (%)</td>
<td>8 (4.4)</td>
<td>13 (8.8)</td>
<td>9 (6.0)</td>
<td>7 (5.0)</td>
<td>37 (6.0)</td>
</tr>
<tr>
<td>Oxycodone (%)</td>
<td>12 (6.6)</td>
<td>5 (3.4)</td>
<td>11 (7.4)</td>
<td>6 (4.3)</td>
<td>34 (5.5)</td>
</tr>
<tr>
<td>Clonazepam (%)</td>
<td>0 (0.0)</td>
<td>8 (5.4)</td>
<td>13 (8.7)</td>
<td>9 (6.5)</td>
<td>30 (4.9)</td>
</tr>
<tr>
<td>Amitriptyline (%)</td>
<td>11 (6.0)</td>
<td>4 (2.7)</td>
<td>7 (4.5)</td>
<td>3 (2.2)</td>
<td>25 (4.1)</td>
</tr>
<tr>
<td>Codeine (%)</td>
<td>3 (1.7)</td>
<td>2 (1.4)</td>
<td>9 (6.0)</td>
<td>9 (6.5)</td>
<td>23 (3.7)</td>
</tr>
</tbody>
</table>

*% = percentage of associated drug deaths with respect to the total number of drug-related deaths in respective years
Diagnosis and Treatment of Depression in Patients with Substance Use Disorders

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Case: Jane is a 41 year old married woman who has worked as an administrative assistant for the past 14 years. She began drinking alcohol sporadically at the age of 17. At age 28 her drinking increased, with regular drinking on the weekends of half a bottle of wine on Fridays and Saturdays. Her father died suddenly of a myocardial infarction when she was 35 years old. She describes that her mood began to deteriorate with her father’s death when she was 37 years old, followed by progressive loss of interest and isolation. Her 2 children left the home to go to University 2 years later. She reports that her drinking escalated over the last 2-3 years to drinking of a bottle of wine per day with occasionally more on weekends. Her mother has suffered from depression; however, there is no family history of substance problems. Despite recognizing that she needs to cut back or stop her alcohol use, she finds she cannot. She comes to see you complaining mostly of impaired sleep with early morning awakening, but also lethargy, anhedonia, poor concentration, guilt, and passive thoughts of suicide.

Jane’s presentation is common in clinical practice. Her presentation suggests alcohol dependence and the presence of a major depressive disorder (MDD). The lifetime prevalence for MDD in a patient who suffers from a substance use disorder is 34.5% (1). Likewise, 28% of patients presenting for treatment of a major depressive disorder have a current substance use disorder (2). While prior epidemiologic data tended to suggest that the majority of mood disorders found in patients presenting for treatment were substance-induced, more recent data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) has found that an independent mood disorder (i.e.: not substance-induced) was present in 40% of patients seeking treatment for an alcohol use disorder and in 60% of those seeking treatment for a drug use disorder (3).

DIFFERENTIATING SUBSTANCE INDUCED DEPRESSIVE DISORDERS FROM INDEPENDENT DEPRESSIVE DISORDERS

Although the clinical presentation is common, sorting out whether the depressive symptoms are a consequence of dependent substance use or are representative of an underlying MDD can be challenging. Making the correct diagnosis is critical to planning treatment setting and timing of treatments, where missing an underlying MDD could potentially contribute to addiction treatment failure via lack of engagement and retention, with persistent symptoms precipitating relapse, and suicide (4). While many patients with a substance use disorder have their depressive symptoms remit within 2-4 weeks of abstinence from substances, at least 20% or more will have persistent and functionally impairing depression even with ongoing abstinence. Identifying factors that suggest the presence of an underlying MDD early, rather than recognizing persistent symptoms later, are exemplified in Jane’s case. These can be broken down to looking at the timing and persistence of symptoms, types and extent of symptoms, demographics, and family history (5).

Jane’s depressive symptoms appear to pre-date the onset of her dependent alcohol use, beginning with her father’s death 6 years ago, associated with progressive loss of interest and isolation. Although retrospectively trying to time onset of an addiction to psychiatric symptoms can be challenging and prone to recollection bias, it at least can provide an initial clue as to whether an underlying psychiatric disorder requiring treatment is present.

Other clues from Jane’s presentation include her meeting full criteria for a MDD, not just having some depressive symptoms falling short of full criteria. In
particular, the presence of suicidal ideation and/or melancholic features of MDD like psychomotor slowing, anhedonia, lack of reactivity to pleasurable stimuli, and early morning awakening should cue the clinician to a MDD being present. The severity of the depressive symptoms and the degree of functional impairment present as a result of these symptoms should also be considered (6). Presence of suicidal ideation should prompt the clinician to ask about frequency, duration and severity of the ideation; controllability of the ideation; reasons for the ideation; deterrents for suicide; prior attempts; and any intentions or plans around suicide to help develop an appropriate safety plan. While many patients with substance use disorders complain of trouble falling or staying asleep, early morning awakening (i.e.: waking at 4 am and not being able to fall back asleep) is highly suggestive of MDD.

While substance use disorders are more prevalent in men, women typically have higher rates of depressive disorders and when they have a substance use disorder, have higher psychiatric co-morbidity rates (1). In addition, Jane has a family history of depression and lacks a family history for substance use disorder, again increasing the likelihood of her having MDD rather than a substance induced depressive disorder.

The constellation of depressive symptoms predating dependent alcohol use, full MDD criteria with typical or melancholic symptoms, suicidal ideation, female gender, and family history only for depression suggest that Jane likely has a MDD and that treatment should be instituted early rather than awaiting a period of abstinence of 2-4 weeks.

THE ROLE OF ANTIDEPRESSANT MEDICATIONS

The best treatment for patients with concurrent depressive and substance use disorders occurs in an integrated fashion where both disorders are addressed simultaneously (6,7). In those patients where it seems likely that there is an underlying MDD, an antidepressant medication should be initiated (8). Pharmacologic treatment of MDD in the patient with a substance use disorder typically is similar to that in a patient without a substance use disorder (6). To date, no one antidepressant has been found to be more effective than another, but choice should be guided by prior treatment response, family history of treatment response, side effect profile, patient preference, and target symptoms emphasized by the patient (8). In Jane’s case, her primary concern beyond depressed mood is her sleep impairment. Choosing an antidepressant that does not impair sleep or directly improves sleep, such as an SSRI or mirtazapine, may be preferable. Some clinicians add trazodone at night to help address sleep issues, but the dose is typically too low to have an antidepressant effect on its own, so would need to be used to augment a primary antidepressant. For the alcohol dependent patient, considerations would include avoiding antidepressants that may interfere significantly with liver metabolism of other agents (i.e.: paroxetine) when liver function may already be compromised due to alcohol use, avoiding agents that may increase the likelihood of a seizure (i.e.: bupropion) during withdrawal, or be potentially lethal in overdose (i.e.: tricyclic agents). Recently, it has been suggested that first line pharmacologic treatments for patients with co-occurring MDD and an alcohol use disorder are mirtazapine, add-on naltrexone or naltrexone alone (even though naltrexone has no antidepressant qualities), or naltrexone with sertraline (9). Typical treatment duration with an antidepressant would be the same as is if the patient did not have a co-occurring substance use disorder (6), but reinforcement of adherence to treatment, observance of medication tolerability, and need for closer follow-up in the concurrent disorder patient may be heightened.

Curiously, antidepressant response does not appear to be affected by substance use as much as was once thought. In the past, patients were told that an antidepressant would not be effective unless the patient was abstinent, but more recent trial and meta-analysis evidence does not support this, especially for alcohol dependent patients (10,11,12). Patients with MDD and drug use disorders may fair worse in clinical trials than patients with MDD alone or MDD and alcohol use disorders potentially due to higher treatment discontinuation rates (10). However, in the Sequeced Treatment Alternatives to Relieve Depression (STAR*D) study, no significant differences were found in response, time to achieve response, and remission with citalopram between subjects with MDD alone compared to subjects with MDD and an alcohol use disorder or MDD with a drug use disorder, although subjects with MDD and both an alcohol use and a drug use disorder
did have decreased remission rates and greater time to reach remission (11). In the Combining Medications to Enhance Depression Outcomes (CO-MED) study, the presence of a co-morbid substance use disorder in patients with chronic and/or recurrent MDD compared to those without a substance use disorder did not significantly affect treatment outcomes with either escitalopram on its own, combination bupropion sustained release and escitalopram, or combination venlafaxine extended release and mirtazapine (12). Despite these findings, it would still be likely best to emphasize that for best initial and sustained responses to antidepressants, abstinence would be the safest and most effective approach.

INTEGRATING PHARMACOTHERAPY WITH EVIDENCE-BASED PSYCHOTHERAPY

A last point would be that while antidepressants can help a patient’s mood state, they do not alone appreciably change substance use behaviour even when there is a marked antidepressant response (6,10). Typical addiction treatment approaches need to be implemented (6). A type of treatment that might be best used would involve a cognitive behavioural therapy (CBT)/relapse prevention approach given the robust data set of CBT being beneficial for MDD alone, substance use disorders alone, and emerging literature that CBT is beneficial for patients with concurrent depressive and substance use disorders (13,14).

In summary, depressive and substance use disorders are frequently encountered in clinical practice and it is important to diagnose and treat both to ensure best treatment outcomes. Although many depressive symptoms can lift with abstinence alone, independent depressive disorders are common in patients with substance use disorders often with overt clinical clues present to signal their presence and need for treatment. While clinical trials to date in concurrent populations have their limitations, antidepressant treatments appear to be equally as effective for patients with MDD and substance use disorders as they are for patients with MDD alone.

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| Graduate Degree(s)/University/Year Graduated: |
| Area of Specialty: |

## Current Employment:

| Area of Employment: | Private Practice | Treatment Centre | Educational Facility | Other (please specify): |
| Appointment(s) – Hospital/University/College Including Department: |

## Addiction Medicine Affiliations

| American Society of Addiction Medicine (ASAM): | Member |
| Certificant | Year of Certification/recertification: |
| Fellow | Year of Fellowship: |
| International Society of Addiction Medicine (ISAM): | Member |
| Certificant | Year of Certification/recertification: |

## Current License to Practice

| Province/Registration Number |
| Are there any current restrictions on your license? | Yes | No |

*Please attach an explanation on a separate sheet. This information will be treated in strict confidence and not used for any reporting or punitive purposes.*

**PLEASE NOTE:** applications will be accepted only till July 15, 2013.
**PLEASE CHECK APPROPRIATE PART AND ATTACH APPROPRIATE DOCUMENTS**

- **CSAM member for 2 years**

**PATHWAY “A”:**

- Letter of good standing certifying membership with the Professional Corporation of Physicians of Quebec OR the Royal College of Physicians and Surgeons of Canada OR the College of Family Physicians of Canada

- Letter of reference from a physician in your community who can testify to your successful completion of one year full time involvement, or 50% over two years in the field of Addiction

**PATHWAY “B”:**

- Letter of reference from a physician in your community who can testify to your successful completion of one year full time involvement, or 50% over two years in the field of Addiction

- Attendance at the Canadian Society of Addiction Medicine Annual meeting, or its equivalent, for the two years prior to certification and show evidence of annual completion of a minimum of 25 hours of Continuing Medical Education credits in Addiction Medicine for each of the preceding two years prior to application for certification.

**AFFIDAVIT**

By signing below, I agree to the following three paragraphs:

I successfully sat the American Society of Addiction Medicine (ASAM) or the International Society of Addiction Medicine (ISAM) exam or the American Board of Addiction Medicine (ABAM): Date: ________________________

I hereby certify that all the above information is correct and complete. I understand that CSAM officers or their designate may verify the accuracy of information in this application from appropriate organizations. I understand that incomplete applications will not be processed for review by the CSAM Standards Committee.

I hereby release, discharge and exonerate the CSAM Board, its Directors, Officers, Members, Examiners, Representatives and Agents from any actions, suits, obligations, damages, claims or demands arising out of, or in connection with this application or the failure of the CSAM Board to issue me a Certificate. It is understood that the decision to issue a Certificate testifying Certificant of the Canadian Society of Addiction Medicine (CCSAM) rests solely and exclusively in the Board and its decision will be final.

Applicant’s Signature ______________________________ Date __________________

**PAYMENT INFORMATION**

Certification Application Processing Fee: $100.00 CDN

Fees may be paid by Cheque, Bank Draft or Money Order Payable to The Canadian Society of Addiction Medicine or

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