Feasibility and Outcomes of a Community-Based Taper-to-Low-Dose-Maintenance Suboxone Treatment Program for Prescription Opioid Dependence in a Remote First Nations Community in Northern Ontario

Mae Katt, NP, MEd, Centre for Rural and Northern Health Research, Lakehead University, Thunder Bay, Ontario

Claudette Chase, MD, Sioux Lookout First Nations Health Authority, Sioux Lookout, Ontario

Andriy V. Samokhvalov, MD, PhD, Centre for Addiction and Mental Health (CAMH), Toronto, Ontario, Department of Psychiatry, University of Toronto, Toronto, Ontario

Elena Argento, MPH, Centre for Applied Research in Mental Health and Addiction (CARMHA), Simon Fraser University, Vancouver, British Columbia

Jürgen Rehm, PhD, Centre for Addiction and Mental Health (CAMH), Toronto, Ontario, Department of Psychiatry, University of Toronto, Toronto, Ontario, Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario

Benedikt Fischer, PhD, Centre for Addiction and Mental Health (CAMH), Toronto, Ontario, Centre for Applied Research in Mental Health and Addiction (CARMHA), Simon Fraser University, Vancouver, British Columbia

ABSTRACT

Objective: Non-medical prescription opioid use (NMPOU) is a major health problem in North America and increasingly prevalent among First Nations people. More than 50% of many Nishnawbe Aski Nation communities in northern Ontario report NMPOU, resulting in extensive health and social problems. Opioid substitution therapy (OST) is the most effective treatment for opioid dependence yet is unavailable in remote First Nations communities. Suboxone (buprenorphine and naloxone) specifically has reasonably good treatment outcomes for prescription opioid (PO) dependence. A pilot study examining the feasibility and outcomes of a community-based Suboxone taper-to-low-dose-maintenance program for PO-dependent adults was conducted in a small NAN community as a treatment option for this particular setting.

National Aboriginal Health Organization (NAHO)
Organisation nationale de la santé autochtone (ONSA)

Design: Participants (N = 22, ages 16–48 years) were gradually stabilized on and tapered off Suboxone (provided on an outpatient and directly-observed basis) over a 30-day period. Low dose maintenance was offered post-taper to patients with continued craving and relapse risk; community-based aftercare was provided to all participants.
Results: Of 22 participants, 21 (95%) completed the taper phase of the program. Fifteen (88%) of 17 participants tested by urine toxicology screening had no evidence of PO use on day 30. No adverse side effects were observed. All but one of the taper completers were continued on low-dose maintenance.
Conclusion: Community-based Suboxone taper-to-low-dose-maintenance is feasible and effective as an initial treatment for PO-dependence in remote First Nations populations, although abstinence is difficult to achieve and longer term maintenance may be required. More research on OST for First Nations people is needed; existing OST options, however, should be made available to First Nations communities given the acute need for treatment.

KEYWORDS

Aboriginal health, addiction, community-based treatment, prescription opioids, opioid substitution treatment

INTRODUCTION

In North America, non-medical prescription opioid use (NMPOU)—involving drugs such as OxyContin (oxycodone), hydromorphone, and morphine — and related harms have become a major public health crisis in recent years, causing extensive morbidity and mortality (Dhalla et al., 2009; Fischer & Argento, in press; Manchikanti, Fellows, Ailinani, & Pampati, 2010). In Canada, up to 6.5% of the general adult population report NMPOU in the past year with even higher rates reported for young people, including secondary students (Shield, Ialomiteanu, Fischer, & Rehm, 2012). Both prescription opioid (PO)-related accidental deaths and admissions to substance use treatment facilities have risen substantially in Canadian jurisdictions (Dhalla et al., 2009; Fischer, Nakamura, Rush, Rehm, & Urbanoski, 2010).

First Nations people are among the most socio-economically disadvantaged groups in Canada, experiencing substantially poorer health outcomes for chronic diseases (e.g., cardiovascular problems and diabetes) as well as a higher incidence of premature mortality compared to non-First Nations populations (Dyck, Osgood, Lin, Gao, & Stang, 2010; Health Canada, 2009). First Nations people also have much higher rates of substance use (alcohol, tobacco, and injection drug use, among others) and are consistently found to be at much greater risk for morbidity and mortality outcomes such as HIV or hepatitis C transmission and drug overdose (Duncan et al., 2011; Health Canada, 2009; Wu et al., 2007). First Nations people are considered particularly vulnerable to substance abuse due to the systemic impact of social determinants of health—e.g., lack of adequate housing or employment—and trauma, such as the legacy of residential schools. The loss of distinct cultural knowledge and capital related to traditions, land, and people is also widely accepted as a pathway to substance abuse, especially at an early age (Dell et al., 2012; Gracey & King, 2009).

Recently, NMPOU has become acutely problematic in First Nations communities, including the Nishnawbe Aski Nation (NAN). The NAN, encompassing most of Ontario's northern land mass, is comprised of 49 smaller communities and has a total population of around 45,000. In some NAN communities, more than 50% of the adult population are reported to be PO (mainly OxyContin) abusers and in need of treatment; similar data have been reported for high school populations (Nishnawbe Aski Nation Think Tank, 2011). A recent study from a NAN health centre found that 17.2% of pregnant women sampled abused POs (oxycodone) during pregnancy, with a significant percentage of exposed neonates experiencing opioid withdrawal symptoms or neonatal abstinence syndrome (Kelly et al., 2011). In addition, multiple NAN communities have reported major increases in family and child neglect, crime and violence, and overall community decay due to NMPOU. On this basis, the NAN Chiefs-in-Assembly formally declared a "state of emergency" related to PO misuse, urgently requesting assistance and intervention support (Nishnawbe Aski Nation Think Tank, 2011).

Opioid pharmacotherapy, specifically opioid substitution therapy (OST) with either methadone or buprenorphine, is considered the gold standard of treatment for opioid dependence, with both drugs included on the World Health Organization's list of essential medicines. Methadone and buprenorphine have demonstrated similarly beneficial outcomes in OST, such as reductions in illicit opioid use, health risk behaviors, and overdose (Mattick, Kimber, Breen, & Davoli, 2008; White & Lopatko, 2007). OST is widely available and easily accessible to most Canadians. The number of people in methadone maintenance treatment in Ontario has doubled to more than 28,000 in recent years, primarily due to patients with PO dependence (College of Physicians and Surgeons of Ontario, 2009). However, OST is not ordinarily available to First Nations people in remote communities, as no treatment infrastructure exists. Patients who need OST are required to travel or move to distant urban centres to receive treatment.

While methadone has been used for maintenance treatment purposes in Canada for decades, Suboxone (a combined buprenorphine/naloxone formulation, administered via sublingual tablets) is a relatively new OST drug that has shown reasonably good outcomes in treating opioid dependence (Fudala et al., 2003; Kahan, Srivastava, Ordean, & Cirone, 2011; Ling et al., 2005). Health Canada approved Suboxone to treat opioid dependence in 2007, but the drug was not included for coverage under the Federal Non-Insured Health Benefits Program (FNIHBP) for First Nations people at the time of study. Based on its pharmacodynamics and pharmacokinetics, buprenorphine has a longer duration of action than methadone as well as a ceiling effect, and therefore has superior withdrawal resolution as well as a lower risk of abuse and overdose (Alho, Sinclair, Vuori, & Holopainen, 2007; Dunn, Sigmon, Strain, Heil, & Higgins, 2011; Gowing, Ali, & White,

National Aboriginal Health Organization (NAHO)
Organisation nationale de la santé autochtone (ONSA)

2009). Suboxone has also been used for opioid detoxification treatment approaches; most studies to date, however, involve only heroin users. A recent study found that a 30-day Suboxone detoxification regimen was more effective than a five-day regimen in terms of treatment completion (16% vs. 4% of participants) and producing opioid-free urines (4.3 vs. 4.8 positive specimens) (Katz et al., 2009). Two recent studies focusing on short-term Suboxone detoxification treatment for PO dependence have found that only a minority (i.e., less than one-third) of treatment completers have opioid-free urine at the end of treatment (Sigmon, Dunn, Badger, Heil, & Higgins, 2009; Weiss et al., 2011).

Given the absence of OST options, as well as the urgent need for effective NMPOU treatment in remote areas, a pilot study to explore the feasibility and potential benefits of a Suboxone taper-to-low-dose-maintenance treatment program was conducted in a small NAN community with high rates of PO dependence. Specifically, the study sought to examine a workable and effective treatment option that would ideally accomplish a taper-to-abstinence outcome. Post-taper low-dose maintenance would be an option for those with continued craving and relapse risk in this particularly challenging setting. The NAN community in which the study took place (the name of the community was kept anonymous to protect the identities of study participants) has a total population of around 300 people, with 75% of adults estimated to be PO-dependent. The community is located 400 km from the nearest city and is accessible only by air. It has an elementary school, a small variety store, and a fuel supply station. Basic health (i.e., nursing) services are provided Monday to Friday, but all serious health problems require air transportation to the nearest hospital 160 km away.

METHODS

For purposes of this study, investigators established a customized basic infrastructure and protocol for the Suboxone taper-to-low-dose-maintenance program in the target population. The treatment program was delivered in the community's local health station by a team comprised of an off-site physician, a nurse practitioner and case manager with extensive addiction care experience, and an on-site registered nurse and addiction worker. The off-site team members were present at the health station during the first (induction) and fourth (tapering) weeks of the initial 30-day phase of the program. Further consultations occurred with opioid dependence treatment specialists in the Addictions Program at the Centre for Addiction and Mental Health (CAMH) in Toronto, Ontario.

The study involved a convenience sample, in that community members with known PO abuse were approached and invited to participate in the pilot treatment program. A total of 22 participants with PO dependence were enrolled in the study. The principal treatment objective was to stabilize participants on, and completely taper them off, Suboxone by day 30 of the program. Patients for whom it was clinically necessary due to continued craving and/or relapse risk would remain on low-dose Suboxone maintenance post-taper. Opioid dependence and treatment eligibility were confirmed by a comprehensive medical examination, including an assessment of opioid use history, urine toxicology screening (UTS), and the Clinical Opiate Withdrawal Scale (COWS) (Tompkins et al., 2009). Exclusion criteria were confirmed pregnancy and currently acute, serious mental health episodes. Participants were required to not consume any psychoactive substances in the 24 hours before starting treatment. Initial induction was 2–4 mg of Suboxone, followed by another 4 mg dose on the same day as determined by withdrawal symptoms. Suboxone doses were increased to optimum levels of 8–16 mg over the following three days. Suboxone was dispensed daily and administered under direct observation at the treatment site on an outpatient basis. In cases of continued withdrawal problems, participants received ancillary medications (e.g., ibuprofen or clonidine). After successful stabilization, Suboxone tapering began on days 8–9, with successive dose decrements of 2 mg every three days. Both UTS and COWS were performed at the end of the 30 day taper period and each patient was assessed individually for a personalized treatment aftercare plan, including the potential need for continued low-dose Suboxone maintenance. Aftercare programming consisted of several weeks of individual and group counselling focusing on relapse prevention, incorporating motivational enhancement, health education, and spiritual support.

Suboxone medications were kept in the care of on-site health staff, stored at the health station in a lockbox with two padlocks. The local police constable provided safe storage at the police office when the nurse was not in the community. Following the practice guidelines for community-based Suboxone treatment programs, the treatment staff completed a medication register. There were no incidents of lost or stolen medication during the study period.

TABLE 1. SOCIO-DEMOGRAPHIC AND OPIOID USE CHARACTERISTICS OF THE SAMPLE (N = 22)

Gender (male)	45.0% (*n* = 10)
Age (years)	Mean: 26.7 (*SD*: 8.2); Median: 23.5
	Range: 16.0–48.0
Employed	32.0% (*n* = 7)
Duration of opioid use (years)	Mean: 3.7 (*SD*: 1.89); Median: 4.0
	Range: 1.0–7.0
Opioid use (morphine equivalent, mg/day)	Mean: 203.1 (*SD*: 119.8); Median: 180.0
	Range: 45.7–481.2
OxyContin use (mg/day)	Mean: 87.6 (*SD*: 65.5); Median: 80.0
	Range: 0.0–240.0
Proportion of OxyContin in total opioid use	Mean: 83.7% (*SD*: 26.4%); Median: 95.2%
	Range: 0.0–100.0%

The initial taper phase of the study took place October 3–November 2, 2011. Participants signed a consent and treatment agreement. The specific objectives of the study were to assess treatment feasibility and progress, as well as basic outcomes at the end of the initial 30-day phase of the program.

RESULTS

The treatment sample consisted of 10 males and 12 females, with an age range of 16–48 years (see Table 1). Participants had abused POs for a mean duration of 3.7 years; most abuse was in the form of OxyContin and, to a lesser extent, Percocet (oxycodone and acetaminophen). Of the total 22 patients enrolled, 21 (95%) completed the initial 30-day taper phase of the Suboxone taper-to-low-dose-maintenance program (see Table 2). Fifteen of 17 (88%) tested participants had PO-free urine (measured by UTS) on day 30 of the initial taper phase. No adverse side effects were observed in the cohort. While the primary objective of the treatment program was opioid abstinence at the end (day 30) of the initial taper phase of the program, following the individualized assessments the treatment team decided to have 19 of the 21 taper phase completers continue on low-dose Suboxone maintenance (most at 4 mg/day) for a short-term (i.e., 6–8 week) period. These decisions were made primarily because of continued substantive opioid cravings, to try to prevent the acute possibility of relapse to PO abuse in these patients. One participant was comfortable being completely tapered off of Suboxone, while a female participant with pregnancy detected and confirmed after the start of treatment was switched to low-dose Suboxone maintenance when the application for the clinical standard of buprenorphine monoformulation maintenance was not approved by Health Canada.

DISCUSSION

This study assessed a community-based Suboxone taper-to-low-dose-maintenance program for PO-dependent individuals in a small and remote First Nations community with an extremely high rate of PO abuse, yet no ready access to adequate regular treatment resources or programming (e.g., OST). This small, exploratory study confirmed the overall feasibility of the Suboxone taper-to-low-dose-maintenance program as implemented in this distinctly challenging setting. The findings contribute to the evidence on evolving models for the delivery of community-based health care—in this case, acute addiction treatment—in remote and disadvantaged First Nations communities (Hay, Varga-Toth, & Hines, 2006; Rygh & Hjortdahl, 2007). Investigators easily recruited participants into the treatment program, and the collaboration between off-site addiction treatment specialists (either on a fly-in basis for key phases of the treatment program or by consulting over distance) and on-site care providers was effective and worked well. On this basis, this study represents a possible and workable model for opioid dependence treatment in remote, and specifically First

National Aboriginal Health Organization (NAHO)
Organisation nationale de la santé autochtone (ONSA)

TABLE 2. SUBOXONE TREATMENT (TAPER PHASE) PARAMETERS AND OUTCOMES (*N* = 22)

Initial COWS* score	Mean: 8.1 (*SD*: 3.7); Median: 8.0 Range: 1.0–15.0
Suboxone dose on day 1 (mg)	Mean: 7.1 (*SD*: 1.6); Median: 8.0 Range: 4.0–8.0
Maximum daily Suboxone dose (mg)	Mean: 14.7 (*SD*: 2.3); Median: 16.0 Range: 8.0–16.0
COWS score on day 30	Mean: 4.2 (*SD*: 2.0); Median: 4.0 Range: 1.0–9.0
30-day taper phase completers	95.0% (*n* = 21)
UTS specimens negative for opioids on day 30 (n = 17 validly administered tests)	88.0% (*n* = 15)
Taper completers continued on low-dose maintenance of Suboxone or Subutex (buprenorphine)	95.0% (*n* = 20)

*Clinical Opiate Withdrawal Scale

Nations, communities with extensive and urgent care needs (Gray & Saggers, 2009; Wakerman, 2009).

The study was effective in that the vast majority of participants completed the initial taper phase of the Suboxone taper-to-low-dose-maintenance treatment program, i.e. they were successfully retained in treatment for the 30-day taper period, and were successfully transitioned onto low-dose Suboxone maintenance, even though the idealized objective of zero-dose tapering (i.e., opioid abstinence) was not possible for the majority of participants. Ongoing craving symptoms and the risk of immediate relapse to PO misuse were too great for many participants, and therefore these individuals received the low-dose Suboxone maintenance option. In this respect, our study confirms findings from other research suggesting that it is difficult for most opioid-dependent individuals to achieve abstinence from opioids following short-term Suboxone detoxification or taper regimens (Sigmon et al., 2009; Weiss et al., 2011; Woody et al., 2008). It is unknown whether longer taper regimens (e.g., 45 or 60 days) would help improve the rate of successful treatment outcomes towards opioid abstinence or detoxification (Dunn et al., 2011; Ling et al., 2009; Weiss et al., 2011). It has also not been effectively established what patient characteristics may predict more successful short-term detoxification or taper-to-abstinence outcomes. Based on non-systematic impressions from the present study, it appears that those participants with long and intensive PO use histories were less likely to be able to successfully taper off of Suboxone at the 30-day mark. Short-term low-dose Suboxone maintenance may help some patients to achieve a successful zero-dose taper (i.e., abstinence). For others, opioid dependence may be a chronic condition requiring long-term or infinite maintenance treatment (Sigmon et al., 2009; Weiss et al., 2011). Our ongoing research will document and assess the low-dose maintenance phase, as well as future treatment courses and outcomes, of the study population in future publications.

CONCLUSIONS

Our study has important implications for research and practice. First, longer term follow-up is needed to assess long-term OST options and outcomes in opioid-dependent First Nations populations. Second, a larger scale study should examine treatment outcomes for different opioid treatment regimens (e.g., shorter and/or longer term Suboxone taper or maintenance regimens or use of other OST agents) in PO-dependent First Nations populations. Given the extensive and acute PO misuse crisis in the NAN and other First Nations communities, OST infrastructure and services for opioid dependence in remote First Nations communities must be quickly improved (Kelly et al., 2011; Nishnawbe Aski Nation Think Tank, 2011). In the absence of these measures, existing OST options such as the Suboxone taper-

to-low-dose-maintenance model used in this study should be made readily available to those in need.

ACKNOWLEDGMENTS

The authors acknowledge research funding from the Canadian Institutes of Health Research (CIHR), specifically Team Grant #94814, as well as the CAMH Foundation, supporting the development of this manuscript. Dr. Fischer furthermore acknowledges salary support from a CIHR/ Public Health Agency of Canada Chair in Applied Public Health; Drs. Fischer and Rehm acknowledge support from the Ontario Ministry of Health and Long-Term Care.

REFERENCES

Alho, H., Sinclair, D., Vuori, E., & Holopainen, A. (2007). Abuse liability of buprenorphine-naloxone tablets in untreated IV drug users. *Drug and Alcohol Dependence,* 88(1), 75–78.

College of Physicians and Surgeons of Ontario (2009). *Methadone Maintenance Treatment Program* [Fact sheet]. Retrieved June 6, 2012 from http://www.cpso.on.ca/uploadedFiles/homepage/homepageheadlines/MethadoneFactSheet(1).pdf

Dell, C. A., Roberts, G., Kilty, J., Taylor, K., Daschuk, M., Hopkins, C. et al. (2012). Researching Prescription Drug Misuse among First Nations in Canada: Starting from a Health Promotion Framework. *Substance Abuse: Research and Treatment,* 6, 23–31.

Dhalla, I. A., Mamdani, M. M., Sivilotti, M. L., Kopp, A., Qureshi, O., & Juurlink, D. N. (2009). Prescribing of opioid analgesics and related mortality before and after the introduction of long-acting oxycodone. *Canadian Medical Association Journal,* 181, 891–896.

Duncan, K. C., Reading, C., Borwein, A. M., Murray, M. C. M., Palmer, A., Michelow, W., et al. (2011). HIV incidence and prevalence among Aboriginal peoples in Canada. *AIDS and Behavior,* 15, 214–227.

Dunn, K. E., Sigmon, S. C., Strain, E. C., Heil, S. H., & Higgins, S. T. (2011). The association between outpatient buprenorphine detoxification duration and clinical treatment outcomes: A review. *Drug and Alcohol Dependence,* 119, 1–9.

Dyck, R., Osgood, N., Lin, T. H., Gao, A., & Stang, M. R. (2010). Epidemiology of diabetes mellitus among First Nations and non-First Nations adults. *Canadian Medical Association Journal,* 182, 249–256.

Fischer, B. & Argento, E. (in press). Prescription Opioid Related Misuse, Harms, Diversion and Interventions in Canada: A Review. *Pain Physician.*

Fischer, B., Nakamura, N., Rush, B., Rehm, J., & Urbanoski, K. (2010). Changes in and characteristics of admissions to substance use treatment related to problematic prescription opioid use in Ontario, 2004–2009. *Drug and Alcohol Dependence,* 109, 257–260.

Fudala, P. J., Bridge, T. P., Herbert, S., Williford, W. O., Chiang, N., Jones, K., et al. (2003). Office based treatment of opiate addiction with a sublingual-tablet formulation of buprenorphine and naloxone. *New England Journal of Medicine,* 349, 949–958.

Gowing, L., Ali, R., & White, J. M. (2009). Buprenorphine for the management of opioid withdrawal. *Cochrane Database of Systematic Reviews,* (3), CD002025.

Gracey, M. & King, M. (2009). Indigenous health part 1: determinants and disease patterns. *The Lancet,* 374, 65–75.

Gray, D. & Saggers, S. (2009). The evidence base for responding to substance misuse in Indigenous minority populations. In T. Stockwell, P. Gruenewald, J. Toumbourou, & W. Loxey (Eds.), *Preventing Harmful Substance Use: The Evidence Base for Policy and Practice* (pp. 381–394). Chichester, United Kingdom: John Wiley & Sons LTD.

Hay, D., Varga-Toth, J., & Hines, E. (2006). *Frontline Health Care in Canada: Innovations in Delivering Services to Vulnerable Populations.* (Report F|63). Ottawa, Canada: Canadian Policy Research Networks. Retrieved June 6, 2012 from http://www.cprn.org/doc.cfm?doc=1554&l=en

Health Canada (2009). *A Statistical Profile on the Health of First Nations in Canada.* Ottawa, Canada: Health Canada. Retrieved June 6, 2012 from http://www.hc-sc.gc.ca/fniah-spnia/pubs/aborig-autoch/2009-stats-profil/index-eng.php

Kahan, M., Srivastava, A., Ordean, A., & Cirone, S. (2011). Buprenorphine. *Canadian Family Physician,* 57, 281–289.

Katz, E. C., Schwartz, R. P., King, S., Highfield, D. A., O'Grady, K. E., Billings, T., et al. (2009). Brief vs. Extended Buprenorphine Detoxification in a Community Treatment Program: Engagement and Short-Term Outcomes. The *American Journal of Drug and Alcohol Abuse,* 35, 63–67.

Kelly, L., Dooley, J., Cromarty, H., Minty, B., Morgan, A., Madden, S. et al. (2011). Narcotic-exposed neonates in a First Nations population in northwestern Ontario. *Canadian Family Physician,* 57, e441–e447.

National Aboriginal Health Organization (NAHO)
Organisation nationale de la santé autochtone (ONSA)

Ling, W., Amass, L., Shoptaw, S., Annon, J. J., Hillhouse, M., Babcock, D., et al. (2005). A multi-center randomized trial of buprenorphine-naloxone versus clonidine for opioid detoxification: findings from the National Institute on Drug Abuse Clinical Trials Network. *Addiction* 100, 1090–1100.

Ling, W., Hillhouse, M., Domier, C., Doraimani, G., Hunter, J., Thomas, C., et al. (2009). Buprenorphine tapering schedule and illicit opioid use. *Addiction*, 104, 256–265.

Manchikanti, L., Fellows, B., Ailinani, H., & Pampati, V. (2010). Therapeutic Use, Abuse, and Nonmedical Use of Opioids: A Ten-Year Perspective. *Pain Physician*, 13, 401–435.

Mattick, R., Kimber, J., Breen, C., & Davoli, M. (2008). Buprenorphine maintenance versus placebo or methadone maintenance for opioid dependence. *Cochrane Database of Systematic Reviews*, (3), CD002207.

Nishnawbe Aski Nation Think Tank (2011). *Restoring Our Nation: Action Plan for Community Recovery from Opioid Addiction.* Thunder Bay, Canada: Nishnawbe Aski Nation Think Tank.

Rygh, E. M. & Hjortdahl, P. (2007). Continuous and integrated health care services in rural areas. A literature study. *Rural and Remote Health,* 7, 766.

Shield, K. D., Ialomiteanu, A., Fischer, B., & Rehm, J. (2012). Assessing the prevalence of non medical prescription opioid use in the Canadian general adult population: Evidence of large variation depending on survey questions used. Unpublished manuscript.

Sigmon, S. C., Dunn, K. E., Badger, G. J., Heil, S. H., & Higgins, S. T. (2009). Brief buprenorphine detoxification for the treatment of prescription opioid dependence: A pilot study. *Addictive Behaviors*, 34, 304–311.

Tompkins, D. A., Bigelow, G. E., Harrison, J. A., Johnson, R. E., Fudala, P. J., & Strain, E. C. (2009). Concurrent validation of the Clinical Opiate Withdrawal Scale (COWS) and single-item indices against the Clinical Institute Narcotic Assessment (CINA) opioid withdrawal instrument. Drug and Alcohol Dependence, 105, 154–159.

Wakerman, J. (2009). Innovative rural and remote primary health care models: What do we know and what are the research priorities? *Australian Journal of Rural Health*, 17, 21–26.

Weiss, R. D., Potter, J. S., Fiellin, D. A., Byrne, M., Connery, H. S., Dickinson, W., et al. (2011). Adjunctive Counseling During Brief and Extended Buprenorphine-Naloxone Treatment for Prescription Opioid Dependence: A 2-Phase Randomized Controlled Trial. *Archives of General Psychiatry*, 68, 1238–1246.

White, J. M. & Lopatko, O. V. (2007). Opioid maintenance: a comparative review of pharmacological strategies. *Expert Opinion on Pharmacotherapy,* 8(1), 1–11.

Woody, G. E., Poole, S. A., Subramaniam, G., Dugosh, K., Bogenschutz, M., Abbott, P., et al. (2008). Extended vs Short-Term Buprenorphine-Naloxone for Treatment of Opioid-Addicted Youth: A Randomized Trial. *The Journal of the American Medical Association,* 300, 2003–2011.

Wu, H. X., Wu, J., Wong, T., Andonov, A., Li, Q., Dinner, K., et al. (2007). Incidence and risk factors for newly acquired hepatitis C virus infection among Aboriginal versus non-Aboriginal Canadians in six regions, 1999-2004. *European Journal of Clinical Microbiology & Infectious Diseases,* 26, 167–174.