Needle and Syringe Exchange Programs: A Review of Outcomes and Best Practices

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Dedication

I would like to dedicate my thesis to all of the clients I have worked with over the past 8 months - you have shown me what true love, support, and compassion really is.

“Passion creates, addiction consumes” – Gabor Maté, M.D
Abstract
There is a long-term high prevalence rate of substance use and addiction behaviours. In Canada, increasing focus on harm reduction may facilitate healthier lifestyles for current drug users, and may reduce the negative impacts substance use and addictions may have on individuals and society. The present literature review examined the evolution of harm reduction efforts through needle and syringe exchange programs to increase safety and improve the mental health of people with addictions in Canada. The review assembled and synthesized best practice recommendations for needle and syringe exchange programs. Databases searched for literature relevant to substance use and harm reduction included: AHFS Consumer Medication Information, Alt Health Watch, CINAHL with full text, E-Journals, ERIC, Health Source – Consumer and Nursing Academic edition, Humanities International Index, MEDLINE, PsycArticles, PsycBooks, PsycInfo, and SOCIndex. Also, relevant books and resources were located. Criteria for inclusion in the review were that: literature be evidence-based and geared towards substance abuse, provide harm reduction efforts for substance use, discuss best practices for public health, and discuss needle and syringe exchange programs. A total of 43 relevant pieces of literature, including articles, books, book chapters, theses, and grey literature were retained for review. Of these, 36 of the articles were peer-reviewed. Current best practice recommendations were evaluated. Effective needle and syringe exchange programs should provide sterile injection and inhalation equipment, meant for one-time individual use. Needle and syringe exchange programs should also provide additional services, such as the proper disposal of used needle and injection equipment. Efficient programs have been shown to help ensure the safety of the community against the dangers associated with substance use behaviours, namely infectious diseases and risk-taking behaviours.
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Chapter 1: Introduction

Background on Substance Use and Addiction

There appear to be ever-increasing opportunities for individuals to engage in behaviours in which substances, chemicals, or sensations can induce physical or psychological addiction (Finding Dulcinea, 2015). Currently, the most common addictions are legalized substances (e.g., nicotine, alcohol), illicit substances (e.g., crystal methamphetamine, heroin), and non-substance activities (e.g., sex, gambling, video games) are known to be the most prevalent dependence inducing processes today (Finding Dulcinea, 2015). The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) defines a diagnosis of a substance use disorder as “a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues using [a] substance despite significant substance-related problems” (5th ed., DSM-5; American Psychiatric Association, 2013, p. 483). A substance use disorder diagnosis can be applied to 9 out of the 10 classes of addictive substances as cited by the DSM-5; these nine classes consist of alcohol, cannabis, hallucinogens, inhalants, opioids, sedatives, stimulants, tobacco, and other or unknown substances (5th ed.; DSM-5; American Psychiatric Association, 2013). As noted by Goodman and Sias (2014), a substance use disorder can be seen as equivalent in severity to a chronic illness or disability, based on comparisons of situational etiologies, treatments, and outcomes of treatment.

Substance use disorders are very prevalent worldwide. In a population survey conducted by Statistics Canada in 2012, 10.1% of the total Canadian population aged 15 years of age and older, or approximately 2.8 million Canadians, were estimated to meet the minimum criteria for a substance use disorder (Pearson, Janz, & Ali, 2013). In the United States, the Substance Abuse and Mental Health Services Administration (SAMHSA) estimated that 9% of the entire American population met the criteria for substance use disorder and/or substance dependence (SAMHSA, 2005, as cited in Astramovich & Hoskins, 2013). Globally, it is estimated that 3.4% to 6.6% of the entire world population aged 15 to 64 years of age, or approximately 153-300 million individuals, used an illicit substance in 2012; within that population, about 12% of these individuals, or approximately 15.5-38.6 million individuals world-wide are drug-dependent or meet the criteria for a diagnosed substance use disorder (World Drug Report, 2012).

Individuals who use illicit drugs regularly are considered to be a high-risk population. The Oxford English Dictionary defines high-risk as “being exposed to a high level of danger” (“High-Risk”, 2014). A high-risk individual is at an increased likelihood to currently be or become involved in or exposed to an increased level of danger, including dangerous people and situations. In these circumstances, regular substance users are more likely to experience a vast range of health issues, spanning from sexually and intravenously transmitted infections, lowered immune system functioning, mental illness, and physical injuries. According to Islam et al., (2013), individuals who are drug-dependent may experience various health concerns. These include HIV/AIDS...
transmission, viral hepatitis, local and systemic bacterial infections, increased risk of drug overdose, physical and mental health issues, and accidental harms related to drug use. Furthermore, high-risk populations face complex barriers when trying to access conventional health care services. Due to stigma, many individuals living with a substance use disorder may not have the ability to access mainstream health care.

According to the Oxford English Dictionary (2014), a stigma is defined as “a mark of disgrace associated with a particular circumstance, quality, or person”. According to Macneil and Pauly (2011), stigmatization is described as a set of widely-held negative beliefs held about those who inject or use illicit substances and involves the devaluing, demonizing, and blame for the decay of society to be placed on intravenous drug users, through which drug users come to be seen as “undeserving or unworthy citizens” (p. 27).

Stigmas assist in the belief that individuals who engage in these behaviours are unwilling to change (Pauly, Goldstone, McCall, Gold, & Payne, 2007). For a variety of reasons, many community health care agencies are unable to provide the services needed to help individuals with a substance use disorder, including a lack of funding, high health care costs, and personal opinions of health care staff. Many health care service providers show a negative disposition towards individuals suffering from a substance use disorder due to the frequency of services needed and the increased cost that follows. Discrimination by health care providers, whether individual or organizational, helps to explain why there are limited primary care services for individuals with substance use issues (Islam et al., 2013).

According to Saint-Lèbes, Rodgers, Birmes, and Schmitt (2012), approximately 50% of dependent drug users also have a co-occurring personality disorder. Broadly, the diagnostic criterion for personality disorders is a persistent display of behaviours that are substantially deviant from the expectations of the individual’s role within society, manifested in the individual’s cognition, affectivity, interpersonal functioning, and impulse control (Wakefield, 2013). Users may also have a wide range of other mental health disorders, including: mood-related disorders, such as major depression and bipolar disorder; anxiety-related disorders, such as post-traumatic stress disorder and obsessive-compulsive disorder (“Behavioural Health Evolution”, 2014, para. 5). The Canadian Mental Health Association (CMHA) notes that “mental health problems can be a risk factor for substance use problems, and substance use problems can be a risk factor for mental health problems” (Canadian Mental Health Association, 2005, para. 2). Dual diagnoses can create additional barriers to treatment, increase the severity of both disorders, and may lead to poor treatment outcomes (Padwa, Larkins, Crevecoeur, Macphail, & Grella, 2013). Individuals living with a dual diagnosis often receive treatment from at least two different professional services, since many professionals are not trained in the treatment of comorbid diagnoses. This means that treatments may not work well together and may not provide the best possible outcome for the individual (Keene, 2005). Without appropriate collaborative treatment, dual diagnoses are associated with increased relapse rates, increased rates of non-compliance, increased clinical service costs, and low treatment outcomes (Keene, 2005).
Consistent substance use can be considered a significant deficit for drug-dependent individuals due to an increased likelihood for engagement in risky or dangerous behaviours. According to the Canadian Centre for Substance Abuse (CCSA), the estimated overall social cost of substance use in Canada in 2002 was $39.8 billion, or $1,267 per capita (Rehm et al., 2006, para. 3). It is known that chronic substance use can affect many areas of an individual’s life, including physical and mental health, social relationships, employment, and family relations. When an individual becomes addicted to a substance, he or she may devote an exaggerated amount of time, money, and effort into the addiction; therefore, leaving the individual lacking in these areas for other life necessities.

Individuals who are unable to meet basic human needs such as food, clothing, and shelter may not be able to address physical health, mental health, and behavioural problems. Dependence on a substance usually depletes the individual of energy, motivation, time, and money; all of which place additional pressures on the individual and may cause him or her to continue or increase use. When working with individuals who are suffering from addiction-related stressors “it is therefore likely that [the addiction-related] issues are masked, and that only where equally pressing deprivations, most likely those caused by homelessness or significant mental or physical morbidities are met, will [addiction-related issues then] arise as presenting needs” (Best, Day, McCarthy, Darlington, & Pinchbeck, 2008, p. 306).

Street Health Centre

Within the recent past, the field of addictions treatment has grown in understanding, empathy, and resources directly serving this population, such as specifically-gaged programs and clinics. The Street Health Centre (SHC) in Kingston is a harm reduction-based health care centre providing a wide range of services to individuals who are unable to receive mainstream health care. It is accessible to all, and is open 365 days a year. Services provided by SHC include, among others: a needle exchange program, methadone maintenance treatment, crisis counselling, Hepatitis C treatment and counselling, outreach, and primary care and disease prevention services. The SHC staff consists of a wide range of professionals including doctors, registered nurse and nurse practitioners, support workers, and counsellors. Many individuals who access SHC are ostracized by conventional health care providers and may even be denied treatment and services. SHC’s clientele includes individuals who are homeless or low-income earners, recently released from incarceration, sex-trade workers, illicit injection and inhalant drug users, and high-risk youth.

Purpose

The purpose of this thesis was to assess the extent to which evidence supports the rationale for implementing harm-reduction and needle and syringe exchange programs by reviewing the relevant literature (published and grey literature) for both best and emergent practices in the field of addictions and harm reduction. To be considered a best practice approach, techniques used must show consistently superior results compared to
other techniques of application. The goal of this narrative review was to assess whether following current best practice recommendations for needle and syringe exchange programs reduce risk-taking behaviours in IV drug users and improve their overall QoL. In addition to the NSEP review, it was proposed that a review of harm-reduction strategies used to treat individuals with a substance use disorder, mental health disorder, or dual diagnosis, such as crisis counselling and education efforts will be a helpful resource for agency staff and clients.

Overview

The next chapter will outline the harm reduction approaches that may contribute to reducing clients’ risky behaviours and improve overall public health and quality of life for this population. The subsequent chapter will present the methods used for defining, searching, appraising, and synthesizing the research literature on harm reduction, substance use, needle and syringe programs, addictions, and the creation of a narrative review with the most pertinent information. Additionally, the literature review will provide rationales for the importance of best practices approaches used throughout the field of harm reduction and addictions that are currently being implemented, and provide conclusions for the purpose of the review. The results section will follow the literature review and discuss the best practice recommendations found through searching the literature. The discussion section will then conclude with an appraisal of strengths and limitations of the review and its contribution to the field of behavioural psychology.
Chapter II: Methodology

This chapter of the thesis outlines the procedures used to create the review, the research strategies employed to collect and assess relevant information, and the selection criteria adopted by the author for inclusion of published and grey literature in the review. This chapter also provides a description and rationale for the use of academic literature management software.

Rationale

A literature review is a process used to identify all relevant literature on a specific topic, synthesize and describe the information found, and provide a thorough understanding of the information being written. According to Cronin, Ryan, and Coughlan (2008), an effective literature review should include both research and non-research literature. A literature review should provide a sound argument explaining the importance of the hypothesis in question in relation to the research or literature available on the topic. A comprehensive literature review should gather relevant information from multiple sources to avoid bias and provide the reader with enough information to fully understand the current scope of information available on the topic being presented. As with this thesis, a literature review should evaluate the current practices being implemented within a specific field as well as assess, update, or further develop guidelines for emergent practices (both published and grey literature).

A narrative review is a comprehensive method of reviewing the literature in which an in-depth understanding of background information on a topic is provided. Narrative reviews are used to critique the current scope of literature on the research topic chosen and draw conclusions about that topic based on synthesis and appraisal of the information found. Narrative reviews are valuable to the field of behavioural psychology because of the ability to synthesize large quantities of information found from a large volume of literature. According to Green, Johnson, and Adams (2006), an effective narrative review should “present information that is written using the required elements for a narrative review, be well structured, synthesize the available evidence pertaining to the topic, and convey a clear message” (p. 106).

As stated by Wakefield (2014), a narrative review should “summarize, critically analyze, evaluate, and clarify ideas that have been presented by other authors” (p. 50). Literature reviews are crucial to developing and understanding evidence-based health care strategies, as well as evaluating the effectiveness of best and emergent practice approaches to harm reduction within the field of addictions.

Evidence-Informed Public Health

Professionals and decision-makers in Canadian health care typically rely on evidence-based materials when making decisions about health care policies and practices (Benzies, Premji, Alix-Hayden, & Serrett, 2006). Canadian public health is overseen by the Public Health Agency of Canada, whose responsibilities are to protect and promote
the health of Canadians, prevent and control infectious and chronic diseases in Canada, prepare for Canadian public health emergencies, as well as sharing and applying international public health research and expertise (Public Health Agency of Canada, 2014). When reviewing evidence regarding Canadian public health policies, the National Collaborating Centre for Methods and Tools (NCCMT) is an effective location to begin, seeing as the NCCMT is one of six Canadian collaborating centres for public health (National Collaborating Centre for Methods and Tools, 2014). The NCCMT provides tools to support evidence-informed decision making about public health interventions. Evidence-informed public health has been defined as “the process of distilling and disseminating the best available evidence from research, context and experience, and using that evidence to inform and improve public health practice and policy” (NCCMT, 2014, para. 1). The NCCMT has developed a seven-step process to find, analyze, and assess evidence to inform decision making in public health. These seven steps consist of: (a) defining the question or problem statement, (b) effective searching of research sources, (c) critical appraisal of the research sources, (d) synthesizing and interpreting information, (e) adapting the information into the appropriate context, (f) implementing the evidence into practice, and (g) evaluating the effectiveness of the implementation. For the present thesis, the first four steps were followed to identify and evaluate harm reduction policies pertaining to substance use and abuse.

Figure 1. Steps in Evidence-Informed Public Health (NCCMT, 2014).
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Defining.

The first step in the evidence-informed public health process is to define the question or problem being reviewed. To ensure that the problem statement or question is clear and answerable, it should discuss (a) the population or target group of individuals relating to the topic (e.g., individuals suffering from a substance use disorder), (b) the intervention or issue in question in relation to the selected population (e.g., needle and syringe exchange programs), and (c) a comparison of relevant interventions, and the outcomes of these interventions. It is important to identify the subject of the review with as much detail as possible, as this will focus the search.

In order to identify and create a well-defined problem statement for which the thesis will discuss, the author consulted a variety of professionals within the fields of addictions, harm reduction, needle and syringe exchange programs, as well as professors and supervisors from the Bachelor of Applied Arts in Behavioural Psychology program at the post-secondary institution. Professionals involved in narrowing the focus of the thesis included the thesis supervisor, the agency supervisor, harm reduction outreach worker, professors in the behavioural psychology program, as well as an addictions worker at a local needle and syringe exchange program. These individuals were contacted for help with narrowing the scope of the thesis, professional opinions and expert experiences regarding the thesis topic, and assistance with critical appraisal of research designs and studies.

Searching.

The second step in the evidence-informed public health process is to search for appropriate research evidence. It is important to locate the most appropriate databases and sources to search that are relevant to the topic being reviewed. Additionally, the search process used in the evidence informed public health (EIPH) process requires the identification of the appropriate and related information within each source retrieved.

When engaging in a search, it is important to determine which research design will be most appropriate and contain the most relevant data in relation to the original problem question. Figure 2 describes the six levels of a search pyramid created by the NCCMT to assist with finding the best possible evidence-based research evidence. Each level of the 6S pyramid builds upon evidence found from the level below, so that the highest level of the pyramid contains the most synthesized and highest quality information. For the purpose of the present thesis, studies, syntheses, synopses of syntheses, and summaries were found to be available.
Figure 2. 6S Search Pyramid of General Public Health Research Evidence (NCCMT, 2014).

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A search of the literature concerning needle and syringe exchange programs, as well as harm reduction approaches to substance use, was conducted using various sources and databases. Primarily, the EBSCOhost database was examined. Within EBSCOhost, a number of online databases were used for the narrative review, including: AHFS Consumer Medication Information, Alt Health Watch, CINAHL with full text, E-Journals, ERIC, Health Source – Consumer and Nursing Academic edition, Humanities International Index, MEDLINE, PsycArticles, PsycBooks, PsycInfo, and SOCIndex with full text. The use of EBSCOhost was supplemented with searches for relevant books, literature reviews, theses and dissertations, as well as related literature found through Internet searches. Internet databases searched included the National Institute for Health and Care Excellence (NICE), the Canadian Best Practices Portal, Google Scholar, and the McMaster Health Knowledge Refinery.

To ensure that all relevant English language literature was found, a search of English-language sources was completed. Search terms were kept broad in order to encompass all possible literature pertaining to the topic of harm reduction within substance use. Search terms included: (a) needle and syringe exchange programs, plus (b) evidence-based practices, plus (c) harm-reduction in substance use, plus (d) substance use disorder, plus (e) mental illness, plus (f) best practices, plus (g) addictions, plus (h) health-care.
Appraisal.

The third step in the EIPH process is to critically appraise the sources of literature found. Critical appraisal involves the assessment of each study, and is crucial to assess its scientific quality and relevance to the specific topic or question. According to the NCCMT, proper critical appraisal should answer the question “were the methods used in this study good enough that [the author] can be confident in the findings?” (NCCMT, 2014, para.1). As studies retrieved from NICE were pre-appraised and validated, it was not necessary to conduct a critical appraisal on them.

One of the most effective ways of performing critical appraisal is to use a rating or assessment form geared specifically towards the research design being evaluated. The NCCMT provides critical appraisal tools based on the research design being used by the author. The Critical Appraisal Skills Programme (CASP) contains workshops, tools, and checklists specifically created to assist with the critical appraisal of literature. According to CASP, the use of critical appraisal skills will “enable [the author] to assess the trustworthiness, relevance, and results of published papers so that [the author] can decide if they are believable and useful” (Critical Appraisal Skills Programme, 2013). CASP provides checklists for: systematic reviews checklist, qualitative checklist, randomized controlled trial checklist, case control checklist, diagnostic checklist, cohort studies checklist, economic evaluations checklist, and clinical prediction rules (CASP, 2014). For this thesis, the author primarily used the systematic review checklist to assist with critical appraisal.

Synthesizing.

Knowledge synthesis, or knowledge translation, is “an efficient and scientific method of summarizing the evidence from several studies on a specific question” (Mallidou, 2014, p. 30). Knowledge synthesis is used in reviews of the literature to clearly identify key information, improve understanding of relevant information, identify gaps or grey areas within the research literature, and provide the best available evidence to guide clinical decisions in relation to the topic being reviewed.

Narrative Review

The incorporation of evidence-based practices into public health care can be difficult. Professionals working in the fields of substance use and harm reduction may not be able to fully comprehend the scope of research literature available on evidence-based practices. Due to the extensive literature on EBP’s for needle and syringe exchange programs, a narrative review of the research was intended to allow for an efficient and accurate synthesis of findings into a single document. This allows for a vast amount of information to be composed together in a manner in which the reader of the review can clearly understand and benefit from. Generally, a narrative review will “report the author’s findings in a condensed format that typically summarizes the contents of each article” (Green, Johnson, & Adams, 2006, p. 103). Narrative reviews are valuable for clinicians, policy makers, and all professionals working in public health;
narrative reviews are also beneficial for clients, as the creation and implementation of strategies and procedures found within the review are supported through evidence to create improvements in the care being received. However, it should be noted that while narrative reviews provide many benefits, such as offering up-to-date education and knowledge on clinical protocols and strategies proven to be effective, these reviews deal with broad issues in public health being addressed, and are less focused on patient care (Green et al., 2006).

Narrative reviews should be unbiased, as the author did not originally undertake the studies being used. Many professionals respect narrative reviews because they are a valid and reliable source of information for providing insights and the high quality evidence needed to make clinical decisions. Narrative reviews should be consistent in displaying appropriate, evidence-based findings, as all information used should be based in scientific evidence. Haneline (2007) states that narrative reviews are useful within the field of public health care because “they present the views of an expert on a given topic concisely and in a manner that can be read and comprehended quickly without having a lot of background knowledge” (p. 20).

Although narrative reviews are widely used, Haneline notes limitations of this method of information processing. Primarily, narrative reviews have the potential to be subjective if they are not methodical. This may cause unreliable information to become published as evidence-based. Secondly, narrative reviews are inclined to contain a general viewpoint on the topic without providing detailed explanations into research methods or study qualifications. This may lead the reader to believe the narrative review without providing concrete evidence or data as to the reliability and validity of the information. Thirdly, the author may be discriminatory in deciding which studies or evidence to include into the review based on his or her own preferences. This may cause a bias in the narrative review findings, and may not cover all aspects of the topic being discussed. Finally, there is no set way to drawing conclusions from the studies included in the review. This leaves room for bias and error within the review itself, and can be seen as a limitation to the use of narrative reviews. Due to these limitations, several narrative reviews regarding the same topic may draw conflicting conclusions or provide differing effective practices (Hanneline, 2007); however, the criterion for inclusion in a narrative review remains that all practices covered within the review must be evidence-based. Depending on the author and the depth of topic being covered, the narrative review may contain much bias or none at all.

**Selection Criteria and Grey Literature**

To select appropriate articles for inclusion in the narrative review, a specific set of selection criteria were developed and employed. Selection criteria were devised to ensure that all retained studies were relevant to the topic of harm reduction. Studies were eligible for consideration in this review if: (a) the literature discussed needle and syringe exchange programs, (b) the focus of the study was harm reduction approaches to substance use behaviours, (c) the literature discussed best practices for harm reduction approaches to substance use, (d) the literature discussed best practices for health care
within the population of substance users, or (e) the literature discussed best-practice evidence or emergent practices in the field of needle and syringe exchange programs.

The inclusion of grey literature is critical to improving the quality of evidence-based reviews. According to Benzies, Premji, Hayden, and Serrett (2006), the pitfalls to the exclusion of grey literature in research-based reviews show that this exclusion creates a heightened likelihood that the review will over represent the significance of findings and inflate estimate effect sizes. Grey literature is not typically peer-reviewed or published, and can include documents such as government reports, theses, discussion papers, program evaluation reports, academic papers, and standards or best practice documents. For the purpose of this thesis, grey literature was found using multiple Internet databases geared towards grey literature. Specifically, the Ontario Public Health Libraries Association, the New York Academy of Medicine Grey Literature Reports, PsycEXTRA, and the System for Information on Grey Literature in Europe (Open Grey) were searched.

**Docear**

In order to effectively organize, synthesize, and appraise all relevant literature found, an academic literature management software system was used. Docear is a free, open-source literature management program that allows for comprehensive discovery and organization of literature by category, pdf and reference management, mind-mapping, creation, viewing, and organization of annotations, and resources for discovering new relevant literature (Docear, 2014). All literature recognized as potentially eligible to be included in this review were entered into Docear. Specifically, the retrieved documents were organized and managed through this reference management software, and were assessed and appraised for eligibility for inclusion in the review.
Chapter III: Literature Review

Substance Use and Addiction

According to Zeldin (1994), “there has been no civilization...whose citizens have not tried to escape from stress or tedium to alter their consciousness with the help of alcohol, tobacco, tea, coffee, or plants of various sorts” (as cited in Wormer & Davis, 2008, p. 44). Historically, substance use can be traced back to the ancient Greek and Roman civilizations, in which alcohol was used regularly. Presently, the use of intoxicating psychoactive substances continues to occur in many individuals spanning across various social and economic statuses. Along with the use of mind-altering substances comes an increased potential for the development of an addiction. An addiction is recognized as a brain disease in which there is an increased need or dependence on a habit-forming substance due to changes in brain neurochemistry as a result of exposure to a substance (Bartlett, Brown, Shattell, Wright, & Lewallen, 2013). It is important to note that addiction can affect individuals regardless of physical, psychological, or socio-economic status; there are no set specifications to determine the likelihood of an individual developing an addiction. As stated by Geraghty (2011), “addiction can affect anyone, whether rich or poor, young or old and all drugs that cause a user to become an addict, other than those given with medical supervision, are hazardous to the user and society” (p. 878).

The use of intoxicating substances for the purpose of altering the individual’s mind, mood, and behaviours can occur for many reasons. Through research on HIV infection risk in adults who suffered childhood sexual abuse, Zierler et al. (1991) have hypothesized that there is an increased likelihood of HIV infection and transmission in adults who have been sexually assaulted or abused as children and participate in high-risk behaviours, namely intravenous drug use and prostitution. In brief, the authors discovered that out of the 393 study participants, one out of every two women and one out of every five men reported experiencing childhood sexual abuse or assault. Between 70%-80% of sexual abuse survivors reported heavy drinking and excess use of substances. Childhood trauma can be detrimental to normal functioning in adulthood, and “may continue to disrupt [the] development of appropriate health behaviours that prevent disease in adulthood” (Zierler et al., 1991, p. 575). Substance use is often used as a coping mechanism for stress management and emotional regulation.

Trauma and substance use.

Traumatic events can occur at any point in an individual’s life, and can have detrimental physical, social, and psychological detriments connecting the trauma to the individual. Haller and Chassin (2014) conducted a study in which the authors have introduced four hypotheses testing the relationships between traumatic events and increased substance use in adolescents. A trauma, or a traumatic event, is defined as “the experiencing of a stressful...event [which] can result in a number of psychological and physiological reactions in an individual” (Boals, Riggs, & Khara, 2013, p. 156). It has
been stated throughout the psychological literature that there is an increased significance between traumatic life events and the possibility of the development of problems with substance use. The four hypotheses described in this study are: (a) the high-risk hypothesis, testing whether substance use problems increase the risk for exposure to trauma beyond the existence of family and demographic risk factors; (b) the susceptibility hypothesis, testing if substance use problems increase the risk for PTSD symptoms beyond existing family and demographic risk factors; (c) the self-medication hypothesis, testing if PTSD symptoms create an increased risk for future substance use problems beyond the trauma itself, pre-trauma substance use, and existing family and demographic risk factors; and (d) the shared vulnerability hypothesis, testing if exposure to trauma and/or adversity in the family increase the risk for substance use issues, regardless of PTSD symptoms. Each hypothesis was formulated to provide an explanation for the high correlation between trauma and substance use. The four hypotheses were tested using participants from a longitudinal, community-based study on hereditary alcoholism. According to Haller and Chassin (2014), rates of comorbid diagnosis of post-traumatic stress disorder (PTSD) and substance-use disorder (SUD) among study participants ranged from 14% to 60%, suggesting that stressful and traumatic events and the development of chronic substance use may be linked. Data from this study was selected for use due to the pre-existing familial risk factors for elevated chances of problematic substance use and alcoholism, along with the community-based aspect of the study, preventing the stigma and change in results from clinical studies. The use of 377 high-risk participants taken as a sample from the larger study of familial alcoholism consisting of 454 participants provided a well-suited sample of individuals for testing the four hypotheses. Haller and Chassin’s study collected data during three waves of data collection from the larger study: Wave 1 in 1988, Wave 4 in 1995, and Wave 5 in 2000, along with three follow-up waves separated over five years. The study found that PTSD symptoms were associated with increased risk for developing or worsening of substance use in contrast to broader internal symptomology (e.g., negative affect, low energy, sad mood) often associated after a traumatic experience. Both the high-risk and susceptibility hypotheses were best supported. Adolescents raised in a high-risk family context are more likely to begin engaging in problematic substance use behaviours, which may increase the risk of future exposure to traumatic events and the development of PTSD symptoms. Therefore, it is the adverse family context that increases the risk for trauma exposure and PTSD symptoms and later problematic adult SUD’s. Additionally, the study suggests that the self-medication and shared vulnerability hypotheses were also supported through the study, however results were not as strong. Adolescents may engage in substance use as a coping mechanism for PTSD symptoms, thus increasing risk for future problematic substance use. These hypotheses also relate to a common theme implying that growing up in a hostile family environment greatly increases the risk for developing PTSD symptoms and later problematic substance use issues. Limitations to the study included factors that were not available for inclusion in the study, such as genetics contributing to the likelihood of SUD development. Also, the study findings may not be generalizable to individuals who are in the early stages of trauma exposure. Lastly, PTSD symptoms were assessed using the DSM-III-R criteria instead of the current DSM-5 criteria, so changes are to be expected.
Canadian drug control policy.

Canada’s National Anti-Drug Strategy was to intended aid with the safety, health, and well-being of Canadian communities (The Government of Canada, 2014). According to the Government of Canada, Canada’s National Anti-Drug Strategy aims to help “prevent use, treat dependency and reduce production and distribution of illicit drugs” through three action plans: the prevention treatment plan, the treatment action plan, and the enforcement action plan (The Government of Canada, 2014). Primarily, the goal of the prevention action plan is to prevent illicit and prescription drug use and abuse. Secondly, the treatment action plan is designed to assist with treating individuals who struggle with a drug dependency. Finally, the enforcement action plan of Canada’s National Anti-Drug Strategy is targeted at the fight against illicit drug production and distribution within Canada.

These policies may also be driving substance users into seclusion and away from the health care services they may benefit from. A study conducted by Hadland et al., (2012), examined drug control policy in Canada by investigating the availability of commonly used substances in Vancouver, British Columbia. According to the authors, Canada’s National Anti-Drug Strategy places a strong emphasis on drug enforcement efforts, such as preventing the importation of internationally transported drugs, discovering and hindering domestically supplied and produced drugs, as well as insistently arresting drug users and suppliers at the street level. Hadland et al. (2012) state that the current focus of drug policy is on collecting data associated with drug-related arrests and seizures, and the impact drug laws have on drug markets. The authors suggest that more consideration should be given to the experiences of current drug users and the services needed to facilitate healthier lifestyles. This study focused on data collected from two community-based cohorts in Vancouver: the At Risk Youth Study (ARYS) and the Vancouver Injection Drug Use Study (VIDUS) and their use of popular drugs, including: heroin, crack, cocaine, crystal methamphetamine, and marijuana. The study found that most drug users can “score within 10 minutes” (Hadland et al., 2012, p. 489). The convenience of acquiring these drugs within a short period of time provides evidence that current drug control policies have limited effectiveness in the reducing drug availability, which supports the suggested change in direction of Canadian drug control strategies. Hadland et al. (2012) further discuss that the City of Vancouver has adapted the Four Pillars Drug Strategy for drug use and addiction, placing significant emphasis and funding on drug law enforcement, concerned with reducing the supply and demand for illicit drug sales and use, while lesser funding is provided to prevention, treatment, and harm reduction efforts under the same policy. It should be noted that the most controversial pillar, harm reduction, has yet to be included in Canada’s National Anti-Drug Strategy, as discussed above. In conclusion, this study offers evidence regarding the significance of the issue of drug use and the need for policy and funding changes into harm reduction efforts and appropriate treatment services in order to minimize the negative effects of substance use on the individual as well as the community.

It should be noted that substance use and addiction is a sizeable issue in Canadian society, as well as globally, and applying the appropriate resources to the proper
strategies and interventions used to treat this issue should benefit individual drug users and society as a whole. As stated by Bartlett, Brown, Shattell, Wright, and Lewallen (2013), “a person with an addiction can recover if given the proper care and treatment, but an addicted person is unlikely to recover alone” (p. 350).

**Evidence-Based Practices**

The use of evidence-based practices, or EBP’s, in health care systems has been an growing in recent years. According to Wilson, Armoutiev, Yakunina, and Werth (2009), the term evidence-based practice can be defined as the combination of the best available treatment research evidence paired with relevant clinical expertise to guide practice to best fit the client’s specific context. EBP’s can be applied to all stages of health care, including the prevention, diagnosis, and treatment of ailments.

According to Gillam and Siriwardena (2014), evidence-based health care consists of the implementation of the most current and accurate evidence-based practices, along with the integration of the professional’s clinical judgment to be used when making decisions regarding individual patient care and well-being. Gillam and Siriwardena (2014) discuss the five steps involved in determining evidence-based practices in health care within their article. The first step is identifying and translating the current gaps in knowledge or information into an answerable question. The question must be tightly focused in order to find the best possible answer through the correct evidence and routes. The second step in this process is to gather and review the best available evidence pertaining to the question being posed. Once the question has been created and specifically focused, the next step is to search the relevant literature repositories for relevant evidenced-based practices or research. When completing this second step it is crucial to give preference to published literature, as literature that has been published has undergone extensive review. When reviewing the literature, it is important to use both primary and secondary sources, being sure to verify the reliability of secondary sources being used. The third step in the evidence-based practice process as critical appraisal of evidence found. Critical appraisal is done to resolve whether the results found through research are valid enough to change current practices and incorporate newfound evidence. Standardized checklists can be used to determine the validity and generalizability of the findings into public health practices. The fourth step, as noted by Gillam and Siriwardena (2014) is the implementation of new practices into services, which is argued to be the most difficult of the five steps as it requires conscious change in either the type of intervention, the target of the intervention, or the social theory underpinning the intervention. The fifth and final step of the process is to evaluate the effectiveness of the new practices. Evaluating the effects of changes in practice usually involves a clinical audit of the new practices against a framework used to determine improvements. A review of the new practices can be done through statistical control methods or by viewing changes from baseline to intervention. Gillam and Siriwardena (2014) state that evidence-based practices for healthcare “were developed to encourage practitioners and patients to pay due respect...to current evidence [when] making decisions” (p. 131). It should be noted that the steps discussed by Gilam and Siriwardena (2014) are central to development of this thesis.
To develop the most effective interventions geared to treating behavioural and mental health problems, the inclusion of EBP’s are a necessity. Though there is debate on what constitutes evidence-based practice, there is “growing recognition in the field that the practice of psychological treatments should be based on valid evidence regarding which approaches to intervention are most likely to be successful” (Dozois et al., 2014). A review of the literature on the effectiveness of addiction treatments can provide rationales for service implementation. EBP combines the best research evidence paired with clinical expertise on the subject at hand to create the best possible public health policies and practices. In order to identify evidence-based practices, the American Psychological Association’s Division of Clinical Psychology defined the criterion “[the] demonstration of [intervention] efficacy in at least two investigations conducted by independent research teams” (Glasner-Edwards & Rawson, 2010, p. 95).

To ensure that the best possible care is provided to individuals within this population, program and policy makers within the field of addictions and substance use should base clinical decisions on established interventions that have proven effective through experimental studies and evidence. According to Glasner-Edwards and Rawson (2010), the use of evidence-based practices should contribute to the treatment of individuals with substance use disorders by: (a) improving the effectiveness of treatment to meet evidence-based standards, (b) provide a consistent method for treatment implementation across the field, (c) improve cost-effectiveness of treatment, (d) establish accountability for appropriate treatment funding needs, and (e) increase the overall quality of the treatment. The United Nations Office on Drugs and Crime (UNODC) created a database of treatment resources for drug dependence known as Treatnet, in which evidence-based practices are defined as being “supported by scientific studies and [are] ideally replicated in multiple geographic or practice settings” (United Nations Office on Drugs and Crime, 2008, p. 10).

**Harm Reduction**

There is a diversity of effective interventions and treatments used to prevent, cease, or reduce behaviours associated with substance use. These include, but are not limited to motivational interviewing, psychoeducation efforts, harm reduction efforts, education, and early childhood/adolescent interventions. As it relates to substance use, harm reduction can be defined as a set of policies and programs rooted in health care which attempt to reduce the negative and adverse biological, psychological, and social consequences of substance use on the individual, their families, and their community as a whole (The International Harm Reduction Association, 2002). According to the Centre for Addictions and Mental Health (CAMH), harm reduction “is any policy or program designed to reduce drug-related harm without requiring the cessation of drug use” (2005, p. 1), based on the understanding that substance use occurs on a continuum in which harm may occur at any point. It should be noted that harms associated with drug use are not based solely on the behaviours of the individual, but also on societal structures.
As the theory of harm reduction evolves, advocates hold the view that, though desirable, a world completely abstinent from drug use is an unrealistic objective. However, there are achievable measures and treatments aimed at reducing the harms and burdens associated with chronic substance use. According to the position statement on harm-reduction of the Winnipeg Regional Health Authority (WRHA), there are three major sources of harm associated with substance use: behaviour-related harms, intervention-related harms, and substance use-related harms (Winnipeg Regional Health Authority, 2014). Behaviour-related harms associated with substance use consist of social concerns, including unstable housing and mobility issues, violence, theft, victimization, increased risk for suicide, poor nutrition and health, sex trade work, and unprotected sex; health concerns include the transmission of HIV, hepatitis B and C, and sexually transmitted infections (STI’s) (WHRA, 2014). The WHRA (2014) also discusses intervention-related harms, including the limited access to services, treatment, and supports, which can lead to a continuation of discrimination, stigmatization, and marginalization of these individuals resulting in harmful outcomes. Lastly, the WHRA (2014) argues that harms related to the method and patterns of substance use result in harmful outcomes, including mortality through illicit drug use, overdose, or suicide, as well as infections, wounds and abscesses, and a wide range of physical and mental health concerns.

Lee, Engstrom, and Peterson (2011), discuss that effective practices strive for harm reduction as both the goal of services and as the strategy for intervention. According to Riley et al. (1999), harm reduction interventions can be considered “a policy or program directed toward decreasing the adverse health, social, and economic consequences of drug use without requiring abstinence from drug use” (as cited in Lee, Engstrom, & Peterson, 2011, p. 1151). Lee, Engstrom, and Peterson (2011) state the multiple advantages of harm reduction strategies and interventions, including a focus on the individual, involving client-driven, individualized goals; the recognition that while abstinence from drug use is the ultimate end result, this may not be achievable or wanted by all clients; a reminder that any positive change in substance use is valuable; an emphasis on the importance of the helping relationship (e.g. counselors, outreach workers); the recognition of substance use as a coping mechanism; and increasing efforts to de-stigmatize substance use and it’s users within society. The study also suggests that through a large body of scientific research, harm reduction interventions such as needle and syringe exchange programs, relapse prevention programs, and cognitive-behavioural therapy (CBT) are all effective and provide positive rewards for substance users (Lee et al., 2011). Effectiveness can be measured in terms of the individual’s perceived and realistic status of health, a minimization in the spread of infectious diseases such as hepatitis C, and ultimately a reduction in illicit substance use. The positive rewards associated with harm reduction interventions include improved physical and psychological health, improved relationships with others, less engagement in risky behaviours, and an overall improvement in quality of life. The effectiveness of harm reduction interventions are contingent on the intervention as well as the individual. In general terms, a positive change in behaviour, such as the use of sterile injection equipment for each injection, can be considered a positive change.
At the individual level, harm reduction policies and programs are offered to those who may not be willing or able to cease their drug use in the short run. However, this philosophy remains compatible with an eventual goal of abstinence. Harm reduction efforts give value to the decision-making process of the individual, allowing for individual growth and responsibility for treatment efficacy. Harm reduction argue that harm reduction programs “offer a non-punitive, non-judgmental approach to drug use, in effect constituting a ‘third way’ between established criminal justice or treatment-oriented responses that seek to deter or cure [substance use] behaviours” (McLean, 2013, p. 422).

Needle and Syringe Exchange Programs

Intravenous drug use can be detrimental to an individual’s physical, social, and emotional functioning, and is also a public health concern. The use of needles and syringes to inject a drug into the body is one of the most dangerous methods of substance consumption. As previously stated, intravenous drug use has been noted as one of the highest risk behaviours related to HIV/AIDS transmission and infection among heterosexual individuals (Kang & De Leon, 1993). Intravenous drug use can lead to many health problems, including an increased risk of contracting blood borne illnesses such as HIV and hepatitis C, bacterial infections, abscesses, and various vascular and rheumatologic ailments. Along with physical impairments, intravenous drug use can cause complications in other aspects of an individual’s life, such as: comorbid diagnosis of mental illness, unemployment and financial problems, homelessness, complications with family and friend relationships, homelessness, and criminal prosecution.

Vickerman, Martin, Turner, and Hickman (2012) state that there is evidence showing that needle and syringe programs reduce the risky behaviours associated with injection drug use. According to the authors, risky behaviours include the sharing of intravenous injection equipment, therefore increasing the risk of hepatitis C infection. Vickerman et al. (2012), state that high-coverage needle and syringe exchange programs can reduce hepatitis C incidence by 50%, or as much as 80% when combined with an opiate substitution therapy, such as methadone maintenance therapy (MMT). High-coverage needle and syringe exchange programs can be defined as 100% compliance or new, sterile equipment used for every injection. Needle and syringe programs may also impact intravenous drug users (IDU’s) by providing relevant information and education on injection drug use and methods of safer injecting; providing accessible means to substance use treatment, health care services, and social services; and connecting with hidden populations of IDU’s through outreach work.

Public health guidelines call for the use of needle and syringe exchange programs as an effective intervention for the prevention of spreading blood borne illnesses such as HIV and HCV. According to McLean (2013), needle and syringe exchange programs (NSEP) have “gained worldwide recognition as an evidence-based public health intervention” (p. 417). The primary goal of NSEP’s is to prevent the sharing of used injecting equipment between users in order to prevent the spread of blood-borne illnesses. NSEP’s also aim to educate and limit the spread of HIV and HCV between IDU’s and the
non-injecting population through sexual transmission. Wormer and Davis (2008),
describe that NSEP’s “show a reduction in risk behaviours as high as 80% in injecting
drug users, with estimates of a 30% or greater reduction of HIV” (Health and Human
Services, 1998 as cited in Wormer & Davis, 2008, p. 537). Alongside NSEP’s, additional
interventions aimed at reducing the risks associated with injection drug use include drug
consumption rooms and the promotion of non-injection based routes of drug use
(Vickerman, Martin, Turner, & Hickman, 2012).

Benninghoff, Morency, Geense, Huissoud, and Dubois-Arber (2006) conducted a
study examining the health of drug users who made use of needle and syringe exchange
program consists of providing free sterile, one-time use injection and inhalation
equipment to individuals who engage in illicit drug use, as well as providing counseling
services, and education on substances, health concerns, and appropriate methods for use.
The study consisted of cross-sectional surveys given to clients attending Swiss NSEP’s
during one week each participating year. The questionnaire was anonymous, and was
completed in two parts. The first section of the questionnaire was completed face-to-face
with the researchers, and included questions regarding the socio-demographic
characteristics of the individual as well as the frequency of consumption of heroin and/or
cocaine within the previous month, the frequency of injection behaviours within six
months prior to the study, the number of injections the individual engaged in per week,
and any treatment the individual was engaged in. The second portion of the
questionnaire was self-reported by the participant, and included questions regarding the
health and risk/protection behaviours of the individual. This included perceived health;
HIV, hepatitis B and C testing; sharing of needles and syringes or other substance use
materials used to prepare for injection within six months prior to the study; as well as
condom use within the previous six months. As the study was conducted over three
different periods in time, differences were noted. Primarily, the number of eligible
NSEP’s increased from 15 in 1994 to 23 in 2000. Additionally, the number of
participants varied over time, from 76% of the total NSEP clientele in 1994, to 81% in
1996, and 69% in 2000 (Benninghoff et al., 2006). Throughout each year of the study,
the average age of NSEP clients rose (from 27.8 years in 1994 to 32.2 years in 2000),
while the number of clients under the age of 25 decreased. The increase in mean age may
suggest that fewer adolescents or individuals under the age of 25 years old are engaging
in intravenous drug use, providing some evidence for the effectiveness of the Swiss
approach to harm reduction. Furthermore, the social situations of participants showed
little improvement throughout the course of the study, with many participants being
unemployed and/or homeless at all stages in the study (Benninghoff et al., 2006).
Approximately half of the participants in the study were enrolled in a methadone
maintenance treatment program (MMT), and these clients showed lower drug use
frequency within the previous month and lowered frequency of injection behaviours as
compared to participants who were not on MMT. Roughly half of the participants
reported using a needle, syringe, or other paraphernalia that was previously used by
another individual; one in 10 participants stated that he or she had done so within six
months prior to the study (Benninghoff et al., 2006). Sexual protection rates remained
stable throughout the study, with most participants viewing their sexual health and safety
as not a concern. Benninghoff et al., (2006) suggest that NSEP’s are an effective means of harm reduction treatment for substance use through education, sterile injection and drug use equipment, and a safe, non-judgmental environment.

Environmental factors can increase harms associated with IDU. In a study by Briggs et al. (2009), qualitative interviews were conducted with 45 current heroin and crack intravenous users in London and Bristol, UK to examine their perceptions of the connection between public injecting and possible health risks. Participants had to be current injection drug users of crack and heroin, and have experience with unstable housing, such as supported housing and hostels, or homelessness. Current injection was defined as having used crack or heroin intravenously within four weeks leading up to the study. Interviews focused on current injecting practices, experiences of speedball injections, perceptions of health risks and harms related to speedballing (‘‘the combined injection of heroin and crack in a single injection, also sometimes termed a ‘snowball’’; p. 439), and environments in which injection occurred. The study identified hostels and the streets or out in public as the two main injecting environments, which influence the risks associated with injection drug use. Street and public injecting environments were associated with lowered hygiene, hurried injections resulting in missing the vein, also known as missed hits, and an increased fear of interruption during injection, by the police, other drug users, or civilians. Interruption during injection can also lead to a missed hit. Participants describe how poor injecting environments can lead to having a bad hit, characterized by feelings of paranoia and anxiety in the individuals.

The implementation of a successful NSEP can provide a cost-effective means to increasing public health measures and awareness of public health issues, specifically those issues associated closely with intravenous drug use (IDU). A study conducted by Kumaranayake et al. (2004), discusses the cost-effectiveness of implementing NSEP in Eastern Europe, relating specifically to HIV rates and costs per infection. In Eastern Europe, IDU became the predominant method for HIV contraction, with an increased fear that HIV transmission from intravenous drug users to their non-IDU partners will become an epidemic. Prior to the study, less than 10% of intravenous drug users in Belarus participated in NSEPs. Methods used within the study include economic analysis and dynamic mathematical modeling used to estimate the costs per intravenous drug user and non-IDU attending an NSEP HIV infection averted in Svetlogorsk, Belarus from 1997-1998. Rates of HIV prevalence among intravenous drug users were collected prior to the intervention in 1997 (74%, n=1296), during the intervention in 1998 (75%, n=548), and post-intervention in 2000 (71%, n=577). Impacts of the data collection suggest that the intervention was successful in reducing HIV transmission, showing a decrease of 4% in HIV rates from 1998 to 2000 (Kumarayame et al., 2004). Data for the study was also collected using an examination of needle and syringe returns for HIV infection, showing a reduction of 67% of syringes returned being infected with HIV in 1997 compared to 66% in 2000. Behavioural surveys were also given to participants pre-and post-intervention, showing significant increases in the self-reporting of never sharing needles (8% in 1997, 65% in 1999), cleaning needles before sharing or re-using (16% in 1997, 55% in 1999), and condom use (29% in 1997, 63% in 1999). Predictions of HIV prevalence in intravenous drug users in 1999 and 2000 (73.6% and 71.4% respectively)
are agreeable with the measured HIV prevalence rates in intravenous drug users for 1999 and 2000 (75% and 71% respectively). Kumaranayake et al. (2004) concluded that NSEPs are a cost-effective intervention for reducing HIV prevalence among intravenous drug users with or without gaps in funding. This study found a 21% decrease in HIV infection rates throughout the two-year study period and a 27% increase in cost-effectiveness for NSEPs. Limitations included disruptions to funding, showing a significant impact on the amount of supplies distributed, as well as problems with generalizability of results of the study into other communities with high IDU and HIV rates. Additionally, there was a lack of control data, which denies the possibility of assessing differences in behaviours between baseline control and intervention measures. Kumaranayake et al. (2004) concluded that NSEPs and well-run harm reduction programs can be a cost-effective method for reducing HIV transmission and minimizing harms within the IDU population and the community as a whole.

Along with prevention of HIV and HCV infection, NSEP’s can attend to additional issues commonly faced by IDU’s. McLean (2013) shares that through her experience at the Bronx Harm Reduction center, most of the clientele were poor, homeless, or IDU’s, or all of the above. The services offered through the needle and syringe exchange program at Bronx Harm Reduction validate clients’ humanity and worth. An effective NSEP should offer easy access for all injecting drug users; sterile one time use needle and syringe distribution; safe needle and syringe disposal; counseling services geared toward addiction, HIV, and HCV; as well as other health and social welfare issues; as well as referrals to other services within the community.

Relationship between the Literature and the Thesis

In conclusion, the review of the literature above validates the reasoning behind the creation of a narrative review focused on the positive effects of evidence-based best practices for a needle and syringe exchange program. Funding and resources for substance use in Canada are primarily for drug law enforcement rather than on treatment and harm reduction. Harm reduction is used to facilitate healthier lifestyles and reduce the negative impacts substance use and addictions can place on the Canadian individual and Canadian society. Although substance use can become an issue in any individual regardless of socio-economic status, age, sex, race, ethnicity, etc., traumatic life events are known to increase the probability of chronic problematic substance use. Additionally, individuals who are born into substance use and addiction within their immediate families are at an increased risk of developing a substance use disorder or addiction.

Implementing harm reduction strategies into current Canadian drug policies could effectively reduce the adverse physical, psychological, and social effects associated with substance use. Harm reduction efforts are designed to reduce harms associated with substance use without requiring the cessation of the substance use itself. This humanistic approach is effective and non-punitive, resulting in positive effects on the health of substance-users. Needle and syringe exchange programs are an effective harm reduction approach to addiction services, which help to keep the use as well as the community safe from drug-related harms. There is growing recognition that illicit substances will never
cease to exist, and it should be more important to preserve the lives of the individuals plagued by the disease of addiction than to criminalize and institutionalize them. NSEP’s provide sterile injection and inhalation equipment, meant for one-time use by one individual. NSEP’s also properly dispose of used needle and injection equipment, ensuring the safety of the community against the spread of infectious diseases such as hepatitis C and HIV. Therefore, based on the relevance of the literature, the thesis seeks to evaluate and validate the current best practices used in a needle and syringe exchange program.
Chapter IV: Results

Disposition of Literature Review

The purpose of this thesis was to understand the need for and evaluate the effectiveness of the current best practice recommendations previously developed for Canadian NSEP’s. This document sought to examine the effectiveness of NSEP’s on the individual user, their community, and society as a whole with relation to public health concerns, cost effectiveness of NSEP, and harm reduction efforts for substance users.

Literature Collection and Selection

Prior to searching, the author produced a set of selection and inclusion criteria for the review including: (a) the literature discussed needle and syringe exchange programs, (b) the focus of the study was harm reduction approaches to substance use behaviours, (c) the literature discussed best practices for harm reduction approaches to substance use, (d) the literature discussed best practices for health care within the population of substance users, or (e) the literature discussed best-practice evidence or emergent practices in the field of needle and syringe exchange programs. For this project, various databases were searched for published literature, such as single case studies, syntheses, and synopses. A list of the databases searched can be found in Table 1. Additionally, the author included scientifically relevant literature as well as grey literature into the thesis. The inclusion of grey literature was deemed appropriate as NSEPs are relatively new and are politically controversial. The literature included in the study must maintain or improve upon Canadian public health and safety.

Table 1.
List of Databases Searched for Inclusion

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With EBSCOhost, additional selection criteria were applied on the specific fields of search in which the most relevant materials may be found. The use of EBSCOhost was supplemented with searches of relevant books, literature reviews, theses and dissertations, as well as related literature found through Internet searches. The search terms selected were: (a) needle and syringe exchange programs, plus (b) evidence-based practices, plus (c) harm-reduction in substance use, plus (d) substance use disorder, plus (e) mental illness, plus (f) best practices, plus (g) addictions, plus (e) health-care. Furthermore, the author was able to obtain the most current version of the Best Practice Recommendations for Canadian Harm Reduction Programs: Part 1, which contains the most recently updated recommendations for NSEP’s in Canada.

A total of 57 references (both published and grey literature) met the criteria for potential inclusion in the review. Upon closer examination, 14 of these references were found not to be relevant. Therefore, a total of 43 documents were retained for inclusion in this thesis. A summary of literature appraisal can be found in Appendix A.

Best Practice Recommendations

The purpose behind creating a best practice document for an NSEP is to encourage the understanding of available scientific evidence and rationales for implementing and sustaining high-quality, consistent, and reliable delivery of services for intravenous drug users and their communities (Strike et al., 2013). Recommendations provided through this document have been developed through a combination of an extensive review of the literature pertaining to harm reduction, specifically needle and syringe exchange programs, as well as possible updates and modifications to increase operation effectiveness for current NSEP’s. Best practice guidelines also serve as benchmarks for current NSEP evaluation, and allows for the identification of areas needing improvement at all levels; best practice guidelines will provide knowledge regarding current NSEP standards, allowing for changes to be made accordingly and efficiently. According to the Ontario Needle Exchange Programs: Best Practice Recommendations (2006), all NSEP’s in Ontario must provide: basic exchange services, including needle and syringe distribution and safe disposal; safe drug use equipment distribution and disposal; condom distribution; harm reduction education and information; and counseling and referral services. The BC Partners for Mental Health and Addictions (2003) identify the societal benefits that can be expected from a well-run NSEP, stated as: (a) reduced public harms related to substance use, such as reduced encounters of inappropriately discarded needles and syringes; (b) a reduction in the transmission of blood-borne illnesses, such as hepatitis C and HIV; and (c) increased accessibility to primary health care and other welfare services. Specifically, as stated by Strike et al. (2013), NSEP best practice recommendations are created with the aim of assisting current NSEP providers and their communities to improve the quality of well-run NSEPs and increase effectiveness; reduce HIV, HCV, or other harms associated with IV drug use; inform clients and decision makers about safe, effective, and efficient drug
practices; as well as providing a reference advocating for better resources and increased funding for harm reduction/NSEP services.

Intravenous substance use equipment available at high functioning NSEPs should include new, sterile, and individually packaged needles and syringes, cookers and/or spoons, sterile water, acidifiers, filters, alcohol swabs, and tourniquets. Additionally, effective NSEPs should also include safe crack smoking kits in order to facilitate safe substance inhalation practices. Safe crack-cocaine smoking kits should include all necessary items to facilitate pipe smoking, including glass stems, mouthpieces, pipe screens, and push sticks. The best practice recommendations for an effective NSEP are listed below, along with evidence from the literature to support these recommendations.

1. Needles and syringes.

The following are the recommended best practice procedures in order to prevent the risk of HIV, HCV, and other blood-borne pathogen transmission and facilitate the use of a sterile needle and syringe for each injection.

1.1 Provide sterile needles without restrictions on the number of needles given per client or per visit without requiring the return of used needles.
1.2 Encourage the proper disposal or return of used needles.
1.3 Provide varying gauges, sizes, and brands of needles and syringes to meet clients’ needs.
1.4 Educate clients on proper needle and syringe use, safe disposal, and safe injection practices to encourage harm reduction.
1.5 Provide all necessary safe injection equipment as well as pre-packaged safe injection kits (consisting of needles and syringes, cookers, filters, ascorbic acid, sterile water, alcohol swabs, tourniquets, condoms, and lubricant if available).

Rationale:

Needles are used by injection drug users to inject a substance into the veins (intravenous), muscles (intramuscular), or under the skin (subcutaneous). IV drug use is done by drawing the warm drug-water solution through a filter into the needle and syringe. Occasionally, depending on the substance of choice, the user may mix the drug directly into the syringe itself. If multiple users are sharing the drug solution, disease transmission and risk for harm greatly increases, as a variety of different equipment may become contaminated if any of the users are contaminated with HIV, HCV, or any other blood-borne pathogen.

To effectively reduce the risk of pathogen transmission through intravenous substance use, the best practices recommend the use of a new, sterile needle for each injection, alongside the use of new, sterile injecting equipment each time. One-for-one needle exchange is not recommended. Sharing should be kept to a minimal, and if possible, avoid sharing any equipment at all. IV drug use with a previously used needle increases the individual’s chances of becoming infected with HIV or HCV. Paintsil,
Huijie, Peters, Lindenbach and Heimer (2010) examined the survival rates of the HCV in used syringes. The authors hypothesized that the high rates of HCV in intravenous drug users can be due to a lengthy survival time of the virus in the needle or syringe itself. The reduction of risk and prevention of contamination of the HCV virus is the primary strategy for HCV, as current treatments are costly and have adverse effects associated with treatment. HCV prevalence is disproportionate amongst society, with prevalence rates as high as 95% within certain intravenous drug using communities worldwide (Paintsil, Huijie, Peters, Lindenbach, & Heimer, 2010). To assess survival rates of HCV, the study created an experimental simulation of injection drug use practices to observe survival rates of the HCV virus in needles and syringes. Results of the study suggest that needles and syringes contaminated with the HCV virus tested positive for HCV after 63 days. The authors pose that this high survival rate of the virus may be contributing to the increased prevalence of the HCV virus, especially within the IDU communities. As this is the first study that examined HCV survival rates in syringes, additional research should be completed in order to assess reliability and validity of the results.

2. Cookers and spoons.

The following are the recommended best practice procedures in order to prevent the risk of HIV, HCV, and other blood-borne pathogen transmission and facilitate the use of a new, sterile cooker or spoon for each injection.

2.1 Each cooker must be sterile and pre-packaged individually.
2.2 Cookers or spoons must have a flat bottom to promote even heat distribution and have heat resistant handles for holding.
2.3 Provide a sterile cooker or spoon with each needle and syringe provided.
2.4 Provide cookers and spoons without limit on the number given to the client per visit.
2.5 Provide a variety of cookers and spoons to meet the needs of clients.
2.6 Offer a convenient location for the safe disposal of used injection equipment within the site, as well as multiple other locations off-site for safe disposal.
2.7 Educate clients on proper cooker and spoon disposal through verbal instructions, pamphlets, and resource handouts.
2.8 Provide all necessary safe injection equipment as well as pre-packaged safe injection kits (consisting of needles and syringes, cookers, filters, ascorbic acid, sterile water, alcohol swabs, tourniquets, condoms, and lubricant if available).

Rationale:

Drugs that can be injected intravenously may come in a variety of forms, from powders, such as cocaine or white heroin, solids or rocks, such as crystal meth, crack cocaine, or black-tar heroin, and tablets, such as OxyContin, or PCP. However, in order to become injectable into the human body, most of these drugs must be in the form of a water-based solution. In order to achieve this state, the drug should be mixed with sterile water in a container of some sort. The container must be able to transmit heat well, as most drugs need to be heated and dissolved further to create the appropriate consistency for injection. Many intravenous drug users will use spoons or bottle caps for this process,
as these items are readily available and are effective for this purpose, however unsanitary and unsterile they may be. Sterile containers offered through NSEPs are often called cookers or spoons, and are necessary to facilitate safe injecting practices.

When injecting a substance into the body, a small amount of the user’s blood will enter into the syringe, determining that a useable vein for injection has been located. Blood residue will be left on the needle and inside the syringe post-injection. The risk of infection increases significantly if a second IV drug user decides to share the contaminated needle with the original user. Blood residue may also contaminate other IV drug use equipment, such as cookers, filters, and sterile water. Hagan and Des Jarlais (2000) suggest that contaminated cookers and filters can transmit blood-borne pathogens, such as HIV and HCV, through to other users or individuals. Pouget, Hagan, and Des Jarlais (2011) state that the sharing of IV drug use equipment has increased. The authors state that between 50-70% of intravenous drug users reported sharing drug equipment in the past. Equipment sharing can be between other known users, friends, or complete strangers, depending on the context of the situation. The authors posit that the high prevalence of equipment sharing may be contributing to the high-rates of HCV, HIV, and other blood-borne illnesses between intravenous drug users.

3. Sterile water.

The following are the recommended best practice procedures in order to prevent the risk of HIV, HCV, and other blood-borne pathogen transmission and facilitate the use of injection-grade sterile water for each injection.

3.1 Offer single-use, 2 mL plastic vials of sterile water for injection with twist-off caps with each needle and syringe provided. If 2mL vials are not available, distribute the smallest available vial.

3.2 Provide sterile water vials without limit on the number given to the client per visit.

3.3 Offer a convenient location for the safe disposal of used vials and other injection equipment according to local biomedical waste standards.

3.4 Educate clients on the health risks associated with using non-sterile water or other liquids, sharing mixing and rinsing waters, and the correct method of use for single-person vials.

3.5 Provide all necessary safe injection equipment as well as pre-packaged safe injection kits (consisting of needles and syringes, cookers, filters, ascorbic acid, sterile water, alcohol swabs, tourniquets, condoms, and lubricant if available).

Rationale:

In order to dilute the drug into the appropriate consistency for injection, sterile water should be mixed into the cooker/spoon with the drug and heated to promote dilution and mixing. Sterile water vials must be designed with a twist-off cap and slow-drip release, allowing the water to be dripped directly into the cooker. A needle should never be inserted into a sterile water vial, as this may cause the needle to dull, possibly leading to further vein damage. If the intravenous drug user re-uses his or her same needle or other
injecting equipment, sterile water should be used to clean the needle and equipment. The use of sterile water for cleaning and decontaminating purposes also aids in decreasing the risk of disease transmission from potentially contaminated water.

4. Acidifiers.

The following are the recommended best practice procedures in order to reduce the risk of bacterial and fungal infection associated with the use of lemon juice and vinegar as acidifiers and facilitate the use of new, single-use acidifiers for each injection.

4.1 Offer pre-packaged, single-use 100mg packages of citric acid or 300mg packages of ascorbic acid with each needle and syringe provided.
4.2 Provide acidifiers without limit on the number given to the client per visit.
4.3 Offer a convenient location for the safe disposal of used acidifiers and other injection equipment according to local biomedical waste standards.
4.4 Educate clients on the appropriate use of single-use acidifiers, risks of fungal infections associated with using other acids, risks associated with not using acidifiers, and the possibility of bacterial contamination, as well as the appropriate single-person method for use.
4.5 Provide all necessary safe injection equipment as well as pre-packaged safe injection kits (consisting of needles and syringes, cookers, filters, ascorbic acid, sterile water, alcohol swabs, tourniquets, condoms, and lubricant if available).

Rationale:

Many substances, crack-cocaine for example, must be dissolved into a water-soluble solution in order to facilitate injection. For this to occur, acid must be added to the drug in order to create a salt. The use of ascorbic, citric, or acetic acids is considered safe and acceptable. Commonly used acids, such as vinegar, lemon juice, and kettle de-scaler contain properties that enable specific bacterial and fungal growth, which can lead to further health issues.

5. Filters.

The following are the recommended best practice procedures in order to prevent the risk of HIV, HCV, and other blood-borne pathogen transmission and facilitate the use of a new, sterile filter for each injection.

5.1 Offer pre-packaged and sterile filters with each needle and syringe provided.
5.2 Provide filters without limit on the number given to the client per visit.
5.3 Filters provided must retain minimal amounts of the drug solution as possible.
5.4 Offer a convenient location for the safe disposal of used filters and other injection equipment according to local biomedical waste standards.
5.5 Educate clients on the appropriate use of single-use filters, risks of filter sharing, risks associated with not using filters, and the possibility of bacterial contamination within multi-use filters.
5.6 Provide all necessary safe injection equipment as well as pre-packaged safe injection kits (consisting of needles and syringes, cookers, filters, ascorbic acid, sterile water, alcohol swabs, tourniquets, condoms, and lubricant if available).

Rationale:
When preparing a drug for injection, the injectable solution must be transferred from the cooker or spoon into the syringe. A needle is placed into the cooker and the solution is drawn up into the syringe. In order for this to happen safely, a filter is used on the tip of the needle to prevent any debris, bacteria, or un-dissolved particles from being drawn up into the syringe and injected into the body. In place of sterile, one-time use filters, many IV drug users will use common and readily available items such as cigarette filters, tampons, cotton buds, cotton swabs, or common household cotton wool items found. The use of a filter is encouraged, as its purpose is to prevent the user from injecting small, potentially harmful particles and organisms into his or her body. However, the use of readily available filters as opposed to sterile, one-time use filters is deemed harmful, since the item is not sterile and may add further health-related risks. Additionally, some intravenous drug users will not use filters when drawing up because of concerns about potency loss; nonetheless, sterile filter use should be encouraged as the risk for disease transmission and health-related harms is decreased.

6. Alcohol swabs.

The following are the recommended best practice procedures in order to prevent the risk of HIV, HCV, and other blood-borne pathogen transmission and facilitate the use of a new, sterile alcohol swab for each injection.

6.1 Offer sterile, individually pre-packaged alcohol swabs with each needle and syringe provided.
6.2 Provide alcohol swabs without limit on the number given to the client per visit.
6.3 Offer a convenient location for the safe disposal of used alcohol swabs and other injection equipment according to local biomedical waste standards.
6.4 Educate clients on the appropriate use of single-use alcohol swabs, risks of swab sharing, risks associated with not using alcohol swabs prior to injection, and the possibility of bacterial infection at the injection site.
6.5 Provide all necessary safe injection equipment as well as pre-packaged safe injection kits (consisting of needles and syringes, cookers, filters, ascorbic acid, sterile water, alcohol swabs, tourniquets, condoms, and lubricant if available).

Rationale:
Alcohol swabs should be used to clean the site of needle injection prior to the injection itself. The swab itself kills any bacteria located on the skin, and allows for a clean, sterile needle to enter the skin without decreased risk of disease transmission. Intravenous drug users may also use alcohol swabs to clean fingers and hands, and remove any blood from surfaces. There is a risk of disease transmission from the
infected user to the alcohol swab; therefore swabs should be discarded immediately after use. A new alcohol swab should be used by each individual for each injection.

7. **Tourniquets.**

The following are the recommended best practice procedures in order to prevent the risk of potential bacterial contamination resulting in illnesses and abscesses, as well as reducing trauma to veins and blood circulation through the use of a new, sterile alcohol swab for each injection.

7.1 **Offer** non-latex, non-porous, easy-to-release tourniquets that are thin and pliable with each needle and syringe provided.

7.2 **Provide** tourniquets without limit on the number given to the client per visit.

7.3 **Offer** a convenient location for the safe disposal of used tourniquets and other injection equipment according to local biomedical waste standards.

7.4 **Educate** clients on the appropriate use of single-person tourniquet use, risks of bacterial contamination when sharing, risks of tissue and vein damage, and the risks associated with not using tourniquets during injection.

7.5 **Provide** all necessary safe injection equipment as well as pre-packaged safe injection kits (consisting of needles and syringes, cookers, filters, ascorbic acid, sterile water, alcohol swabs, tourniquets, condoms, and lubricant if available).

**Rationale:**

Tourniquets are used by intravenous drug users as a method of placing pressure on the vein in order to increase blood flow into the vein of choice and allow for injection and circulation of the substance; tourniquets are also known as ties for this reason. Common items used as tourniquets are rope, shoelaces, condoms, bandanas, wire, or cloth belts. These items may cause further damage and trauma to the skin, veins, and surrounding tissues due to a lack in elasticity and difficulty releasing. Tourniquets should be discarded and replaced if there is blood or dirt visible on the tourniquet, if another individual has previously used it, or if there is a loss in elasticity.

8. **Crack cocaine smoking equipment.**

The following are the recommended best practice procedures used to prevent the risk of potential bacterial contamination resulting in illness and to facilitate proper pipe smoking.

8.1 **Offer** new, sterile glass stems, mouthpieces, screens, and push sticks without limit on the number given to the client per visit.

8.2 **Offer** a convenient location for the safe disposal of used crack smoking equipment according to local biomedical waste standards.

8.3 **Integrate** the distribution of safe inhalation equipment into existing NSEP services.

8.4 **Provide** all necessary safe inhalation equipment as well as pre-packaged safe inhalation kits (including all equipment stated above).
8.5 Educate clients on safe inhalation equipment and practices, as well as the risks associated with sharing smoking equipment.

**Rationale:**

Different routes of drug consumption can lead to increased risks of differing infections. No one method of substance consumption is safer than another, seeing as the intake of a foreign substance into the body can lead to detrimental outcomes. There is a misconception that IV drug use can be more harmful to an individual’s health and well-being, however, individuals who prefer to smoke illicit substances (such as crack-cocaine) experience alternate health risks, differing societal stigmas, and an increased potential for harm. Without the use of safe crack-cocaine smoking materials, individuals who engage in these behaviours have increased risks for injuries and burns. Self-made pipes are unsafe in many areas. The use of metal pipes and car antennas is common when making homemade smoking instruments, and can cause severe lip and mouth burns to the individual. The most commonly used items when making a homemade pipe are plastic water bottles and soda cans, which give off highly toxic vapours when exposed to heat as well as metal or steel wool materials, which are used to hold the rock. Inhaling small pieces of metal can cause harm to the individual’s oral health, throat, and lungs. Individuals who engage in crack-cocaine smoking behaviours have an increased risk of respiratory infections such as pneumonia or tuberculosis.

**Recommendations for Best Practice Implementation**

Although there is a considerable evidence of the efficacy and benefits of appropriate NSEP implementation from many countries, controversies persist. Historically, NSEPs were created as an approach to the public health issue of substance use and blood-borne illness transmission with the goal of reducing risk-taking and harm-causing behaviours surrounding illicit substance use. The implementation of NSEPs into the community challenged the theory of abstinence from illicit substances. NSEPs by definition operate under the theory that harm reduction is a more realistic and attainable goal, specifically for the population these programs serve. Unfortunately, the debate surrounding NSEPs continues, and with this comes the social stigmatization of illicit substance users, harm-reduction agencies, NSEPs, and outreach workers. According to Des Jarlais, Paone, Friedman, Peyser, and Newman (1995), a controversial issue regarding NSEPs is public acceptability of the service. There are both positive and negative views of NSEP practices and policies and the debate on whether NSEP’s encourage illicit substance use or provide harm reduction efforts to assist in keeping communities safe and clean. As stated by Des Jarlais et al., (1995), NSEPs “should be seen as a component of comprehensive systems [used] to address the problems of drug abuse and HIV [and HCV] infection” (p. 1582).

In order to implement the best possible practices for NSEPs and receive the best outcome possible, it is important to make a few distinctions. Firstly, it can be stated that the implementation of NSEPs should not increase crime rates and criminal behaviours, nor will it stop all HIV/HCV transmission. NSEPs are beneficial to the community at
large as a method of reducing harm and risk-taking behaviours by providing sterile using equipment. Restrictions placed on NSEPs, such as who can access the sterile equipment, limits on the quantity of supplies received per person per visit, the location of the site, and lengthy and time-consuming entrance procedures and assessments place a limit on the effectiveness and use of NSEPs by individuals who may benefit from the service.

Secondly, there are laws in some jurisdictions that permit dispensing of sterile injection equipment only to individuals who possess a prescription specifically requiring sterile equipment. Additionally, some laws criminalize the possession of intravenous drug use equipment and can lead to arrest and/or incarceration. These laws provide no benefit to the implementation of NSEPs and do not provide any help in the reduction of risk-taking behaviours, HCV/HIV transmission, or illicit substance use. Laws as such place restrictions on the efficacy of NSEPs. Repealing these laws would allow for NSEPs to run most effectively as well as allow for public funding to support NSEP operations in areas in which funding has not yet been possible. This would permit NSEPs to reach a broader population and increase access to safe equipment.

It is important for NSEPs to clearly maintain the focus that the purpose for these services is to prevent the spread of HCV/HIV and reduce risk-taking behaviours in IV drug users. This can be done most effectively by example, through successfully run NSEPs. Maintaining the stance that NSEPs are used as a harm-reduction approach to substance use and addiction can increase societal acceptance. The implementation of additional services within NSEPs, such as counselling services, can uphold harm reduction efforts for NSEP clients.

In addition, allowing for secondary distribution, which is known as the delivery or sharing of sterile IV equipment by NSEP clients to other IV drug users within the community should be encouraged. Secondary distribution allows sterile injection equipment the opportunity to reach a broader population and can greatly assist in HCV/HIV reduction efforts. Encouraging the use of sterile equipment by fellow IV drug users rather than professionals may incline some users to consider the harm reduction approach, since it may come across as less intimidating. Attempts to control the behaviours of IV drug users by making the acquisition of sterile equipment dependent on attending an NSEP would violate the fundamental NSEP premise that IV drug users are capable of changing their own behaviour at their own time and in their own fashion.

Finally, discretion and location are two extremely important aspects to running an effective NSEP. When deciding upon an appropriate location for an NSEP, decision makers should collect data on locations in which drug use is prevalent and high. For example, many NSEPs are located in the downtown area of most cities, as this is the most populated and easily accessible area for most users. As well, discretion is necessary in order to protect those who make use of the NSEPs from societal discrimination and stigmatization. Creating a convenient and easily accessible NSEP can lead to increased distribution of safe equipment and may contribute to increased safety.
Chapter V: Discussion

This narrative review of harm reduction literature was developed as a reference tool for the Street Health Centre to update current NSEP practices and procedures. Updating best practices and procedures should ultimately increase the effectiveness of harm reduction approaches. This thesis may assist NSEP facilitators and clients to increase safety by reducing client engagement in the high risk-taking behaviours associated with substance use. The review drew upon a behavioural psychology perspective, with a focus on psychoeducational and behaviour modification efforts. Table 2 briefly describes the best practice recommendations found throughout the literature.

Table 2.

*Best Practice Recommendations for Needle and Syringe Exchange Programs*

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needles and Syringes</td>
<td>Provide sterile needles and syringes free of charge without limit on the number requested by the client per visit.</td>
</tr>
<tr>
<td>Cookers and Spoons</td>
<td>Provide individually packaged, single use cookers and spoons free of charge for each needle and syringe provided without limit on the number requested by the client per visit for each needle provided.</td>
</tr>
<tr>
<td>Sterile Water</td>
<td>Provide single-use 2mL vials of sterile water for injection with twist-off caps for each needle and syringe provided without limit on the number requested by the client per visit for each needle provided.</td>
</tr>
<tr>
<td>Acidifiers</td>
<td>Provide pre-packaged, single-use 100mg packages of citric acid or 300mg packages of ascorbic acid with each needle and syringe provided without limit on the number requested by the client per visit.</td>
</tr>
<tr>
<td>Filters</td>
<td>Provide pre-packaged and sterile filters with each needle and syringe provided without limit on the number requested by the client per visit.</td>
</tr>
</tbody>
</table>
Alcohol Swabs

Provide sterile, individually pre-packaged alcohol swabs with each needle and syringe provided without limit on the number requested by the client per visit.

Tourniquets

Provide non-latex, non-porous, easy-to-release tourniquets that are thin and pliable with each needle and syringe provided without limit on the number requested by the client per visit.

Crack Cocaine Smoking Kit

Offer new, sterile glass stems, mouthpieces, screens, and push sticks without limit on the number given to the client per visit.

Review

The purpose of this thesis was to develop a thorough narrative review of the current literature regarding the positive effects of needle and syringe exchange programs (NSEPs), and to synthesize the current best-practice recommendations as they relate to NSEP’s and public health, to reduce client engagement in high risk-taking behaviours by implementing evidence-based procedures into practice at local NSEPs. Another purpose was to document evidence of the success of NSEPs and the appropriate recommendations for running an effective NSEP.

Strengths

The development of an evidence-based narrative review of NSEP best practice recommendations has many advantages. Firstly, evidence from studies and best-practice recommendations was synthesized to focus on the best practices. The data and interpretations used were taken from trustworthy secondary sources.

Limitations

It was not possible to gather and synthesize all of the information available on the topic of harm reduction. Due to the wide range of literature available on harm reduction and NSEPs, the scope of the review had to be limited. The short duration of the field placement narrowed the scope of the review to allow for completion within the time available. Additionally, lack of client involvement in the thesis may be regarded as a limitation.
Multilevel Challenges to Service Implementation

Client level. Many clients receiving services from this agency are mentally unwell and do not currently have appropriate coping skills. Without appropriate coping mechanisms, clients may continue to engage in behaviours that are detrimental to their own health; however, they may be resistant and unwilling to change their behaviours because they are afraid and have been met with difficulties in prior situations. The effectiveness of NSEPs relies on client compliance. Clients of the SHC can quickly become emotionally reactive and/or physically violent, and therefore may not have control over their behaviours.

Additionally, from the client perspective, strengths include acceptance and understanding, recognition of stigma, education on safe methods for substance use, sterile equipment for substance use, and an increase in effective functioning of current NSEPs. The thesis presents information that could be beneficial in educating clients on the harmful effects associated with substance use and the sharing or re-use of injection and inhalation equipment. Increasing client awareness of the harms associated with substance use and equipment sharing can be beneficial in increasing appropriate decision-making skills in clients. Quality of life for the specified may be also be improved as a result of the proper implementation of the thesis.

Program level. A limitation at the program level revolves around the boundaries associated with NSEPs. Primarily, the limited hours of operation can discourage clients from receiving the supplies needed. This can lead to an increase in risk-taking behaviours such as needle and syringe sharing. Secondly, in order to increase efficiency, each NSEP should have a full-time staff member available to educate clients and maintain the NSEP space. Having a full-time NSEP staff member may also increase client compliance with the harm reduction efforts being presented.

Organizational level. At the organizational level, a lack of funding is a major challenge to service implementation. The funding provided for NSEPs is not substantial enough to provide all of the services that are needed to run effectively. With this lack of funding, many services may not be run appropriately and therefore do not provide the client with the best possible care. Furthermore, staffing at the agency is also an issue. Due to the high-stress environment and high-demands of the agency, many staff members experience burnout and may not be as helpful as possible. This agency requires high-intensity staff training and counseling in order to keep staff members healthy and efficient.

Societal level. Challenges to the societal level of service implementation include the stigmas attached to the agency itself. Many clients may become stigmatized or discriminated against because of their use of the agency’s services. In some individuals, this stigma may deter them from using the services they need. Additionally, individuals within society may not want to attend SHC due to the stigma attached. Secondly, because the agency works with a range of clients, working with other community organizations or agencies is constant and can pose many challenges. Many clients who
use the NSEP services may also receive harm reduction equipment from other agencies. This may cause a conflict in the delivery of services. Some services offered by another agency may coincide with services offered being received from SHC, and this may reduce effectiveness of treatments and services.

**Implications for the Behavioural Psychology Field**

This narrative review contributes to the field of behavioural psychology by providing summarizing evidence on the positive impacts associated with running an effective needle and syringe exchange program, including a reduction in harms associated with substance use on the client and society. The agency (SHC) has implemented best practice recommendations and continues to update services as needed.

**Directions for Future Research**

To achieve the best results for improving Canadian public health and reducing risk-taking behaviours in illicit substance users, a number of measures should be taken. Firstly, to improve on the scope of the narrative review itself, further research should be conducted. The inclusion of additional research can improve on the validity and reliability of the thesis. Secondly, the inclusion of client views and opinions can serve to improve the effectiveness of the narrative review and the NSEPs themselves. The inclusion of client recommendations and opinions can improve the client/agency relationship, and allow clients to feel comfortable and accepted at the agency. It is hoped that these feelings of acceptance will increase client rates of equipment pick-up and appropriate disposal.

The author recommends that data be collected on client and agency perceptions of the benefits of, and barriers to access to the NSEP at SHC.

**Conclusion**

The present literature review supports the positive effects of evidence-based best practices for a needle and syringe exchange program. Needle and syringe exchange programs are an effective harm reduction approach to addiction services, and may help to keep the use as well as the community safe from drug-related harms. It should be more important to preserve the lives of individuals who are addicted than to criminalize and institutionalize them. NSEPs provide sterile injection and inhalation equipment, meant for one-time use by one individual. NSEPs also properly dispose of used needle and injection equipment, ensuring the safety of the community against the spread of infectious diseases such as hepatitis C and HIV. Implementing harm reduction into current drug policies can effectively reduce the adverse physical, psychological, and social effects associated with substance use. Harm reduction efforts are designed to reduce the potential damages associated with substance use without requiring the cessation of the substance use itself. This humanistic approach is effective and non-punitive, resulting in positive effects on the health of substance-users. A focus on harm
reduction may facilitate healthier lifestyles for current drug users and may reduce the negative impacts substance use and addictions can place on both users and the community.
References


http://www.researchgate.net/journal/0091-4509_Contemporary_drug_problems


