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Research Update

Alcohol Use and Pregnancy:
An Important Canadian Public Health and Social Issue

Canada

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1 Introduction

Women's use of alcohol during pregnancy is an important public health and social issue in Canada. This is due to the increasing societal awareness of the significant personal and social costs associated with fetal alcohol spectrum disorder (FASD). To help inform current discussions on what works best to respond to pregnant women's use of alcohol and related harms, this research update summarizes the Canadian and international (primarily US) literature. Three topics are reviewed: patterns of women's use of alcohol during pregnancy (sections 3 and 4); the characteristics of women who use alcohol during pregnancy and the circumstances surrounding their use (section 5); and the public health, social and legal responses to pregnant women's use of alcohol (sections 6 to 10). Within each topic, the strengths and limitations of the literature are reviewed, and from this, recommendations are made for further research. If applicable, programming and policy implications are discussed. The audience intended for this report is the various stakeholders of the Public Health Agency of Canada.

A large number of complex and interrelated factors help to explain the use of alcohol by women. This is particularly the case with drinking during pregnancy. Pregnant women's use of alcohol cannot be separated from other issues in their lives,[1] such as violence and socio-economic status, and their alcohol use is often not easily isolated from other potentially harmful behaviours, including tobacco and other drug use. In general, problematic substance use for women is linked to a range of biological, genetic, psychological, social, cultural, relational, environmental, economic and spiritual factors.[2] However, there are good reasons to concentrate on alcohol alone. These range from the various negative health consequences of alcohol use for pregnant women, including physical, mental, emotional and spiritual well-being, to the fact that alcohol use during pregnancy is one of the leading causes of birth defects and developmental delays in Canadian children.[3]

Women who drink during pregnancy are at risk of having a child with an FASD, including its most visible presentation, fetal alcohol syndrome (FAS).[i, 4,5] Estimating the number of children born in Canada with FASD and FAS is difficult.[ii] Among the key problems is that diagnostic capacity is inadequate and not evenly available across the country, studies are

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i. "Fetal Alcohol Spectrum Disorder (FASD) is an umbrella term describing the range of effects that can occur in an individual whose mother drank alcohol during pregnancy. These effects may include physical, mental, behavioural and learning disabilities with lifelong implications. The term FASD is not intended for use as a clinical diagnosis" (Chudley, A.E., J. Conry, J.L. Cook, C. Loock, T. Rosales, N. LeBlanc (2005). "Fetal alcohol spectrum disorder: Canadian guidelines for diagnosis". *Canadian Medical Association Journal*. 172 (5 suppl). pp. s1). "Fetal Alcohol Syndrome (FAS) is a medical diagnosis referring to a specific number of abnormalities associated with drinking alcohol during pregnancy. Fetal Alcohol Effects (FAE) is a term used to describe the presence of some, but not all, FAS characteristics when prenatal exposure to alcohol has been confirmed". (Health Canada (2001). *The Facts: Fetal Alcohol Syndrome/Fetal; Alcohol Effects*. ON: Health Canada. p. 1).

ii. It is important to acknowledge at the outset of this report that although alcohol use in pregnancy is necessary for the outcome of FASD, prevalence and incidence rates of the former cannot be equated with prevalence and incidence rates of the latter.

largely restricted to sub-populations that may not be representative, some research is methodologically weak, and there is a general lack of comparability among studies.[6] FAS is estimated to occur at a rate of one to two per 1,000 live births, while FASD rates are less clear but undoubtedly higher.[7] In Health Canada's Framework for Action on FASD, the incidence is estimated to be nine in 1,000 live births.[8] With the recent publication of guidelines for diagnosing FASD, the calculated incidence will likely become increasingly accurate. It is also estimated that the incidence of FAS/FASD in some Aboriginal communities in Canada is higher.[9,10] Studies have suggested rates from 25 to 200 per 1,000 live births in some isolated northern communities.[11] There are no known studies that have researched FAS/FASD among other sub-populations of Canadians.[12]

Evidence is emerging, but still inconclusive, on the amount of alcohol, if any, women can safely use during pregnancy without affecting the fetus.[13-16] The amount,[iii] timing[iv] and frequency[v] of alcohol intake are critical factors in determining risk for FASD; however, other factors, including the mother's age, health, other substances used and the genetic susceptibility of the mother and of the fetus[17] also help to determine outcomes. Recent research suggests that more moderate levels of drinking during pregnancy, in comparison to patterns of drinking that produce high levels of blood alcohol content, may cause long-term cognitive impairments.[vi, 18-20] In the absence of conclusive information, Health Canada and other authorities, including the US Department of Health and Human Services,[21,22] recommend that women abstain from drinking alcohol during pregnancy.[vii] Public health messaging similarly surrounds the adverse effects of alcohol on nursing infants (e.g. sleep–wake patterns, decreased milk intake, impaired motor development), and education about breastfeeding scheduling is promoted to ensure women that their babies will not be exposed to alcohol.[23-25]

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iii. An "unsafe" amount of alcohol consumption is commonly defined as 5 or more drinks on one occasion, or binge drinking. Some define it as 4 or more drinks on one occasion to account for women's slower metabolism rate compared with that of men's.

iv. Timing refers to the stage of pregnancy at which women drink. Alcohol-related damage to the fetus during the early stages of conception (first three weeks) can lead to miscarriage; up to 12 weeks, it can include abnormalities of the head and face, damage to the brain and lower birth weight; and at later stages, drinking can also cause developmental delays. Alberta Alcohol and Drug Abuse Commission: http://corep.aadac.com/for_women/the_basics_about_women/women_brochures_pregnancy.asp.

v. An "unsafe" frequency of alcohol consumption is commonly defined as 7 or more drinks per week.

vi. A concern with studies that focus on moderate levels of alcohol consumption is that they frequently disregard the complexity of drinking behaviour and measure average levels of consumption. Abel commented that "[s]ince it is blood alcohol level, rather than the amount of alcohol consumed, this is critical for producing fetal damage; the difference in drinking patterns is a critical factor determining the potential dangers of alcohol" (Abel 1996). Moderate drinking during pregnancy. *Clinica Chimica Acta*, 246, 149–154). To illustrate, the calculation of an average level of consumption does not account for differences between two scenarios: woman A drank 2 alcoholic beverages on Friday evening and 5 on Saturday evening, and woman B drank 1 alcoholic beverage each night of the week with her dinner.

vii. There are national and international debates over appropriate public health messaging regarding drinking during pregnancy. See later prevention-specific sections of this report for more information.

To support the health of pregnant women in Canada and to arrive at the most effective responses, it is important to understand the patterns of use among women drinking during pregnancy, the characteristics of these pregnant women, and the circumstances of their drinking. It is also equally important to be knowledgeable about current public health, social and legal responses to women's use of alcohol during pregnancy.

2 Methodology

A systematic analysis of existing, published data on women's use of alcohol during pregnancy was undertaken. The data were collected from available literature spanning the medical and social science disciplines.[viii] The primary inclusion criteria were post-1995,[ix] Canadian, peer-reviewed literature on women's use of alcohol during pregnancy. When Canadian literature was lacking, as it was particularly with respect to evaluated responses, the international (primarily US) literature was consulted. Also, the applicable FAS and FASD literature was more heavily drawn upon in the response section.[x] For all sections, research reports, reviews, discussion documents and personal communication with field experts were drawn on when limited evidence-based literature was located.[xi] Although no attempt was made to rate studies for this update, the greatest attention was paid to experimental and quasi-experimental studies. For the most part, the review of patterns of women's alcohol use during pregnancy and their characteristics and circumstances is confined to published survey data and localized case file review and qualitative studies. Every attempt was made to account for the most recent Canadian data from the growing number of Canadian data sources.

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viii. The following databases were searched for (English-only) literature: Arts and Humanities Citation Index; Canadian Centre on Substance Abuse Library Collection Database; Centre for Addiction and Mental Health Library Database; Criminal Justice Abstracts; Digital Dissertations; DrugScope; ETOH Archival Database (Alcohol and Alcohol Problems Science); ERIC; MEDLINE; PsycINFO; Sociological Abstracts; and Social Science Citation Index. The key words used in the search were alcohol, alcohol use, drug, substance, pregnancy, alcohol warning label, prenatal, and addiction. Additional terms and their derivations were used to access the literature specific to responses, such as treatment and prevention. These terms were searched in a variety of ways depending on the database and were not searched together. For instance, terms were searched as a "topic" in the Arts and Humanities Citation Index, whereas they were searched as "keywords" in Sociological Abstracts. Over 100 articles were selected for review.
The following Web sites were searched for (English-only) literature:
Alberta Alcohol and Drug Abuse Commission (AADAC); Best Start: Ontario's Maternal Newborn and Early Child Development Resource Centre; Canadian Institute for Health Information (CIHI); Canadian Institute of Health Research (CIHR); Canadian Mental Health Association (CMHA); Canadian Paediatric Society (CPS); Canadian Public Health Association (CPHA); Centre of Excellence for Early Childhood Development (CEECD); Centres for Excellence in Women's Health (CEWH); Cochrane Reviews; FAS/E Support Network of BC; FASlink; FASWorld; Fetal Alcohol Syndrome topic page, National Center on Birth Defects and Developmental Disabilities; Centers for Disease Control and Prevention, USA; Government of Canada; Health Canada; Motherisk; Public Health Agency of Canada (PHAC); SAMHSA Fetal Alcohol Spectrum Disorders (FASD) Center for Excellence; Society of Obstetricians and Gynaecologists of Canada (SOGC); Status of Women Canada (SWC); and The Women's Addiction Foundation. For the majority of Web sites, searches employed the keywords "pregnan*" AND "alcohol." This search string varied slightly from Web site to Web site depending on the sophistication of each Web site's search utility. The majority of Web sites allowed for keyword searches using only one or two terms (pregnan* & alcohol). A limited number of Web sites used "advanced search" options, whereby the entire Web site or the publications/library catalogue could be searched. Advanced search options often allowed for the use of specific subject headings (pregnant, pregnancy, alcohol) in conjunction with date parameters. Therefore, from one Web site to another the effectiveness of the search utility varied greatly. As a result, the most relevant results were found by conducting a broad search for "pregnan*" or "pregnan* AND alcohol" and reviewing the list of results. In addition, Web pages, PDF documents and/or sections of Web sites were scanned for relevant material. Over 50 documents were selected for review.

ix. Pre-1995 articles were included when more recent literature was not located and/or it was a significant document.

x. This document, therefore, in some ways can be viewed as an update to Health Canada's 2000 report *Best Practices: Fetal Alcohol Syndrome/Fetal Alcohol Effects and the Effects of Other Substance Use During Pregnancy*, prepared by Gary Roberts and Jo Nanson.

xi. This method corresponds with Rehm's liberal approach to inclusion criteria for reviews. Rehm, J. (1999). Review papers in substance abuse research. *Addiction*, 94(2), 173–176.

The research update proceeds from a review of the epidemiology of women's use of alcohol, particularly in relation to pregnancy, to a review of the literature on effective responses. The literature on responses to women's use of alcohol during pregnancy is dominated with the prevention of FASD. This review reflects this and gives priority to peer-reviewed studies that used an experimental and quasi-experimental design. The responses sections use the framework proposed by the Institute of Medicine,[26] distinguishing between universal, selective and indicated prevention of prenatal alcohol use problems. Training and professional development, and policy and legal responses are also discussed. Because there are few peer-reviewed Canadian evaluation studies, most of the empirical literature is US-based. Although it was beyond the scope of this report to identify all relevant non-peer-reviewed Canadian literature, an attempt was made to identify key Canadian evaluation reports and other documents that reflect recommended practices.

3 Women's Alcohol Use Patterns

What the Studies Say

Recognizing the data limitations, the surveys show that overall, approximately three quarters of adolescent girls and adult women in Canada reported the use of alcohol in the 12 months prior to the survey. On average, over 10% reported heavy drinking at least once a month, with the rate typically higher among young women. Among adolescent girls and young women, prevalence and frequency of drinking and heavy drinking are higher. Drinking among school-aged females appears to have increased from the late 1980s to the late 1990s, with relative stability since. These findings raise concerns for the health and safety of young women, and if pregnant, the fetus. Rates are understood to be higher still for female youth who are not enrolled in school or are living on the street, and their use is typically riskier in comparison with their high school counterparts.

Survey Data Weaknesses

Note that there are weaknesses with survey data. These weaknesses include superficial coverage of complex topics, non-comparable datasets, inadequate assessment of the effects of social life, weak validity, poor respondent recall, underestimation and an inability to measure some topics.[30] Marginalized women, who may be particularly at risk for drinking during pregnancy, are also less likely to be reached by and/or respond to formal surveys.

It is well established in the literature that women in general have lower levels of alcohol use and problematic use compared with men,[27] yet women are at a greater risk of developing alcohol-related problems.[28] This is due partly to biological factors, such as body composition and hormonal influences. Social factors specific to sex and gender, such as victimization and lack of social support, are also significant contributors to women's alcohol-related problems. To help inform current discussions on what works best to respond to pregnant women's use of alcohol and related harms, it is important to first become acquainted with the overall use of alcohol by women in Canada.

The data presented in this section and the next are gathered mostly from published articles reporting on national and provincial surveys.[xii] These surveys typically report on prevalence, frequency and level of use (i.e. how many women use, how often and how much[xiii]). This is important because, as mentioned, fetal development has been linked to the amount of alcohol used (i.e. peak blood alcohol levels) and frequency of drinking. Excessive alcohol consumption over time has also been linked to serious

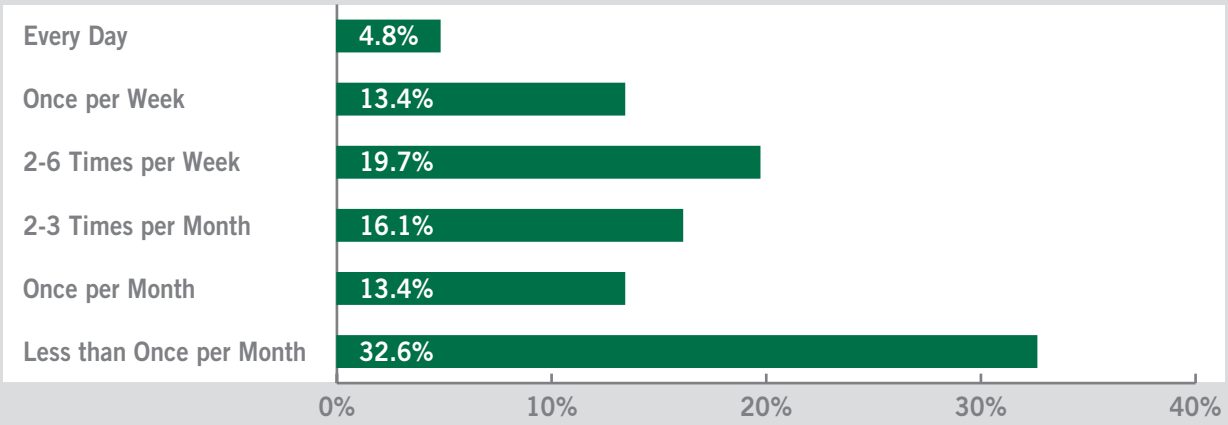
xii. There may be more recent data collected in Canada on women's use of alcohol during pregnancy than reported on here (e.g. 2003 Canadian Community Health Survey, 2002-03 National Longitudinal Survey on Children and Youth); however, it was not publicly available for this report. As outlined in the methodology section, this research update focuses solely on published data.

xiii. Surveys typically also report on high-risk drinking and dependence using tools such as the Alcohol Use Disorders Identification Test (AUDIT), which measures hazardous and harmful drinking, alcohol dependence and some specific consequences of drinking.

health problems in women, such as liver, heart, stomach and brain damage, as well as some forms of cancer.[29]

According to a 2004 national survey[31] of Canadians' (15 and older) **use of alcohol** and other drugs, 76.8% of females reported consuming alcohol in the past year. The 2000-01 Canadian Community Health Survey, Cycle 1.1 (CCHS) similarly reported on past-year drinking, for respondents 12 and older, with 73.1% of these females reporting use of alcohol. Of the females who reported drinking in the past year, their frequency of use ranged widely: 32.6% drank less than once per month, 13.4% once a month, 16.1% 2 to 3 times a month, 13.4% once a week, 19.7% 2 to 6 times a week, and 4.8% every day.[32]

Figure 1: Frequency of Drinking, Females 12 and Older, 2000-01

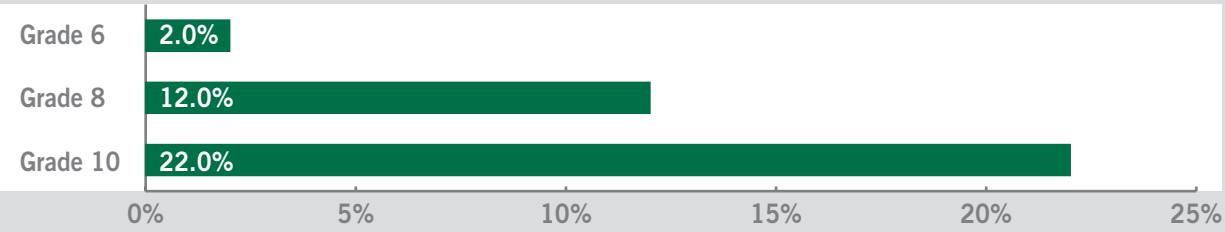


Source: R.A. Cormier, C.A. Dell and N. Poole. (2003). *Women's health surveillance report. A multidimensional look at the health of Canadian women.* Ottawa: Canadian Institute for Health Information.

Looking at the **level** of alcohol used by Canadians, **heavy drinking** was defined in the 2004 Canadian Addiction Survey (CAS) as 4 or more drinks on a single occasion for women. Among female past-year drinkers (15 and older), 3.3% reported heavy drinking at least once a week and 17.0% reported heavy drinking at least once a month.[33] In the 2000-01 CCHS (defining heavy drinking for females as 5 or more drinks per occasion), 8.3% of women reported heavy drinking at least once a month. The CCHS data further relayed that twice as many Aboriginal as non-Aboriginal women reported drinking at this level.[34] In addition to the limitations of survey data already outlined, a further weakness is that differing definitions of variables make it difficult to compare datasets. This may help to explain the above difference in reported levels of heavy drinking between the 2004 CAS and 2000-01 CCHS.

Increasing attention is being paid to the **use of alcohol by adolescent girls and young women**. Adolescence is a time of brain and hormonal maturation, and adolescent drinking patterns can influence later patterns, so it is likely there are long-term consequences to alcohol use by this population. According to the 2001-2002 Health Behaviour in School Aged Children (HBSC) survey, 22% of females in Grade 10, 12% of girls in Grade 8 and 2% of girls in Grade 6 reported drinking any alcoholic beverage once a week or more.[35] Canadian studies have also revealed that young people are more likely to engage in sex without the use of contraception when they are drinking.[36] In a US study, one third of pregnant 14- to 21-year-olds reported they were drinking when they became pregnant.[37] There is some indication as well that young women tend to identify their pregnancy later in term than older women.[38] Also of concern are studies that report that the younger a woman is when she starts drinking, the more likely she is to develop a problem with alcohol later in life.[39]

Figure 2: Young Women's Use of Alcohol (Drinking Any Alcoholic Beverage Once a Week or More), 2001-02



Source: Anon. *Health Behaviour in School Age Children–Survey Data 2001-2002.* Available at http://phaspc.gc.ca/dca-dea/publications/pdf/hbsc 01 2candat.pdf

Insight: Substance Use Before Age 13

In an informal evaluation of the Edmonton First Steps Fetal Alcohol Spectrum Disorder program, which offers mentorship for women who are pregnant or who have recently given birth and have used drugs or alcohol during their pregnancy, it was found that of the 96 female program clients interviewed, all had begun to use alcohol and/or drugs prior to age 13.[40]

Surveys conducted during the 1990s have indicated that the prevalence of drinking among high school students in Canada has increased substantially.[41] The Ontario Student Drug Use Survey (OSDUS), which is commonly used as a proxy for drinking patterns among school-aged children in Canada, found that drinking declined during the late 1980s but increased during the late 1990s, and has shown relative stability since.[42] The 2000-01 CCHS reported that 71.1% of females between 15 and 19 years of age used alcohol in the previous 12 months.[43] Although not differentiated by sex, the 2004 CAS survey reported that approximately 90% of Canadians between 18 and 24 consumed alcohol within the past year.[44] Data from the 1996-97 National Population Health Survey (NPHS) also showed that younger women were more likely to report regular drinking than older women: 59% of women 20 to 24 years of age and 56% of women 18 to 19 years of age drank regularly, compared with approximately 50% of women between 25 and 54, 41% of those 55 to 64, 34% aged 64 to 74, and 23% of those 75 and older.[45] There is little information available on youth who are out of the mainstream, but indications are that the percentage of these females drinking alcohol is higher and their pattern of use is riskier than their high school counterparts.[46] Young women who are homeless/living on the street are at particular risk for a range of harms related to their heavy substance use and other risk behaviours.[47]

Binge Drinking

Of significant concern is the level of drinking by adolescent girls and young women.[48, 49] Typically, young women are more likely to binge drink (i.e. more than 4 or 5 drinks per occasion) than older women. For example, in the 1998 Canadian Campus Survey 56.1% of females reported consuming 5 or more drinks on a single occasion at least once during the school year, and 25.2% reported consuming 8 or more drinks on a single occasion.[50] Although not directly comparable, the 2003 OSDUS found that 21.7% of females reported consuming 5 or more drinks on one occasion at least once in the 4 weeks before the survey. This is higher than the 18% reported in 2001, but nearly identical to the 21.5% reported in 1999.[51]

4 Women's Alcohol Use Patterns During Pregnancy

What the Studies Say **It appears from the published data on women's use of alcohol during pregnancy that the rate of alcohol use has generally declined in both Canada and the US from the mid to late 1990s. However, it is important to emphasize here the limitations of self-report data as well as the frequent exclusion of marginalized women from survey data. Nonetheless, approximately one seventh of Canadian women (less than 15%) use alcohol while pregnant, and a similar but lower percentage was found in the US. Canadian women who report using alcohol during pregnancy appear to use it infrequently, although the data are limited. For women of childbearing age (18–44), the reported rate of alcohol use is similar, albeit slightly lower compared with the percentage of women who use alcohol in the general population. A small proportion of women report heavy drinking during pregnancy, though again the data are limited. Comparing the definitions of heavy drinking, both of which are linked to increased risk of damage to the fetus, it appears that a greater percentage of women engage in drinking 12 or more drinks a week than drink 5 or more drinks on one occasion. Canadian studies on the use of alcohol by pregnant Aboriginal women conclude a high rate and level of use; however, there have been limited comparisons made with other populations and there is a lack of clear understanding for this (e.g. possibly more candid self-reporting by Aboriginal women, the influence of other mitigating factors such as poverty).**

4.1 Drinking While Pregnant and Levels of Consumption

It is important to state at the outset that the lives of the women conveyed in the data should not be judged, as this would contribute to the detrimental stigma that surrounds women who use alcohol during pregnancy. Further, although the women are using a substance while pregnant, in nearly all cases, they had started before becoming pregnant.[52] An evaluation report by Poole (2000) of the Sheway Project for high-risk and pregnant and parenting women reminds us in her review of the international literature that "women using substances during pregnancy have been described both as struggling with the many pressures put on them and demonstrating remarkable strength and resourcefulness."[53] This cannot be forgotten.

> ***… the lives of the women conveyed in the data should not be judged, as this would contribute to the detrimental stigma that surrounds women who use alcohol during pregnancy.***

Insight: Who's at Risk?...Because Risks Change and Vary

Although women who drink during pregnancy are at risk of having a child with FASD, prevalence and incidence rates of the former cannot be equated with prevalence and incidence rates of the latter. Also, women who drink during pregnancy are not a homogeneous group, and include women who are alcohol dependent, women who abuse alcohol on an episodic basis, and women who drink infrequently or regularly at low amounts. Amount, timing and frequency of alcohol intake, alongside other factors such as mother's health and genetic susceptibility of the fetus, are critical factors in determining risk for FASD.

The collection of information on women's use of alcohol during pregnancy may be undertaken through the use of three methodologies:

1. self-report questionnaires and interviews
2. screening tools
3. biomarkers

First, most of the information collected on alcohol use in pregnancy is based on self-report data gathered through interviews, self-administered questionnaires and intake histories administered for either clinical or research purposes.[54] In addition to the limitations identified with survey questionnaires above, the use of self-report methodologies to collect information about alcohol use in pregnancy is further limited by the associated social stigma, feelings of guilt and shame and/or fear of repercussions (including fear of child welfare involvement and, in some jurisdictions in the US, incarceration).[55-57] The validity of self-report data may be enhanced when it is gathered in the context of a respectful, non-judgmental, ongoing and trusting relationship in which women are engaged with a health care or social service provider.[58]

Second, the use of screening tools to identify levels of alcohol use in pregnant women is a potentially good source for data, but at present there is no consistent application of screening tools. In addition, some health care professionals hesitate to use them (reasons include absence of training in use of the tools and no coverage for their use in medical plans).[59] The screening methodology also relies on self-report and is therefore limited by the factors discussed above. Once again, the ability of women to be honest in their responses on screening tools is enhanced if the tools are administered within the context of a respectful, trusting and ongoing relationship with a service provider.

Third, biological markers are a means to collect information after a woman has delivered a baby. Biomarkers (hair and meconium[xiv]) are biological data taken from the neonate in order to identify a mother who has used alcohol at risky levels in her pregnancy and to identify an infant who has been exposed. The use of biomarker data to identify women and children is not routinely used in Canada, and remains controversial. Further research has been recommended,[60] with the stipulation that it must be conducted alongside an inclusive social and legal-ethical policy debate regarding the use of biomarkers to identify women and children. Keeping these limitations in mind, the data that are available are nonetheless important to help to begin to identify drinking patterns among pregnant women that in turn can be used to inform current discussions on what works best to respond to pregnant women's use of alcohol and related harms.

The use of alcohol by women during pregnancy is an important issue to examine on its own. However, it is necessary to preface this discussion with the recognition that alcohol use, and most specifically alcohol abuse, commonly occurs in combination with other substances. It is widely acknowledged that heavy substance-using women rarely use a single substance.[61,62] It is also recognized that not all substances are equally harmful, and associated factors such as combinations of use, levels of exposure and related risk behaviours contribute to differing outcomes. The Maternal Health Practices and Child Development Study in the US (Pennsylvania) reported that 76% of adult women who smoked during the first trimester of pregnancy also used alcohol.[64] Further, among pregnant US teenagers surveyed, 61% who smoked during the first trimester of their pregnancy also reported drinking alcohol.[65] This has important implications for effective responses to pregnant women's use of alcohol and related harms in that alcohol use cannot be viewed in isolation from other potentially harmful behaviours or from the realities of women's lives (e.g. poverty, low social support) that lead to the behaviours.

Multiple Risk Factors

The Saskatoon Pregnancy and Health Study found that 36% of the women interviewed reported engaging in two risk behaviours during the first trimester of their pregnancy, the most common combinations being alcohol and caffeine use (24%). About 16% of respondents reported three risk behaviours, which were in almost all cases drinking, smoking and caffeine consumption.[63]

xiv. Meconium is the first stool of a newborn child.

Keep in mind that there are weaknesses with survey data.[66] It is also evident in the presentation of the survey findings that many of the datasets are not comparable, and so what emerges are "pieces of a picture" that together provide as complete a picture as possible. As will be relayed in the recommendation section, there is much need for improvement in the data that are collected in Canada on women's drinking during pregnancy to provide an accurate portrayal. The intent of this overview is to provide a general statement based on often very disparate and incomplete survey findings.

The percentage of women reporting alcohol use during pregnancy has recently decreased in Canada.[67] The most recent published data on the prevalence of women's use of alcohol during pregnancy is located in the 2005 overview, *Report on Maternal and Child Health in Canada*, which relayed that "roughly 14% [of mothers] reported drinking alcohol (any amount) during pregnancy."[68] Similarly, the 2000-01 CCHS indicates that 13.7% of all women who reported using alcohol in their lifetime also consumed alcohol during their last pregnancy. Similar findings were also reported in the 1998-99 National Longitudinal Survey of Children and Youth (NLSCY): 14.4% of women reported drinking at some point during their pregnancy, and 4.9% drank throughout.[69] Comparing these rates[xv] to the 1994-95 National Population Health Survey (NPHS) and the 1994-95 NLSCY, these surveys similarly reported that between 17% and 25% of women drank alcohol at some point during their pregnancy, and between 7% and 9% drank alcohol throughout their pregnancy.[70,71] For the most part, women who reported drinking during their pregnancy in the 2000-01 CCHS did so infrequently: 75.4% drank less than once per month, 9.7% once per month, 6.5% two or three times per month, 5.3% once per week and 1.3% drank every day.[72]

Insight: Self-Reporting – Does It Reveal the Whole Picture?

The above findings are comparable to results from a 2000 survey of Canadian women's views on whether they would drink should they become pregnant; 85% said they would not.[73] However, in a 2002 poll of Canadians' perceptions and opinions about women's use of alcohol during pregnancy, 22% felt that more than one third of pregnant women consumed alcohol.[xvi, 74] Although the comparability of this Canadian poll data to pregnant women's self-reported use of alcohol is limited, it is interesting to note that this finding is considerably higher in comparison to the self-report data discussed.

xv. The CCHS analyses are for females 12 and older; however, the question is specific to the respondent's last pregnancy, making the data comparable to the NPHS and NLSCY.

xvi. Consumed alcohol more than once a week.

In comparison, the 2002 US Behavioral Risk Factor Surveillance System survey established that approximately 10% of women reported alcohol use while pregnant.[75] Using data from the same survey, the US Centers for Disease Control and Prevention found that the rate of any alcohol use during pregnancy declined from an average of 14.6% between 1988 and 1995 to 12.8% in 1999.[xvii, 76] The drinking rate and decline match the Canadian findings.

Insight: Did You Know?

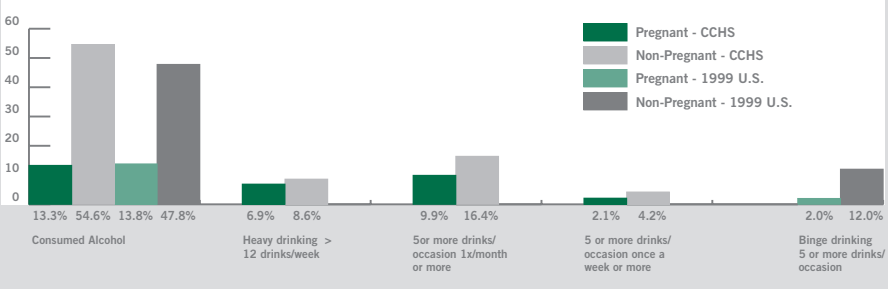
***The 1996-97 NPHS found that 51% of sexually active 15- to 19-year-old females in Canada had sex without a condom* without *the explicit intention of becoming pregnant in the year prior to the survey.*[77]**

In the absence of available data on the prevalence of women's use of alcohol during pregnancy, drinking by women of childbearing age (typically defined as 11–44, 15–44 or 18–44 years) is often examined for insight. These data are also valuable because approximately 40% of pregnancies are reported to be unplanned, with higher rates among teenage and older women.[78] A 2004 Alberta Alcohol and Drug Abuse Commission (AADAC) report analyzed the 2000-01 CCHS, comparing women 18 to 44 years of age who were or were not pregnant at the time of the survey. It is important to mention that most of the CCHS questions asked about the previous 12 months, so responses from women who were pregnant at the time of the study may reflect alcohol use prior to their pregnancy. Overall, 72.8% of women of childbearing age in Canada who were pregnant at the time of the survey, and 82.3% of those who were not, reported drinking alcohol in the past 12 months. Although not an equivalent study population, the 2002 US Behavioral Risk Factor Surveillance Survey found that more than half of female respondents who were of childbearing age (18–44), and were not using birth control, reported using alcohol.[79]

In AADAC's analysis of CCHS data for Alberta, women who were pregnant at the time of the survey were much less likely to drink on a regular basis (defined as at least once per week) than women who were not pregnant: 41.6% of pregnant women and 32.1% of non-pregnant women reported drinking less than once per month; 19.3% versus 16.2% drank once per month; 22.3% versus 20.2% drank 2 to 3 times per month; 11.1% versus 17.6% drank once per week, 5.8% versus 9.7% drank 2 to 3 times per week, and 2.1% of non-pregnant women drank 4 to 6 times per week and 2.0% drank every day.[80] These numbers are encouraging in that they are lower in comparison to the CCHS data on the frequency of alcohol use by all Canadian women, keeping in mind that the ages and populations of the women are different.

xvii. From the late 1980s to the mid 1990s, there was a reported increase in women's alcohol use during pregnancy by the US Centers for Disease Control and Prevention.

Figure 3: Alcohol Use by Pregnant and Non-Pregnant Women



Source: 2000-01 Canadian Community Health Survey US 1999 National Household Survey on Drug Abuse

Examining the use of alcohol in the week prior to the 2000-01 CCHS, 13.3% of pregnant women in Canada and 54.6% of non-pregnant women reported drinking. There were similar findings in the US 1999 National Household Survey on Drug Abuse, in which it was estimated that 13.8% of women 15 to 44 years of age and pregnant, and 47.8% of women who were not pregnant and of childbearing age consumed alcohol.[81]

Drawing on the 1994-95 NPHS and the 1994-95 NLSCY to examine levels of alcohol use among women who reported drinking alcohol at some point during their pregnancy, 94% consumed fewer than 2 drinks on the days they drank, 3% had between 3 and 4 drinks, and less than 3% drank 5 or more drinks.[82] The 2000-01 CCHS measured heavy drinking[xviii] among women who reported drinking in the past year, and found that 9.9% of pregnant women at the time of the survey[xix] and 16.4% of non-pregnant women reported having 5 or more drinks on one occasion once a month or more, and 2.1% of pregnant women and 4.2% of non-pregnant women reported consuming 5 or more drinks on one occasion once a week or more. Comparably, the 2002 US Behavioral Risk Factor Surveillance Survey found that 2% of pregnant women and 12% of women of childbearing years (18–44) engaged in binge drinking (5 or more drinks on one occasion).[83]

Heavy Drinking Rates

The 2000-01 CCHS also measured heavy drinking as regularly drinking more than 12 drinks per week, and 6.9% of pregnant women at the time of the survey[xx] and 8.6% of non-pregnant women reported heavy drinking. In examining heavy drinking in the week prior to the survey, 0.5% of pregnant and 3.6% of non-pregnant women reported drinking more than 12 drinks. Of those surveyed, 12.5% of pregnant and 47.7% of non-pregnant women reported consuming between 1 and 9 drinks in the week prior to the survey.[84] In the US, the Centers for Disease Control and Prevention found that in 1999 more women reported heavy drinking while pregnant compared with pooled estimates of such drinking from 1998 to 1995. Specifically, 2.1% of women in 1999 reported having 7 or more drinks a week and 3.3% reported having 5 or more drinks on one occasion.[85] The literature indicates that heavy drinking has a higher association with adverse pregnancy outcomes.[86]

xviii. Also termed binge drinking.

xix. Recall the caveat in the collection of the data discussed above.

xx. Again, recall the caveat in the collection of the data discussed above.

There are also provincial and local Canadian studies that report on the rate of women's drinking while pregnant and their levels of consumption. The studies often differ in methodologies and populations, and therefore are not easily comparable. Nonetheless, they add valuable insight into the subject area. A large majority focus on what they variously define as high-risk women. For example, the Saskatoon Pregnancy and Health Study accessed pregnant women for interviews through a prenatal program (not high-risk) and an outreach program (high-risk). Approximately 46% of the women interviewed reported drinking alcohol during the first three months of their pregnancy, with 75% consuming fewer than 2 drinks a week on average.[87] A study of pregnant women in Toronto who were seeking counselling found that 3.1% of clinic patients and 0.8% of telephone clients reported having 5 or more standard drinks per occasion at some point during their pregnancy.[88]

The focus on Aboriginal communities with high rates of alcohol abuse and regions with large concentrations of Aboriginal peoples has meant that Canada lacks epidemiological data regarding other populations, making it difficult to determine whether or not Aboriginal women are at greater risk than other groups. Further attention also needs to be paid to the methodology surrounding studies with Aboriginal populations (e.g. possibly more accurate account of alcohol use by Aboriginal women because of the acknowledgement that alcohol use/abuse is a health and social problem among their people[91] and greater attention on the influence of mitigating factors, such as poverty).

Disproportionate Focus on Aboriginal Women

Canadian studies on women's use of alcohol during pregnancy, in particular in relation to FAS and FASD, disproportionately focus on Aboriginal women and the geographic areas in which they live.[89] Further, Canadian studies of FAS/FAE prevalence rates have focused on Aboriginal communities where alcohol abuse and dependency are known to be high. This raises the concern that the high prevalence rates of FAS/FAE found in these communities will be used to describe rates of FAS/FAE in the general Aboriginal population.[90]

4.2 Recommendations and Implications

The following research recommendations are aimed at improving data collection efforts and identifying valuable research questions so that a better understanding of the patterns of women's use of alcohol during pregnancy can be determined.

Data Collection

Implement systematic surveillance practices to monitor women's use of alcohol and other drugs during pregnancy in all provinces and territories.[xxi] This should include the development of more valid and reliable measures of substance use during pregnancy, taking into account current experiences with surveys, interviews and screening instruments. For example, standardize the use of gender-appropriate definitions of heavy drinking on surveys (e.g. binge drinking as 4 or more drinks on one occasion for women and 5 or more for men), and relate alcohol-specific questions only to the period of each respondent's pregnancy. Attention should also be given to ongoing methodological problems, such as small sample sizes of pregnant women and the under-use of qualitative methodologies.

1. In conjunction with the implementation of systematic surveillance practices to monitor women's use of alcohol and other drugs during pregnancy, develop research environments and relationships that are respectful, non-judgmental, sensitive and acknowledge the reasons why women use alcohol in pregnancy. These conditions may facilitate openness and comfort for women to provide more candid information.
2. Adopt a woman-centred approach to data collection. Such an approach would facilitate understanding in addressing women's use of alcohol in pregnancy. Although there is no agreement on an overarching definition of a women-centred approach to research, it is commonly understood to be research that contributes to the improvement of individual and group conditions for women and men, stemming from social, political and economic improvement for women.
3. Avoid selection bias in studies. Attempts should be made to compile a random sample of pregnant women and avoid focusing only on women who access services for their drinking.
4. Use tailed methods for collecting information on sub-populations and marginalized groups (e.g. street-involved girls and young women, sex trade workers).

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xxi. The Canadian Perinatal Surveillance System (CPSS), as part of the Public Health Agency of Canada, is launching a Maternity Experiences Survey to monitor important indicators during pregnancy, such as alcohol and drug use. This survey will be the first of its kind in Canada. The target population is all women who have had a live birth in the months prior to the survey. Phase I was completed in January 2001 with the testing of sampling strategies and the data collection instrument. Health Canada and CPSS are currently developing the National Survey.

It is necessary to approach such studies by fully accounting for the range of risk factors the women face and the influence of these on their alcohol consumption.

5. Analyze existing national datasets and publish regular and timely reports on women's use of alcohol during pregnancy and the use of alcohol by women of childbearing age. Substance use trends should continue to be documented for pregnant women using the NLSCY and CCHS. The analysis of data on women of childbearing age is important, given the frequency and levels of alcohol use documented for this population together with the prevalence of unplanned pregnancies.
6. Conduct longitudinal studies on alcohol use, starting with girls/young women who are of childbearing age. This is important because of the high rates of heavy drinking in this population.
7. Make available and accessible diagnostic services in Canadian communities to determine incidence and prevalence rates of FASD.

Research Questions

8. Under what conditions are women able to reduce or stop alcohol consumption once pregnancy has occurred? What contributes to pregnant women's continued use during pregnancy and/or after delivery?
9. What factors are underlying increased rates of alcohol use among adolescent girls and young women as well as increased levels of consumption?
10. Is the apparent decline in the rate of alcohol consumption during pregnancy from the mid to late 1990s accurate, and if so, why? How does this relate to 2000 rates in Canada?
11. What health risks do women pose to their bodies, physically, socially, mentally and spiritually, when they drink alcohol while pregnant? In addition to FAS/FASD, how do these risks potentially negatively influence pregnancy outcome?
12. Although the number of women who report using alcohol during pregnancy are generally low, as are the reported levels of use, there are still women using and some at high levels. Are there co-existing conditions in the lives of these women that have not been identified or fully examined?
13. What combinations of alcohol and other substances (e.g. benzodiazepines[xxii]), alcohol and life circumstances (e.g. trauma), and alcohol and other harmful behaviours (e.g. poor nutrition) are common among women of childbearing age?

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xxii. Benzodiazepines are central nervous system depressants.

5 Characteristics and Circumstances of Women Who Use Alcohol During Pregnancy

What the Studies Say **The co-existing conditions experienced by pregnant women who use alcohol are generally related to other substance use (e.g. illicit drugs, tobacco), mental health (e.g. cognitive impairments, depression) and life circumstances (e.g. violence, low social support). Recent Canadian surveys and studies contribute a partial understanding of the characteristics and life circumstances of women who use alcohol while pregnant. Though the data are sporadic and some focus only on one province, it is still meaningful. Overall, women who have higher incomes and are older are more likely to report drinking alcohol during their pregnancy, younger and older women are more frequent drinkers, and younger women are much more likely to drink 5 or more drinks on one occasion as well as to have the lowest incomes. There is limited information available on regional variations, but what does exist shows the highest rates of alcohol use during pregnancy by women in Quebec and the lowest rates in Atlantic Canada. The need for further research is clear.**

5.1 Issues Faced by Pregnant Women Who Use Alcohol

Current research indicates that, for many women, pregnancy is a reason to reduce or stop alcohol use.[92-95] However, this is not the case for all women. Further, it is important to recognize that not all women discover their pregnancy immediately, and therefore continue to drink into their first trimester and for some even beyond. This may lend insight into the profile of women who drink during pregnancy. It is important to know not only the rates, frequency and levels at which women drink during pregnancy, but also their characteristics and circumstances, to help inform current discussions on what strategies and approaches are most effective. Similar to the review of data on women's use of alcohol, the surveys and research reported in this section do not provide a complete understanding. They do, however, provide a starting point for describing women who drink while pregnant and the breadth of interconnected factors that influence their lives. This is necessary to accurately and comprehensively identify risk factors for specific populations.[96]

A 2004 report on substance abuse treatment and care for women released by the United Nations, Office on Drugs and Crime, described women with substance use problems as generally

> *…having fewer resources (education, employment, income) than men, are more likely to be living with a partner with a substance use problem, have care of dependent children and have more severe problems at the beginning of treatment.… [They] also have higher rates than men of trauma related to physical and sexual abuse and concurrent psychiatric disorders, particularly post-traumatic stress disorder and other mood and anxiety disorders (1).*

According to the Canadian literature on women's use of alcohol during pregnancy, there is a vast interplay of issues that pregnant females face alongside their substance use. One factor previously mentioned is use of other substances. Additional factors relate to social, legal and health issues[97-101] (see Table 1). It is important to acknowledge that complete agreement on these factors does not exist among the various studies,[102] but they do reflect a pattern that is also seen in the US literature.[103-109] It is also important to recognize that among Aboriginal women in Canada these factors frequently reside in the context of colonial oppression and its aftermath, such as ongoing social and economic marginalization and the intergenerational link between residential schooling and FAS/FASD among Aboriginal peoples.[110]

Table 1: Summary of Co-existing Conditions Experienced by Pregnant Women Who Use Alcohol

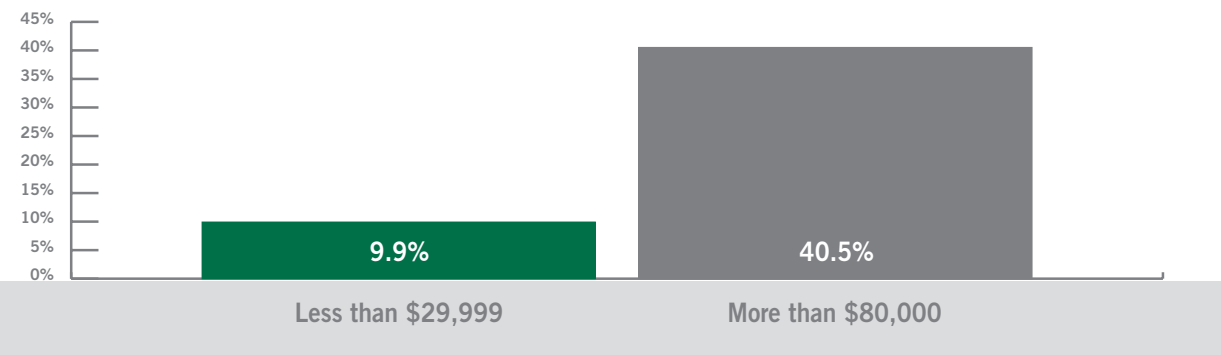
sole parenting	violence, abuse, sexual exploitation, trauma
child(ren) in custody/changes in custody	involvement in the criminal justice system
low income/social economic status/poverty	low social support
limited access to prenatal/postnatal care services	previous birth of a child with prenatal and exposure to alcohol and/or other substances
feeling/experiencing loss of control	low education and literacy levels
menial, low-paying employment problems	concurrent physical and mental health
cognitive impairments, possibly due to FASD	co-existing use of other substances
unplanned pregnancy/pregnancies	shame
low self-esteem	depression and other mental health issue(s)
historical and cultural factors pregnancy	heavy consumption of alcohol prior to
older in age	inadequate nutrition
mother's own prenatal exposure to alcohol, tobacco or other drugs	alcohol, tobacco or other drug exposure at a young age
poor early childhood environment of the women (stress, abuse, neglect)	paternal/partner alcohol and drug use during the pregnancy
physical, mental, social and spiritual imbalance	unstable housing and living conditions

Some insight into the co-existing conditions that pregnant alcohol-using women face can also be acquired from the study of birth mothers of children diagnosed with FAS. A leading research project in Washington State in the US by Astley et al. (2000) generated a profile of women who had given birth to a child diagnosed with FAS and identified factors that helped and/or hindered the mother's ability to achieve abstinence.[xxiii, 111] Of 80 women enrolled in the study, 50 had achieved abstinence by the time of their interview and 25 did not. Similar to the characteristics reported above, overall the women were identified as high risk, many of them dealing with mental health issues as well as victimization from abuse. The authors reported on the life circumstances of women who had achieved abstinence as having, on average:

> significantly higher I.Q.s, higher household incomes, larger more satisfactory social support networks and were more likely to report a religious affiliation. While they were equally likely to have mental health disorders, those who had achieved abstinence were more likely to have received treatment…. Those who had achieved abstinence reported higher levels of drinking just before the birth of the index child and were more likely to have parents who had problems with alcohol use (513).

AADAC's analysis of 2000-01 CCHS data for Alberta revealed clear income-based differences among women who reported **drinking alcohol during their last pregnancy**. Women with higher incomes were more likely to report drinking: 40.5% of women with an income over $80,000 reported drinking, and this rate steadily declined to 9.9% of women with an income of $29,999 and under.[112] This finding for Alberta is supported in analyses of Canadian data in the 1994-95 NPHS and the 1994-95 NLSCY. Both surveys reported that alcohol use during pregnancy was most common among women with higher incomes.[113]

Figure 4: Income-based Differences Among Women Who Reported Drinking During Their Last Pregnancy, 2000-01



Source: Alberta Alcohol and Drug Abuse Commission (AADAC). (2004). *Windows of opportunity: A statistical profile of substance abuse among women in their childbearing years in Alberta.* Edmonton: AADAC.

xxiii. Abstinence was defined as "consumed no alcohol or consumes minimal quantities only on special occasions" Astley, S., Bailey, D., Talbot, C., & Clarren, S. (2000). Fetal alcohol syndrome (FAS) primary prevention through FAS diagnosis: II. A comprehensive profile of 80 birth mothers of children with FAS. *Alcohol & Alcoholism*, 25(5), p. 513.

The 1994-95, 1996-97 and 1998-99 NLSCY data also indicate that women who are older are more likely to report alcohol consumption during pregnancy. The most recent 1998-99 NLSCY data reveal that 14.1% of children under 2 and whose mothers were under 25 at the time of the survey were exposed to some alcohol prenatally compared with 21.6% of children whose mothers were 35 years and older.[114]

AADAC also examined the **frequency of alcohol intake** by women in Alberta who were pregnant at the time of the survey. It was found that women of childbearing age in the youngest age group (18–20) were the least likely to drink less than once per month. Women in both the youngest and oldest groups (18–20 and 31–44) were more likely to be frequent drinkers (between one and six times a week) than women between 21 and 30.[115] It is noted in the report that this finding fits with the US research showing more frequent drinking among women of college age and those who are older.[116]

Examining the **amount of alcohol consumed per occasion** by Alberta women of childbearing age (18–44), young women were most likely to report drinking 5 or more drinks on one occasion (14.1% of women 18–20 years of age drank this amount once or more per week versus 6.2% in the 21–25 age group). In the two oldest age groups (26–44), only 3% of women reported consuming 5 or more drinks on one occasion once or more per week. Once again, the report acknowledges that this finding is consistent with other research on drinking patterns, including US studies.[117] To illustrate, the 2002 US Behavioral Risk Factor Surveillance Survey reported that binge drinking for women who are pregnant and women of childbearing age is highest among 18- to 24-year-olds (19.4%), followed by 25- to 34-year-olds (13.1%) and then those 35 to 44 years of age (8.6%).[118] So, although higher income pregnant women in Alberta were more likely to be drinkers, when they did drink, lower income pregnant women were more likely to binge drink (i.e. drink 5 or more drinks on one occasion) once per month or more (22.4% of women with incomes between $10,000 and $19,000) and once per week or more (9.2% of women with incomes less than $10,000, 5.7% in the $10,000 to $19,999 income group, and 4% to 5% in income groups over $20,000).[119] The Saskatoon Pregnancy and Health Study similarly determined that pregnant women with higher incomes were more likely to use alcohol.[120]

Regional Variation in Alcohol Use

There was little information located on regional variation in alcohol use by pregnant women; however, analysis of the 1998-99 NLSCY reported the highest rate of use in Quebec (25.1%) and the lowest in Atlantic Canada (7.7%).[121] This was also found in the analysis of the 1994-95 and 1996-97 NLSCY.[122,123] In addition, a 2000 survey of Canadian women found that women in Quebec were much less likely to state that they would stop using alcohol if they were to become pregnant.[124]

5.2 Recommendations and Implications

As in previous section, the research recommendations are aimed at improving data collection efforts and identifying valuable research questions so that a better understanding of the characteristics of women who use alcohol during pregnancy and the circumstances of their use can be determined. The outlined policy and program implications aim to do the same. Many of the research recommendations made in the prior section also apply here.

Data Collection

- Increase research attention on the characteristics and circumstances of women who consume alcohol while pregnant and the contexts in which they drink (e.g. influential role of partners and peers). This can be achieved through both survey data and more qualitative, representative small-scale studies.
- Do not concentrate studies only on currently over-represented sub-populations (e.g. poor, young women, Aboriginal women). For example, the CCHS and US studies suggest that women with the highest incomes and in the oldest age group are more likely to drink alcohol during pregnancy.
- Continue to collect data and conduct further analyses on women who binge drink during pregnancy (in particular young women) and those who are alcohol dependent, as these forms of consumption present the greatest potential harm to the fetus.
- Develop well-designed, multi-site, multi-year qualitative studies that can gather in-depth information on the women's characteristics and circumstances of women who drink at varying levels and frequency during pregnancy.
- Conduct further studies on women who have given birth to FAS-diagnosed children to learn more about the risk factors for drinking during pregnancy and/or the reasons for stopping or reducing their use.
- Several the data recommendations on women's use of alcohol during pregnancy are also applicable here, including the development of research environments in which women are comfortable in discussing their lives, adoption of a woman-centred approach to data collection, analysis of existing data, implementation of longitudinal studies, publicly release of results in a timely manner, and the collection and analysis of data by province and territory.

Research Questions

- What are the associations between alcohol use and the use of other substances (e.g. illicit drugs, tobacco, caffeine, prescription and non-prescription drugs) during pregnancy and for women of childbearing age?
- Do women view alcohol use during pregnancy as a high-risk behaviour (and how does it compare with other behaviours, such as injection drug use)?
- Why are younger and older women the most frequent drinkers? What do they have in common, if anything, to explain this?
- Why are younger women more likely to binge drink during pregnancy? What is the association between binge drinking and income?
- What are the associations between life factors identified as contributing to women's use of alcohol while pregnant, with particular emphasis on the influence of her partner?
- How does women's use of alcohol during pregnancy relate to co-occurring disorders in her life, such as depression?
- What are the unique needs and services required by pregnant women who are alcohol dependent, compared with those who are binge drinkers and, if applicable, women who use alcohol occasionally during pregnancy?
- What contributes to the reported higher rates of alcohol use during pregnancy among women in Quebec and lower rates in the Atlantic Provinces? Are there methodological and/or cultural explanations for these differences?

Policy and Program Implications

- Increase resources for pre- and postnatal care for women at risk, such as women drinking heavily during pregnancy.
- Identify evidence-based interventions that help women reduce or stop their use of alcohol during pregnancy, in particular those interventions that use a variety of strategies to reach different sub-populations of women.
- Design and evaluate campaigns to succinctly convey to the Canadian public the well-documented risks associated with drinking while pregnant, and tailor the information to specific audiences. For example, an abstinence-based message may not be the best means to reach some audiences (in particular women who currently drink at heavy levels while pregnant). Consider including information on general behaviours that contribute to a healthy pregnancy (e.g. nutrition) as well as those that are harmful (e.g. smoking).

- Support perinatal and substance use treatment services that address the factors in women's lives that surround their substance use.
- Raise awareness and sensitivity among all agencies and persons who work within the addictions field about the unique risks of the female population they serve, as the women who are accessing treatment may be pregnant or become pregnant.
- Provide training to agencies and human service workers in follow-up services on asking women about their alcohol use during pregnancy. Careful consideration also must be given to the positions of the people who are asking the questions, as they may be perceived to be in positions of power (e.g. child welfare).
- Prenatal alcohol use problems.

6 Universal Prevention of Prenatal Alcohol Use Problems

What the Studies Say Universal measures – which address the general public or an entire population group with policies, programs and messages – to prevent women's substance use during pregnancy can range from popular approaches such as public awareness campaigns, to less popular and controversial policy initiatives such as increasing taxation on alcoholic beverages and mandating warning labels on alcoholic beverage containers. Most universal prevention measures for this issue have not been scientifically evaluated and many suffer from weak program design; the most evaluated measure, beverage warning labels, has been shown to affect awareness in the general population in the short term and drinking behaviour among low-risk women only. Nevertheless, well-designed and evaluated universal prevention measures have the potential to create an environment within which a range of more intensive and targeted measures can receive support and effectively operate.

Linking Prenatal Alcohol Use and FASD to Social Policy

While individuals and neighbourhoods carry an obvious responsibility in promoting their own health, many of the determinants of health, such as income levels, the distribution of wealth and the degree of disparity in living standards are a function of government policies. It is therefore clear that prevention will not occur without attention being given to policies that affect these factors. No attempt has yet been made in the scientific literature to link changes in problematic prenatal alcohol use and FASD to social policy changes.

For the purposes of this section, universal prevention measures address the general public or an entire population group (community, school or neighbourhood) with policies, programs and messages aimed at preventing prenatal alcohol use problems. The measures discussed include population health promotion, alcohol control, public awareness activities, measures directed to adolescents and young adults, and multi-component strategies.

6.1 Population Health Promotion

Those serious about having an impact on the prevalence of prenatal alcohol use must take into account broad factors that have been shown to affect the health of individuals and populations – income, education, quality jobs and social support. Research shows that people with higher levels of education and income generally have better states of health than those with low income and less education; this effect is accentuated when there is a large disparity between high- and low-income earners in a population.[125] Consistent with this pattern, women living in poverty, for complex reasons, tend to have less healthy birth outcomes.[126]

This pattern holds true for substance-related pregnancy issues. Although the picture is far from complete, the data presented in the previous sections for Canada and the US suggest that the prevalence of FASD is greater in lower socio-economic families and communities.

6.2 Alcohol Control Measures

It may be surmised that measures effective in limiting alcohol consumption, particularly heavy consumption, in a general population would have the effect of reducing prenatal alcohol exposure and FASD. Various regulatory approaches – for example, increased taxation, advertising regulations, responsible service, and limiting hours of service or numbers of outlets – have been recommended. In some jurisdictions, these approaches have been implemented to reduce alcohol consumption. The regulatory measure to reduce consumption that is most supported by evidence is increased pricing through taxation. One study showed women reducing their consumption due to price increases more than men, which suggests that this measure may be effective for reducing drinking by pregnant women.[127] A limitation of these alcohol-specific measures is that they do not account for individuals switching to another substance when alcohol becomes less available – for whatever reason. Although the empirical evidence on this phenomenon is limited,[128] it is possible that some pregnant women who cannot access beverage alcohol may seek out other substances, some of which could be just as, or more, harmful (e.g. home brew, inhalants).

Community alcohol policies that guide whether and how alcohol is made available (e.g. through special events licences) may be perceived as having an impact on this issue; however, no relevant research was found. Lauzon et al. reported on an Ontario on-reserve alcohol policy initiative that led to greater regulation of the sale and service of alcohol at community events.[129] Findings indicated a reduction of some problems; however, drinking during pregnancy was not measured. Preliminary evidence from an Alaskan study suggests that a community alcohol ban resulted in a significant reduction in heavy alcohol use among pregnant women in the short term.[130] The long-term implications have yet to be determined. Having worked with many Ontario communities to develop municipal alcohol policies (MAPs) that reduce alcohol-related harms, the Centre for Addiction and Mental Health is currently adapting the approach to be culturally appropriate for First Nations, but no public documentation of the process or outcome of this work has been made available to date.[131]

6.3 Public Awareness Activities

Public awareness activities are the most common universal prevention measure. However, many have weak designs and have not been evaluated. Mandated warning labels are the most studied universal prevention measure on this issue, with almost all of the research originating in the US, which enacted this policy in 1989.

In a 2002 review of studies on warning labels in the US, Hankin concluded that after several years of heightened awareness of the labels and their messages, general population awareness levels tended to slip in subsequent years. Stockwell suggested that rotating and changing the messages would have the effect of keeping them fresh and would reduce this "slippage" in awareness.[132] Hankin further found that "low-risk" pregnant women reduced their alcohol consumption following the implementation of the warning label, but women who drank heavily during pregnancy did not.[133] In another of the few studies on warning labels and pregnant women, Kaskutas et al. surveyed a nationally representative sample of pregnant women in the US over a five-year span on their awareness of warning labels, signs, advertisements and posters. They found that there was no relationship between awareness of the various messages and drinking levels during pregnancy.[134] In a 1999 study, Greenfield et al. found a positive relationship between the amount of exposure to warning labels and conversations about drinking and pregnancy.[135]

Canadian Measures

There have been several major FASD-related awareness-raising initiatives recently implemented or proposed in Canada, including Bill-43 (Sandy's Law) in Ontario and related Responsible Beverage Service programs; Alberta's FASD awareness campaign; and a private member's bill, Bill C-206 (Government of Canada), to legislate warning labels on alcoholic beverage containers.

On February 1, 2005, Bill-43, referred to as "Sandy's Law," came into effect in Ontario. This Bill requires establishments that are licensed to serve or sell alcohol to post specific warning signs about the risks of alcohol use in pregnancy. The regulations specify the types of licensed establishments affected by this new law, the size, language, wording and images for the signs, and where the signs must be posted. The message on the signs reads: "WARNING: Drinking alcohol during pregnancy can cause birth defects and brain damage to your baby. 1-877-FAS-INFO www.alcoholfreepregnancy.ca."

Fenaughty and MacKinnon studied the effectiveness of a legislated warning poster in Arizona.[136] The poster was required in all establishments selling alcohol, and included the statement, "Warning: Drinking Distilled Spirits, Beer, Coolers, Wine and Other Alcoholic Beverages during Pregnancy Can Cause Birth Defects." They found that most of those studied had become aware of the poster and its message, but that it had minimal impact on their beliefs regarding the effect of alcohol on the fetus. Women and older subjects were more likely to be aware of the poster than men and younger subjects, respectively.

Responsible beverage service (RBS) programs work with managers and servers in licensed establishments to help ensure that beverages are served responsibly (i.e. not served to minors, intoxicated or disruptive patrons). There is good evidence to support these programs generally.[137] Some may see RBS programs having preventative potential on this issue by placing servers in a role of refusing to sell alcohol to pregnant women; however, this would be generally viewed as discriminatory and contentious. RBS programs may have a role to play in raising awareness of this issue among bar managers and servers, but there is no documentation of the impact of this type of measure.

In 1999-2000, the Alberta Alcohol and Drug Abuse Commission (AADAC) conducted an awareness-raising campaign for the Alberta Partnership on FAS. Among other aims, the campaign intended to increase the awareness and profile of FAS in the province and used television, radio and newspaper advertisements in addition to local initiatives that included private sector involvement. A sample of 800 Albertans was surveyed prior to the campaign, with another sample surveyed immediately following the television portion of the campaign (a period of three months). According to a number of measures, a generally high level of awareness and support for action remained unchanged as a result of the campaign. However, recall of information related to alcohol and pregnancy rose significantly, with 61% of Albertans reporting having seen, heard or read something about this issue prior to the mass media element of the campaign compared with 73% immediately following.[138]

Health care providers are in an excellent position to offer brief, universal messages to increase general public knowledge of the risks of alcohol use to the fetus and the prevalence of unintended pregnancies. A general message that has been recommended is "being sexually active, a frequent alcohol user, and not using effective contraception places a woman at risk for having an alcohol-exposed pregnancy."[139] Important leadership on this issue was provided by the US's top physician, the US Surgeon General, during an update of a 1981 statement in February of 2005, advising women who are pregnant or considering becoming pregnant to abstain from alcohol.[140]

Insight: Evaluation – Poor at Best

Overall, public awareness-raising campaigns, while common, tend not to be evaluated. The goals of such programs are also often not clearly articulated, making it difficult to evaluate them using scientific methods. When the campaigns are evaluated, as with warning labels, they tend to show modest benefits in terms of knowledge gains among the general public and behaviour change seems confined to low-risk women.

Some conclude that the small positive effect of beverage container warning labels and other awareness-raising activities justifies a measure that costs government virtually nothing and the alcohol industry very little.[141] Others caution that harm may be caused by public awareness messages that recommend abstinence as the only safe option for pregnant women. They argue that, given the high percentage of women of childbearing age who drink, the high number of unplanned pregnancies discovered later in their term, and that FASD is diagnosed primarily in the children of heavy-drinking women, these public messages are unduly "alarmist." The contention is that these messages may lead to unnecessary anxiety and possible termination of pregnancy among low-risk women, while failing to reach the women at greatest risk.[142,143]

In the face of some indication that exposure to lower amounts of alcohol may increase risk of stillbirth and have an effect on the growth and cognitive skills of a child,[xxiv] the broad message of abstinence during pregnancy is the most prudent universal message.[144] This general message needs to be complemented by clear, targeted messages from physicians and other practitioners in contact with pregnant women to clarify the degree of risk associated with different patterns of drinking (e.g. low, occasional levels of drinking vs. frequent and binge drinking), and particular sub-populations (e.g. women who drink during pregnancy who are considered high risk). Clear definitions of low, moderate, occasional and frequent drinking need to be agreed upon to support these messages. It is important that women, who for whatever reason, have consumed alcohol during pregnancy, be made aware that stopping or reducing their consumption at any point, while attending to their overall health, will increase the likelihood of positive outcomes for their unborn child.[145] (See also section 7 – Selective Prevention Strategies).

Public awareness campaigns alone seem unable to shift behaviour among higher risk women; however, it is arguable whether they should be held to that standard. By raising awareness, these campaigns can help to establish overall norms on an issue – norms that may help some pregnant women garner the support they need from partners, family and friends to avoid use of alcohol.[146]

Insight: "Tilling the Soil"

The role for public awareness campaigns best supported by the literature is to contribute to larger, multi-component strategies.[147] These strategies must be well defined, evaluated and draw upon available advice. Beyond that, it has been suggested that these universal prevention measures can play an important role in "tilling the soil," in that an informed public may be more inclined to support public expenditures for more intensive strategies to address this issue.[148]

xxiv. There are, however, concerns with these studies due to a lack of consensus on what constitutes low and moderate drinking. In several cases, they are based on weekly averages that could hide high consumption during one or two occasions during the week.

It is critical that these efforts be well designed and evaluated, and take advantage of available advice, such as the 2003 guide *Keys to a Successful Alcohol and Pregnancy Communication Campaign*, by the Ontario government's Best Start program.[149]

6.4 Measures Directed to Adolescents and Young Adults

Given the prevalence of binge drinking and sexual activity among teens and young adults, and the tendency for these activities to be combined,[150-152] this population is increasingly seen as an important target for universal prevention. According to the literature, younger women appear to be less at risk for having an affected child than older women. This may provide a window of protection and opportunity for education and identification of those women who will require more intense interventions. Logical subject areas within the curriculum to locate awareness-raising topics include drug/health education, personal development, and life management programs. Interactive approaches based on the Social Influence Model have been shown to be the most promising approaches to general drug education at the secondary school level.[153] Topics for FASD education at this level include pregnancy planning, resisting pressure to use alcohol or engage in sexual activity, teratogenic[xxv] effects of alcohol, early symptoms of pregnancy, the importance of routine physical exams for sexually active female adolescents, understanding the needs of those affected by prenatal alcohol exposure, and problems confronting parents of affected children.[154] Although examples of Canadian FASD-specific curricula were located,[155] no studies on the effectiveness of introducing curricula in high school were found.

Engage Key Stakeholders

While brief, motivational approaches with high-risk drinkers – a selective prevention approach – have been used with good effect at the college level in the US, the most promising universal prevention programs appear to be those that use an environmental approach that engages key stakeholders (i.e. students, health care providers, licensed establishments and the alcohol industry) in identifying and pursuing policy-level strategies (e.g. reducing access, implementing responsible beverage services) to reduce high-risk drinking.[156]

6.5 Multi-Component Strategies

Perhaps the most promising use of awareness-raising campaigns is in support of broader multi-component campaigns. Multi-component programs typically aim to shift attitudes and behaviours among both men and women concerning alcohol use during pregnancy

xxv. Teratogenic refers to the ability of a substance to produce malformations in a fetus.

through a variety of means. Elements include fully available birth control and substance-specific information routinely provided to men and women (premarital and prenatal) and from a number of sources (e.g. accompanying marriage licence applications). This is complemented by prenatal and outreach services; professional training to identify, intervene with and support those at risk; and accessibility to FASD diagnostic clinics to assess children prenatally exposed to alcohol.

Multi-component strategies are difficult to implement and challenging to evaluate. One of the few FASD-related initiatives to be evaluated was the Tuba City program involving an Aboriginal population in the US. This program used a comprehensive approach to prevention and intervention that included awareness raising, training and a diagnostic component. Although the various elements of the initiative were not separately evaluated and no control group was used, the overall program appeared effective in promoting referrals and abstinence among pregnant women.[157] Further, the work of Astley (2004) suggested that the various components to the strategies implemented in the State of Washington over the years together resulted in a decline in prenatal use of alcohol and FASD between 1993 and 1998.[158]

6.6 Recommendations and Implications

Priorities for research, programming and policy arising from this review of the evidence in support of universal prevention measures are:

Evaluation Research

- Conduct Canadian research on the effectiveness of:
  - municipal alcohol policies on preventing alcohol use during pregnancy
  - public awareness measures such as media campaigns, mandated warning signs, and if implemented, warning labels
  - school-based FASD curricula
  - multi-component community FASD prevention strategies
- Clarify definitions for low, moderate, occasional and frequent drinking in the context of pregnancy.

Policy and Program Implications

- Give attention to social policy that reduces inequity among low-income pregnant and parenting women.
- Improve the design of public awareness programs to allow rigorous evaluation.
- Evaluate the potential for promoting health as well as harm in public awareness messages presenting an abstinence-only message.
- Build public awareness initiatives into comprehensive prevention strategies.
- Give increased attention to the issue of problematic alcohol use by adolescent and young adult women.

7 Selective Prevention of Prenatal Alcohol Use Problems

What the Studies Say

Selective prevention measures select sub-populations that are seen as being of higher risk for more targeted attention, in this case, women of childbearing age who consume alcohol. Selective measures for this issue include outreach, screening, referral and brief intervention activities. Although some researchers have argued for routine alcohol use screening among all women of childbearing age, the consensus is stronger for routine alcohol screening of all pregnant women. Many women are able to stop using alcohol once they know they are pregnant or when planning pregnancy; for others, simply being asked screening questions will prompt action. Brief interventions consisting of one to three sessions by health or social service practitioners are showing evidence of effectiveness with non-dependent alcohol-using pregnant women.

Selective prevention interventions are directed to people who are at greater risk for a particular outcome because they are members of a subgroup known to be at higher risk than the general population. Selective prevention for FASD is directed to women of childbearing age who drink alcohol. These interventions typically involve greater selection and intensity than universal prevention interventions and can include outreach, screening, referral and brief intervention activities with the intent of promoting the health of the mother and preventing or minimizing harm to the fetus. The selective prevention measures discussed here include targeted selective prevention messaging, identifying women with substance use problems and brief interventions.

In another large US population survey, 60% of women who reported frequent alcohol consumption (more than 6 drinks a week) during the three months prior to pregnancy recognition did not know that they were pregnant until after the fourth week of gestation. The vast majority of women stopped or significantly cut back their alcohol consumption when they realized they were pregnant.[160] As noted earlier, Canadian studies have also shown that young people are more likely to engage in sex without the use of contraception when they are drinking.[161]

Binge Drinking – Does It Link to Unwanted, Unplanned, Unintended Pregnancy?

Because of the prevalence of drinking and unintended pregnancies, there is a risk that a woman may consume alcohol before she is aware that she is pregnant. In the US, Naimi et al. found that 45% of more than 72,900 women who gave birth from 1996 to 1999 reported their pregnancy to be unintended (either unplanned or unwanted) and that those who engaged in binge drinking (5 or more drinks on an occasion) before conception (within three months prior to) were more likely to have an unintended pregnancy. Acknowledging that this is a complex issue, the authors also found that the more binge drinking episodes that a woman engaged in before conception, the more likely that the pregnancy was unintended.[159]

7.1 Targeted Selective Prevention Messaging

Given what is at stake, there is an argument for routinely screening all women of childbearing age for alcohol problems, but lack of training, as well as time and staffing pressures within the health care system, mean that screening is currently quite uneven.[162] However, these women must be provided information clearly stating that: being sexually active, being even a moderate alcohol user (e.g. fewer than 7 standard drinks per week), and not using effective contraception places a woman at risk for having an alcohol-exposed pregnancy, which, in extreme circumstances, can result in fetal brain damage and other birth defects.[163] Given the prevalence of binge drinking among adolescent and young adult women, the extent of their sexual activity, and their tendency to recognize pregnancy later in term,[164] it would make sense to target messages to this population. However, no studies were found that examined messaging to this population on alcohol use and pregnancy issues. While necessary and likely sufficient for the vast majority of women of childbearing age who consume alcohol and are non-dependent, this knowledge is not sufficient for women who are alcohol dependent and living in difficult circumstances.

7.2 Identifying Pregnant Women with Substance Use Problems

There is a broad consensus among experts that primary care settings provide an optimal environment for screening pregnant women for alcohol use as part of routine prenatal health care.[165,166] There are many barriers to the implementation of routine screening of all pregnant women; however, it is critical that decisions to screen not be left to individual discretion.[167] Some persons may not acknowledge alcohol use problems due to lack of motivation or fear of discrimination by health care providers, and some providers feel similarly hesitant in raising the issue. This discomfort for both parties is best addressed by creating a non-judgmental, respectful environment in which alcohol screening questions are asked within a general health inquiry and by providing physicians with more information on available pregnancy outreach and treatment programs. Screening for impoverished women who are street involved may be more effective in an outreach environment where there is a health or social work practitioner on staff whom the women trust.[168]

Validated Screening Tools

Two screens designed specifically for pregnant women are the TWEAK and T-ACE. The TWEAK has been validated in several different populations, including emergency ward patients of diverse backgrounds.[169-171] Russell et al. evaluated the effectiveness of the TWEAK and T-ACE. They found both to be highly sensitive in the detection of risk drinking during pregnancy. A study by Flynn et al. found administration of the TWEAK in a busy obstetric clinic to be feasible and acceptable to women.[172] And in a review of screening instruments, Chang concluded that the T-ACE takes only a minute to administer, and that while the TWEAK is also useful, it offers no particular advantage over the T-ACE.[173]

Learning about a woman's alcohol use is as simple as having a conversation, perhaps within the context of general health and well-being. An efficient alternative is to use a brief questionnaire. Brief screening instruments are simple, easy-to-use tools that are primarily used in health care settings – an obstetric clinic is ideal – but others in the health and social services can administer them or help the person to complete the questions.

A limitation of screening tools is the tendency of respondents to under-report their use of alcohol. To minimize under-reporting, the T-ACE and TWEAK do not ask women about actual quantities of alcohol used or about current use. Because the TWEAK and T-ACE do not ask for quantities and because that is important information, Hankin and Sokol suggest following up these screens with women whose responses suggest alcohol problems and, with sensitivity, ask about current and at-conception amounts of alcohol used.[174]

Whichever method is used, it is critical that it occur in a supportive milieu that is sensitive to the circumstances of pregnant women, particularly substance users. A respectful, non-judgmental approach permits both open questions and increases the likelihood of honest responses.[175] In a study with British Columbia women, Ling found that pregnant women's self-reports of their substance use were quite accurate (as determined by meconium testing of the infant) when they were approached in a non-judgmental way and were given information that would help them care for themselves and their child.[176] Further, repeated screening (i.e. during each prenatal visit) has been suggested to lead to a growing rapport and therefore more openness, accuracy and opportunity for intervention. Some additional time must be found to raise alcohol use in this context, but it has been argued that it is an efficient way to address questions or complications that may otherwise arise later during the pregnancy.[177]

Biomarkers (e.g. meconium, carbohydrate-deficient transferrin [CDT] and gamma glutamyl transpeptidase [GGT]) are an alternative to asking questions about alcohol use or using questionnaires to screen for alcohol problems. To their advantage, they can be administered in a (physically) non-intrusive manner and measure current and recent use rather than historical use

patterns. However, ethical concerns arise regarding the administration of any test that can be applied without the woman's knowledge or consent, and this is particularly the case with the use of bio-markers. For this reason, further research and an associated inclusive social and legal-ethical policy debate is needed before the routine use of laboratory tests can be recommended to identify alcohol risk among pregnant women.[178-180]

Screening for pregnant women who consume alcohol, of course, presupposes that intervention resources are available to support identified women. Although there are no empirical data to support this, experts generally agree that resources to care for and treat pregnant women with substance use issues are quite insufficient in this country.

7.3 Brief Interventions

If, through conversation or completion of a screening questionnaire, it appears that a pregnant woman may have alcohol use issues, a more complete assessment is in order. A viable option for persons who are not alcohol dependent and have reasonable social support is a brief intervention (one to three sessions) conducted by a health care or social services practitioner.[181] In a review of brief interventions, Yahne and Miller[182] summarized the elements of successful interventions, identified by the acronym FRAMES:

- Feedback: Provide clients with personal feedback regarding their individual status.
- Responsibility: Emphasize personal responsibility for change and the individual's freedom of choice.
- Advice: Include a clear recommendation or advice on the need for change, typically in a supportive rather than authoritarian manner.
- Menu: Offer a menu of different strategies for change, providing options from which clients may choose what seems sensible to them.
- Empathy: Place emphasis on an empathetic, reflective, warm and supportive practitioner style, which is linked with positive treatment outcomes.
- Self-efficacy: Reinforce self-efficacy – the client's expectation that she can change.

Insight: Time Is of the Essence

Brief physician-led alcohol-focused interventions – 10 to 15 minutes –following the FRAMES model have been shown to be effective with various populations.[183] There is now good evidence that a brief intervention can be effective for non-dependent women of childbearing age. Brief interventions have also been shown to reduce alcohol consumption among pregnant drinkers who were not alcohol dependent.

In a well-designed experimental study, Manwell et al. tested an intervention for women of childbearing age who were not seeking treatment. The intervention consisted of two 15-minute physician-delivered sessions scheduled one month apart (consisting of advice, education and contracting, using a workbook). Patients received a follow-up phone contact by a clinic nurse within two weeks of each physician session. The intervention was conducted by 64 community-based physicians who were trained using role play and general skills training techniques. The sample consisted of women ages 18 to 40 who consumed at least 11 drinks a week, 4 drinks per occasion or scored greater than 2 on the CAGE.[xxvi] When followed up after 48 months (which is an unusually lengthy duration in the literature), those receiving the intervention reduced their alcohol intake by 48% on average (from 14 to 7.5 drinks per week). The number of subjects reporting any binge drinking declined from 93% to 68%, while the number of binge drinking episodes in the previous month decreased from five to three.[184]

Chang et al. tested a two-session intervention with pregnant women that focused on identifying alcohol use goals during pregnancy and found that the intervention assisted in the reduction of alcohol use.[185] Hankin et al. conducted a randomized controlled trial to examine the effect of a brief intervention strategy on drinking in subsequent pregnancies. Upon follow-up, women in the experimental group were found to have consumed slightly more than half as much as women in the control condition. Women who reported the heaviest pre-pregnancy drinking showed the largest reduction in drinking following the brief intensive intervention, and children born to women in the brief intensive intervention groups showed better growth outcomes at birth.[186]

Motivational interviewing (MI), as conceived by Miller and Rollnick,[187] has shown some effectiveness as a brief intervention with pregnant women.[188] Handmaker et al. tested a brief MI intervention with a small sample of drinking pregnant women in a prenatal care setting.[189] After an assessment, those in the experimental sample participated in a one-hour intervention consisting of a discussion of what the woman already knew about the effects of drinking, feedback on the severity of her drinking, and comments intended to increase motivation to change. Those in the control condition were given the assessment and mailed information on potential risks associated with drinking during pregnancy. Women who had been reaching high blood alcohol concentrations (BACs) before the intervention were found to be drinking at much lower BAC levels compared with women in the control group.

A large feasibility study by the US Centers for Disease Control (CDC) has shown that a relatively brief (five session) MI intervention can be successful in effecting change with higher risk women. This study found that motivational counselling, focusing on both

xxvi. The CAGE is a 4-question questionnaire that screens for alcohol problems, asking whether a person has ever tried to CUT BACK, been ANNOYED by the criticism of others over their drinking, felt GUILTY about their drinking, or drank first thing in the morning (EYEOPENER).

reducing risk drinking and using contraception, is feasible and promising for women at high risk for an alcohol-exposed pregnancy.[190] The intervention consisted of four motivational counselling sessions conducted by a mental health clinician and one family-planning consultation by a family-planning clinician. Discussions in each session were tailored to each woman's self-rated readiness to change and interest in discussing alcohol use or contraception. In brief, the intent was to provide brief advice and counselling for moderate-to-heavy drinkers to reduce their drinking levels or referral to community treatment services for alcohol-dependent drinkers.

It was found that the option of having two choices for achieving positive outcomes appeared to be appealing, supporting the contention that people are more committed to goals that they establish for themselves. Approximately one in four women chose the option of effective contraception as their principal step in reducing their risk for an alcohol-exposed pregnancy; 12% reduced their drinking only; while close to one-third reported both. Lower risk women (in terms of their scores on an alcohol use questionnaire) were the most likely to reduce their risk for an alcohol-exposed pregnancy, but least likely to do so through reducing their alcohol use (i.e. they tended to do so through instituting effective contraception use). These encouraging results were consistent across six community sites in various parts of the US. However, it will be important to study the model using an experimental design to increase confidence in its effectiveness, which is the intention of the CDC. A modification of this methodology is currently being tested with adolescent women; Project Balance (Birth Control and Alcohol Awareness: Negotiating Choices Effectively) is underway with college women in the southeast US.[191]

It appears that any constructive attention to this issue will help non-dependent women to make changes. The vast majority of women, upon learning they are pregnant or when planning a pregnancy, are able to stop drinking on their own.[192] For others, having the screening questionnaire administered in a respectful, non-judgmental way seems to raise awareness sufficiently to instigate change.[193] Aside from a basic understanding that non-dependent drinkers tend to respond better to brief interventions than dependent persons, a need remains for research on how different women respond to various levels of intervention. In light of this, Handmaker et al. suggested that providers employ brief interventions within a stepped care approach for pregnant women with alcohol use issues.[194,195] In this stepped care model, clients are assessed according to level of motivation, self-efficacy, level of dependence, co-morbidity and sociocultural factors, and triaged into one of three treatment levels. A guiding principle of this model is the use of the least intensive (and least expensive) level first and "stepping up" a client if the less intensive treatment has not been effective.

It is also important to note that, although a biological effect on fetal development associated with a father's drinking has been suggested, its actual presence and role has not been demonstrated[196,197]; consequently, the male's role in the development of birth defects appears to be primarily through social and psychological influence. However, this influence appears to be quite strong, with various studies showing drinking by a partner to be associated with use by the pregnant woman.[198] Consequently, although there is no empirical evidence one way or another, it is reasonable to direct attention to drinking fathers to enlist them in supporting their partner toward healthy choices.

7.4 Recommendations and Implications

Priorities for research, programming and policy arising from this review of the evidence in support of selective prevention measures are:

Evaluation Research

- Conduct Canadian research on:
    - the effectiveness of using T-ACE, TWEAK and informal methods of asking about alcohol use in health care and social service settings to identify pregnant women who use alcohol
    - the feasibility of implementing routine screening of pregnant women for their use of alcohol in a Canadian jurisdiction and barriers to reporting this on the perinatal record
    - the effectiveness of using brief interventions in health care and social service settings to reduce alcohol use by pregnant women
    - the relationship between partner (male and female) drinking and a woman's drinking and the implications for intervening with both partners at pregnancy

Policy and Program Implications

While awaiting the results of Canadian studies, priority should be given to these promising practices:

- Promote routine universal screening for alcohol use among pregnant women with relevant health care and social services providers, emphasizing the need to create comfortable, safe and respectful contexts for screening and education about alcohol use.
- Promote use of brief interventions using a motivational approach in health care and social service settings as promising methods to reduce alcohol use by pregnant women who are not dependent.

8 Indicated Prevention of Prenatal Alcohol Use Problems

What the Studies Say

Indicated prevention measures attempt to prevent or minimize harm among pregnant women with significant substance use issues. Women with these issues often have a history of physical or sexual abuse and experience concurrent mental health problems as well. Consequently, programs that work best are those that provide respectful, flexible care, offering support in a number of life areas, including access to child care. Motivational counselling and intensive case coordination are two modalities that have shown promise in supporting high-risk women in making healthy decisions concerning contraception and/or their use of alcohol.

Indicated prevention measures are directed at women who are at high risk for having a child affected by FASD. This includes alcohol-dependent women of childbearing age, women who have consumed alcohol during previous pregnancies, and pregnant women who have delivered an infant with FASD and continue to use alcohol.[199] Women who themselves are affected by FASD may also be at high risk of having a child with FASD.[200] This level of prevention includes treatment for alcohol dependence among pregnant women or women who are likely to become pregnant, support with the many other issues they typically face, and measures to encourage the prevention of pregnancy.[201,202] Reducing harms arising from continued use by reducing higher risk use, promoting the overall health of the mother and increasing her capacity to care for her children effectively are also legitimate aims.[203] This section reviews research in the following related areas:

- identifying women who benefit from indicated prevention measures
- barriers to identifying pregnant women with significant substance use issues
- outreach
- targeted indicated prevention messaging
- prenatal medical and social attention
- management of withdrawal
- treatment for women with significant substance use problems
- treatment for pregnant women with significant substance use problems
- respectful service philosophy
- providing comprehensive and practical care
- interagency collaboration and coordination of services

- broad and flexible continuum of substance abuse services
- case management
- attention to family issues
- continuing or aftercare
- use of motivational counselling approaches
- Canadian models
- prevention through diagnosis
- culturally appropriate treatment for Aboriginal women
- cost-effectiveness of treatment

8.1 Identifying Women Who Benefit from Indicated Prevention Measures

Women who have been unable to stop consuming alcohol while pregnant on their own or through a brief intervention may benefit from having access to supportive and intensive intervention. Although there is some indication that Canadian Aboriginal women may differ in this respect,[204] when women do seek help, those with drinking problems tend to seek out health and mental health services rather than substance abuse services.[205] This is likely due, in part, to the added stigma experienced by women with substance use problems. However, when asked about using substance abuse treatment services, women participating in qualitative research in British Columbia also cited "not knowing what treatment was available" and "not knowing what treatment would be like" as barriers.[206]

Women in this target population experience a range of co-existing risk factors. Typically, they have not fared well with respect to factors that are understood to fundamentally influence the health of individuals and populations, particularly education, employment and adequate income.[207] Moreover, a high proportion of these women have experienced physical and sexual violence in their lives. For some, violence starts during pregnancy, for others its frequency and severity increases during pregnancy.[208] For many Aboriginal mothers, these circumstances are exacerbated by the intergenerational impacts of the residential school system and other elements of colonial oppression.[209] Depression and anxiety can stem from violence and other seemingly intractable difficulties, but are worsened among women with little or poor social support. Consequently, assessment should include an exploration of mental health status, domestic violence issues and other frequently occurring co-existing risk factors.[210]

Because age and number of previous children appear to be large factors in determining the likelihood of a FASD-affected child occurring through a mother's use of alcohol, some suggest that the optimal time to identify and intervene is after the first pregnancy.[211] With everything else being equal, mothers who are older, have already had a child and continue to drink in pregnancy appear to be at higher risk of having a child with FASD than a younger woman without children. Women in this situation may point to their apparently healthy child as evidence that their drinking is not a problem and see standard prevention messages as not credible.[212] Nevertheless, a pregnancy will often stimulate an interest in health-promoting behaviour that a supportive, non-judgmental service provider can effectively use as a point of engagement.[213]

8.2 Barriers to Identifying Pregnant Women with Significant Substance Use Issues

Insight: Unplanned and Unwelcomed…

Many women with substance use issues report that their pregnancies were unplanned and unwelcome, sometimes occurring as a result of sexual assault.[214] Pregnant women in these circumstances tend not to seek early prenatal care or substance abuse services (in the US, it has been estimated that only about 5% to 10% of pregnant women with substance use problems receive professional treatment).[215] Major reasons given by women for not seeking medical assistance or treatment are feelings of shame and fear of loss of custody of their child.[216,217] Many women in this situation are so overwhelmed with a sense of the inevitability of harm and child custody issues that they have difficulty taking concerted action. Ironically, punitive interventions that aim to protect the fetus have the opposite effect, pushing the woman further from needed supports. Research clearly indicates that fetal protection is best achieved through maternal protection in the form of therapeutic, non-punitive interventions.[218,219]

When women seek help from services other than prenatal or substance abuse services, their substance use problems often go unrecognized by professionals, many of whom lack knowledge and harbor negative attitudes toward women with substance use problems, particularly pregnant women. Lack of routine professional training on substance abuse screening and advice for the prevention of women's alcohol use during pregnancy continues to be a barrier. Other barriers that have been variously cited are long waiting lists, limited access to low-threshold services, lack of access to women-centred treatment for pregnant women with substance use problems, lack of designated staff, insufficient staff, insufficient referral protocols, weak referral linkages (staff reluctant to identify unless they can readily provide help), poor coordination of services, and lack of transportation and child care for clients.[220-223]

Barriers are also compounded in "distressed" communities. A qualitative study by Kowalsky and Verhoef demonstrated the difficulties inherent in living in an isolated Aboriginal community. They described an unnamed Déné community in northern Canada, citing a number of barriers for people who have substance use issues, including fear of stigmatization, lack of awareness of the issues and other social problems in their community. They noted that substance use problems are embedded in the fabric of these other social problems and must be addressed within the context of these issues.[224]

8.3 Outreach

Because of the numerous barriers faced by pregnant women to obtain help for their drinking, outreach activities are needed to identify and intervene with those unable to quit drinking on their own, as well as those seeking help from non-substance abuse services. Clearly, attention to substance use issues by pregnant woman as early as possible is important. But if individuals are not able or interested in attending to their health issues, outreach can be effective in initiating this process. Outreach efforts can reduce known barriers such as fear and low self-esteem, while increasing readiness to address alcohol use issues, demystifying what is available and what is involved in the various levels of care.[225,226]

Drop-in centres, community centres and transition houses or shelters for women and mothers are in a strong position to raise substance use issues with women in a sensitive, respectful manner. A study of women entering transition houses in British Columbia found a general reduction in substance use when they were followed up three months after leaving the house.[227] In fact, in Canada, much of the substance abuse "treatment" for pregnant women that does occur is through these types of services (i.e. outside the formal treatment sector).[228] On-call outreach workers trained in substance abuse counselling (particularly the Transtheoretical or Stages of Change Model) can extend outreach further (e.g. to homes, schools and streets). By providing emergency response, counselling and possibly referral, these workers can increase access to care for pregnant substance-using women who are harder to reach.[229] It has been suggested that outreach work also needs to involve collaboration with referral sites, education of community agencies and advertisement of programs.[230,231]

In a small non-experimental study of women with serious substance use and mental health issues, Corrarino and colleagues found home visits by nurses to be effective. Ninety percent of the women in the study entered treatment and all had full-term babies. The authors suggested that nurses, by fostering trusting non-judgmental relationships, were able to "push open" the window of opportunity that pregnancy provides to move women to the point of being ready to change.[233]

Heavy Drinking

The heaviest drinkers are less likely to know that cutting back at any time during pregnancy can help the fetus.[232] Testa and Reifman suggested that heavy-drinking women with children would benefit from a tailored message that points out "just because you had a healthy child the first time doesn't mean you will again. In fact, the research says that the more children you have the more likely they'll be affected if you continue to drink."[234] Awareness efforts directed to this population need to acknowledge the challenge in making changes, and reinforce any reduction; they could also recognize the loneliness of choosing to abstain.[235]

It is important to point out that it is commonly believed that the most frequent and heavy substance users will not alter their use as a result of messaging alone. However, it is possible that the messages may at the very least contribute to a health-promoting environment that facilitates discussion of the issue, although this has not been studied to date. Where possible, basic messages about the potential harms of alcohol use during pregnancy need to lead to discussion and assessment concerning substance use problems.

8.4 Targeted Indicated Prevention Messaging

This highest risk population of women needs to receive messages particularly tailored to their circumstances. Posters and pamphlets that encourage conversation and questions about alcohol use during pregnancy and brief, carefully worded remarks need to be presented in a supportive, non-critical way. The aim of these messages is to encourage women using alcohol while pregnant to postpone becoming pregnant or, if pregnant, to quit their use on their own or to seek further information or help.

It is also important for service providers to correct erroneous knowledge in this population. Branco and Kaskutas found that there was generally a lack of clarity on what constituted a standard drink (e.g. some felt that wine was safer). Further, more frequent drinkers and those drinking high-alcohol-content beverages tend to underestimate standard drink consumption.

8.5 Prenatal Medical and Social Attention

Insight: Trust, Respect and Cultural Sensitivity

The foundation of all effective responses to prenatal drinking, according to the literature, is building a non-judgmental relationship based on trust, respect and cultural sensitivity. This relationship in turn needs to serve as the basis of an accurate and ongoing health and psychosocial assessment as early in the pregnancy as possible.[236]

When women visit a prenatal provider, they are unlikely to view substance use as an issue they are ready to work on. Consequently, the process of engagement, assessing the need for treatment and making a successful referral requires sensitivity and patience.[237]

For most women who are concerned about the health of their unborn child, and who are drinking harmfully, pregnancy provides a window of opportunity to address their substance use and related life issues. However, some women may not be ready or able to reduce or stop drinking or enter substance abuse treatment. In such situations, engaging and supporting women to

address other important issues in their lives can improve maternal and fetal health outcomes and may subsequently lead to women reducing or stopping their use of alcohol.

Practical issues such as housing, education, job training, transportation assistance, food and income support, and help with health care and employment are often seen as higher priority needs.[238,239] It is important to note that with respect to alcohol use, some women will successfully cut back without help, others will try different ways of reducing harm to their fetus, such as switching to marijuana, not using on certain days or weeks, eating more, using prenatal vitamins and getting an increased amount of sleep.[240] It is important to engage and support women so they can make the most informed and healthy choices for themselves and their unborn child.

Management of Withdrawal

According to the Treatment Improvement Protocol (TIP) for pregnant substance-using women prepared by the US Center for Substance Abuse Treatment, detoxification for a pregnant, alcohol-dependent woman needs to be undertaken in an inpatient setting under medical supervision that includes collaboration with a prenatal care provider.[241] That being said, physicians associated with Sheway in Vancouver, BC provide withdrawal management on an outpatient basis where inpatient stay is not realistic. At BC Women's Hospital, the Fir Square Combined Maternity Care Unit provides withdrawal management within longer term care. Mothers are stabilized so their babies have a chance to be born without withdrawal symptoms. These new mothers stay on the ward and receive life-skills and parenting training. This program is unique; availability of women-centred detoxification programs (especially medically managed services for pregnant women) is very limited in Canada, and particularly so in rural and remote regions.[242,243]

Benzodiazepines and short-acting barbiturates are often used to reduce alcohol withdrawal symptoms in the general population. However, because they are teratogenic, some clinicians avoid their use with pregnant women if at all possible. Benzodiazepines are used at BC Women's Hospital in some cases as an alternative to seizures.[244] Disulfiram (Antabuse), which is often used to support abstinence in early recovery from alcohol, is not appropriate for pregnant women because its use is associated with a number of physical anomalies in the fetus.[245]

Treatment for Women with Significant Alcohol Use Problems

The scientific literature on women's treatment is providing increasing direction to programmers and policymakers. In 2003, Ashley reviewed 38 studies of women's treatment, seven of which were randomized, and identified several components of treatment that were associated with positive outcomes: child care, prenatal services, women-only programs, supplemental services and workshops that address women-

Community-based Treatment Options

Most of the peer-reviewed literature is US-based and reports on findings from within the "formal" substance abuse treatment sector. Because pregnant women, for various reasons, do not access formal treatment, it is important to note that much substance abuse "treatment" in this country is occurring outside the traditional specialized treatment sector. Community-based agencies in Canada (many of which are Health Canada-funded programs for high-risk women and children) are integrating substance abuse treatment for pregnant women within a range of comprehensive, integrated and coordinated services and within a continuum of services developed through cross-sectoral partnerships. This calls for a broader, more flexible understanding of what constitutes treatment and an acknowledgment of the role of various community service providers (e.g. public health, mental health, social services) in ameliorating substance use problems than may be reflected in the peer-reviewed literature.

focused topics, mental health care and comprehensive care. The studies found positive associations between these six components and treatment completion, length of stay, decreased use of substances, reduced mental health symptoms, improved birth outcomes, employment, self-reported health status and HIV risk reduction.[246]

There is a consensus that studies of treatment effectiveness for this population need to measure outcomes beyond abstinence from alcohol. Intermediary measures that account for decreased drinking and that assess changes in self-efficacy, stress management and decision making are viewed as critical because programs showing effect on these measures appear to have a greater and longer lasting impact on the quality of women's lives than programs that demonstrate only short-term abstinence.[247]

In the most recent review (1999) of the peer-reviewed literature on substance abuse treatment for pregnant women, Howell et al. concluded that research on treatment efficacy for pregnant women was sparse and shared the same design weaknesses as women's treatment research generally (e.g. small sample sizes, lack of adequate comparison groups). However, the literature through the 1990s does allow a conclusion that is supported by programmers: women who remain in treatment fare better than women who leave early.[248] This was supported by the principal finding from a broad 2000 US government study (US Pregnant and Postpartum Women and Infants, PPWI), which concluded that after controlling for other possibilities, the amount of substance abuse programming (i.e. the number of contact hours with the program) received prior to delivery was the major factor in the reduction of substance use among participating women.

According to a 2004 study by Kissin et al., it is important to engage pregnant women in treatment within the first few days of contact as it is during this period that many clients drop out.[249] Monetary incentives such as vouchers, which have been found to be effective with other populations, do not appear to increase retention and attendance among this population.[250,251] Of course, simply accessing appropriate treatment in a timely way is a large issue for pregnant women, and because readiness might be affected by waiting, this may also have an impact on retention.[252]

It should not be surprising, therefore, that the bulk of the research that has been conducted on treatment for pregnant women since 1999 focuses on variables that affect clients' length of stay in a program. (Within a discussion on client retention, it is again important to take a broad view of what constitutes treatment. For example, pregnant women may be too busy and tired to access intensive treatment during pregnancy, but ready to access outpatient counselling or a low-threshold service.)[253]

Program factors that have been shown to increase client retention include availability of child care, single-gender programming, transportation, case management,[254] supportive housing and programs that are well connected with mental health services and family service providers.[255] Client factors that have been associated with program completion include having previous experience with treatment (personally or through partner's experience)[256] and having greater substance use and psychosocial problems (decreased chance of program completion).[257] Among women being served by the Toronto community agency, Breaking the Cycle, the client factors most associated with leaving treatment early were low education and a primary addiction to crack or cocaine.[258]

The fact that previous experience with the treatment system is linked to longer stays suggests that women who have not been in treatment may be fearful of child custody issues, labelling issues and may fear the unknown, and that providers need to promote a better understanding of treatment. Alternatively, Knight et al. found that women with a criminal justice history and deviant friends were more likely to leave early, in spite of the legal pressure to remain in treatment that some experience.[259]

Health Canada's 2001 report *Best Practices: Fetal Alcohol Syndrome and the Effects of Other Substance Use During Pregnancy* cites findings from the PPWI projects and other US government granting programs that give guidance on successfully reaching pregnant substance users and retaining them in care. These themes continue to be supported by US and Canadian studies and experience.

Insight: Respectful Service Required

With recognition that shame, guilt and mistrust of the systems scrutinizing women who use alcohol during pregnancy have been identified as barriers in accessing care,[260] programs have shifted toward an empowering, strengths-based and women-centred approach. Central to this approach is an openness for allowing women to set goals for improving their health that may not give immediate priority to substance use issues, and when they do, accommodating goals of reduced use rather than immediate abstinence.[261] Breaking the Cycle in Toronto,[xxvii] Food for Thought in Saskatoon,[xxviii] the various First Steps programs in Alberta, such as the Catholic Social Services program in Edmonton[xxix] and Sheway in Vancouver,[xxx] are Canadian programs that exemplify this approach. These programs employ a non-judgmental harm reduction approach in their work with substance-using pregnant women experiencing very significant challenges.

8.6 Providing Comprehensive and Practical Care

Of the various services needed by women who consume alcohol while pregnant, treatment for substance use problems is often seen as having the most formidable barriers, so formal addiction treatment programs often engage women through other avenues. This has the effect of reducing related harms to the mother and unborn child while increasing the likelihood that formal substance abuse treatment will be considered. Noting this, programs strive to combine alcohol and drug treatment with other services, such as prenatal care, other medical care, parenting education, transportation to appointments, family-planning services, assistance to access child care, nutritional support, advocacy on housing needs, and counselling on violence and relationship issues.[262-269] Women often indicate that child care is the most crucial element in a comprehensive program, and there is strong evidence that women who live with their children during treatment remain in treatment longer than women who do not.[270]

Women who participate in these programs have been shown to lower their stress and stabilize their family situations,[271] while their children show significantly lower infant mortality, higher birthweight and are more likely to be full-term babies.[272] In some cases, comprehensive programming has been organized into a "one-stop" multidisciplinary clinic setting, such as that provided by Breaking the Cycle (Toronto) and Sheway (Vancouver) programs. Conversely,

xxvii. www.breakingthecycle.ca/

xxviii. www.phac-aspc.gc.ca/dca-dea/_publications/pdf/woodsworth_e.pdf

xxvix. www.child.gov.ab.ca/whatwedo/fas/page.cfm?pg=FASD%20Demonstration%20Projects#firststeps

xxx. www.vnhs.net/programs/sheway.htm

some programs for pregnant women provide far fewer services and seem to focus almost exclusively on pregnancy in much the same way that traditional substance abuse programs treat "the addiction." These programs fail to provide the vast array of services necessary for recovery. Not surprisingly, although such programs demonstrate improved birth outcomes, overall success rates appear to be lower and less comprehensive.[273]

Interagency Collaboration and Coordination of Services

Given the range of health, social and practical services important to a comprehensive service, coordination and collaboration between services is crucial. The collaborative linkages established with a variety of community-based medical, mental health and social services; literacy programs; vocational training and job placement; children's assessment services; and family court and child welfare systems were identified as a major strength of 35 programs supported by the US government's Pregnant and Postpartum Women's (PPW) programs. Perhaps the most critical area of collaboration is between the child welfare and substance abuse treatment domains.[274]

Insight: Coordinating Services in Smaller Communities

The Maxine Wright Centre in Surrey, BC, is an example of a Canadian program that has been established with a clear aim of coordinating services for pregnant women with substance use issues. The goal of its high-risk pregnancy and early parenting program is to coordinate and provide pre- and postnatal care to women who are least likely to access traditional medical resources and to coordinate and provide services to their young children. The program has been developed on the basis of a review of the literature and community consultations and is currently under evaluation.[275] It is in this way that communities that do not necessarily have the numbers to support a one-stop centre can provide comprehensive care.

A Broad and Flexible Continuum of Substance Abuse Services

To address the considerable challenges in supporting pregnant women to enter, re-enter and complete substance abuse treatment, a broad menu of services – including outreach, case management, pretreatment programming, harm reduction programming, medical detoxification, short-term intensive programs (day and residential), as well as sober housing and aftercare – is advocated.[276,277] Further, flexibility in providing access and in accommodating absences while in treatment has been found to be critical for enhancing retention of the pregnant and parenting women receiving care. The process through treatment for pregnant and parenting women is not necessarily orderly, but more often

takes a complicated cycle of entering treatment, trying different types of treatment, relapse, reunifying with children, completing treatment and maintaining sobriety. Support in the postnatal period for new mothers and their infants can be effective in reaching mothers with substance use problems to support ongoing change and self-efficacy.

Case Coordination or Management

Case coordination, from a broad, client-centred approach, is repeatedly described as a key component of an alcohol and drug system of care responsive to the needs of pregnant women. Case management services that include home visits, telephone counselling, transportation and advocacy with other professionals by members of a multidisciplinary team significantly contribute to retention in treatment.[278]

A well-designed evaluation of the Seattle Birth to Three Program illustrates the value of an intensive case coordination approach.[279] Using a random control study design, the program studied the effectiveness of intensive, long-term case coordination using para-professional "advocates." The advocates did not provide direct services, such as substance abuse treatment or child care, but facilitated the women's connection with these services in the community through regular and as-needed home visits and active contact with the extended family. The program also gave attention to family planning as an option for preventing FASD. This powerful intervention supported the women in making and sustaining positive lifestyle changes, with half of them entering treatment and three-quarters following a reliable family-planning method upon completion of the three-year intervention.[280]

In a follow-up of participants two years after completion of the intervention, investigators found that these seriously marginized women were generally managing to sustain their changes, even though the challenges they faced were daunting.[281] Because this post-program study did not use a comparison group, it is not so clear that the intervention is responsible for observed changes; however, given the massive challenge involved with pulling oneself out of the intergenerational cycle of deprivation that many of the women faced, these findings are nevertheless very important. Manitoba's Stop FAS[xxxi] programs and the First Steps programs in Alberta[xxxii] are replicates of this model.

Attention to Family Issues

Programs that integrate women, children and partners into their care have often been found to improve treatment outcomes for women in the perinatal period. An almost universal finding is that women are often unwilling or unable to separate themselves from their caregiver role to attend to their treatment needs. Many programs have found that even

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xxxi. www.gov.mb.ca/healthychild/fas/stopfas.html

xxxii. www.child.gov.ab.ca/whatwedo/fas/page.cfm?pg=FASD%20Demonstration%20Projects#first_steps

when partner relationships are in turmoil, a primary task of this period is decision making around disconnecting or reuniting, and program support through this is important.[282] There is a continuing need for attention to child care and mothering issues in the formal addiction treatment sector.

Continuing Care/Aftercare

The literature on continuing care and aftercare for women, particularly pregnant women, continues to be limited. However, aftercare makes intuitive sense, considering the vast number of issues and lifestyle changes that women typically need to work through following a period of treatment. These can include development of new social support networks, dealing with new roles in the family, relationship issues, learning to anticipate events that precipitate drinking, dealing with new emotions and learning to trust others. Continuing care programs can take various forms, including group sessions, individual counselling and phone support. A BC Women's Hospital aftercare pilot project that employed these methods and focused on smoking cessation, trauma counselling, vocational training and parenting skills found that participants valued these services and improved their health in a number of ways.[283]

Use of Motivational Counselling Approaches

Motivational approaches, which were shown to be effective as brief interventions with non-dependent women in the previous section, can be effective with dependent women in the context of more extensive interventions. Community parent, child and family agencies often see women who are not considering changes in their substance use and find approaches based on motivational principles to be useful.

The use of motivational principles to help women with significant substance use issues has been described in a Canadian training manual for providers working with pregnant women who use alcohol that was prepared by AWARE (Action on Women's Addictions – Research and Education),[xxxiii] a women's health research program, and Breaking the Cycle,[xxxiv] a one-stop service for high-risk mothers and their young children.[284] Using motivational counselling in the context of stages of change theory (the Transtheoretical Model of Behaviour Change), agencies can work with a woman to increase her "readiness" to address substance use. This means working with a woman to help her move from the point of not considering changes in this area of her life (precontemplation) to the point of considering possibilities (contemplation), preparing to act (preparation), ultimately acting on (action), and ideally, sustaining the changes (maintenance).[285,286] The process rests on the

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xxxiii. www.aware.on.ca

xxxiv. www.breakingthecycle.ca

assumption that everyone has strengths that can be brought out to address problems and that a person's motivation to do so is not fixed – it can shift with events (e.g. pregnancy or an accident) or through contact with another person. This is not usually a short process for women with significant alcohol use issues that co-exist with other serious issues.

Although a motivational intervention in a community agency may aim to bring a person to the point where she will accept a referral to a formal treatment service, in many cases, treatment is occurring in these community agencies – that is, counsellors are supporting women through all these stages of change and helping her to address relapses that are part of the process of change. Motivational approaches are consistent with women-centred approaches that foster autonomy and self-efficacy among pregnant women.[287]

8.7 Canadian Models

Even though they were cited to illustrate one or another of the elements of good practice, the Canadian programs identified in the above discussion generally encompass all of these elements; in fact, it is the integration of these multifaceted elements into program structure that results in successful engagement and opportunities for support.[288] The two Canadian programs working with high-risk pregnant women that are best documented are Sheway and Breaking the Cycle. The Sheway program, located in the Downtown Eastside of Vancouver, takes a women-centred, harm reduction, culturally focused approach to working with pregnant women with substance use problems and supporting mothers and their children until the children are 18 months of age. An evaluation of the program published in 2000 found the following key components contributed to Sheway's success:[289]

- a service philosophy respectful and supportive of women's self-determination in making needed change
- the provision of practical supports, such as hot meals and vitamins, advocacy on housing and other basic needs, bus tickets, clothing and baby equipment
- outreach to engage women in prenatal care and to assist them in connecting with other needed services
- the full range of assistance found in a multidisciplinary team of professionals in an accessible drop-in setting
- leisure and creative programming for women and their families
- an active approach in assisting women to face and meet child protection standards of care

Breaking the Cycle (BTC) in Toronto uses a one-stop service delivery model to serve "high-risk drug-involved pregnant women and families who have a history of family/partner abuse, few supports and experience chaotic, unstable and often violent environments."[290] A 2002 evaluation report concluded that BTC services are:

> *"contributing to fewer birth complications, decreased postnatal diagnoses and shorter hospital lengths of stay. In addition, BTC children had better maternal health ratings, fewer health concerns, fewer separations from their mothers and fewer developmental concerns as expressed by mothers.... Mothers reported significant knowledge, attitudinal and behaviour changes related to parenting skills, which affect the mother–infant attachment.... Mothers reported less use of inappropriate discipline, more mother–child activities, and increased positive feelings about parenting.... BTC children made substantial growth during the evaluation periods and continued developmentally-appropriate progress could be anticipated."* [291]

8.8 Prevention Through Diagnosis

Mothers of children with FASD have numerous needs that must be addressed to prevent future prenatal alcohol exposure in subsequent pregnancies.[292] The diagnosis of FASD in children, young people and adults should be seen as a crucial form of prevention in that mothers who have had an affected child are at high risk to have another. Moreover, if the multiple needs of the affected child are not adequately addressed, she may one day be at risk of having a child with FASD. Astley et al. reported on the preventative potential of FASD diagnostic clinics in Washington State. Mothers of diagnosed children had "very harsh profiles," with 95% having been physically or sexually abused, and most having one or more mental health problems. In a number of cases, these women had made constructive changes in their lives and the FASD diagnosis appeared to be an instigating factor. Women most likely to stop their alcohol use were those receiving mental health care, those receiving social support, those with higher incomes and those with higher IQs.[293,294] Significant efforts have been made in Canada to educate and provide guidance to physicians in diagnosing FASD.[295,296]

Highlighting the intergenerational aspect of FASD, some researchers have posited that pregnant women who drink too much may, in some cases, be affected by FASD themselves.[297] There is a growing consensus that tailored substance abuse treatment for persons affected by FASD is necessary, and clinical experience is being gained in this area; however, there is currently no empirical knowledge to guide programming.[298]

8.9 Culturally Appropriate Treatment for Aboriginal Women [xxxv]

Although several studies have suggested that FASD is more prevalent among Aboriginal people than non-Aboriginals, the picture is not complete as there is little information about the prevalence of FASD in the general Canadian population.[299] As Tait (2003) observed, alcohol use problems are an issue that need to be understood as a problem of certain individuals and sub-populations, rather than a problem of all Aboriginal people.[300]

In 2001, the Society of Obstetricians and Gynaecologists of Canada prepared a policy statement to guide professionals in addressing Aboriginal health concerns, including FASD.[301] The Aboriginal Healing Foundation (2003) also suggested best practices from an Aboriginal perspective, proposing alternative practices that are aligned with the culture and that fit with the reality in which Aboriginal peoples live in Canada. The report gives attention to the role of residential schooling and concludes that widespread use of alcohol and other substances among residential school survivors can be attributed to the residential school experience for many.[302] Aboriginal women participating in consultations leading to the report, *Substance Use and Pregnancy: Conceiving Women in the Policy-development Process*, spoke of the tremendous importance of cultural (re)connection as a means of facilitating healing, supporting recovery and preventing future problems.[303]

Holistic, community-wide interventions that see other persons in the community, as well as organizations such as Native Friendship Centres, as part of an extended family are favoured by Aboriginal communities.[304] Programs that incorporate outreach, identification, referral and appropriate support into an overall preventive and early intervention strategy appear to make the most sense. Masis and May tested this approach and concluded that the high rate of client acceptance of referral was due to the initiative being presented as a prevention program rather than a social work or alcoholism program and because it was hospital-based with trusted professionals involved. Because there was no control group used in this design, findings need to be viewed as suggestive.[305]

8.10 Cost-effectiveness of Treatment

The 2002 lifetime costs of care for a person with FAS were estimated to be US $2 million.[306] In years ahead, it will be important for researchers in this field to determine the extent to which various interventions can be expected to help avoid these enormous costs. While several authors have examined cost-effectiveness of drug treatment and found benefits, no cost-effectiveness study specific to treatment for pregnant women with alcohol use problems was found.[307,308] Ashley, in a discussion on cost-effectiveness in women's

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xxxv. Cultural considerations encompass a wide range of issues, including sexual orientation, and it is critical that all programming for pregnant women with substance use issues, not just Aboriginal programming, be culturally sensitive.

treatment that applies to pregnant women's treatment, noted the need for better controlled studies on which to make reliable comparisons.[309] Research on the Sheway program estimated that it cost $8,000 per family per year for the Sheway program's comprehensive care and $49,000 per year for a special needs foster placement.[310] Ultimately, however, the availability of empirically supported treatment for pregnant women is more than an issue of cost-effectiveness. It has been suggested that the lack of empirically based treatment for pregnant women is one of the most important social justice issues in US medicine and thus should not be judged solely on the basis of whether it saves money.[311]

8.11 Recommendations and Implications

Priorities for research, programming and policy arising from this review of the evidence in support of indicated prevention measures are:

Evaluation Research

- Conduct Canadian research on the effectiveness of gender-specific and -sensitive treatment in comparison to mixed gender treatment.
- Evaluate the effectiveness of motivational interviewing in a Canadian setting in supporting high-risk women to choose contraception and/or reduce or stop use of alcohol to prevent an alcohol-exposed child.
- Conduct a scientific (i.e. with control or comparison group) evaluation of a Canadian one-stop service for high-risk women and their children and of comprehensive care provided by perinatal service networks in smaller communities (where one-stop services are not feasible).
- Conduct a scientific evaluation and cost-effectiveness study of a Canadian intensive case management program as implemented in the one-stop or birth-to-three models of programming.
- Conduct research into the effectiveness of tailoring substance abuse treatment for individuals affected by FASD.

Policy and Program Implications

While awaiting the results of Canadian studies, priority should be given to these promising practices:

- Promote the development of respectful, flexible, comprehensive and harm-reduction-oriented programming for pregnant women with substance use issues.
- Promote the one-stop model of service delivery for high-risk pregnant women and their young families and of comprehensive care provided by perinatal service networks in smaller communities (where one-stop services are not feasible).
- Promote outreach and intensive case coordination for moderate- and high-risk pregnant women and mothers.
- Greatly expand the capacity of the Canadian health care system to identify and diagnose individuals who may have FAS and other alcohol-related birth defects and developmental disabilities.
- Promote easily accessible and free emergency contraception for all women.
- Make funding available to incorporate child care and children's programming into women's substance abuse treatment services.
- Promote policies that require priority admission for pregnant women to substance abuse treatment.

9 Training and Professional Development

What the Studies Say

As new evidence of effective practices arises, there is a need to transfer the new knowledge from researchers to practitioners (researchers, in turn benefit from networking with practitioners and parents in this field). Best practice and clinical guidelines can support the uptake of new practices, as can training. There is very little scientific evaluation of the effectiveness of FASD-related guidelines or training initiatives. At times, there are other barriers to the adoption of new practices, and a "workforce development" approach that assesses the picture from a broader perspective is necessary.

The implementation of evidence-based practices holds large implications for professional development. With respect to identifying and intervening with pregnant women with substance use issues, physicians and other health care professionals, such as nurses and midwives, hold an important position.[312] Routine screening of pregnant women for alcohol use problems is a recommended practice, yet this has not been achieved in Canada. A recent study reporting a 41% response rate found that 94% of a national sample of Canadian health providers (pediatricians, psychiatrists, obstetricians and gynecologists, midwives and family physicians) asked pregnant women about their alcohol use, but only 62% report using a standardized screening tool.[313] This reinforces findings from other physician surveys that indicate that screening is not fully routine and that validated screening tools are much underused.[314,315] Authors of the national study suggested that those least likely to be identified include women over age 35, social drinkers, women who are highly educated, women with a history of sexual or emotional abuse, and women of high socio-economic status.[316]

According to the findings of the Canadian physician surveys, efforts should be directed toward improving professional preparedness to care for alcohol dependent/abusing pregnant women and FAS-affected individuals, as less than 60% of respondents felt prepared to do so. Lack of specific preparation was viewed as the chief barrier with journals, medical school curricula, continuing medical education (CME) and parents of affected children, identified (in descending order) as preferred channels for learning.[317]

Professional policy statements and practice guidelines are important vehicles for professional development. A landmark guide for Canadian health care professionals on this issue was the *Joint Statement: Prevention of Fetal Alcohol Syndrome (FAS) and Fetal Alcohol Effects (FAE)* in Canada, led by the Canadian Paediatric Society, and signed by 19 organizations.[318] In 2002, the Canadian Paediatric Society also published a position statement that provides guidance on the identification, prevention and management of FASD to pediatricians. While both of these publications were widely circulated, neither has been evaluated for their impact.

Generally, practice guidelines are considered necessary but not sufficient for changing practice. Training is often required. The Ontario Best Start program has given attention to physician training with the development of a training program and planning guide for training local physicians. Handmaker et al. (1999b) used a controlled study design to test the effectiveness of a 20-minute training videotape focusing on motivational interviewing with a small sample of obstetric care physicians.[319] Those in the experimental group showed greater empathy and were more effective in minimizing patient defensiveness and supporting women's beliefs in their ability to change.

The medical, child welfare, women's services and substance abuse treatment systems tend to have differing agendas and understanding of issues (e.g. reporting requirements regarding suspected child abuse and child custody, confidentiality, expectations regarding recovery from a substance use problem, and the most effective methods for ensuring a healthy outcome for mother and child). Cross or joint training of these professionals would allow for a broader perspective and lead to critically important collaboration between the sectors. An example of a joint training approach is a program funded by Health Canada and piloted by Breaking the Cycle and the Canadian Centre on Substance Abuse, which trains prenatal and child services practitioners together, using a motivational, stages of change model for working with both pregnant women and affected children and families.[320]

Other practitioners, including social workers and human service workers, have important opportunities to identify women at risk. In their qualitative research concerning barriers to treatment facing women in British Columbia, Poole and Isaac found that supportive professionals from a wide range of services, including justice, violence, health and housing, proved helpful to women in obtaining treatment.[321]

As has been discussed in this review, diagnosis of FASD is an important way to prevent future cases of FASD. Significant joint US–Canada effort has resulted in the development of the first Canadian guidelines for the diagnosis of FAS and related disabilities.[322] These guidelines reflect a harmonizing of Institute of Medicine diagnostic criteria and the Four Digit Diagnostic Code. Those involved in the preparation suggest that these form the basis of physician training.

9.1 Recommendations and Implications

Priorities for research, programming and policy arising from this review of the evidence in support of training and professional development are:

Evaluation Research

- Conduct Canadian research into the extent to which disseminating practice guidelines to health care and social service practitioners increases the adoption of recommended practices.
- Conduct Canadian research into the extent to which providing training to health care and social service practitioners on practice guidelines results in the adoption of recommended practices.
- Identify barriers (beyond awareness and training) to the adoption of recommended practices concerning prenatal alcohol use in health care and social service settings.

Policy and Program Implications

While awaiting the results of Canadian studies, priority should be given to these promising practices:

- Develop a national workforce development strategy that recognizes the range of barriers that may prevent or inhibit the adoption of recommended practices concerning use of alcohol by pregnant women in the health care and social services fields, including the substance abuse treatment sector.
- Within a national workforce development strategy on this issue, prepare a national training strategy that takes advantage of regional expertise and minimizes duplication.

10 Policy and Legal Responses

What the Studies Say

Although it has not been demonstrated empirically and would be difficult to do so, there is good reason to believe that social policy that aims to reduce inequity and poverty in Canada would contribute to reduced alcohol use problems among pregnant women. More specific to this issue, social and organizational policies that serve to increase access, reduce stigma and promote fetal protection through maternal protection in the form of therapeutic, non-punitive interventions have strong support in the literature.

As a population, women in their childbearing years, particularly younger women, are among the poorest in the country. In 2000, the National Council on Welfare estimated that young women between 18 and 24 years of age have a poverty rate of 24.9% (18.5% for women between 25 and 34 years of age). Overall, single mothers and their children fare the worst. The poverty rate for families led by a single mother under 25 years of age was an "abysmal" 85.4%.[323] Women of all socio-economic groups use substances during pregnancy; however, poverty is an aggravating factor that greatly decreases a woman's likelihood of accessing adequate care. Government social policy that reduces the poverty rate among young, single mothers would undoubtedly serve to address substance use problems among pregnant women.[324]

Pregnant substance-using women have been more profoundly impacted by alcohol- and drug-related policies and sanctions than any other population group requiring substance abuse treatment. These policies include the historical emphasis on treatment models for men and co-educational treatment as the norm; lack of funding and other mechanisms to provide child care for those attending specialized substance abuse treatment; and civil and criminal sanctions for pregnant substance-using women.

A striking example of policy affecting women with substance use problems in Canada was the issue of mandatory treatment highlighted with the case of Ms. G.[xxxvi] There are a host of arguments against mandatory treatment and/or the involvement of the criminal justice system as mechanisms to prevent substance use during pregnancy, and in favour of providing comprehensive care that addresses a range of health and social issues as most likely to lead to the best outcome for the mother and unborn child. The most obvious and serious consequence of a punitive approach is that it will deter women from accessing needed services or from being able to discuss their substance use with health care professionals, leading to poorer outcomes for mothers and children.[325,326]

xxxvi. In 1996, a landmark Canadian legal judgment was made in which a young, pregnant Aboriginal woman with a six-year history of solvent abuse was ordered by a Winnipeg judge to enter a mandatory treatment program; Canadian higher courts ultimately ruled against mandatory treatment of pregnant women.

This review has found that being able to have children accompany a mother in treatment is one of the most important ways to help her complete the process. Fear of losing their children creates a substantial barrier to women in need of treatment. In Canada, apprehension of children due to parental substance use occurs in those situations in which parental substance use is assessed to have an impact on parenting and on the child's well-being. There is no question that the best outcome is for children to be parented by their mothers, but it is also clear that parental substance misuse can have an impact on parenting behaviours and ultimately on child development. There is also no question that systemic supports to support the mother and infant/child safely in all circumstances and levels of "risk" to the child are inadequate. This does not mean that these women are "bad mothers," but that because they did not experience relationships and environments that included safety, consistency, structure and responsiveness, they have adapted (or maladapted) in various ways (including substance use). They experience difficulties in parenting (not only because of their substance use, but also because of all the co-existing factors related to their substance use).

Clearly, the needs of women with significant substance use problems are multiple and complex. Increasingly, child welfare and substance abuse treatment providers in Canada are seeking a shared perspective on these issues; however, the capacity of systems to support these families remains woefully inadequate. Few programs exist where women can take their children to treatment, and women who wish to go to treatment without their children obtain little support for finding safe, temporary care for their children.[327] In addition, child welfare agencies and related systems providers do not have the resources to adequately support the maintenance of children in their families with immediate access to the various services they may need (i.e. formal addiction treatment sector, with child care, for those who are using substances; women-centred services to address related trauma and mental health problems; safe and stable housing; and intensive supports for parenting and child development).[328]

Rutman et al., in a key Canadian policy discussion document, *Substance Use and Pregnancy: Conceiving Women in the Policy-making Process*, suggested that this complex issue calls for policy integration between those advocating for affected children and those advocating on behalf of women with substance use issues. The authors further called for policy approaches that recognize and address the complexities of the lives of many women who are pregnant and using substances. Based on broad consultation, they call for policy shifts in the following directions:

- from a moralizing medical model to a harm reduction/health promotion philosophy
- from a child welfare mandate as protection-focused to one that emphasizes supporting families
- from viewing child apprehension as the failure on the mother's part to failure of the system/community to provide what is needed[329]

A shift of policies in this direction can be argued from a human rights perspective and make sound economic sense as well.

10.1 Recommendations and Implications

Priorities for research and policy arising from this review of the evidence in relation to policy and legal issues are:

Evaluation Research

- Explore the links between socio-economic status and alcohol use during pregnancy in a Canadian context.
- Conduct Canadian research into the value of a policy and campaign to reduce drinking-during-pregnancy stigma among practitioners in the health care or social service fields.
- Conduct Canadian research into the extent to which substance abuse treatment and rehabilitation services in Canada that serve women have in place appropriate policies, program elements and linkages to other key sectors, such as prenatal care and child welfare services, in order to provide appropriate care for pregnant women using alcohol.

Policy and Program Implications

While awaiting the results of Canadian studies, priority should be given to these promising practices:

- Implement models of child welfare, through amendments to provincial/territorial child welfare legislation, which give preference to supporting mothers as the best means of protecting the child.
- Increase funding to child welfare agencies and related systems providers to support the maintenance of children in their families with adequate and immediate access to the formal addiction treatment sector (with child care) for those who are using

substances, for immediate access to women-centred services to address related trauma and mental health problems, for access to safe and stable housing, and for intensive supports for parenting and child development.

- Increase resources available to service providers of high-risk pregnant women (beyond what is typically short-term funding) to increase access, level of care and evaluation research across Canada.
- Develop, disseminate and provide orientation on evidence-based model policies and protocols with organizations serving high-risk pregnant women.

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