



Alcohol Use and Pregnancy Consensus Clinical Guidelines

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Alcohol Use and Pregnancy Consensus Clinical Guidelines

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Abstract

Objective: To establish national standards of care for the screening and recording of alcohol use and counselling on alcohol use of women of child-bearing age and pregnant women based on the most up-to-date evidence.

Evidence: Published literature was retrieved through searches of PubMed, CINAHL, and the Cochrane Library in May 2009 using appropriate controlled vocabulary (e.g., pregnancy complications, alcohol drinking, prenatal care) and key words (e.g., pregnancy, alcohol consumption, risk reduction). Results were restricted to literature published in the last five years with the following research designs: systematic reviews, randomized control trials/controlled clinical trials, and observational studies. There were no language restrictions. Searches were updated on a regular basis and incorporated in the guideline to May 2010. Grey (unpublished) literature was identified through searching the websites of health technology assessment (HTA) and HTA-related agencies, national and international medical specialty societies, clinical practice guideline collections, and clinical trial registries.

Key Words: Fetal alcohol syndrome, Fetal alcohol spectrum disorder, pregnancy, alcohol, teratogen

Each article was screened for relevance and the full text acquired if determined to be relevant. The evidence obtained was reviewed and evaluated by the members of the Expert Workgroup established by the Society of Obstetricians and Gynaecologists of Canada. The quality of evidence was evaluated and recommendations were made according to guidelines developed by the Canadian Task Force on Preventive Health Care.

Values: The quality of evidence was rated using the criteria described by the Canadian Task Force on Preventive Health Care (Table 1).

Sponsor: The Public Health Agency of Canada and the Society of Obstetricians and Gynaecologists of Canada.

Endorsement: These consensus guidelines have been endorsed by the Association of Obstetricians and Gynecologists of Quebec; the Canadian Association of Midwives; the Canadian Association of Perinatal, Women's Health and Neonatal Nurses (CAPWHN); the College of Family Physicians of Canada; the Federation of Medical Women of Canada; the Society of Rural Physicians of Canada; and Motherisk.

Summary Statements

1. There is evidence that alcohol consumption in pregnancy can cause fetal harm. (II-2) There is insufficient evidence regarding fetal safety or harm at low levels of alcohol consumption in pregnancy. (III)
2. There is insufficient evidence to define any threshold for low-level drinking in pregnancy. (III)
3. Abstinence is the prudent choice for a woman who is or might become pregnant. (III)
4. Intensive culture-, gender-, and family-appropriate interventions need to be available and accessible for women with problematic drinking and/or alcohol dependence. (II-2)

Recommendations

1. Universal screening for alcohol consumption should be done periodically for all pregnant women and women of child-bearing age. Ideally, at-risk drinking could be identified before pregnancy, allowing for change. (II-2B)
2. Health care providers should create a safe environment for women to report alcohol consumption. (III-A)
3. The public should be informed that alcohol screening and support for women at risk is part of routine women's health care. (III-A)
4. Health care providers should be aware of the risk factors associated with alcohol use in women of reproductive age. (III-B)
5. Brief interventions are effective and should be provided by health care providers for women with at-risk drinking. (II-2B)
6. If a woman continues to use alcohol during pregnancy, harm reduction/treatment strategies should be encouraged. (II-2B)
7. Pregnant women should be given priority access to withdrawal management and treatment. (III-A)
8. Health care providers should advise women that low-level consumption of alcohol in early pregnancy is not an indication for termination of pregnancy. (II-2A)

This document reflects emerging clinical and scientific advances on the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed. Local institutions can dictate amendments to these opinions. They should be well documented if modified at the local level. None of these contents may be reproduced in any form without prior written permission of the SOGC.

Table 1. Key to evidence statements and grading of recommendations, using the ranking of the Canadian Task Force on Preventive Health Care*

Quality of evidence assessment†	Classification of recommendations‡
I: Evidence obtained from at least one properly randomized controlled trial	A. There is good evidence to recommend the clinical preventive action
II-1: Evidence from well-designed controlled trials without randomization	B. There is fair evidence to recommend the clinical preventive action
II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group	C. The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making
II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category	D. There is fair evidence to recommend against the clinical preventive action
III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees	E. There is good evidence to recommend against the clinical preventive action
	L. There is insufficient evidence (in quantity or quality) to make a recommendation; however, other factors may influence decision-making

*Woolf SH, Battista RN, Angerson GM, Logan AG, Eel W. Canadian Task Force on Preventive Health Care. New grades for recommendations from the Canadian Task Force on Preventive Health Care. *Can Med Assoc J* 2003;169(3):207-8.

†The quality of evidence reported in these guidelines has been adapted from the Evaluation of Evidence criteria described in the Canadian Task Force on Preventive Health Care.*

‡Recommendations included in these guidelines have been adapted from the Classification of Recommendations criteria described in the Canadian Task Force on Preventive Health Care.*

Introduction

Consumption of alcoholic drinks by Canadian women is common, pleasurable for many, and problematic for some. The nature and potential severity of the problems increase when alcohol is consumed during pregnancy. The purpose of this guideline is to provide a rational basis for health care professionals to assess and, as required, counsel and intervene with respect to consumption of alcohol by women who are pregnant or are in the reproductive age group.

Many other issues with respect to alcohol and its effects, including population health outcomes, alcohol consumption by pre-pubertal children, and the management of children and adults affected by maternal consumption of alcohol, are outside of the boundaries of this guideline. We seek in this guideline to provide evidence on the basis of which there can be informed practice, including interventions when needed and reassurance when appropriate.

We have tried to reconcile the desire for simple straightforward statements with a body of evidence that is not simple. We recalled the quotation attributed to Einstein: “Everything should be made as simple as possible, but no simpler.” There is an appealing simplicity to a recommendation for abstinence only. However, the concept of risk reduction is critical for women who are problem drinkers and cannot achieve or adhere to abstinence. The literature includes research demonstrating a threshold below which there is no increased risk of any adverse outcome attributable to alcohol as well as papers finding that there is no such threshold. This guideline must serve to facilitate the recognition and reduction of problem drinking; it must guide health care providers who seek to eliminate the harms that can be caused by alcohol; and it must provide advice that health care providers can give to women with low levels of

alcohol consumption who want to continue a planned or unplanned pregnancy. Such women may have concerns caused by a strict abstinence-only message. Members of the writing group have brought to the task informed judgement and convictions shaped in part by the health care work each one does and the effects of alcohol consumption on the women and families for whom each one provides care. We have achieved a consensus statement to assist all of our readers with the provision of care for the full range of individuals and populations served.

ABBREVIATIONS

ARND	alcohol related neurodevelopmental disorder
AUDIT	Alcohol Use Disorders Identification Test
BI	brief intervention
BMAST	Brief Michigan Alcoholism Screening Test
CAGE	Cut-down, Annoy, Guilty, Eye-Opener
CNS	central nervous system
CRAFFT	Car, Relax, Alone, Forget, Friends, Trouble (screening test)
FAS	fetal alcohol syndrome
FAEE	fatty acid ethyl ester
FASD	fetal alcohol spectrum disorder
HTA	health technology assessment
IUGR	intrauterine growth restriction
MAST	Michigan Alcoholism Screening Test
MI	motivational interviewing
SMAST	Short Michigan Alcoholism Screening Test
T-ACE	Tolerance, Annoyed, Cut down, Eye-opener (screening test)
TLFB	Timeline Followback
TWEAK	Tolerance, Worry, Eye-opener, Amnesia, Cut down (screening test)

Definitions

Clear definitions of alcohol consumption, patterns associated with drinking, and alcohol use disorders are essential for this guideline and for practice. Alcohol exerts its effects according to the amount of alcohol consumed and not to any particular alcoholic beverage. Standardization of consumption should be done based on the amounts of absolute alcohol, with conversions to and from the various beverages that may be consumed.

Alcohol Content

The concentration of alcohol in a beverage is usually stated as the percentage of alcohol by volume, a standard measure of how much alcohol is contained in an alcoholic beverage. Typical alcohol by volume levels are:

Cider	2% to 8.5%
Beer	2% to 12% (most often 4% to 6%)
Non/low alcohol beers	0 to 0.05%
Coolers	~ 7%
Alcopops	4% to 17.5%
Wine	8% to 14.5%
Fortified wines (e.g., sherry, port)	17% to 22%
Liqueurs	5% to 55%
Liquors (e.g., vodka, rum, gin, whisky)	40% to 50%
Absolute alcohol	> 99%

Standard Drink

Definitions of a standard drink differ in different countries. In Canada, a standardized serving of an alcoholic beverage contains 0.6 ounces (17.7 mL) of pure ethanol. That is approximately the amount of ethanol in a 12-ounce serving of regular beer (5%), a 5-ounce glass of wine (12%), or a 1.5-ounce glass (44.4 mL) of a 40% spirit.¹ Women may be unsure or variable in reporting their consumption, so an effort must be made to achieve descriptions of the standardized amounts.

Low-risk Drinking

Low-risk drinking is defined for use in this guideline as no more than 2 standard drinks on any one day; no more than

9 standard drinks a week for women; and no more than 14 standard drinks a week for men.²

These low-risk drinking guidelines do not apply to those who:

- are pregnant, trying to get pregnant, or breastfeeding;
- have health problems such as liver disease or mental illness;
- are taking medications such as sedatives, pain killers, or sleeping pills;
- have a personal or family history of drinking problems;
- have a family history of cancer or other risk factors for cancer;
- will be operating vehicles such as cars, trucks, motorcycles, boats, snowmobiles, all-terrain vehicles, or bicycles;
- need to be alert; for example, those operating machinery or working with farm implements or dangerous equipment;
- will be doing sports or other physical activities where they need to be in control;
- are responsible for the safety of others at work or at home; or
- are told not to drink for legal, medical, or other reasons.

Binge Drinking

Binge drinking is defined as consumption of alcohol that brings blood alcohol concentration to about 0.08% or above. This corresponds to an average-size female consuming 4 or more drinks in about 2 hours. This definition is used in the annual Behavior Risk Factor Surveillance Survey according to the Centers for Disease Control and Prevention.³

Binge drinking is a common pattern of alcohol use among women of reproductive age, yet it is a pattern that may be associated with adverse fetal affects. Alleddeck et al.⁴ reported that binge drinking at critical stages of organ formation may constitute a particularly high risk for adverse developmental outcomes. This is a cause of concern because many pregnancies are unplanned and the occurrence of pregnancy may be complicated by 1 or more episodes in which 4 or more drinks are consumed before the woman is aware she is pregnant. Episodes of binge drinking may not be taken as seriously as persistent heavy drinking, but adverse effects in

the fetus may still occur. Alcohol metabolism in the fetus is slower than that in the mother and thus there may be higher levels of alcohol sustained longer in fetal blood than in the maternal blood. The risk to the fetuses of women who have had one binge episode in the first trimester before they knew they were pregnant may be relatively low. Nulman et al.⁵ looked at the offspring of non-alcohol dependent women who had 1 to 5 binge episodes in the first trimester. They found behavioural differences in the pre-school children in 3 of 9 scales but no differences in terms of physical, language, or cognitive outcomes.

Alcohol Abuse or Problematic/Harmful Alcohol Use

Alcohol abuse is defined as a pattern of drinking that results in harm to health, interpersonal relationships, or ability to work. Manifestations of alcohol abuse include⁶:

- failure to fulfill major responsibilities at work, school, or home;
- drinking in dangerous situations, such as drinking while driving or operating machinery;
- legal problems related to alcohol, such as being arrested for drinking while driving or for physically hurting someone while drunk; and
- continued drinking, despite ongoing relationship problems that are caused or worsened by drinking.

Long-term alcohol abuse can turn into alcohol dependence.

Alcohol Dependence

Alcohol dependence, also known as alcohol addiction and alcoholism, is defined as a chronic disease characterized by the following signs and symptoms⁶:

- a strong craving for alcohol;
- continued use despite repeated physical, psychological, or interpersonal problems⁷
- the inability to limit drinking;
- physical illness when drinking stops; and the need to drink increasing amounts to feel the effects.

Fetal Alcohol Spectrum Disorder

FASD is an umbrella term that refers to the range of harms that may be caused by prenatal exposure. It is not a diagnostic term but does refer to the diagnostic conditions below as delineated in the Canadian Guidelines for Diagnosis of Fetal Alcohol Spectrum Disorder⁷:

FAS	fetal alcohol syndrome
pFAS	partial fetal alcohol syndrome
ARND	alcohol related neurodevelopmental disorder

The diagnosis of is always related to the following:

- growth restriction
- facial dysmorphology
- CNS dysfunction brain damage
- prenatal exposure to alcohol

Precise diagnostic criteria are located in the appendix.

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Incidence and Prevalence of Drinking

This section presents information about the incidence of alcohol consumption by non-pregnant and pregnant women and the levels of consumption that may be associated

with adverse effects on the fetus. It also presents information on the prevalence of fetal alcohol spectrum disorder, conditions that may result from prenatal exposure to alcohol.

Figure 1. Distribution of alcohol consumption prior to pregnancy and during pregnancy, by province/territory, Canada, 2006-2007.

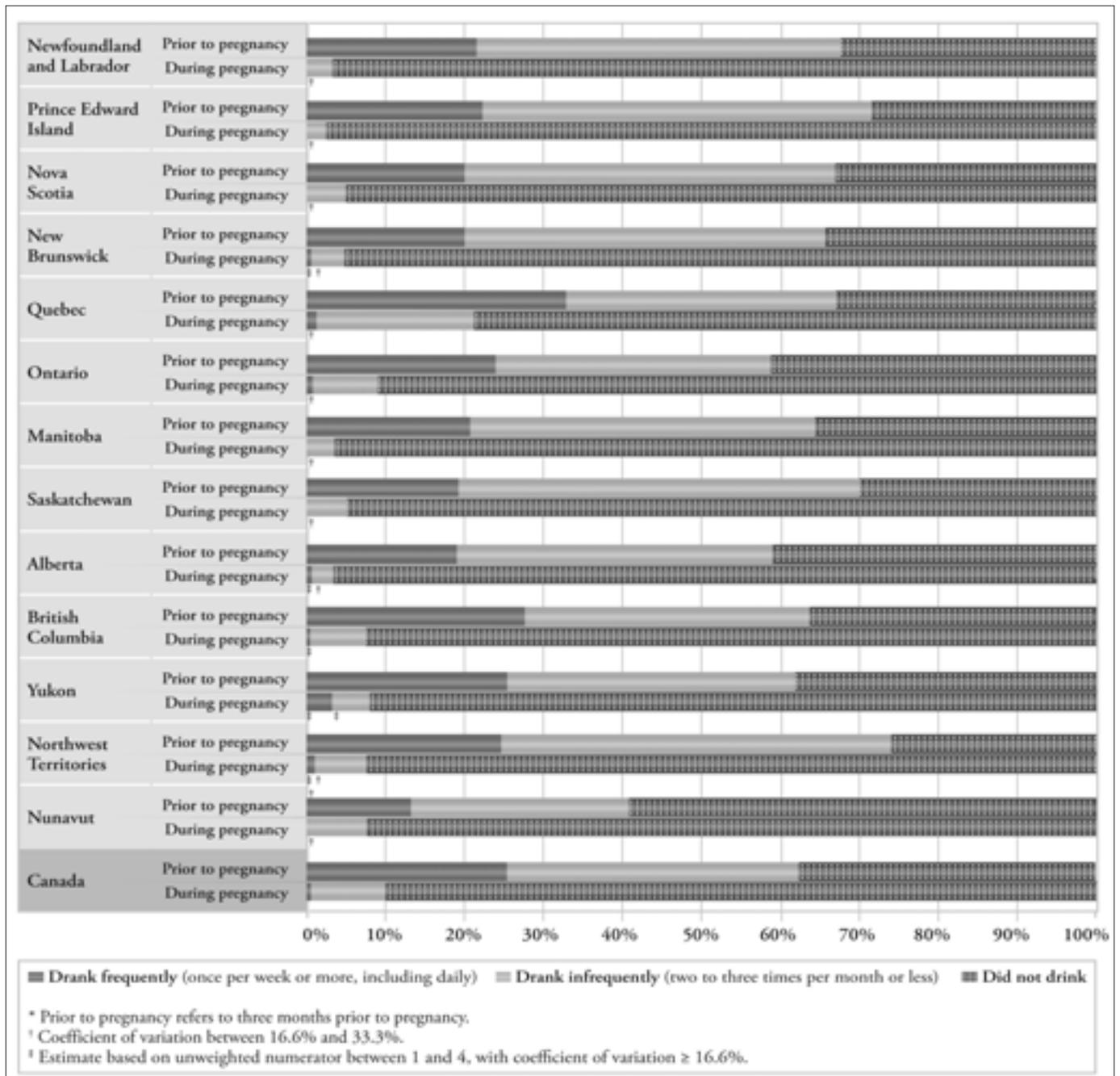


Figure 2. Percentage who consumed 5 or more drinks per occasion at least 12 times a year, by age group and sex, household population aged 12 or older, Canada, 2007.

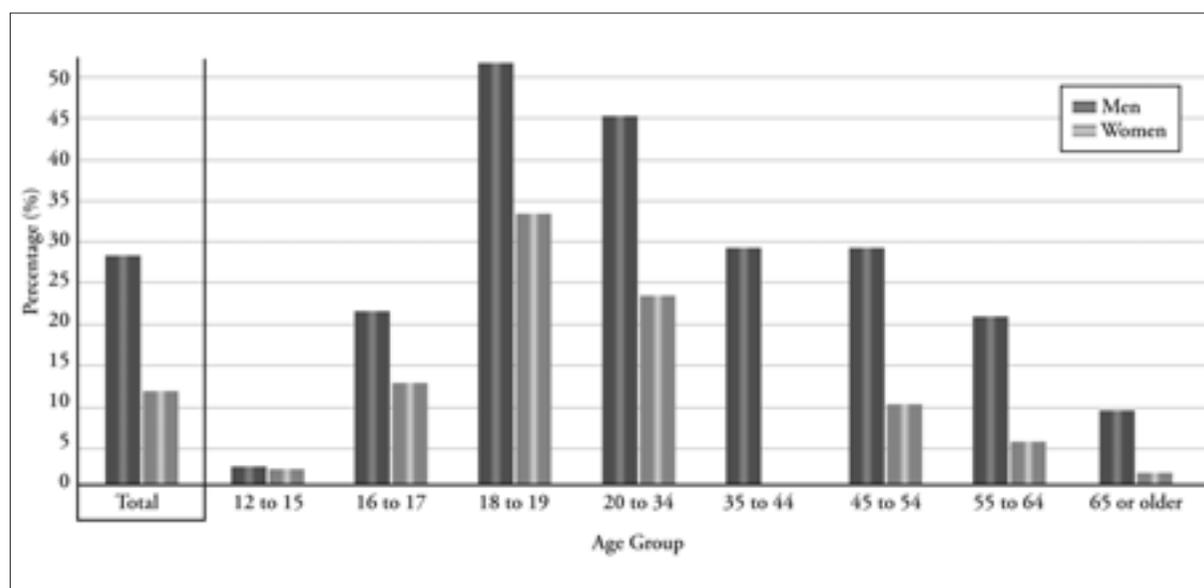


Figure 3. Alcohol use among women aged 18–44, 1991–2005



*Binge drinking is defined as having 5 or more drinks on at least one occasion in the past 30 days.

Alcohol Consumption

The majority of Canadian women drink alcohol. The 2004 Canadian Addiction Survey indicated that 76.8% of Canadian women over 15 years of age reported drinking alcohol within the previous twelve-month period.¹ Of the women surveyed, 32.8% reported drinking at least once a week, for the most part at low-risk levels, and 17.0% of women

reported heavy drinking at least once a month.² Survey research in Western Canada indicated levels of binge drinking as high as 32% among non-pregnant women.³

Alcohol Consumption During Pre-conception and Pregnancy

The 2005 Report on Maternal and Child Health in Canada found that approximately 14% of pregnant women reported drinking during pregnancy.⁴ Data from the 2009 Canadian Maternity Experiences Survey indicated that 62.4% of women reported drinking alcohol during the three months prior to pregnancy but only 10.5% of the women surveyed reported that they consumed alcohol during pregnancy; 0.7% of these women drank frequently and 9.7% infrequently⁵ (see Figure 1). Binge drinking was reported by 11% of women before the recognition of pregnancy.

Women most likely to be missed as being identified as drinking during pregnancy include women over 35 years of age, women who are social drinkers, women who are highly educated, women with a history of sexual and emotional abuse, and women of high socioeconomic status.⁴

Ethen et al. have reported that 30.3% of the women surveyed in a large US telephone survey of new mothers drank alcohol at some time during pregnancy, 8.3% of whom reported binge drinking. Drinking rates declined considerably after the first month of pregnancy, during which 22.5% of women reported drinking, 2.7% of women reported drinking during all trimesters of pregnancy, and 7.9% reported drinking during the third trimester. Pre-pregnancy binge drinking was a strong predictor of both drinking during

pregnancy and binge drinking during pregnancy. Other characteristics associated with both any drinking and binge drinking during pregnancy were non-Hispanic white race/ethnicity, cigarette smoking during pregnancy, and having an unintended pregnancy.⁶

Information from Statistics Canada on the frequency of consumption of alcohol by men and women is shown in Figure 2.⁷

US data from the Behavioral Risk Factor Surveillance (1991–2005) describe the frequency of any consumption and binge drinking in women of reproductive age and in pregnant women. This data are shown in Figure 3.⁸

Alcohol Effects

The incidence of FAS is estimated at 1 to 3 per 1000 births.⁹ FASD is estimated to affect approximately 1% of the population or 10 per 1000. Studies in some communities in Canada indicate prevalence rates as high as 190 per 1000 live births.⁹

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Why Alcohol Use Is a Problem and Why Guidelines Are Required

Problematic use of alcohol by women in their child-bearing years can negatively affect both maternal and child health. Alcohol is a recognized teratogen. There is good evidence that children and youth with FASD have significantly lower health and quality of life outcomes than children and youth from the general Canadian population.¹ Children with FASD struggle with depression and anxiety and experience difficulties in social interactions and relationships.² Lifetime direct tangible costs per individual related to health care, education, and social services in Canada have been estimated to be \$1.4 million.²

High-Risk Alcohol Use During Pregnancy

There is clear evidence that exposure to alcohol at high-risk levels can result in characteristic abnormalities of development, including neurodevelopmental effects. Jacobsen et al.^{3,4} demonstrated that the amount of alcohol consumed was directly related to cognitive defects in a group of alcohol-exposed infants in which the mothers consumed more than 0.04 ounces of absolute alcohol per day. Recent research indicates an effect on the hypothalamo-pituitary-adrenal axis in terms of production of cortisol.^{5,6} There may be a variability of effects for reasons that include the amount and/or pattern of alcohol ingested and the mother's genetic ability to metabolize alcohol. There is no test that can predict which women may be more or less at risk for adverse fetal outcomes.

Lower Level Consumption

The effects of low-dose alcohol consumption on pregnancy and fetal outcome are still under study. A systematic review of the literature by Henderson et al. of the effects of low-risk drinking (as defined in this document) found little or no effect on birth outcomes such as IUGR, spontaneous abortion, preterm labour, gross malformations, etc.⁷ (Table 2). A meta-analysis of infant development up to 26 months indicates variable results with multiple confounding factors such as smoking, other drug use, and education⁸ (Table 3). A recent Swedish systematic review of the literature about the cognitive, mental health, and socio-emotional development of 3- to 16-year-old children found some evidence that there may be subtle long-term

Table 2. Outcomes after low-level alcohol consumption⁷

Outcome	Number of studies	Number of women	Findings (odds if possible)
Spontaneous abortion	8	115 958	Varied Odds = 0.8 to 3.79 2 of 8 studies found significant increases
Stillbirth	5	56 110	3 of 5 studies had higher rates in abstainers
Impaired growth	7	129 439	1 of 7 studies found a positive association with IUGR
Birth weight	19	175 882	1 of 19 studies found significant increase in low birth weight
Preterm labour	16	178 639	15 of 16 studies found no effect or a reduced rate of prematurity
Malformations	6	57 798	1 of 6 studies found a significant association with malformations

Table 3. Mental Development Index scores compared to abstainers⁸

Age	< 1 drink/day	1 to 1.99 drinks/day	≥ 2 drinks/day
6 to 8 months	NS	NS	NS
12 to 13 months	Lower	Lower	Lower
12 to 13 months adjusted for covariates*	NS	NS	Lower
18 to 26 months	Higher (favourable)	NS	NS

NS: no significant difference. Others are significant in the direction stated.

*There are confounding factors including smoking, drug use, and education, and available data allows for these in the studies of the 12- to 13-month-old infants.

Table 4. Results from the systematic review by the Swedish Public Health Institute⁹

Country of study	Number of children	Age of children	Outcome measure(s)	Effect of alcohol?
Pre-school children ages 3 to 5 years				
United States	128	4 years	Focused attention, positive responses to parents	YES Less attentive; shorter "longest attention episodes"
Denmark	251	42 months	Development, Griffiths test	NO Scores not statistically different
England	9086	47 months	SDQ	YES, but* More problems in girls
Children ages 6 to 12 years				
Denmark	4968	10 to 12 years	Inattention and hyperactivity	NO In all cohorts
Finland	8525	7 to 8 years		
England	8046	81 months, (SDQ by parents) 93 to 102 months, by (SDQ by teachers)	SDQ for behavioural and emotional problems	YES, but* Mental health problems in girls at < 1 glass/week
Schoolchildren ages 13 to 16 years				
Australia	5139	14 years	Attention, learning, intellectual ability	NO
Denmark	11 148	15 years	Inattention and hyperactivity	NO
Finland	7844			All cohorts
United States	410	14 years	Attention, short term memory	YES

* High score (worse outcome) at 1 drink/week and not at greater consumption; effect only in girls
SDQ: Strengths and Difficulties Questionnaire.

cognitive and behavioural effects and concluded that abstinence is the most prudent choice during pregnancy because of the lack of clear evidence of a threshold for harms that may be attributed to alcohol⁹ (Table 4).

Screening women of child-bearing age and pregnant women and recording their alcohol consumption is a practical process to identify and evaluate women at risk and to identify potentially exposed infants. In a study that collected information from Canadian health care professionals, the majority (93.6%) reported that they routinely discussed current drinking patterns with pregnant patients. However, only 62% reported using a standardized screening tool.^{10–12} To provide effective counselling support and treatment for women who are drinking at levels that might compromise their health or the health of their babies, maternal alcohol consumption must be identified. Asking questions about alcohol use during pregnancy is necessary for gathering accurate and reliable information that will initiate an appropriate intervention program, as well as for early diagnosis of babies affected by prenatal alcohol exposure.

Summary statements

1. There is evidence that alcohol consumption in pregnancy can cause fetal harm. (II-2) There is insufficient evidence regarding fetal safety or harm at low levels of alcohol consumption in pregnancy. (III)
2. There is insufficient evidence to define any threshold for low-level drinking in pregnancy. (III)
3. Abstinence is the prudent choice for a woman who is or might become pregnant. (III)

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Intended or Unintended Pregnancy

Unintended pregnancy is a common occurrence. Approximately one half of all pregnancies are unintended, and almost one half of these occur in women using a form of reversible contraception.¹⁻³ The rate of unintended pregnancies varies by maternal age, with the highest rates being in women aged 15 to 19 years (82% of total pregnancies in this age group) and the lowest being in women aged 35 to 39 years (29% of total pregnancies in this age group).² Because of the high rate of unintended pregnancy and the frequency of alcohol consumption in women of reproductive age, consideration of the effects of alcohol consumption in pregnancy should be included in the care of all women of reproductive age. The highest rate of unintended pregnancy occurs in the age group of women at highest risk of binge drinking (ages 15 to 19 years).⁴ These high rates of unintended pregnancy illustrate the need for reliable contraception to avoid unintended pregnancy and its consequences.

Overall contraceptive effectiveness is related both to the inherent efficacy of the contraceptive method and to its correct and consistent use.⁴ Permanent contraceptive methods such as sterilization are very effective and almost unaffected by user characteristics. Non-permanent forms of contraception, such as condoms, are effective when used correctly and consistently, but overall effectiveness depends on the user.⁵ The Canadian Contraception Study found that many women are unfamiliar with the range of effective contraceptive

options available, and many are using unreliable methods, such as withdrawal. The study concluded that contraceptive counselling could be improved through patient education, and health care providers and public health personnel involved in providing contraceptive information could expand their counselling efforts.⁶ Research has shown that brief motivational intervention with non-pregnant women of reproductive age can not only reduce at-risk drinking behaviour, but also increase the use of effective contraception.⁷

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Recognition, Screening, and Documentation

Screening women of child-bearing age and pregnant women and recording their alcohol consumption is a practical process to identify and evaluate women at risk and to identify potentially exposed infants. It is important to distinguish between drinking in pregnancy and alcohol dependence in pregnancy. The following 3 levels of screening (Figure 4) are successive steps in a structured approach to screening:

- Level I screening involves practice-based approaches such as motivational interviewing and supportive dialogue that can be used by health care providers when talking to women about alcohol use.
- Level II screening includes a number of structured questionnaires that can be used with directed questioning (TLFB) or indirect or masked screening (AUDIT, BMAST/SMASST, CAGE, CRAFFT, T-ACE (Figure 5), TWEAK (Figure 6).
- Level III screening includes laboratory-based tools that can be used to confirm the presence of a drug and the level of exposure and to determine the presence of multiple drugs.

The frequency and amount of alcohol use should be recorded in a woman's chart on a routine basis and not only in relation to pregnancy. This information should be transferred to appropriate health care providers and health records to ensure a continuum of care.

Maternal Alcohol Screening

The Canadian guidelines for diagnosis of FASD recommend the screening of all pregnant and postpartum women for alcohol use.¹ Such screening can improve maternal-child health outcomes through

- early identification and reduction of problem maternal drinking,
- early identification of exposed infants, and
- earlier diagnosis of FASD.

Periodic screening of all women of child-bearing age is recommended. Maternal alcohol screening and recording by health care providers could lead to a reduction of primary FASD disabilities as well as a reduction of secondary disabilities often related to FASD in the absence of diagnosis and appropriate interventions. The earlier in pregnancy a woman can stop drinking, the better the outcome; the younger

the age at which the affected child is identified, the lower the frequency of secondary disabilities.²

Level I Screening—Practice-based Screening

Recent surveys of health professionals indicate that some clinicians feel uncomfortable asking about alcohol use.^{3,4} They may avoid the subject of alcohol use entirely because they do not know how to identify women who engage in at-risk drinking without embarrassing or offending women who are not consuming alcohol. Others lack knowledge of the alcohol treatment and counselling services that are available, or they practise in areas that simply lack adequate services. Still others may hesitate to screen because they are pressed for time and screening for alcohol use may seem to be beyond the scope of their practice.

One or two interview questions concerning alcohol use have been shown to be an effective way to screen women by identifying those who are drinking and in need of education or intervention.^{5,6}

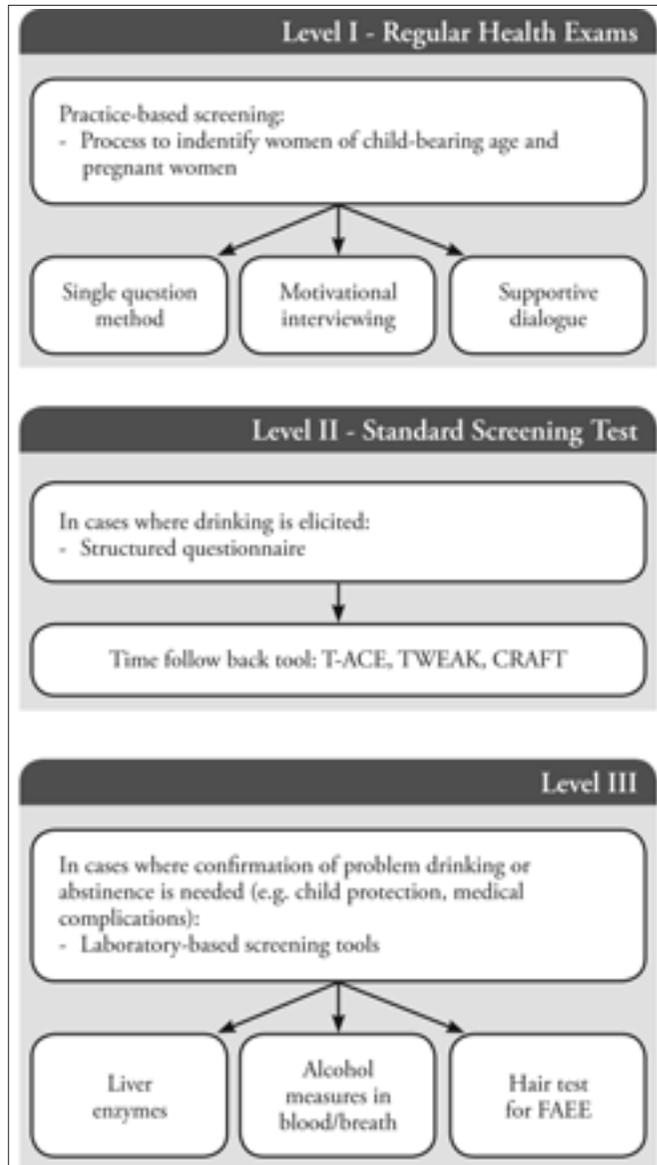
For the practitioner who chooses to use the single question method, the following are questions identified as being effective for establishing a rapport and introducing a discussion about alcohol use:

- When was the last time you had a drink?
- Do you ever enjoy a drink or two?
- Do you sometimes drink beer, wine, or other alcoholic beverages?
- Do you ever use alcohol?
- In the past month or two, have you ever enjoyed a drink or two?

If a woman indicates she does not consume alcohol, then positive reinforcement is beneficial. Research shows that it is helpful to provide brochures and other information about a healthy lifestyle during pregnancy that include details about alcohol abstinence and the effects of alcohol on the fetus.^{7,8} Any written information should be provided in a way that is linguistically and culturally sensitive.

Research has shown that brief interventions can be very useful in helping a pregnant woman who drinks low to moderate amounts of alcohol to reduce her alcohol intake during pregnancy. Brief interventions are cost effective and can be implemented in a variety of clinical settings. They include 4 components: (1) assessment and direct

Figure 4. Decision tree



feedback after assessment, (2) goal setting through establishing contracts, (3) positive reinforcement, and (4) education through pamphlets and handouts for self-help.⁹

Motivational interviewing

Motivational interviewing is a relational model based on collaboration between the health professional and a woman seeking care.¹⁰ Women who are alcohol dependent can be more resistant to change and should be referred to counsellors who can devote the time it takes to establish a collaborative relationship.

Supportive dialogue

A woman-centred approach has been found to be effective in engaging a woman in the decision to change behaviours.

A non-judgemental approach is especially helpful for a woman who drinks above low-risk level and who may have other problematic substance use issues. Open-ended questions allow a woman to expand on her life circumstances. Practitioners can use this as an opportunity to provide information as well as to correct any misinformation. This can be followed by questions such as

- Can you tell me a bit about your drinking patterns before you knew you were pregnant?
- Have you been able to stop or cut down since you found out?
- Do you have any concerns about your drinking?

The woman may have concerns about drinking before she knew she was pregnant and it is at this time that the practitioner can reassure her that if she cuts down or stops, she can help her baby. It is also at this time that the practitioner can offer help on how to cut down or to stop drinking.

Interview techniques for effective engagement—“dos and don’ts”

The following examples suggest interview techniques for effective engagement.¹¹

The following is an example of an introductory statement that can be used with a woman of child-bearing age:

- I want to ask you a series of questions today about your lifestyle. I ask all my patients these questions because it helps me to get a better understanding of what your day-to-day life is like (in terms of diet, exercise, and other lifestyle issues). It will help me to know you, and that will help me to provide better care.

The following is an example of an introductory statement for a pregnant woman:

- I ask all my patients these questions because it is important to their health and the health of their babies.

Unless otherwise reported, assume use of alcohol by all women. Try to pose questions in the past tense to avoid triggers associated with the stigma of alcohol use during pregnancy.

- In a typical week, on how many occasions did you usually have something to drink?

Avoid questions such as

- Do you drink often?
- How much are you drinking?

To encourage more accurate reporting, one can suggest high levels of alcohol consumption:

- And on those days, would it be something like 3 to 4 drinks or about 8 to 10 drinks?

It is important to avoid questions that require a “yes” or “no” response. It is preferable to ask open-ended questions to open a dialogue, such as

- What do you know about the effects of drinking in pregnancy?

In cases of confirmed or suspected history of past alcohol dependency or abuse, the following questions are suggested⁵:

- Have you ever had a drinking problem? followed by
- When was your last drink?

Avoid statements that increase guilt in a woman who admits to continued alcohol use; instead make informational statements such as

- You can have a healthier baby if you stop drinking for the rest of the pregnancy.

Avoid statements such as:

- You may have already hurt your baby.

Level II Screening—Structured Questionnaires

If a woman indicates that she does consume alcohol, then a second stage of screening is necessary. This can be done using standardized screening questionnaires. Practitioners can also use this opportunity to help a pregnant woman who is using alcohol with a “brief intervention” in the office. There are numerous methods for structured screening. We have selected those that are both validated in women of reproductive age and used widely by Canadian practitioners.

Recommended Methods

Timeline Followback: The (TLFB) is an assessment interview developed to assist individuals in their recollection of alcohol consumption.¹² As risky (high-volume/binge) drinking can occur in the absence of any alcohol problems, direct questions regarding the quantity and frequency of alcohol intake in the TLFB method aim to identify risky drinkers. This interview can assist in identifying a woman who would otherwise be missed by indirect questions focusing on the consequences of heavy drinking.¹³ The TLFB is considered a useful and accurate retrospective assessment of drinking and has been shown to be both highly reliable and valid when individually administered by an interviewer over the telephone.^{14,15} Sacks et al. also reliably assessed substance use in psychiatric populations using the TLFB method.¹⁶

The CRAFFT: Researchers at the Children’s Hospital in Boston refined a brief questionnaire called CRAFFT (Car, Relax, Alone, Forget, Friends, Trouble) that primary care physicians can use to screen for alcohol or substance abuse problems in adolescents. Drawing on situations that are more suitable to this age group, the purpose of this tool is to identify which teens require more time for comprehensive evaluation such as a diagnostic interview. This test can be administered by any health care professional who can maintain confidentiality and can refer the teen to appropriate resources. A score of two or more positive items usually

Figure 5. The T-ACE tool¹⁹

T-ACE	QUESTIONS	Points
Tolerance	How many drinks does it take to make you feel the first effect (before pregnancy)? _____ (3 or more = 2 points)	
Annoyed	Have people ever annoyed you by criticizing you about your drinking? (yes = 1 point)	
Cut down	Do you sometimes feel the need to cut down on your drinking? (yes = 1 point)	
Eye-opener	Do you sometimes take a drink in the morning when you first get up? (yes = 1 point)	

Source: Sokol RJ, Martier SS, Ager JW. The T-ACE questions: practical prenatal detection of risk-drinking. *American Journal of Obstetrics and Gynecology*, 1989;160(4):863-870.

Figure 6. The TWEAK tool²⁵

TWEAK	QUESTIONS	Points
Tolerance	How many drinks does it take to make you feel the first effect (before pregnancy)? _____ (3 or more = 2 points)	
Worry	Have close friends worried or complained about your drinking in the past year? (yes = 2 points)	
Eye-opener	Do you sometimes take a drink in the morning when you first get up? (yes = 1 point)	
Amnesia	Has a friend or family member ever told you about things you said or did while you were drinking that you could not remember? (yes = 1 point)	
Cut Down	Do you sometimes feel the need to cut down on your drinking? (yes = 1 point)	

Source: Russell M. New assessment tools for risk drinking during pregnancy: T-ACE, TWEAK and Others. *Alcohol Health and Research World* 1994;18(1):55-61.

indicates the need for further assessment. The CRAFFT screening tool is included in a policy statement issued by the American Academy of Pediatrics and has been part of a national case-based training curriculum in some pediatric residency programs.^{17,18}

The T-ACE: As the first validated screening questionnaire for risky drinking developed for pregnant women, the T-ACE (Tolerance, Annoyed, Cut down, Eye-opener) has been established as a highly effective screening tool and is regularly used by practitioners as part of routine care.¹⁹ Any woman who answers “more than two drinks” on the tolerance question, “How many drinks does it take to make you feel high?” is scored 2 points. Each “yes” to the additional 3 questions scores 1 point. A score of 2 or more out of 5 indicates risk of a drinking problem, and the woman should be referred for further assessment^{19–24} (Figure 5).

The TWEAK: TWEAK (Tolerance, Worry, Eye-opener, Amnesia, Cut down) is a 5-item screening tool that combines questions from other tests including MAST, CAGE, and T-ACE that were found to be effective in identifying at-risk drinkers.²⁵ These questions address tolerance, feeling the need to cut down on drinking, and having close friends or relatives worry or complain about the drinking.²⁶ On the tolerance question, 2 points are given if a woman reports that she can consume more than 5 drinks without falling asleep or passing out (“hold version”) or reports that she needs 3 or more drinks to feel the effect of alcohol (“high version”). A positive response to the worry question yields 2 points and positive responses to the last 3 questions yield 1 point each. Scored on a 7-point scale, a woman who has a total score of 2 or more points is likely to be an at-risk drinker^{24,27–31} (Figure 6).

Other recommended methods

The AUDIT: The Alcohol Use Disorders Identification Test consists of 10 questions that may be used to obtain more qualitative information about a patient’s alcohol consumption. An important limitation is the lack of a cut-off point indicating harmful use. A score of 8 is associated with problem drinking, while 13 or more is indicative of alcohol dependence.^{28–30,32}

The BMAST/SMAST: The Michigan Alcoholism Screening Test is a long questionnaire with 25 questions about drinking behaviour and alcohol-related problems that was originally developed for use with men. There are several variations of MAST, including modified versions such as brief MAST (BMAST) and short MAST (SMAST). The main disadvantage of these tests is their focus on the lifetime use of alcohol rather than recent use, which limits their ability to detect problem drinking at an early stage. A score of 3 points or less indicates non-alcoholism, 4 points suggests problem drinking, and 5 or more points indicates alcohol dependence.^{33–36}

The CAGE Tool: One of the oldest brief screening instruments, the CAGE (Cut-down, Annoy, Guilty, Eye-opener) questionnaire has been widely used in a range of cultures worldwide and is popular for screening in the primary care

setting.³⁷ This 4-item screening instrument is designed to identify and assess potential alcohol abuse and dependence. However, it primarily focuses on the consequences of drinking rather than the quantity or frequency of alcohol use, levels of consumption, or episodes of binge drinking—all factors that help identify patients in the early stages of problem drinking. An affirmative response to 2 or more questions is an indication that a more thorough assessment is warranted.^{31,38,39}

Level III Screening—Laboratory-based Screening Tools

Biological markers

Biochemical markers provide objective data on alcohol intake. During pregnancy, current alcohol use can be detected by urine toxicology, blood, saliva, or breath analysis. Gamma-glutamyl transferase and carbohydrate-deficient transferrin have been used as biochemical measures to detect long-term heavy drinking.^{40–42} However, they are not specific and may reflect liver damage due to other causes.

A benefit of toxicology tests is the confirmation of the presence of alcohol and other drugs. However, disadvantages include the high costs associated with laboratory analysis and the possibility that the trust between the care provider and the woman will be jeopardized.

There are limitations to laboratory testing. Alcohol, a widely used substance and fetal teratogen, is hard to detect due to its short time in the blood stream. Negative results do not rule out alcohol use, and a positive test fails to reveal patterns of alcohol use, e.g., binge drinking.

Fatty acid ethyl esters (FAEEs) are metabolic products that result from the interaction between alcohol and fatty acids circulating in the body. FAEEs can be detected in blood, hair, placenta, cord blood, and meconium (i.e., first stool of newborns) long after alcohol has ceased circulating (Table 6).

Recently, a new test using adult hair has been developed and validated to measure FAEE. The test can accurately separate chronic alcohol abuse from low-risk and non-drinking status. Six centimetres of hair are needed, representing 6 months of hair growth (i.e., the most recent 6 months in the individual’s life).^{41,42}

Although hair testing offers an accurate understanding of a woman’s alcohol use, it is not available in all centres and its clinical use is not widespread. Currently, hair testing is usually ordered for legal reasons. Additionally, some providers may be disinclined to use such tests because of a woman-centred philosophy of caring for pregnant women, which advocates belief in a woman and acceptance of her reports of alcohol use as accurate. This novel test can

Table 5. Recommended structured questionnaires

CRAFFT	Validated as the most sensitive tool for detecting a range of alcohol problems among adolescents	Limited research conducted specifically in pregnancy	Validated for use in adolescents
T-ACE	Instrument developed specifically for use with pregnant women Questions are easy to remember and score and can be asked by an obstetrician or a nurse (1 min)	Emerging research suggests TWEAK outperforms the T-ACE Validity of the tool varies across different ethnic populations	Validated for use in pregnant women
TWEAK	Instrument developed specifically for use with pregnant women Short and very easily administered (takes ≤ 1 min) Optimal tool for racially diverse groups, superior in sensitivity compared to other tools as it has been extensively validated in different obstetric populations. Emerging research suggests TWEAK outperforms the T-ACE	Validity of the tool varies across different ethnic populations	Validated for use in pregnant women

be very effective in corroborating a woman's report of abstaining or cutting down alcohol use.

Recording Alcohol Use

Documentation of alcohol and other substance use during pregnancy on the maternal, newborn, and child health records is crucial. There are considerable differences in what is expected to be recorded in different jurisdictions (Table 7).

Primary health care providers (family doctors, nurse practitioners, midwives, family practice nurses, public health nurses, physician assistants, etc.) are encouraged to include questions about alcohol and other substance use as a routine part of well-woman visits (Pap smears, birth control renewals, annual checkups, etc.). Ideally this information is gathered on all women of child-bearing age.

Recording alcohol use in pregnancy is important if fetal alcohol spectrum disorder is suspected in the newborn and developing child. It is useful to ask these questions at multiple visits so that they become part of the standard of care. In this way, a pregnant woman will not feel stigmatized by questions that are linked only to their pregnancy. Documentation should be on the standardized antenatal record so that obstetrical providers and hospital labour and delivery staff are able to access the information. This is of great importance if the woman is alcohol dependent and goes into withdrawal during or after delivery.

Equally important is the recording on the chart of a newborn the important risk factors present during the pregnancy. Contents of the newborn's hospital or midwifery care chart should be easily and routinely available to the family physician or pediatrician caring for the infant. Subsequently, the relevant information about maternal alcohol

and substance use is available to be transferred to the child's health record.

While recording of maternal alcohol use may have long-term benefits for the diagnosis and support of children, the implications for mothers are often less positive. Pregnant women and new mothers report experiencing discrimination and lack of support from health care providers and others in a position to assist them with alcohol problems. In addition, women fear losing custody of their children if their alcohol use is made known to child welfare authorities. (Substance use in pregnancy is almost unique as a health problem that can result in the loss of child custody.) For women, these fears of prejudicial treatment and removal of children create serious barriers to open discussion of their alcohol use, to providing consent to laboratory testing, and to seeking support or treatment. It is therefore critical that physicians and other health care providers make extraordinary efforts to sensitively discuss alcohol use with women, to seek to understand their fears, and to actively assist women to access treatment and support as necessary.⁴³

Recommendations

1. Universal screening for alcohol consumption should be done periodically for all pregnant women and women of child-bearing age. Ideally, at-risk drinking could be identified before pregnancy, allowing for change. (II-2B)
2. Health care providers should create a safe environment for women to report alcohol consumption. (III-A)
3. The public should be informed that alcohol screening and support for women at risk is part of routine women's health care. (III-A)

Table 6. Fatty acid ethyl esters cut-off levels⁴⁴

FAEE level ⁴⁴	Interpretation, specificity, and sensitivity
FAEE levels \geq 1 ng/mg	100% specific for regular, excessive alcohol consumption. At this level 25% of chronic alcohol abusers will test below (i.e., 75% sensitivity).
FAEE levels from 0.5 to 0.99 ng/ml	90% specific for regular, excessive alcohol consumption. At this level 10% of chronic alcohol abusers will be missed, and 10% of moderate drinkers will show results in this range.
FAEE levels \leq 0.49 ng/mg	indicate no evidence of excessive alcohol consumption (up to 2 drinks per day)
FAEE levels from 0.2 to 0.4 ng/mg	indicate no evidence of alcohol consumption.

Source: Koren G, Hutson J, Gareri J. Novel methods for the detection of drug and alcohol exposure during pregnancy: Implications for maternal and child health. *Clin Pharmacol Ther* 2008;83:631–4.

Table 7. Summary of provincial prenatal records in Canada

Maternal alcohol use screening questions	NWT	BC	AB	SK	MN	ON	QC	NB	NS	PEI	NFLD
Drinking pattern				X	X	X	X	X			X
Amount											
Frequency					X						
No. drinks/day			X	X	X		X	X	X	X	
No. drinks/wk		X	X								
No. drinking days/wk					X			X		X	
Max no. per occasion			X								
Quit date		X	X		X			X			
T-ACE score	X		X	X	X					X	X
TWEAK score		X									
Record to infant chart	Not clear	Not clear	Not clear	Y	Not clear	Y	N	Not clear	N	Not clear	Not clear

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Selected Factors Associated with Alcohol Use Among Pregnant Women and Women of Child-bearing Age

This is intended to assist health care professionals during their work with women who are pregnant and those who could become pregnant, by raising for consideration associated behaviours which may interact with and/or predispose to problematic alcohol consumption. It is understood that when a woman's complex high-risk health history includes, for example, drug or alcohol use, a caregiver should carefully assess the current status of alcohol consumption as well as other risk factors. Concurrent use of other substances and/or

risky behaviours may make alcohol use more problematic, may modify the chance of success with interventions to achieve abstinence or harm reduction, and may alter (usually by increasing) the chance that alcohol consumption in pregnancy may produce adverse effects on the fetus. Associated behaviours also may be significant confounders in attempting to link maternal alcohol consumption with the health status of a child or adult. Concurrent risk factors pre-

Table 8. Demographic factors associated with harmful drinking by Canadian women

Drinking pattern and associated factors	Source
<p><i>Past year drinking.</i> Over three quarters (76.8%) of all Canadian women report they drank in the past year. This percentage peaks at 18 to 19 years of age (90.7%).</p> <p>Aboriginal women have a lower rate of past-year drinking than non-Aboriginal women at 60.6%</p>	<p>Canadian Addictions Survey, 2004 N = 13 909 (8188 women)⁴</p> <p>Aboriginal Peoples Survey, 2001⁵</p>
<p><i>Past year drinking.</i> Among women, past year drinking increases with increasing education and income.</p> <p>When adjusted for all other demographics, women with a university degree were almost twice as likely to have drunk in the past year (81.9%) as women who had not completed high school (66.6%).</p> <p>Similarly, women reporting higher income adequacy were more likely to have drunk in the past year when compared with women in the lowest income adequacy category.</p>	<p>Canadian Addictions Survey, 2004⁴</p>
<p><i>Heavy weekly drinking.</i> When adjusted for all other demographics, heavy weekly drinking varied with age and education among women.</p> <p>About 10% of women aged 15 to 24 engage in heavy weekly drinking (7.8% of women 15 to 19 years and 11.8% of women 20 to 24 years). This rate drops to about 2% for women over 25. Rates of heavy weekly drinking were highest among women reporting the lowest income adequacy category (8.5%).</p> <p>The First Nations Regional Health Survey of 2003 found that 10.2% of Aboriginal women consume 5 or more alcohol drinks on at least one occasion a week, a higher rate than for non-Aboriginal women.</p>	<p>Canadian Addictions Survey, 2004⁴</p> <p>First Nations Regional Health Survey, 2003⁶ N = 22 602 from 238 First Nations communities in 10 regions</p>
<p><i>Exceeding low-risk drinking guidelines.</i> When adjusted for all tabulated demographics, the likelihood of exceeding low-risk drinking guidelines varies with age and marital status among Canadian women.</p> <p>The proportion of women who exceed the low-risk drinking guidelines peaks among women aged 18 to 19 and 20 to 24. (31.2% and 30.4% respectively) and drops among women aged 25 to 34 (15.6%).</p> <p>Single women or women who had never married were more than twice as likely as married or partnered women to exceed these guidelines. Similarly, formerly married (divorced, separated, or widowed) women were at least 1.6 times more likely than married or partnered women to exceed the low-risk drinking guidelines.</p>	<p>Canadian Addictions Survey, 2004⁴</p> <p>For definition of low-risk drinking and further caveats related to low-risk drinking, see Centre for Addiction and Mental Health Low-Risk Drinking Guidelines⁷</p>

Table 9. Selected risk factors associated with maternal drinking

Risk factors associated with drinking in pregnancy	Source
Smoking	National Epidemiologic Survey on Alcohol and Related Conditions, 2001-2002 ⁸ N = 453
Illicit drug use, low income, age 15 to 24 years significantly associated with smoking and alcohol use	National Canadian Maternity Survey ⁹
Alcohol abuse more common among non-white, older, and less educated women; those not living with a partner; those reporting use of tobacco and illicit drugs by one or both partners in a couple; and those with little social support	Pennsylvania Women's Health Study to improve preconception health, ¹⁰ N = 537 randomly selected in a cross-sectional study ¹⁰
Older age, being unmarried, lower gravidity, greater depressed mood, currently smoking, exposure to intrapersonal violence, a history of not remembering things because of alcohol use, and feelings that she should reduce her drinking	Statewide population-based sample women at their first prenatal visit at 67 prenatal clinics in Minnesota ¹¹ Chi-squared and multivariate logistic regression analyses were conducted to identify risk markers associated with any prenatal alcohol use. N = 4272
Alcohol use continuation in pregnancy was predicted by older age, current smoking, lack of transportation, pre-pregnancy alcohol use frequency, depression, and physical or sexual abuse by someone other than an intimate partner	Use of Prenatal Risk Overview (PRO) screening tool with consecutive prenatal care patients from four urban US clinics in Minnesota between November 2005 and June 2007. ¹² N = 1492
High-risk status for maternal alcohol use was associated with past sexual abuse, current or past physical abuse, using tobacco, using other drugs, living with substance users, and having mates who were substance users. Other contributing factors for high-risk classification included feeling sad, believing that drinking any amount of alcohol while pregnant was acceptable, and being able to hold 4 or more drinks. Women at high risk for alcohol use when pregnant tended to be younger, less educated, single, and unemployed. Demographic factors protective against drinking when pregnant were being married and full-time housewife status.	Participants from four US states were sampled for high- and low-risk drinking using a 36-item screening tool with the TWEAK questions embedded. ¹³ N = 4676
Higher education was associated with both alcohol consumption during pregnancy and with abstinence after confirmation. Consumption was associated with parity, smoking, shorter sleep duration; abstinence associated with (previously) less frequent consumption and knowledge of risks	Nationwide questionnaire conducted random sampling in Japan ¹⁴ 260 institutions participated (number of women not reported in abstract)
Risk of unintended pregnancy	Source
Women who reported unintended pregnancy were younger, more likely to be non-white, and less educated, and they tended to have higher gravidity. After adjusting for maternal age, education, race, and previous adverse pregnancy outcome, women who reported unintended pregnancies were more likely also to report smoking.	Correlational maternal behaviour reported in third month of pregnancy ¹⁵ N = 3029

dict less likely reduction or cessation of alcohol use in pregnancy.¹

The Antenatal Psychological Health Assessment¹⁶ screening tool is one type of multidimensional screening tool available to practitioners for use in their assessment. The ALPHA includes questions relating to family factors (social support, recent stressful events, the relationship of the couple, etc.), maternal factors (self-esteem, mood disorders, relationships with parents, etc.), substance use issues (partner's substance use, polydrug use, etc.), and family violence (childhood experience of violence, childhood sexual abuse, intimate partner

violence, etc.).² For more information about the use of this and other screening tools, health care professionals should refer to the Public Health Agency of Canada Consensus Report (2009).³

Assessment of alcohol use among pregnant women and those who could become pregnant may be overlooked when the woman appears to be at low risk.

Table 8 shows the subpopulations of women at particular risk of harmful drinking, and Table 9 shows psychosocial factors associated with drinking in pregnancy.

Recommendation

4. Health care providers should be aware of the risk factors associated with alcohol use in women of reproductive age. (III-B).

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Counselling and Communication With Women About Alcohol Use

Brief Interventions

The term “brief interventions” refers to a collection of time-limited motivational counselling strategies aimed at helping patients reduce or eliminate at-risk alcohol use (Tables 10 to 12). Most successful brief interventions include 3 components:

1. Assessment and feedback after assessment aimed at increasing awareness;
2. Advice including provision of pamphlets and discussion of strategies for reducing or eliminating problematic alcohol use; and
3. Assistance in the form of eliciting ideas about change strategies, goal setting to reduce or eliminate alcohol use, positive reinforcement, and referrals to supportive services.¹

Collaborative brief interventional approaches on the part of health care practitioners are gaining increasing attention.²

Evidence in the Adult Population

There is good evidence that brief counselling interventions are effective in reducing problematic alcohol use in the general population.²

- A 2004 systematic review of 12 randomized control clinical trials found there was significant reduction (approximately 13% to 34%) overall in the number of drinks per day and week sustained for 6 to 12 months or longer. From 10% to 19% more intervention participants reported reducing their drinking to safe levels compared with control subjects.³
- A 2005 systematic review and meta-analysis based on 8 randomized control clinical trials also found a reduction in risky drinking at 6 and 12 months.⁴
- A 2004 meta-analysis indicated that a long-term effect of using BI with problem drinkers was reduced mortality.⁵
- One long-term randomized clinical trial found that after 48 months the BI group had 50% fewer motor vehicle crashes, 46% fewer arrests, 37% fewer hospitalizations, 20% fewer emergency department visits, and 33% fewer non-fatal injuries than the control group.⁶

Brief interventions are cost effective, and they can be implemented in various clinical settings by the practitioner or an assistant. They can vary in length, intensity, and frequency from 1 very brief session of 5 minutes or less to 1 to 4 or more sessions of 5 to 25 minutes each.⁶ However, multi-contact interventions have been linked to greater risk reduction than single-contact interventions.⁷ Effectiveness is also impacted by the overall approach taken.

Brief interventions are often achieved through employing a motivational interviewing approach. MI is defined as “a collaborative, person-centered, goal directed form of guiding to elicit and strengthen motivation for change.”⁸ Health professionals work collaboratively with patients and skilfully draw out reasons for change that are personally relevant and meaningful. MI has been gaining increasing attention as an efficacious brief intervention approach across a range of health areas.⁸ In a 2005 systematic review of randomized controlled trials evaluating the effectiveness of MI interventions in health behaviour change, MI was shown to outperform traditional advice giving.⁹ Further, physicians have reported that using an MI approach was no more time consuming than traditional advice giving.⁹

Evidence With Women From Pre-conception to Pregnancy

In one study, BIs were an effective method of helping women who screened positive for at-risk drinking during the pre-conception period reduce problematic alcohol use over a 48-month period.¹⁰ Women in the treatment group who became pregnant during that time had the most dramatic decreases. There is also good evidence that BIs are effective in helping women reduce possible alcohol-exposed pregnancies with low- and medium-risk as well as high-risk drinkers in the pre-conception period.^{10,11} Significantly more women reduced the risks of an alcohol-exposed pregnancy in a BI treatment group than in a control group. The BI group consisted of four MI counselling sessions and one contraception-planning visit. The MI counselling sessions consisted of personalized feedback about risk of an alcohol-exposed pregnancy; choice to focus on alcohol use, contraception, or both; discussion about ways to reduce risk and increase confidence; and developing a personalized change plan.

Table 10. The 3 As: assess, advise, assist

Assess: Discuss the risks of alcohol use and assess to determine reproductive stage and level of risk or dependence. Record the level of risk so that appropriate, tailored follow-up can be done throughout the system of care.

Advise: Provide and discuss information about a variety of healthy choices appropriate to her reproductive stage—low-risk drinking guidelines prior to pregnancy and while breastfeeding, low-risk drinking guidelines, info on FASD and contraception during pre-conception, abstaining from alcohol during pregnancy if possible, strategies for reducing risk in other ways if not. Tailor the advice/information provision based on what she already knows.

Assist: Work with a woman to set goals based on her situation. Assist her to plan change(s), keep the discussion open, and support self-efficacy. Assist her in getting the help she needs by making referrals to other agencies or follow-up depending on her situation.

Table 11. Relational principles of effective interventions: the 6 Rs

Relationship: Health care professional inquires about the patterns and context of the patient’s alcohol use, working to form a caring, non-judgemental relationship—accepting the health behaviour without condoning it.

Recognition: Health care professional gives information and clear recommendations in a supportive manner—helping client recognize at-risk drinking before, during, and after pregnancy as appropriate to the patient’s situation.

Respect: Health care professional respects differences in each patient’s ability and readiness to change, giving feedback appropriate to the patient’s situation. How important is it for the patient to make changes in her drinking? How confident is the patient that she can?

Responsibility: Health care professional offers a choice of approaches—always reinforcing the patient’s ability to change and helping her set goals and make a plan—and makes note of these goals in the chart.

Routine: Health care professional routinely discusses alcohol use with all women of child-bearing age.

Repetition: Health care professional follows up so that there are regular points of contact, asking about alcohol use and giving positive feedback and encouragement at each well-woman or prenatal visit.

The control group received one brief advice session, brochures on women’s health and alcohol, and a community referral guide.¹²

There is also good evidence that BIs are effective in reducing subsequent alcohol-exposed pregnancies and improving infant outcome when women identified as drinking during an index pregnancy are given an intensive BI four weeks after the index birth.¹³

In one study, 300 women identified as drinking more than 4 drinks per week at the beginning of an index pregnancy were randomized into a control group and a treatment group 4 weeks after giving birth and then were followed for 5 years. The treatment group received one intense brief (1 hour) intervention. During subsequent pregnancies women in the BI group drank significantly less and delivered fewer low-weight or premature infants. At 13 months of age children born to mothers in the BI group showed better neurological functioning than those born to women in the control group.¹³

Evidence With Pregnant Women

There is also evidence that BIs are effective with pregnant women but the number of studies is more limited than in other populations.^{1,14–19} O’Conner and Whaley¹⁹ reported that pregnant women in the BI treatment group were 5 times more likely than women in the control group, to have reported that they abstained from alcohol than in the control group. The infant mortality rate in the BI treatment group was 3 times lower than in control group, and newborns from the BI group had greater birth length and weight than control subjects.

Chang et al.¹⁸ and O’Connor and Whaley¹⁹ found that BIs are more effective in reducing alcohol use by pregnant women when a support person chosen by the woman receives the BI with her. This person could be a mother, friend, or partner. Including the support person in the counselling was especially effective with women who had higher levels of drinking. The sample population for Chang’s study was made up primarily of middle class, educated, married pregnant women who chose their partners as support persons. A study of birth mothers of children with fetal alcohol syndrome in Washington State found that the

Table 12. Alcohol Interventions with women of child-bearing years.

Asses	Advise	Assist	Recommended approach
All women	Low-risk drinking guidelines Information about FASD		Very brief intervention
Low risk	Information about FASD Discuss low-risk drinking guidelines: Pre-conception—avoid at-risk drinking Pregnant—safest not to drink (no known safe amount) Postnatal breastfeeding and drinking	Drink size information and low-risk drinking guidelines Birth control information as required Educational materials on risk of heavy alcohol use and FASD for woman and partner/significant others Support for goal setting Breastfeeding pumping and timing charts	Brief intervention Routine check each prenatal or well-woman visit
Moderate to high risk	Information about health risks of heavy alcohol use including dependency Information about FASD Pre-conception—avoid at risk drinking and/or use contraception Pregnant—safest to not drink(no known safe amount), or reduce to lowest possible level and reduce harms associated with drinking Postnatal breastfeeding and drinking	Drink size information and low-risk drinking guidelines Birth control as required Clear message and feedback Elicit and support motivation to change Assistance with goal setting and reducing harms Follow-up visit with partner or significant other if possible Referral to services as needed Postnatal breastfeeding pumping and timing charts	Multiple contact brief interventions Motivational interviewing Follow-up phone calls if pregnant, not using birth control, or breastfeeding
Alcohol dependent	Information about FASD Information about the health risks of heavy drinking and dependency Information about the process of withdrawal and stages of recovery Information about treatment and support options Pregnant—safest to not drink (no known safe amount) due to dependency Birth control choices to fit lifestyle Postnatal breastfeeding and drinking	Birth control as required Clear message and feedback Elicit and support motivation to change Assistance with goal setting Referral and support to access treatment Withdrawal management/treatment options Explore need for medication Follow-up visit with partner or significant other Continue to elicit and support change Postnatal bottle-feeding options	Multiple brief interventions Motivational interviewing Referral to treatment Medication Follow-up phone calls

majority of these women had partners who were not supportive of their stopping drinking.²⁰ As alcohol problems are correlated with experience of violence in relationships,²¹ women's preferences for including their partners as support persons should be explored and not assumed.

Overall, the most common type of brief intervention reported across the studies pertaining to pregnant women and alcohol and women of child-bearing age and alcohol was motivational interviewing.²² MI motivates individuals to change behaviours through exploring and resolving discrepancy and ambivalence.²³ MI has been shown to be

especially effective in helping women who are drinking problematically prevent an alcohol-exposed pregnancy; it is also useful in helping women who have an alcohol-use disorder reduce their intake and participate in alcohol treatment.

Harm Reduction

Evidence indicates that a harm reduction approach can be helpful in our work with women in their child-bearing years.²⁴ Harm reduction involves assisting women with reducing harms associated with substance use, as well as

with establishing realistic and achievable goals to reduce their alcohol use as they work toward abstinence or when abstinence is not possible.²⁵ Fundamental to a harm-reduction approach is

a shift away from stigma, guilt, confrontation and shame, towards an empowering and strengths-based approach. A respectful, non-judgmental approach by the health care provider accommodates goals of reduced use rather than immediate abstinence.²⁶

This is important since many women who are dependent upon alcohol would not be able to enter, engage, or remain in treatment if an abstinence-based treatment approach was presented by the health care provider as the only legitimate alternative or goal.

Pregnant Women Who Have Consumed Some Alcohol

It is not uncommon for women to have had low-level exposure to alcohol in early pregnancy, particularly because many pregnancies are not planned. Such women may be concerned about possible harm to their fetuses and some may seek pregnancy termination for that sole indication. The available evidence about the effects of low-level consumption does not warrant acceding to such a request.

Pregnant Women Who Are Alcohol Dependent

Pregnant women are generally motivated to change their drinking behaviour, and alcohol dependency problems are relatively rare.²⁷ Women who are alcohol dependent usually find it more difficult to stop drinking when they are pregnant than women without dependency problems, and they need more intense and specialized counselling and support. They also need medical support during the process of withdrawal, as well as support to access alcohol dependency treatment. Specialized medical care should be provided for pregnant women who are alcohol dependent. Women with alcohol problems and dependency are at risk for a wide range of other health problems that may also need attention.²⁸ Health care providers making referrals should indicate that the woman is pregnant to ensure she is provided priority access to treatment.

Intense Interventions

Most often alcohol problems and dependency are symptomatic of underlying social and emotional problems. The stigma that attaches to substance use by pregnant women and new mothers, as well as broader issues in a woman's social environment, may keep her from accessing appropriate support services.²⁹ There is fair evidence that intense home-visiting advocacy programs are effective in helping alcohol-dependent women of child-bearing years get the help they need to effect change in their lives.^{26,30}

Communicating About Women's Drinking

Women's substance use remains highly stigmatized, making women less likely to disclose problems associated with their substance use when attempting to access services.³¹ In addition, women may encounter significant resistance from partners, friends, and family when they are interested in treatment.²⁰ Women's roles as mothers and caregivers can often create further barriers to accessing care and treatment. Women report they are afraid to talk to providers about their substance use, because they fear child apprehension and professional judgements.²⁹

The issue of communication of women's drinking history and current status is sensitive. When the details of maternal drinking are revealed during medical interviews, it is important to document them in the medical records of both the mother and the infant, as this may be the only source of information available about maternal use of alcohol when the diagnosis of FASD is being considered. It is important to recognize that information about maternal alcohol may be also be used unfairly, not to support women's and child health but to justify child apprehension, and for this reason women may be unwilling to discuss their alcohol use with health care and other professionals. Communication of information regarding alcohol use should be done with utmost respect to confidentiality and other rights of the woman involved, congruent with the standards of medical practice.

Summary Statements

4. Intensive cultural-, gender-, and family-appropriate interventions need to be available and accessible for women with problematic drinking and/or alcohol dependence. (II-2)

Recommendations

5. Brief interventions are effective and should be provided by health care providers for women with at-risk drinking. (II-2B)
6. If a woman continues to use alcohol during pregnancy, harm reduction/treatment strategies should be encouraged. (II-2B)
7. Pregnant women should be given priority access to withdrawal management and treatment. (III-A)
8. Health care providers should advise women that low-level consumption of alcohol in early pregnancy is not an indication for termination of pregnancy. (II-2A)

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Pregnancy Scenarios

Consider the following scenarios. What issues need to be discussed in each case?

These pregnancy scenarios are examples of cases that health care practitioners encounter. The model of discussion uses the headings Assess, Advise, and Assist. The order of this model of discussion is not linear and reassessment of alcohol use at subsequent visits should be a routine part of care. Every practitioner will be comfortable with different screening methods, be it single questions, motivational interviewing, informal discussions, timeline follow-back, or standardized tools.

1. Janine is 26 years old and comes to your office to discuss her concerns. She discovered two weeks ago that she was pregnant. This is her first pregnancy and it was unplanned. An ultrasound done today confirms a gestational age of 8 weeks. A few weeks ago she was at an anniversary celebration for friends and had three glasses of wine. The day before she discovered she was pregnant she went with some co-workers to a bar after work and had two drinks. She has consulted several sources on the Internet and has now come requesting a termination of pregnancy.

Assist and Advise: There is a low level of risk with this level of alcohol use. It is likely that this level of alcohol will not affect the fetus. The options for unplanned pregnancy may be reviewed.

Assist: Support Janine's choices. Give her information about alcohol in pregnancy as well as factual information to share with her friends.

Reassess alcohol use at the next visit. There is no need at this time to do further assessment as Janine has revealed her current use of alcohol. Review information on the effects of alcohol use and recommendations, particularly when a chosen support person is present at a visit.

2. Josee is a 20-year-old university student. She parties regularly on the weekends, when she will often consume 6 to 8 beers at a time. She found out yesterday she was pregnant at 9 weeks, gestation. She wants to continue the pregnancy and plans to stop drinking. She is concerned about the well-being of the fetus.

Assess: This pattern is consistent with binge drinking. A range of methods may be used to assess her drinking: a standardized tool, a timeline follow-back, or discussion

about her patterns of drinking. Review goals.

Acknowledge that it may be difficult for Josee to change her alcohol consumption patterns as they are so connected to her social lifestyle.

Advise: It is prudent not to drink at all in pregnancy. The pattern of Josee's drinking is of concern. Repetitive drinking of more than 4 or 5 servings of alcohol at one time may cause fetal damage. There is risk to the fetus with continuous binge drinking.

We cannot predict if there has been harm. There is a risk that there may already have been adverse effects on the fetus, but the nature and extent of those effects cannot be quantified. There is no way to make a prenatal diagnosis to include or exclude a fetal effect. Support Josee in her choice to continue her pregnancy.

Assist: Ask Josee if she needs or wants help to stop drinking. Offer referrals to alcohol recovery counsellors or support programs.

Reassess alcohol use at a future visit. Review information on the effects of alcohol use and recommendations, particularly when a chosen support person is present at a visit.

3. Zara is a 35-year-old lawyer who is happy to be pregnant for the first time at 5 weeks, gestation. She goes to a walk-in clinic for a pregnancy test. The pregnancy is confirmed and the SOGC booklet on healthy pregnancy is provided. She has read it and has questions. At her first prenatal check-up, the health care practitioner asks, "When was the last time you had a drink?" Zara replies, "Just a glass of wine with dinner."

Assess: Various methods of assessment, either open-ended questioning or a standardized tool, can be used. Attempt to quantify alcohol consumption.

Advise: It is prudent not to drink in pregnancy. Go back to the booklet to review healthy pregnancy recommendations.

Assist: Help Zara define her goals, including what support she will need to change her practice, with questions and statements like "What does this information about alcohol use and healthy pregnancy mean to you? Does it change your thinking?" and "We will continue to support you in your pregnancy to grow a healthy baby."

Reassess alcohol use at a future visit. Review information on the effects of alcohol use and recommendations, particularly when a chosen support person is present at a visit.

4. **Sheila** is 35 years old, gravida 7, para 5, abortus 1, and presently at 12 weeks, gestation. She enjoys a few beers in the evening a couple of times a week to manage her stress from a noisy household. She says she was drinking 4 to 6 beers, 3 or 4 times a week, but has cut down since she discovered the pregnancy to 1 or 2 beers, 2 or 3 times a week.

Assess: Quantify alcohol use and clarify when alcohol consumption was reduced. The timeline follow-back model would help in identifying patterns and amounts of alcohol use. It is important for the health care practitioner to identify the timeline of problematic alcohol use. Ask questions such as “Will you be able to achieve your goals of decreased alcohol use?” or “What supports will you need to reduce or abstain from alcohol use?”

Clinical Tip:

A woman may be afraid to tell her practitioner the full extent of her alcohol use. She may be testing the health care practitioner to see if she will be judged.

Advise: Support Sheila’s efforts so far. Advise Sheila that it is prudent not to drink at all in pregnancy. If Sheila cannot stop drinking, she should be encouraged to continue reducing her alcohol intake. Harm reduction methods should be used.

We cannot predict if there has been harm to the fetus. There is a risk that there may already have been adverse effects on the fetus, but the nature and extent of those effects cannot be quantified. There is no way to make a prenatal diagnosis to include or exclude a fetal effect.

Assist: Ask Sheila what has helped her with reducing alcohol so far. Does she want to see an alcohol and drug or addictions counsellor? What are some options to get to the source of her drinking? Increase support networks and consider making plans for stress management. Encourage Sheila to be proactive in finding supports to eliminate alcohol use. Consider follow-up phone calls and, if available, a referral to home-visiting programs.

Reassess alcohol use at a future visit. Review information on the effects and recommendations of alcohol use, particularly when a chosen support person is present at a visit.

5. **Alana** is 30 years old, presenting with an unplanned first pregnancy at 10 weeks. After the death of her partner two years ago, Alana started drinking a shot or two of vodka with juice every morning and a bottle of wine every night to ease the pain of her loss. She conceived a few months ago after being out at bar and doesn’t remember what happened or who she was with. She wants to continue the pregnancy. She admits to having few friends outside of work and her parents and sister live in the UK. She can’t sleep without alcohol, but she wants to keep the baby from being damaged.

Assess: A range of tools or discussion could be used to assess alcohol use. Alana’s pattern of drinking conforms to alcohol dependence.

Advise: There is a high level of risk for fetal alcohol affects. Alana’s own health is also of concern. Discuss the seriousness of the exposure and the need to eliminate alcohol use.

Assist: If Alana is agreeable, refer her to a support and/or treatment program and to community support groups to increase her social supports. Follow-up with Alana regarding her alcohol consumption. Address grief counselling.

Reassess alcohol use at a future visit. Review information on the effects of alcohol use and recommendations, particularly when a chosen support person is present at a visit.

6. **Sarah** has two children and is now pregnant with a third. Three years ago Sarah could not leave an abusive relationship and her children were apprehended by the child protection agency. Sarah is giving up hope about her chances at parenting. She drinks heavily. She drinks at least 8 beers whenever she has money and uses other substances. She comes to a drop-in prenatal clinic at 27 weeks pregnant.

Assess: A timeline follow-back method would be useful to help Sarah identify her patterns. Quantify alcohol use. Clarify the use of any other substances and her social situation and support.

Clinical Tip:

The use of other substances is common and needs to be a consideration in women who consume alcohol.

Advise: Discuss the overall impact of alcohol consumption on Sarah's health and the ongoing pregnancy. Encourage Sarah to reduce alcohol consumption for her own health and for the development of the fetus. It is never too late to start healthy living. Encourage Sarah to return for prenatal care. Facilitate ongoing opportunities for prenatal care.

Assist: A harm reduction approach may be suitable for Sarah. Encourage Sarah to see the risks of what she is doing. Assess her readiness to change. Support Sarah if she is considering entrance into a detoxification or addiction recovery program. If she is interested, expedite the referral and intake process.

Reassess alcohol use at a future visit. Review information on the effects of alcohol use and recommendations, particularly when a chosen support person is present at a visit.

7. **Giselle** is a 27-year-old gravida 3, para 2 woman at 14 weeks, gestation who comes for a prenatal visit

having missed her previously scheduled visit the week before. She has some bruising on one arm and when asked about it says that she slipped and fell leaving a party with a group of friends.

Assess: A range of tools or discussion could be used to assess alcohol use. Also ask questions related to a possible abusive relationship and intimate partner violence. Consider using the ALPHA tool.

Assist: Discuss the available community programs for women who have experienced abusive relationships. Acknowledge that it is common for women who have experienced intimate partner abuse to also drink alcohol.

Advise: Give Giselle information about alcohol in pregnancy as well as information to share with her friends.

Reassess alcohol use at a future visit. Review information on the effects of alcohol use and recommendations, particularly when a chosen support person is present at a visit.

Appendix

FETAL ALCOHOL SPECTRUM DISORDER (FASD): SUMMARY OF DIAGNOSTIC PROCESS

1. Criteria for FAS, partial FAS, and, after excluding other diagnoses, are:

- a. Evidence of prenatal or postnatal growth impairment, in at least 1 of the following (**FAS only**):
 - i. Birth weight or birth length at or below the 10th percentile for gestational age.
 - ii. Height or weight at or below the 10th percentile for age.
 - iii. Disproportionately low weight-to-height ratio at or below the 10th percentile.
- b. Simultaneous presentation of the following facial anomalies at any age (**FAS all 3, partial FAS any 2**):
 - i. Short palpebral fissure length (2 or more standard deviations [SDs] below the mean).
 - ii. Smooth or flattened philtrum (rank 4 or 5 on the lip-philtrum guide).
 - iii. Thin upper lip (rank 4 or 5 on the lip-philtrum guide).
- c. Evidence of impairment in 3 or more of the following central nervous system (CNS) domains (**FAS, partial FAS, and ARND**):
 - i. hard and soft neurologic signs
 - ii. brain structure
 - iii. cognition (IQ)
 - iv. communication
 - v. academic achievement
 - vi. memory
 - vii. executive functioning and abstract reasoning
 - viii. attention deficit/hyperactivity
 - ix. adaptive behaviour
 - x. social skills
 - xi. social communication
- d. Confirmed maternal alcohol exposure (**partial FAS and ARND**). FAS can be diagnosed without this if a) to c) are all present.

2. The Physical Examination and Differential Diagnosis

Differential diagnosis of CNS abnormalities involves ruling out other disorders as well as defining comorbidities and is essential given various syndromes with features that overlap with those of FAS.

Growth/Facial Features

Growth should be monitored to detect pre- and postnatal deficiency defined as height, weight, or weight to height

ratio at or below the 10th percentile (1.5 SDs below the mean).

The three facial features unique to alcohol toxicity in utero are:

- a. Short palpebral fissures, at or below the 3rd percentile (2 SDs below the mean)
- b. Smooth or flattened philtrum, 4 or 5 on the 5-point Likert scale
- c. Thin vermilion border of the upper lip, 4 or 5 on the 5-point Likert scale.

Presence of other dysmorphology should be assessed in the context of comorbidities.

3. Neurobehavioural Assessment

Assessments in the following domains should take place:

- a. hard and soft neurologic signs
- b. brain structure
- c. cognition (IQ)
- d. communication: receptive and expressive
- e. academic achievement
- f. memory
- g. executive functioning and abstract reasoning
- h. ADD/ADHD

The above must be supported by a battery of psychological tests to determine impairment, defined when:

- scores are 2 SDs or more below the mean;
- there is a discrepancy of at least 1 SD between subdomains;
- there is a discrepancy of at least 1.5 to 2 SDs among subtests on a measure, taking into account the reliability of the specific measure and normal variability in the population.

Evidence of impairment in 3 domains is necessary for a diagnosis.

4. The 4-digit Diagnostic Code

The 4 digits in the code reflect the magnitude of expression of the 4 key features of FAS in the following order:

- a. growth deficiency
- b. the FAS facial features
- c. CNS damage or dysfunction
- d. prenatal alcohol exposure

The magnitude of expression of each feature is ranked independently on a 4-point Likert-type scale with 1 reflecting complete absence of the FAS feature and 4 reflecting a strong “classic” presence of the FAS feature.

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