Effective **Interventions** and **Strategies** to Prevent Alcohol-Exposed Pregnancies

Thunder Bay District Health Unit

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Introduction

This paper explores the literature to determine what are effective interventions and strategies during preconception and pregnancy to prevent alcohol-exposed pregnancies. Seven themes emerged from the literature reviewed: Population Health Surveillance, Public Awareness, Public Programs, Education for Health Care and Social Services Providers, Screening and Intervention by Health Care and Social Services Providers, Partnerships and Policy/Government Directives. The emerging themes were further analyzed to determine their relationship to the "Ontario Public Health Standards 2008" (OPHS) under the Reproductive Health (RH) Requirements.[1] In addition, a provincial health unit and local community scan of what is currently happening in this field is included in this report.

A consistent finding in all themes was the need for a multi-pronged Fetal Alcohol Spectrum Disorder (FASD) prevention approach and stronger integration within the broader alcohol context in regards to tackling the issue of preventing alcohol-exposed pregnancies in the preconception and prenatal periods. It is important to keep in mind when reading this report that the strategies and interventions discussed in this paper are within the overall context of limited studies and low levels of evidence.

Research Process

In the spring of 2014, the Thunder Bay District Health Unit's (TBDHU) Family Health Program undertook an alcohol and pregnancy research project. The following research question was developed: "What are effective interventions and strategies during preconception and pregnancy to prevent alcohol-exposed pregnancies? Exclusion = after pregnancy." The inclusion criteria consisted of articles from 2007 to early 2015.

Pertinent information for research was obtained for this project using the following strategy: a white literature search including documents such as systematic reviews, journals, quantitative and qualitative studies, and a grey literature search including documents such as ministry reports and conference proceedings. A higher-level document search including documents such as national and international surveillance/indicator reports and broader alcohol reports; a provincial health unit scan and a local community scan including information personally gathered via email from health units and community partners were collected.

In order to organize the incoming information, specific templates using the Excel program were developed for this project using examples from other internal health unit programs. See Appendix 1 for further information and details related to the research process.

Emerging Themes

A total of seven themes emerged from the analysis when reviewing the white literature findings and recommendations. The themes were consistent with the grey literature findings, and these were utilized to categorize the higher-level document findings, the provincial health unit scan and the local community scan.

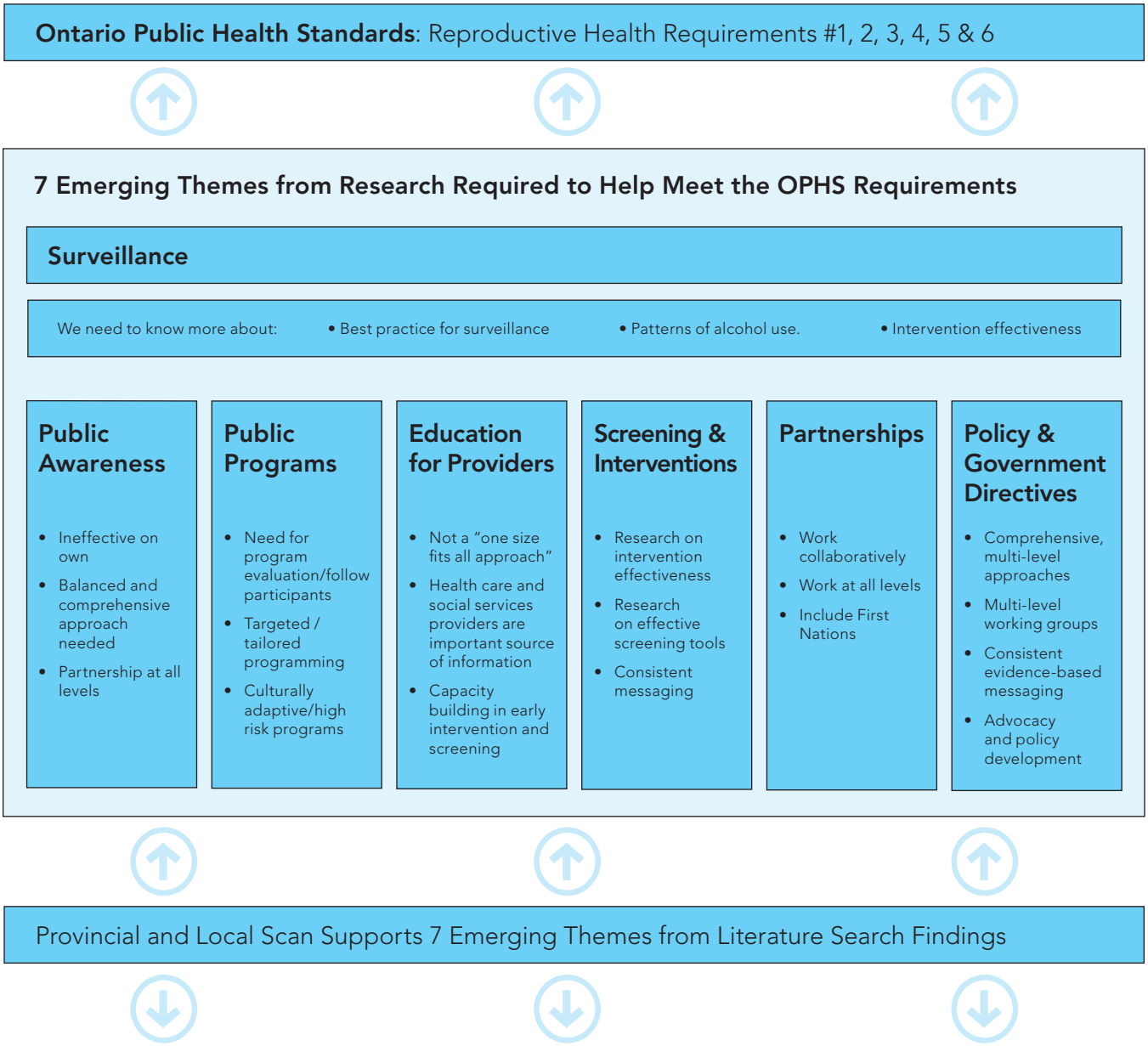
The seven themes that developed were:

1. **Population Health Surveillance**
2. **Public Awareness**
3. **Public Programs**
4. **Education for Health Care and Social Services Providers**
5. **Screening and Intervention by Health Care and Social Services Providers**
6. **Partnerships**
7. **Policy/Government Directives**

The emerging themes were further analyzed to determine their relationship to the "OPHS 2008" RH requirements specifically relating to: Population Health Surveillance (RH-1), Public Awareness (RH-3), Public Programs (RH-4, RH-5, RH-6), Education (RH-2), Screening and Intervention (RH-4, RH-5, RH-6), Partnerships (RH-2, RH-4, RH-6) and Policy/Government Directives (RH-2).[1]

Summary of Findings

Effective Interventions and Strategies to Prevent Alcohol-Exposed Pregnancies



Next Steps

More collaborative research, evidence, programming, and policy to support the above 7 identified areas of need - **Surveillance, Public Awareness, Public Programs, Education for Providers, Screening & Interventions, Partnerships, and Policy & Government Directives**

Summary of Literature Search

The following is a summary of the research, categorized by the seven themes and linked to the OPHS.

1. Population Health Surveillance

> OPHS RH Requirement #1:
>
> "The board of health shall conduct epidemiological analysis of surveillance data, including monitoring trends over time, emerging trends, and priority populations, in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or current) in the areas of: preconception health, healthy pregnancies, reproductive health outcomes and preparation for parenting."[1](p.37)

While the population health surveillance theme identified in the literature does not directly speak to effective interventions or strategies to prevent alcohol-exposed pregnancies (AEPs), it underpins all other themes identified. Furthering research focused on determining the incidence and prevalence of AEPs and FASD would help to inform future planning and evaluation efforts.

The precise incidence and prevalence of FASD in Canada is unknown. Most research on FASD originates from the United States (US).[2] Estimates are available for the Canadian population but they are mainly based on estimates from the US.[3] The literature also failed to identify rates for AEPs in Canada, a measure of interest in preventing alcohol-exposed pregnancies beyond the clinical outcome(s) of FASD.

There is a lack of significant published scientific evidence in the area of women and alcohol.[4] The Canadian Centre for Substance Abuse's (CCSA) report entitled, "Substance Abuse in Canada: Licit and Illicit Drug Use During Pregnancy: Maternal, Neonatal and Early Childhood Consequences" identifies alcohol and tobacco as the two most common substances used by pregnant women in Canada and the United States, and remain key risks that require public health strategies for prevention and prevalence reduction.[5]

Suggested population health surveillance to inform prevention of AEPs included: measuring changes in alcohol use patterns and reproductive health outcomes of women of reproductive age to determine if universal interventions are

effective;[6] ongoing surveillance, monitoring of population-based and targeted interventions, research and knowledge exchange for capacity building;[7] and integrating congenital anomalies surveillance and reproductive preconception health promotion within public health's priority setting, programming, practice and evaluation.[8] In addition, more comprehensive research is needed to capture incidence and prevalence rates of FAS/FASD internationally, among the Canadian population including Aboriginals and non-Aboriginals, across Canada in a variety of settings, and examining why geographical differences exist.[9-12] Research on characteristics of women who have children with FASD, women at very high risk and measuring the extent of under-reported alcohol exposure among pregnant women is also needed as negative behaviours such as alcohol use may be underestimated and positive behaviours overestimated.[2,12-15]

Locally, surveillance tools like the Rapid Risk Factor Surveillance System (RRFSS) to monitor alcohol use and pregnancy knowledge awareness levels of populations was recommended, and staying informed of the literature on alcohol use and pregnancy.[3] RRFSS is a telephone survey used to obtain surveillance data, monitor public opinion on certain public health issues and collect information on emerging issues of importance to public health in Ontario.

Provincial Health Unit Scan.

The RRFSS is used by eight of the twenty-one health units that responded to obtain local information on alcohol and pregnancy. Information is utilized to guide operational planning, develop a community report and determine public awareness of alcohol and pregnancy issues in their region. Further information on what other health units utilize is needed.

Local Community Scan.

Most respondents did not indicate population health surveillance was an area they were currently working on. Some alcohol questions were added to the TBDHU/Lakehead University preconception survey of university students. The report is currently being developed. The Thunder Bay Drug Strategy identified they were doing a situational assessment around the needs of women who use substances and who are pregnant or parenting, but acknowledged there was no specific focus on alcohol except for a future focus group with women whereby alcohol-related questions will be added. It is unclear what types of questions will be asked. Information from TBDHU's Alcohol Strategy community consultations and key informant interviews may generate some information specific to AEPs and FASD.

2. Public Awareness

OPHS RH Requirement #3:

"The board of health shall increase public awareness of preconception health, healthy pregnancies and preparation for parenting by adapting and/or supplementing national and provincial health communications strategies; and/or developing and implementing regional/local communications strategies."[1](p.37-38)

While there was a lack of effective public awareness (universal and targeted) interventions and strategies identified in the literature to prevent alcohol-exposed pregnancies, public awareness continued to be described as useful if part of a larger strategy.

An Ontario public health unit report found insufficient high-quality evidence and limited studies on universal prevention strategies related to effects of alcohol use in pregnancy. It recommends not investing in the development of broad universal social marketing campaigns that are related to effects of alcohol use in pregnancy, whereas in the broader alcohol context implementing education and awareness raising strategies around alcohol as one component of a balanced and comprehensive approach is needed. "Universal prevention interventions such as warning labels and public messaging campaigns, when carefully designed, can play a positive role in multifaceted FASD prevention."[3,4,16] General public campaigns to increase and maintain public awareness in some critical areas such as alcohol screening and those that indirectly target women at risk with the alcohol message integrated as part of the promotion related to women's health care are recommended.[17]

Broad recommendations highlighted with respect to effective public awareness interventions and strategies in order to prevent AEPs include an important need to partner with all levels of government as more targeted efforts are needed to meet the national goals of preventing alcohol-exposed pregnancies.[18,19,20] The development of comprehensive educational campaigns that target several audiences including different segments of women of childbearing age, those that influence them (partners, family members and friends) and those that influence the practice of health care providers were suggested.[21] A specific segment of women identified for targeted messaging include women such as those in post-secondary institutions who are more likely to binge drink and where the risk of unintended pregnancies and AEPs can be higher.[22,23]

In terms of literature around implemented public awareness interventions, there are specific ways to increase the effectiveness of communication campaigns identified, whether they be universal or targeted. These include a variety of communication campaign channels, media outlets, high- and low-cost promotional products with easy-to-read information for targeting women, and an information section for family and friends. Some recommended providing this information in clinical settings and particularly directly through health care providers.[24-32]

Although some communication campaign messages are suitable for targeting all women of childbearing age as they are at risk of having AEPs, no group should be ignored in prevention efforts. Messages targeting specific groups of women such as post-secondary women instead of all community women can benefit from the use of a combination of positive and threat-based messages and culturally appropriate, relevant, non-stigmatizing messages,[36] based on pre-determined local needs.[22-26,33-36]

More research on strategies related to risky drinking patterns not only in pre-pregnancy but for all women of childbearing age are needed.[37,38] Evidence-based interventions recommended for implementation during pregnancy are more beneficial if done before conception.[6] Further research directed towards behavioural prevention strategies to reduce alcohol intake in the general population is needed as alcohol consumption by pregnant women and women of childbearing age, and the associated outcomes need to be evaluated in the context of society as a whole.[2]

Best Start Resource Centre recommends tracking public awareness at the provincial level and developing community-level interventions in settings where levels of knowledge about maternal drinking are low.[24,25]

Provincial Health Unit Scan.

Regarding public awareness, most health units participated in FASD awareness day events (such as barbecues, displays at events, advertisements in local paper, health fair, proclamations, invitation of dignitaries and guest speakers). In terms of public awareness campaigns, health units either developed an alcohol and pregnancy campaign, piggybacked onto the provincial Best Start Alcohol and Pregnancy campaign or integrated alcohol and pregnancy within broader alcohol campaigns (e.g., Rethink Your Drink, Low Risk Drinking Guidelines campaigns, etc.). Health units use a variety of channels ranging from posters and pamphlets to billboards, theatre and radio ads, and social media like Facebook and Twitter. Promotional items identified included coasters, t-shirts and mocktail demos. Two health units identified purchasing pregnancy test dispensers to place in local bars and bars at post-secondary institutions.

Local Community Scan.

Most identified awareness activities particularly related to the annual international FASD Awareness Day. Examples include distribution of water bottles at a Liquor Control Board of Ontario (LCBO) store with "no safe alcohol in pregnancy" messaging and participation in Honouring Our Mothers FASD Awareness Day Pow Wow at Marina Park in Thunder Bay where federal, provincial and local dignitaries attended. Others identified some additional activities at various times throughout the year such as information added to community newsletters, display of pamphlets, brochures and information cards, displays at events, health fairs, participation in the Christmas parade, social media ads, webpage and installation of a pregnancy test dispenser at the Lakehead University Outpost bar in the women's washroom (Thunder Bay was the first community in Canada to install a dispenser).

3. Public Programs

OPHS RH Requirement #4

"The board of health shall provide, in collaboration with community partners, prenatal programs, services and supports, which include consultation, assessment and referral, and group sessions."[1](p.38)

OPHS RH requirement #5

"The board of health shall provide advice and information to link people to community programs and services on the following topics: preconception health, healthy pregnancies and preparation for parenting."[1](p.38)

OPHS RH Requirement #6

"The board of health shall provide, in collaboration with community partners, outreach to priority populations to link them to information programs and services."[1](p.38)

Although there is a lack of research on effective public program interventions and strategies associated with prevention of alcohol-exposed pregnancies during preconception and prenatal, "the importance of prevention programs directed at reducing even small amounts of alcohol consumption in pregnancy" is emphasized.[39](p.1230) A number of subthemes emerged in the findings to consider when developing programming. These include evaluation of programs, tailored/targeted and culturally adaptive programs, priority population group programs and information dissemination channels.[6,11,13,20,36]

The literature reviewed suggests there is a need to develop workshop evaluations that follow participants over time in order to determine participant implementation of interventions rather than only measuring changes in knowledge and attitudes.[29] Further research projects should include evaluation on potential side effects of interventions such as depression, anxiety and drop-out from prenatal care.[2] Other research areas needed to explore the effectiveness of these strategies and interventions in reducing AEPs include the role of partners, how to reach priority populations and impact of symptoms of depression and anxiety on binge drinking in pregnancy.[24,40,41]

In terms of targeted programs, interventions are required particularly for adolescent girls regarding substance use in pregnancy and postpartum as they have unique developmental needs.[40] Cultural programming is considered a protective factor against substance misuse.[9] Although there is a lack of research on AEPs with regards to Canadian Indigenous women, a study from the U.S. with American Indian and Alaskan Native women found that incorporating cultural components like a traditional craft activity in programming spoke to cultural identity.[42] In addition, respecting cultural traditions by involving community members in all aspects of project design and implementation contribute to successful prevention/treatment programs for women.[42]

In terms of programs for high-risk women, there is a need for more seamless delivery of specialized programs, including services, resources and referrals, access to treatment and intensive services to assist women who have a drinking issue.[9,14,17,42,43] Pregnant women should be given priority access to withdrawal management and treatment. Although there is a need for more research to determine factors associated with higher-risk drinking in pregnancy, literature suggests that higher-risk women may include American Indian women, those with symptoms of depression, women that smoke including disadvantaged women and alcohol-dependent women.[17,25,44,45]

Information dissemination channels were also discussed in the literature. These included addition of information through prenatal education programs, prenatal packages, the Healthy Babies Healthy Children (HBHC) program, community presentations that integrate FASD into health talks rather than FASD as the main focus, videos with less direct emphasis on FASD, and programs that include the partner as a support.[3,25,29,30,46] Information dissemination suggestions using schools as a channel included peer-led presentations using multimedia, avoiding just "information only" type presentations and involving nurses in schools and post-secondary institutions.[14,46,47] The need for a mandated educational component (standard curriculum) for elementary and secondary schools and establishing partnerships between the school system, post-secondary and community programs to develop engaging presentations about alcohol and lifelong damages to the unborn child were recommended.[13,47] Targeted and tailored interventions at key stages of the lifespan are important.[13]

Provincial Health Unit Scan.

Most health units provided FASD information via presentations, guest speakers, support groups, prenatal and postnatal classes (including online), Canadian Prenatal Nutrition Programs (CPNP) and pregnancy circles using the forum to also distribute brochures and tear-off sheets. Ontario Early Years Centres (OEYC) and colleges were another channel used to disseminate brochures and tear-offs. One health unit was involved in a pilot project to deliver presentations in high schools.

Local Community Scan.

Many of the organizations that responded provided FASD information via workshops to families mainly through pre- and post-natal programs, 1-1 education sessions and/or prenatal packages. Most integrate the topic into their current programming. Some offered presentations/education sessions to community groups and schools (many of the Thunder Bay District communities offered workshops in September to schools in senior elementary). Aboriginal programs integrated a traditional activity into their workshops and integrated the alcohol and pregnancy information into pre-/post-natal programming.

4. Education for Health and Social Services Providers

OPHS RH requirement #2:

"The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and the creation or enhancement of supportive environments to address preconception health, healthy pregnancies and preparation for parenting."[1](p.37)

Building capacity of health care professionals to implement early intervention and screening in their practice is important.[4] Health care providers and/or nurses are regarded as important sources of information with regards to health.[24] Targeting primary health care providers in order to promote screening of alcohol use and brief interventions for both women planning a pregnancy and pregnant women is needed to prevent AEPs.[3]

The need for further education of health and social services providers was reported in the literature citing a lack of consistent messaging by providers around the "no amount of alcohol is safe in pregnancy" message and a lack of knowledge, understanding and confidence on how-to, and when to use screening and intervention tools in order to identify potential risk factors.[3,17,18,48,49] Most importantly, providers need to be able to create an environment where women feel safe to report their alcohol consumption.[17] The literature identified that evaluation studies were needed with regard to training effectiveness, best types of interventions to use and information to support providers.[29,50]

Further, it is important to keep in mind that education and training of health and social services providers is not a "one size fits all" approach. Various providers in various settings have different education and training needs. There are specific education areas and training approaches for nurses, midwives, social services and for nursing and medical students.[14,25,27,28,48,50,51,52,53,54] There is limited research with regard to whether education/training of health care and social services providers is an effective strategy to reduce AEPs during the preconception and prenatal period.

Other suggestions include the development of an outreach strategy targeting health care providers and inclusion of the topic in curricula, and more emphasis on consistent and widespread use of practice guidelines such as the "Alcohol Use and Pregnancy Consensus Clinical Guidelines."[15,17,55] Health care providers in general are uncertain of where to refer patients if they do identify alcohol misuse.[36] The literature suggests the development of a follow-up system and/or referral process for positive screens, a readily available list of services for nurses in practice and a list of community contact information for FASD services.[27,36,50]

A number of health promotion educational tools mainly for clinic offices with patients as the target audience and health care providers were also discussed in the literature, but as stated, more research is needed on the effectiveness of these tools.[27-29,31]

Provincial Health Unit Scan.

Very few health units identified activities under Education however some health units mentioned the use of printed resources for health care providers including midwives (via website, tear-off sheets), articles in workplaces, physician newsletters and Registered Nurses Association of Ontario (RNAO) webinars on substance use in pregnancy as a means of education. One health unit conducted staff training every two years with updates on AEPs and a review of the T-ACE (Tolerance, Annoyed, Cut-down, Eye-opener) screening tool used with pregnant women.[56] This same health unit trained other external health care providers upon request. An additional health unit reported they are currently working on a health care provider outreach strategy.

Local Community Scan.

Some agencies identified that they attended training and workshops related to prevention of FASD (mainly Aboriginal organizations). Most, however, did not identify education and training of service providers as one of their activities. Norwest Community Health Centre identified that they provide an FASD placement to Northern Ontario School of Medicine (NOSM) students. They also provide education and training at Confederation College on topics related to dealing with individuals with FASD and/or families who have a child with FASD. A local Thunder Bay special interest group, Healthy Brains for Children (main chapter originates in Minnesota), offered presentations and training to first- and second-year NOSM students, police and school teachers, primarily related to working with individuals who have FASD or families who have a child with FASD with some information on prevention.

Union of Ontario Indians developed teaching materials and offer a variety of FASD training opportunities to service providers including an annual Anishinabek G7 FASD conference, Feast Bundle/Grandmother Bag workshops (in partnership with TBDHU) and FASD presentations to the First Nations communities they serve.

5. Screening and Intervention by Health and Social Services Providers

OPHS RH Requirement #4:

"The board of health shall provide, in collaboration with community partners, prenatal programs and services on the following topics: preconception health, healthy pregnancies and preparation for parenting."[1](p.38)

OPHS RH Requirement #5:

"The board of health shall provide advice and information to link people to community programs and services on the following topics: preconception health, healthy pregnancies and preparation for parenting."[1](p.38)

OPHS RH Requirement #6:

"The board of health shall provide, in collaboration with community partners, outreach to community priority populations to link them to information, programs and services."[1](p.38)

Although evidence for early intervention in the broader alcohol context is strong it is unclear as to whether psychological and/or educational interventions to reduce prenatal alcohol consumption are effective overall.[3,4,54] The Screening and Intervention theme generated the most findings and recommendations of all the themes identified, however, the information needs to be interpreted in the context of limited studies and insufficient evidence overall. Subthemes identified are as follows: factors that predict drinking during pregnancy; screening prior to pregnancy; prenatal screening; screening tools; interventions prior to pregnancy and prenatal interventions.

There is a lack of consensus in terms of what predicts who will drink during pregnancy. A systematic review by Skagertsrom, Chang and Nilsen found inconsistent socio-demographic factors predicting drinking during pregnancy. However, among the studies that were reviewed, the authors did identify three factors that were most consistent to predict behaviour of drinking during pregnancy: having been abused, having been exposed to violence, and quantity and frequency of pre-pregnancy alcohol consumption. The latter was found to predict drinking during pregnancy in all the studies in this referenced review. Skagerstrom, Chang and Nilsen recommend that antenatal care providers should assess for these most consistent predictors for improved detection of women at risk for an AEP.[57] Of note, another study suggests there is a need to include "intention to drink" as a predictor of drinking during pregnancy as this may also be an important factor in detecting women at risk.[58]

With regards to screening prior to pregnancy, there are studies that suggest routine screening for alcohol use, and for risk of pregnancy in all women of childbearing/reproductive age. Universal screening for alcohol consumption to be done periodically for all pregnant women and women of childbearing age is recommended.[6,14,17,27] Ideally, at-risk drinking could be identified before pregnancy allowing time for change. Most research identifies that health care providers should be administering the screens and recommend assessing alcohol behaviour along with other health behaviours during routine assessment.[37,60]

Prenatal screens are also needed. The literature suggests that routine assessment and recording of maternal alcohol use should become standard practice with maternity and other health services.[14,15,29,61] The simple use of a screening instrument and discussion about alcohol abuse can reduce alcohol intake during pregnancy.[2] It is important to screen pregnant women with depression and/or anxiety as they may be a higher risk group for binge drinking during pregnancy.[41] The most popular alcohol screening tools utilized with prenatal women include T-ACE, TWEAK (Tolerance, Worry, Eye-opener, Amnesia and Kut down)[3,62] and AUDIT-C (Alcohol Use Disorders Identification Test using a cut point score).[62]

While screening is called for, the need for tools to be retested and validated in different population groups and for different alcohol use constructs and diagnosis before they are adopted for widespread screening of pregnant women is recommended.[62] There is no clear guidance for how to question women about alcohol consumption. At present T-ACE, TWEAK and AUDIT-C show promise for screening risky drinking in pregnant women and could be administered by practitioners as part of their prenatal care; however, their performance as stand-alone tools is uncertain and further evaluation of questionnaires for prenatal alcohol use is warranted.[62]

Of note, "AUDIT-C may also be useful for identifying alcohol dependency or abuse in addition to risky drinking."[62](p.601) There is also "insufficient evidence on sensitivity and specificity of tools outside the United States in representative samples of women and when administered as independent instruments."[62](p.612) Although, "some brief interventions are effective in preventing prenatal drinking it is unclear as to which components of the interventions are responsible for success as unsuccessful interventions were comprised of the same component."[3,54](p.21) Providing brief intervention (via a health care provider) to women at risk of drinking is effective.[17]

There were a number of findings and recommendations with regards to interventions to prevent AEPs in women of childbearing age like targeted interventions for sexually active women and using brief intervention with a contraceptive counselling component.[3,23] Contraceptive use counselling for women at risk of an AEP due to alcohol consumption is suggested in the literature.[27] Utilizing the Project CHOICES (Changing High-Risk AlcOhol Use and Increasing Contraception Effectiveness Study) model[63] as motivational interviewing to decrease risky alcohol consumption combined with increased contraception among women of childbearing age shows promise as an effective intervention to reduce alcohol-exposed pregnancies.[30,37,63] The program gives women a choice between reducing or stopping drinking and/or using effective contraception to reduce their risk for an AEP.[63] The Centre for Disease Control (CDC) is currently adapting the program to make it available nationally on their website.[63] The Birth Control and Alcohol Awareness: Negotiating Choices Effectively (BALANCE) intervention, an adaptation of the CHOICES model, was also mentioned in the literature as a promising intervention to reduce AEPs.[30]

Additional areas both targeted and universal, where an intervention may be of use but where limited research exists include:

- preconception counselling to low income childbearing age women incorporating alcohol and substance use prevention;[6, 19]
- counselling and brief skill building to risky drinkers;[6]
- developing brief interventions which are culturally/linguistically appropriate;[6]
- telephone and mail-based brief interventions to risky drinkers and sexually-active women of childbearing age;[44]
- brief skill-building interventions for high-risk women and their partner combined with motivational interviewing;[43,64]
- integrating brief interventions within systems serving women who are older, ethnic, unmarried, unemployed and /or of low educational level;[33]
- universal interventions suited for occasional drinkers;[25] and
- providing awareness and prevention information on pregnancy, FASD, birth control methods and smoking cessation.[19, 38, 60]

A systematic review found: "little evidence on effects of pre-pregnancy health promotion (from very brief advice through to education on health and lifestyle over several sessions) on pregnancy outcome;"[38](p.2) "little evidence on the effect of pre-pregnancy health promotion on the health of mothers and babies;"[38](p.2) some evidence that "health promotion interventions encourage women to have more healthy lifestyles such as lower rates of binge drinking;"[38](p.2) and "insufficient evidence to recommend the widespread implementation of routine pre-pregnancy health promotion for women of child bearing age either in the general population or between pregnancies."[38](p.2) Further research is suggested to explore best models for integrating screening and motivational interviewing into routine primary care services for childbearing age women as part of a comprehensive programming for FASD prevention.[63] Until simple screening and brief intervention innovations that include an AEP risk component are developed and tested, it is recommended to use AEP risk-reduction interventions CHOICES and BALANCE as they show stronger evidence of promoting change.[30]

Interventions aimed at pregnant women were also a point of discussion in the literature. Most women stop drinking during pregnancy and understand the importance of refraining and no interventions are needed for low-risk drinkers as they usually quit on their own.[43] For low to moderate drinkers, short-term interventions may be useful whereas more intensive interventions are needed for higher-risk drinkers.[43] Women who consume low levels of alcohol during pregnancy will reduce their consumption after relatively simple interventions like being asked about their drinking behaviour and getting simple advice.[3] A randomized clinical trial using an Early Start Plus computerized intervention related to drink sizes with pregnant women was utilized as an intervention tool to decrease drinking in pregnancy.[66] Although no differences were found between the Early Start and Early Start plus intervention, the computerized program was found to provide clinicians with an innovative assessment tool that creates open dialogue about drinking during pregnancy which is useful in and of itself.[66] Other interventions highlighted for use with higher-risk women include physician-involved interventions,[67] motivational interviewing combined with self-determination theory[68] and supportive counselling.[54] A scoping review focused on adolescents' use of tobacco and alcohol during pregnancy and postpartum found there is a lack of effective interventions designed to prevent or reduce alcohol and tobacco use during pregnancy among adolescents.[40] The authors recommend futu re research on interventions for adolescent girls' substance use, identifying their preferences and developmental needs to encourage behaviour change throughout pregnancy and post-partum as well as addressing partners' and friends' influences on use.[40]

Overall, future research on interventions and treatment for reducing alcohol consumption during pregnancy are needed for both preconception and prenatal periods.[14] Robust evaluation frameworks including larger and more varied samples of primary care practices are needed to determine successful implementation of screening, brief intervention and treatment in various settings.[69] More location-specific targeted intervention approaches that identify specific characteristics of women who would most benefit from prevention and intervention programs are recommended[60] and more aggressive methods of early detection are needed to identify women who require more intensive interventions.[70]

There is also a need for more clarification with regard to the amount and length of counselling, qualifications of the counsellor, optimal gestational age for implementing intervention, and future research investigating the effect of short-term interventions to determine which factors and settings are related to the success of the interventions.[2] Stade et al. emphasized there is a lack of information on effects of interventions on the health of moms and babies. The review also emphasized that evidence from a limited number of studies suggests that psychological and educational interventions may result in increased abstinence from alcohol and a reduction in alcohol consumption among pregnant women; however, results were not consistent and a number of other factors identified limit the authors' ability to determine the type of intervention that would be more effective in increasing abstinence from, or reducing the consumption of alcohol among pregnant women.[54] Therefore, this all hinges on effective and efficient screening and intervention strategies.

Provincial Health Unit Scan.

Of the few health units that identified activities under screening and intervention most used the T-ACE screening tool with pregnant women. Some health units are collaborating on developing a universal screening tool for women of child-bearing age. One health unit released a report in 2010 related to a screening tool for alcohol, smoking and violence.

Local Community Scan.

Most agencies did not identify whether they screen pregnant women for alcohol use. Healthy Babies Healthy Children (HBHC) identified they screen women for alcohol within their HBHC screen. Approximately half of the agencies that responded did mention they refer prenatal clients to other agencies if high risk. Some do in-house interventions with those at risk but will also refer if there is anything specific that needs to be counselled on. Hope Place (Thunder Bay Counselling) provides specialty counselling for pre- and post-natal women struggling with substance use issues including alcohol.

6. Partnerships

OPHS RH Requirement #2:

"The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and the creation or enhancement of supportive environments to address preconception health, healthy pregnancies and preparation for parenting."[1](p. 37)

OPHS RH Requirement #4:

"The board of health shall provide, in collaboration with community partners, prenatal programs, services and supports, which include consultation, assessment, referral and group sessions."[1](p. 38)

OPHS 200 RH Requirement #6:

"The board of health shall provide, in collaboration with community partners, outreach to priority to link them to information, programs and services."[1](p. 38)

Several authors spoke of the need for partnerships in relation to alcohol exposure and pregnancy. The Alcohol Locally Driven Collaborative Project (ALDCP) identified the need for the establishment of a provincial stakeholder group in the larger alcohol context which would integrate FASD prevention.[4] Floyd et al. suggested a comprehensive FASD prevention approach along with collaborations and strong partnerships in their study from the United States.[6] Jonsson et al. highlighted the need for broad community development and community and partner engagement in areas like campaign development and evaluation, and also for broader international and national partnerships.[36] However, the literature did not directly identify how partnerships will decrease alcohol-exposed pregnancies. One can assume they will ensure comprehensive and coordinated approaches.

A systematic review done in the US with American Indian and Alaskan women highlighted the importance of community involvement as an approach to reducing alcohol consumption in women who are pregnant or of reproductive age,[42] while a study with Northern Plains Indians identified the effectiveness of face-to-face interactions with community members when partnering to develop an FASD media campaign to prevent AEPs.[26] Overall, there is a need for more collaborative research with indigenous groups.[11]

The qualitative study "Evaluation of a Successful FASD Coalition in Ontario, Canada" did demonstrate how successful internal processes lead to more productive health promotion activities and increased capacity to deal with complex health issues.[71] The "Internal Coalition Outcome Hierarchy Model" developed to increase a practitioner's understanding of how an effective coalition infrastructure works proved to be a useful framework for reflecting on the FASD coalition's development.[71] (p.247)

Provincial Health Unit Scan.

More than half of the health units that replied identified that they collaborate locally with partners mainly through an FASD or Drug Awareness Committee. Some of the committees have subcommittees on which most health units participate. Some of the health units identified that they also participate on provincial committees (FASD Ontario Network of Expertise [FASD ONE], Universal Screening for Childbearing Women Health Unit Workgroup and Ontario Public Health Association [OPHA] RH workgroup. In their report, Peel Public Health identified they will continue to work in partnership with local FASD initiatives by providing research, evidence and best practices related to AEPs.[3]

Local Community Scan.

Approximately half of agencies identified that they partner once a year for the Honouring Our Mothers FASD Awareness Day Pow Wow (Aboriginal and mainstream organizations). Some organizations identified they participate in the newly formed FASD Network (2014). There are also special interest groups in Thunder Bay namely, the Healthy Brains for Children and Fetal Alcohol Syndrome International Network (FASIN).

7. Policy/Government Directives

OPHS RH requirement #2:

"The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and the creation or enhancement of supportive environments to address preconception health, healthy pregnancies and preparation for parenting."[1](p. 37)

Policy/government directives also emerged as an important theme in the findings. While the literature spoke to this theme as discussed below, it is important to note that findings and recommendations were guided by limited evidence and were mostly from an FASD lens rather than a prevention of alcohol-exposed pregnancies lens.

Prevention efforts to reduce FASD incidence in Canada and other countries are urgently needed.[72] Prevention of FASD should be given a larger role in the development of alcohol and Social Determinants of Health (SDOH) policies.[9] There is a need for governments to provide clear, consistent evidence-based messages related to risks of AEP and FASD. Although Giesbrecht & Wettlaufer call for a coordinated provincial strategy to address alcohol and alcohol-related harms in Ontario, the report did not identify how AEP and FASD prevention would be integrated into this strategy, specifically.[73]

It is important to note that comprehensive multi-level prevention approaches of both population-based strategies and individual-level interventions need to be taken into consideration.[6] For pregnant women and women intending a pregnancy, "there is an urgent need for wider implementation of prevention programs and policy approaches that can reduce risk."[73](p.776) More high-level research in evaluating certain preconception interventions are needed as "there are no studies that have been done that follow change in drinking behaviour through to congenital outcomes such as FAS."[75](p.1377)

Regularly reviewed national policies, guidelines and public health campaigns are needed however, it is important to keep in mind that there is a lack of research available to inform clinical and policy decisions.[27]

Suggested areas of focus identified for policy development varied from universal policy such as providing easy access to reliable and affordable contraceptives[9,55] to the development of a permanent campaign on FASD.[55] Additional strategies included educational opportunities at a policy level such as mandated educational components for health care providers,[24] development of regional training centres and FASD clearinghouses,[28] development of age-appropriate provincial AEP and FASD curriculum that links to other school topics,[24] and lastly clinic policies that screen all women of childbearing age for alcohol use.[14] The "success of brief intervention conducted in a community setting by non-medical professionals has significant implication for national public health policies."[70](p. 252) Also recommended is the use of office personnel to establish an AEP prevention protocol using non-physician clinical staff providing brief intervention for women of childbearing age.[27]

An additional subtheme under policy and government directives emerged around alcohol-use deterrent strategies. For example, broad-based alcohol prevention strategies to decrease access to alcohol and increase alcohol taxes for the general population are recommended.[6] Sandy's Law, a Liquor Licence Act by the Alcohol and Gaming Commission of Ontario requires certain premises to post signs warning women that drinking alcohol during pregnancy can cause FASD.[73] The authors recommend similar warning strategies for the general population.[73] A range of warning strategies at the policy/government level related to the risks of alcohol and pregnancy are needed, particularly in the areas of advertising, alcohol products, serving and purchasing alcohol.[24] Carefully designed alcohol warning labels may be effective in reducing alcohol use in pregnancy and preventing FASD.[16] Examples noted from the literature included warning posters about fetal alcohol effects where alcohol is sold and served, explicit information on the front and back of alcohol containers related to birth defects from FAS,[14] labels on alcohol products, signs at point of purchase, messages on liquor bags, cash register receipts and coasters.[24] However, further research is recommended to determine types of alcohol warning labels that may be effective in decreasing alcohol-exposed pregnancies.[14]

Provincial Health Unit Scan.

Very few health units that responded identified activities under the Policy/Government Directives theme. Of those working on this area, it is mainly through the provincial FASD ONE committee to advocate via the Ontario Health Minister for a provincial FASD strategy. They are currently working on a strategic plan for Ontario. One health unit identified that they developed a written policy on alcohol screening with pregnant women while another health unit has incorporated AEP into their prenatal nursing practice guidelines – a professional resource for public health nurses. Two health units identified they are collaborating alongside the Registered Nurses Association of Ontario to develop a resolution related to this area. Lastly, one health unit identified they are working with their local drug strategy committees to engage more community-driven policy work around this issue.

Local Community Scan.

Agencies that responded did not identify any alcohol- and pregnancy-related activities under this category. Two agencies are members of the provincial FASD One Committee, which is looking at wider provincial policies on FASD. The Family Health Team at TBDHU is a member of the OPHA RH workgroup.

Next Steps

The information obtained from the Alcohol and Pregnancy Research report will help guide the Thunder Bay District Health Unit Family Health Team with future program planning with regards to prevention of alcohol-exposed pregnancies and FASD. The following next steps have been identified as local consideration for future planning. Although much of the next steps could be integrated within existing larger health unit and family health projects, the author cautions this may dilute the alcohol and pregnancy focus. This is a topic that merits special attention of its own for maximum effectiveness.

1. Population Health Surveillance

Local population health surveillance related to alcohol and pregnancy is lacking. There are many factors that can affect alcohol and pregnancy consumption rates and FASD rates. Preconception and prenatal data on alcohol consumption rates are needed, but data that identifies potential predictors of drinking could also be useful; however, these are also difficult to pinpoint due to a lack of research in this area (e.g., depression, anxiety, self-medicating, social determinants of health issues). A challenge with self-reported data is the stigma associated with alcohol use in pregnancy. Developing indicators locally when there is a lack of consensus on what indicators are effective to obtain surveillance data at a provincial, national and international level may prove to be a difficult task (there is currently no data that measures exposure to alcohol prenatally and in relation to fetal outcome). Obtaining information from various local reports may be useful but may also prove to be a piecemeal approach and results may be unclear, broadly focused and/or lacking specific information related to alcohol and pregnancy issues. There is a need to come up with a specific strategy on how to obtain data specific to decreasing alcohol and pregnancy and FASD rates within the larger alcohol context. Many health units utilize the Rapid Risk Factor Surveillance System (RRFSS) to assist with obtaining a snapshot of local issues. TBDHU may want to investigate this type of surveillance system. This theme was the biggest gap area of all themes identified and an important one as it helps guide the remainder of the other themes.

2. Public Awareness

There is a need to determine the level of awareness related to alcohol among the general public in the Thunder Bay District with specific information needed on knowledge of alcohol and pregnancy prevention and FASD in order to determine appropriate social marketing strategies. There are many specific messages that can be conveyed in a variety of ways but no clear evidence that gives us information as to what type of messaging is needed. Given the stigma associated with drinking during pregnancy, it is essential to use an "it takes a village to raise a child" approach to assist with decreasing stigma while supporting woman to say no to alcohol in pregnancy. In addition, there is a need to monitor awareness and behavioural changes within the social marketing strategy. Research suggested that public awareness is needed but has to be part of a comprehensive approach. Further research on level of awareness, community perception of alcohol and pregnancy and clarification around roles/support should be reviewed. Health units that utilize RRFSS have obtained this type of information in their community.

3. Public Programs

There are many types of programs available in Thunder Bay for pre- and post-natal women that include alcohol use in pregnancy/FASD prevention as a topic. There is a need for more partner programs, more awareness of these programs in the general public and more research related to what type of FASD prevention curriculum is offered in schools. It is unknown as to how effective these programs are in contributing to decreasing alcohol and pregnancy /FASD rates. Information on public programs related to alcohol and pregnancy and FASD should be integrated into a larger alcohol community services database to make it more comprehensive. Information on mainstream and Aboriginal programs (including programs for women at risk) should be promoted and made more readily available to the general public.

4. Education for Health and Social Services Providers

There is a need locally to determine health care providers and social services providers' (including students') knowledge and attitudes towards alcohol and pregnancy issues, FASD issues, types of training and comfort in screening. As well, there is a need to determine a consistent manner in which information can be delivered where all providers give the same message to women. More research into what types of educational needs and tools are required for providers is needed as this is not an area where a "one size fits all" approach can be used. Different disciplines will have different educational needs around this particular issue.

5. Screening and Intervention by Health and Social Services Providers

It is currently unknown which types of screening and intervention tools are being used by health and social services providers in Thunder Bay and District with women of childbearing age and pregnant women to determine alcohol consumption. Of those providers using screening tools, it is unclear how they are being used, what type of training was required to use these tools, whether the alcohol screening is integrated into a larger screening tool, how often providers discuss alcohol consumption with their clients and their comfort level. The biggest issue with these tools is that there is a lack of consensus in terms of which tools are effective, and lack of consistency with the messaging given to pregnant women about alcohol consumption in pregnancy. Some do not agree with the precautionary message of "no alcohol is safest in pregnancy."

6. Partnerships

The research emphasized the need to work collaboratively with partners on alcohol and pregnancy/FASD issues at a local, provincial and national level, and to continue working collaboratively with Aboriginals. In addition, there is a need to develop partnerships that will assist with local research around alcohol and pregnancy. Information from this report will be shared with the local Thunder Bay FASD Network, Thunder Bay Drug Strategy and Internal health unit alcohol working group to assist with determining next steps.

7. Policy/Government Directives

Next steps for this theme may include participating in provincial working groups such as FASD ONE that address alcohol and pregnancy prevention with an advocacy and policy focus. Keeping abreast of internal working groups (e.g., alcohol working group, preconception project) advocacy and policy activities where alcohol and pregnancy prevention may be integrated as well.

Conclusion

In summary, effective strategies and interventions during preconception and pregnancy to prevent alcohol-exposed pregnancies were highlighted under seven overarching themes and further analyzed to determine their relationship to the "OPHS 2008" RH requirements.[1] The importance of a multi-pronged approach to preventing alcohol-exposed pregnancies was highlighted. Additional research on effective interventions and strategies in this area is needed as the overarching themes in this report were within the overall context of limited studies. It is important to note that new reports and evidence may have been released since the time period when this report was produced. Emerging evidence will be reviewed and will be helpful in determining further next steps related to preventing alcohol-exposed pregnancies.

Appendix 1

Research Process

White Literature Search

Hard copies of 82/135 articles were requested from the health unit librarian for review following the literature search. Eighty-two articles were added to the Excel spreadsheet and assigned a reference code number. Upon further review, 23/82 articles were excluded as they did not meet the research question criteria. A total of 59 articles were utilized.

- 9/59 articles were qualitative in nature (e.g., editorials, reviews, case studies, commentary about a cohort study)
- 33/59 articles were quantitative in nature (e.g., descriptive longitudinal, pilot study, retrospective analysis, observational cross-sectional, intervention studies, evidence review, prospective cohort, population-based cohort and convenience sample)
- 9/59 articles were systematic-type reviews (e.g., literature review, rapid literature review)
- 8/59 articles were randomized trials (e.g., clinical, control, three armed, cluster)

Additional articles were found through the online TBDHU library database following the librarian search. Of these articles, 28/29 were assigned reference numbers and were added to the white literature as they met the research question criteria.

- 5/28 articles were qualitative in nature (e.g., formative, focus groups)
- 18/28 articles were quantitative in nature (e.g., double blind peer reviewed, cohort, cross sectional, mixed methods, prospective)
- 4/28 articles were systematic type reviews (e.g., scoping, small scoping, meta-analysis with systematic review)

The following headings were used in the white literature template to gather information for each article: Code Number; Title; Author(s); Year; Country; Method (qualitative, quantitative, systematic review, randomized controlled trial); Target group; Awareness; Education/Training; Promotion; Prevention; Intervention/Screening; Focus; Study Purpose; Results; Main Findings; Recommendations; and Notes.

Grey Literature Search

Hard copies of 8/14 articles were requested from the health unit librarian for review of the Grey Literature. Eight articles were added to the Excel spreadsheet and assigned reference numbers. Upon further review, 2/8 articles were excluded as they did not meet the research-question criteria. A total of six grey literature articles were utilized. The literature ranged from commentaries, provincial plan reports to narrative reviews.

An additional search was done for grey literature using the online TBDHU library database following the librarian search. Nine additional grey literature articles were retrieved and assigned reference numbers. The literature ranged from a provincial survey report, literature review, cover story from a magazine and annotated bibliography.

The following headings were used in the grey literature template to gather information for each article: Code Number; Title; Authors; Year; Country; Qualitative; Quantitative; Systematic Review; Target; Purpose; Awareness; Education; Prevention; Conclusions; Recommendations; Notes; and Website Links.

Higher-Level Documents

Higher-level documents were obtained through a library search, and from the alcohol program contact at TBDHU who is currently doing a larger alcohol research project. Reference numbers were assigned to the higher-level documents. Twenty-eight higher-level documents were added to the database, 17 of which had some information related to alcohol and pregnancy/FASD while 11/28 documents had no mention of alcohol and pregnancy/FASD in their document/report. Document types ranged from national and international surveillance and indicator reports to broader alcohol reports.

The following headings were used in the Higher-Level Document template to gather information for each document: Code Number; Title; Source; Date; Description; and Reference to Alcohol-Exposed Pregnancies/FASD.

Provincial Health Unit Scan

Health units from Ontario were contacted via email asking what they currently did in the areas of alcohol and pregnancy. Information was obtained from 21/35 health units (excluding TBDHU).

The following headings were used in the Provincial Health Unit Scan template to gather information about provincial health units: Health Unit Name, Contact, Awareness, Education, Screening, Policy, Local Committees, Provincial Involvement, and Comments/Report.

Local Community Scan

Community partners from the Thunder Bay Prenatal Coalition, FASD Network and INGODEWIZI (formerly Aboriginal Working Committee) committee were contacted via email. A short questionnaire was sent asking what they do in the area of alcohol and pregnancy (FASD). Internally, the HBHC, Sexual Health, Family Health and Genetics team were also sent the questionnaire. In total, 23 responses were received.

The following headings were used in the template to gather information about the local community scan: Organization/Committee Name; Contact/Address; Awareness; Education; Screening; High Risk; Diagnostics; Policy; Local Committee; Provincial Involvement; and Individuals with FASD.

Data Analysis

A qualitative inductive analysis approach was used to identify themes from the literature. Findings and recommendations from the white and grey literature were first organized by hand by one staff member and then refined by two additional staff members. Emerging themes were negotiated and agreed upon by all three staff members. Linkages between the identified themes and the Ontario Public Health Standards 2008 (OPHS) Reproductive Health (RH) Requirements (Ministry of Health and Long Term Care [MOHLTC], revised 2014) were made evident to inform next steps for the health unit.

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