

Effective Interventions to Prevent Alcohol-Exposed Pregnancies: A Rapid Review of the Literature

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Table of Contents

<i>Key Take Home Messages</i>	1
<i>Executive Summary</i>	2
<i>Research Question</i>	2
1 <i>The Issue</i>	5
2 <i>Context</i>	7
2.1 <i>Prevalence of FASD and FAS</i>	7
2.2 <i>Prevalence of alcohol consumption in pregnancy: Locally and Nationally</i>	8
2.3 <i>The Public Health Way: Prevention Strategies</i>	9
2.4 <i>Current Peel Public Health Activities</i>	9
3 <i>Literature Review</i>	11
3.1 <i>Research Question</i>	11
3.2 <i>Search Strategy</i>	11
3.3 <i>Selection Strategy</i>	12
3.4 <i>Quality Assessment of Included Studies</i>	12
3.5 <i>Data Extraction</i>	13
3.6 <i>Synthesis of Findings</i>	13
3.6.1 <i>Universal Prevention Strategies</i>	13
3.6.2 <i>Selective Prevention Strategies</i>	16
3.6.3 <i>Conclusions</i>	20
4 <i>Applicability & Transferability</i>	22
5 <i>Recommendations</i>	25
<i>References</i>	26
<i>Appendices</i>	27
<i>Appendix A: Conceptual Model</i>	28
<i>Appendix B: Overview of the Search Process</i>	29
<i>Appendix C: Search Strategy</i>	30
<i>Appendix D: Data Extraction Tables</i>	42

Key Take Home Messages

- There is insufficient high-quality evidence to suggest that universal prevention strategies are effective in preventing alcohol-exposed pregnancies.
- The reviewed studies conclude that selective prevention strategies, namely screening, is more effective than usual care, or than not using any screening tool in identifying potential alcohol use among pregnant women.
- Studies examining the effectiveness of screening tools to detect risky drinking behaviour in pregnant women purport that the most appropriate screening tools are the pregnancy specific T-ACE and TWEAK questionnaires.
- Studies examining the effectiveness of brief interventions claim that some brief interventions are effective in preventing prenatal drinking. However, it is unclear which components of the interventions are responsible for success, as unsuccessful interventions were comprised of the same components.
- There is a possibility that women who consume low levels of alcohol during pregnancy will reduce their consumption after relatively simple interventions such as being asked about their drinking behaviour and receiving simple advice about the risks of drinking during pregnancy.
- Brief interventions that have a contraceptive counselling component targeting non-pregnant women are effective in reducing risk drinking and increasing effective use of contraception.
- Screening and brief interventions are 1:1 strategies, are not in accordance with population health strategies, and are best administered by primary healthcare providers.

Executive Summary

Issue and Context

Alcohol is a known teratogen. Drinking alcohol during pregnancy increases a woman's risk of having a baby with birth defects and developmental disabilities. Alcohol consumption during pregnancy is recognized as the cause of fetal alcohol spectrum disorders (FASD). At this time, it is unclear what, if any, amount of alcohol is safe in pregnancy. Given that there is no *known* safe level of alcohol consumption in pregnancy, the Family Health Division in Peel Public Health promotes alcohol abstinence prior to and during pregnancy through a continuum of health promotion strategies, including social marketing campaigns and health education to pregnant clients and their families. The impact of these strategies on changing behaviour has not been evaluated and their effectiveness is unknown. The purpose of this review is to identify effective public health strategies to prevent and/or reduce alcohol consumption among women planning pregnancy and during pregnancy.

Research Question

What interventions or strategies are effective in preventing women from drinking alcohol during pregnancy?

Literature Search and Critical Appraisal

Systematic searches of three academic databases (Medline, CINAHL and PsycINFO) and the grey literature were conducted between December 2010 and March 2011. The search generated 146 articles. Five studies were identified as potentially relevant and underwent a quality assessment. Overall, three strongly rated systematic reviews inform the findings of this paper.

Synthesis of Findings

One systematic review addressed *universal prevention strategies*. In that paper, the authors identified six studies reporting on four different interventions. With the exception of an alcohol prohibition intervention, all of the other studies found no significant difference between control and intervention groups. The findings suggest that there is no strong evidence that any universal primary prevention strategy is effective in reducing alcohol consumption. All three systematic reviews addressed *selective prevention strategies*. The reviewed evidence concludes that the use of screening tools is more effective than usual care and that the T-ACE and the TWEAK appear to be the most sensitive and specific validated screening instruments for identifying alcohol use among pregnant women. Moreover, the literature reports that brief interventions may be effective in reducing women's alcohol use in pregnancy. Findings suggest that pregnant women who consume low levels of alcohol during pregnancy may reduce their consumption after relatively simple interventions, such as being asked about the drinking behaviour and receiving simple advice about stopping.

Conclusions and Recommendations

A group of stakeholders convened to discuss the applicability and the transferability of the research findings to the residents of Peel and the implications for Family Health programming. From the discussion, the group agreed that Peel Health would continue to deliver key messages about drinking and pregnancy through existing prenatal education programs; however, Peel Health will no longer create universal social marketing campaigns regarding drinking and pregnancy. In addition, the group agreed that screening would not be a main strategy in Family

Health programming; rather Peel Health will promote screening and the use of validated screening tools to primary healthcare professionals.

1 The Issue

Alcohol is a known teratogen. Drinking alcohol during pregnancy increases a woman's risk of having a baby with birth defects and developmental disabilities. Alcohol consumption during pregnancy is recognized as the cause of fetal alcohol spectrum disorders (FASD). FASD is an umbrella term that describes the full range of disabilities associated with prenatal exposure to alcohol; it is not a diagnostic term. In Canada, three diagnostic categories that comprise FASD are used to refer to specific effects and conditions resulting from a fetus' exposure to alcohol. They are Fetal Alcohol Syndrome (FAS), Partial Fetal Alcohol Syndrome (pFAS) and Alcohol Related Neurodevelopmental Disorder (ARND) (Chudley, Conry, Cook, Looch, Rosales, & LeBlanc, 2005). A FAS diagnosis is the severest outcome of alcohol exposed pregnancies and is caused by excessive alcohol use. FAS is characterized by facial malformations, growth deficits, and severe neuro-developmental problems (Hankin, 2002).

At this time, it is unclear what, if any, amount of alcohol is safe in pregnancy. There is great debate about whether light or moderate drinking is harmful to a developing fetus. In a recent cohort study, it was purported that at age five, children born to mothers who drank up to 1-2 drinks per week or per occasion during pregnancy were not at increased risk of clinically relevant behavioural difficulties or cognitive deficits (Kelly, Sacker, Gray, Kelly, Wolke, Head and Quigley, 2010). Conversely, it has been reported that low to moderate drinking is associated with adverse long-term outcomes, including slower patterns of growth during the first year of life, poorer cognitive development and poorer behavioural development (Jacobson & Jacobson, 1999).

Given that there is no *known* safe level of alcohol consumption in pregnancy, the Public Health Agency of Canada, the Centre for Addiction and Mental Health, and Peel Public Health encourage pregnant women to abstain from alcohol during their pregnancy. Specifically, the Family Health Division in Peel Public Health promotes alcohol abstinence prior to and during pregnancy through a continuum of health promotion strategies, including social marketing campaigns and health education to pregnant clients and their families. The impact of these strategies on changing behaviour has not been evaluated and their effectiveness is unknown. The purpose of this review is to identify effective public health strategies to prevent and/or reduce alcohol consumption among pregnant women and women planning pregnancy.

2 Context

2.1 Prevalence of FASD and FAS

There is no reporting or data aggregation of FAS, pFAS or ARND diagnoses in Canada. Consequently, the precise incidence and prevalence of FASD is unknown. However, estimates are available for the Canadian population. These estimates are largely based on American estimates. In the United States, studies have been conducted using passive surveillance systems (e.g. reviewing hospital records), clinic-based studies, and active case ascertainment (recruiting children who may have FAS). From these data sources, the reported prevalence rate of FASD is 9.1 in 1000 live births and the prevalence of FAS is estimated to be between 0.5 to 2 cases per 1000 births (May & Gossage, 2001). It is important to mention that these estimates do not come from general population surveys.

In Canada, FASD is estimated to affect approximately 9 to 10 per 1000 people or 1% of the population (SOGC, 2010). Studies in some Aboriginal communities in Canada indicate prevalence rates of FASD as high as 190 per 1000 live births (Robinson, 1987). However, none of the data from these studies is to be generalized to other communities or the Canadian population in general (Chudley et al, 2005). Based on the available Canadian estimates, approximately 300,000 people are currently living with FASD. A FAS diagnosis is less common than FASD, with estimates between one and three per 1000 births in the general population in Canada (Robinson, 1987). Based on this estimate and a Canadian birth cohort of 378, 000, between 378 and 1134 Canadian children are born annually with FAS, with potentially 15 to 45 children born in the Region of Peel (birth cohort of 15, 000).

2.2 Prevalence of alcohol consumption in pregnancy: Locally and Nationally

There is no Peel-specific data on alcohol consumption rates during pregnancy. There is, however, data on drinking rates among females in the Region of Peel. According to the Canadian Community Health Survey, 60% of females between the ages of 18 and 44 in the region of Peel reported that they drank alcohol during the past year (CCHS, 2008). This rate is lower than Canadian rates of alcohol consumption among women. Moreover, more than 90% of respondents aged 19 years and older in the Region of Peel adhere to low-risk drinking guidelines; and for women that means drinking fewer than 9 drinks per week, or not drinking at all if pregnant (RRFSS, 2008). Furthermore, from survey data there is evidence that **there is a high level of awareness among Peel residents on the deleterious effects of alcohol on a developing fetus (i.e. over 85% of respondents believe that drinking at any time during pregnancy could be harmful to an unborn baby) (RRFSS, 2008).**

From survey data, we know that the majority of Canadian women drink alcohol (SOGC, 2010). 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. The 2005 Report on Maternal and Child Health in Canada found that approximately 14% of pregnant women reported drinking during pregnancy. Data from the 2009 Canadian Maternity Experiences Survey indicated that 62.4% of women reported drinking alcohol during the three months prior to pregnancy (with 11% reporting binge drinking) but only 10.5% of the women surveyed reported that they consumed alcohol during pregnancy, with 9.7% of these women drinking infrequently and 0.7% drinking frequently (SOGC, 2010). It can be estimated then, that in Canada, 11% to 14% of women drink during pregnancy.

2.3 The Public Health Way: Prevention Strategies

The Committee to Study FAS of the Institute of Medicine has described an intervention spectrum for FAS that includes three major prevention strategies: universal, selective and indicated strategies (Hankin, 2002). Universal strategies are interventions that aim to educate the broad public about the risks of prenatal drinking. Efforts may be geared towards pregnant women or women of childbearing age. They often include social marketing campaigns, pamphlets and public service announcements (Hankin, 2002). Selective strategies target persons at an increased risk of an outcome, that is, all women in their reproductive years that consume alcohol or pregnant women. Strategies often include screening and brief counselling interventions. Indicated prevention strategies target high-risk women, that is, women who have previously abused alcohol or have had a child with FASD. Interventions for this population usually involve repeated counselling over several years or alcoholism treatment (Hankin, 2002). Based on this three-pronged approach to prevention, we have adapted and modified a conceptual model on an intervention spectrum to illustrate the relationship between Peel Public Health and the various interventions. (Refer to Appendix A)

2.4 Current Peel Public Health Activities

Peel Public Health has been promoting abstinence of alcohol in the preconception and prenatal periods for the last seven years through multi-component social marketing campaigns and health education. Every year since 1999, on September 9th, International FASD Awareness Day is observed. Events are held in Peel to raise the awareness about the dangers of drinking during pregnancy and the struggles faced by individuals and families who live with FASD.

Peel Public Health is currently in partnership with Success-by-6 Peel and is represented on the Peel FASD Steering Committee. The long-term vision of this committee is to create a sustainable, comprehensive health promotion model that is comprised of prevention, diagnosis, early intervention and treatment components. In 2010, a strategic plan was developed by community stakeholders that identified strategies to support the actualization of the long-term vision. The cornerstone of all the identified strategies is the identification, synthesis and dissemination of evidence and best practices. This perspective underlies the motivation to undertake this rapid review, as we aim to identify evidence on effective strategies to prevent alcohol-exposed pregnancies.

This paper will review universal and selective interventions as they are within the scope of public health practice. Indicated prevention strategies were identified as beyond the scope of public health practice and will not be addressed in this paper.

3 Literature Review

3.1 Research Question

What interventions or strategies are effective in preventing women from drinking alcohol during pregnancy?

Table A. PICO Format:

	Population	Intervention	Comparison	Outcomes
	Pregnant women	Prevention strategies	None	No prenatal alcohol consumption
Synonyms or other key words or phrases	<ul style="list-style-type: none"> Expectant women 	<ul style="list-style-type: none"> Interventions Behaviour modification Health promotion Health policy 		<ul style="list-style-type: none"> Alcohol reduction Abstinence Sobriety No binge drinking No FASD

3.2 Search Strategy

Systematic searches of three academic databases were conducted between December 2010 and March 2011. The following databases, Medline (1995-current) CINAHL (2005-Current) and PsycINFO (1995-current) were searched. The search generated 52, 70 and 22 articles respectively. For a full review of the search strategy refer to Appendix C. Additionally, specific websites, namely Agency for Healthcare Research Quality (AHRQ), CDC, Public Health Plus and health-evidence.ca were reviewed for appropriate guidelines and systematic reviews. Google search engine was also used to identify potentially relevant articles, using key phrase “FASD prevention strategies” + “systematic reviews”. Two grey literature papers were retrieved.

3.3 Selection Strategy

All titles and abstracts from the Medline literature search were screened for relevance by three independent reviewers (refer to Table B for relevance criteria). Three abstracts were judged potentially relevant and the full texts of the articles were retrieved. All reviewers and an external knowledge broker read the three articles for relevance. Assessment by the reviewers deemed all three papers met inclusion criteria and each underwent a quality assessment. The titles and abstracts from the CINAHL and PsycINFO search were screened for relevance by the primary author. No articles from these searches met relevance criteria and therefore none were retrieved for full text assessment. Two articles from the Google search were reviewed for relevance by two independent reviewers and also met inclusion criteria and underwent a quality assessment. Refer to the Overview of the Search process, Appendix B.

Table B. Inclusion/Exclusion criteria

Inclusion Criteria	Exclusion Criteria
Systematic reviews	Single studies
Primary or secondary prevention strategies	Treatment focused
Public health strategy	Acute care strategy
Outcome of interest: prevention or reduction of prenatal drinking	

3.4 Quality Assessment of Included Studies

Overall, five studies were assessed for quality using the health-evidence.ca Quality Assessment Tool for Review Articles. Two independent reviewers assessed the studies for comprehensive search strategies, quality assessment of primary studies included in the review, transparency of the process, appropriate weighting and reporting of findings. A rating out of ten was provided for each review. According to the assessment tool, a score ranging from 8-10 is rated strong; 5-7 is

rated moderate and a score of four or less is rated weak. All five studies were systematic reviews and each received a strong rating.

3.5 Data Extraction

Data was extracted from all five studies. During this process, however, it was evident that two articles could be eliminated as one systematic review (Whitworth & Dowswell, 2009) reported findings of only one single study of interest. This single study was captured in other included reviews. Another systematic review (Elder, 2009) was removed, as it did not meet all inclusion criteria.

3.6 Synthesis of Findings

Three systematic reviews reported on studies that met all the review inclusion criteria. All studies reported on at least one of the prevention strategies: universal or selective and the outcome of interest was prevention of alcohol consumption in pregnancy.

3.6.1 Universal Prevention Strategies

One of the three systematic reviews reported on universal prevention strategies. That is, it reported on strategies targeted at the general public and pregnant women in particular with hopes of decreasing prenatal drinking.

In Elliott (2008), the authors undertook a comprehensive, systematic literature review in the areas of FASD prevention, diagnosis and management. Their review of prevention strategies was further categorized into primary, secondary and tertiary prevention and prenatal screening tools.

In their review of primary prevention strategies, the authors identified six studies reporting on four different interventions. The studies looked at:

- the effect of alcohol warning labels on alcohol bottles on pregnant women attending a prenatal clinic in the United States (Hankin, 1993a, 1993b and 1996),
- the effect of an alcohol prohibition in a remote village in Alaska (Bowerman, 1997)
- the effect of a comprehensive, multi-faceted prevention campaign in a town in Denmark (Olsen 1989), and
- the effect of any type of alcohol reduction campaign on the level of prenatal drinking (Kaskutas, 1998)

Hankin (1993a, 1999b) reported that there was no significant change in mean alcohol consumption during pregnancy after the introduction of a legislated alcohol-warning label in the United States. In a sub-group analysis, evaluating the effect of the warning labels on light drinkers compared with heavy drinkers, the authors reported that light drinkers decreased their drinking score by 0.68 or about 1 ounce of beer/week and no change was found among risk drinkers. Hankin et al., note that the small decrease found in light drinkers would not be expected to make a difference in pregnancy outcomes, given that they were drinking below risk levels at the time of conception.

Bowerman (1997) reported that alcohol prohibition can reduce alcohol use during pregnancy. Specifically, the authors reported significant decreases in alcohol abuse during pregnancy and during the first trimester after an alcohol ban was introduced in a remote borough of Alaska. While decreases were also observed in the second and third trimesters, the results were not

significant (Elliott, 2008). This ban occurred in an area with a significant substance abuse problem and the decision to be alcohol free was decided by a referendum (Elliott, 2008).

Olsen (1989) reported the findings of a multi-faceted health campaign run in the town of Odense in Denmark. The campaign aimed to reduce drinking and smoking during pregnancy and improve healthy eating habits. It was comprised of an educational campaign, which targeted health care providers, brochures for pregnant women and promotion about the campaign using radio and TV outlets. Change in alcohol consumption was the outcome of interest in the town of Odense and was compared with any changes in a nearby town that served as a control. No statistical analyses of the results were included in the publication, but the authors reported no change in drinking habits (Elliott, 2008).

Kaskutas (1998) evaluated the relationship between exposure to any type of health message related to the dangers of prenatal drinking and changes in drinking behaviour during pregnancy. Women between the ages 18-40 years were randomly selected to participate in a telephone survey and were asked if they had been exposed to a warning label, a sign or an ad about drinking during pregnancy. Analyses were performed only on the women who reported being pregnant within the last 12 months. Kaskutas reported that exposure to multiple sources of information did not correlate with a decrease in prenatal drinking (Elliott, 2008).

Overall, the studies were of poor to fair quality and varied greatly in their intervention and outcomes of interests. Elliott et al (2008) note that the paucity of studies, coupled with the poor quality of study design make it difficult to draw meaningful and reliable conclusions.

Consequently, from the available evidence, they report that **there is no strong evidence that any primary prevention strategy is effective in reducing alcohol consumption in pregnancy.**

3.6.2 Selective Prevention Strategies

Selective prevention strategies target people who are at an increased risk for a particular outcome, as they are members of a subgroup known to be at an increased risk, such as pregnant women or women of childbearing age who misuse alcohol. Two systematic reviews, Parkes (2008) and Elliott (2008) examined both screening and brief interventions. An additional study, Stade (2009) reported on educational interventions, which were all brief interventions in design.

3.6.2a Screening

Screening in pregnant women can be used quickly to identify women who may be participating in risky alcohol consumption, and can lead to appropriate interventions (Elliott, 2008). There are hundreds of screening instruments available to identify alcohol consumption in the general population (Elliott, 2008). Currently, only two screening tools have been developed specifically for pregnant women: T-ACE (Tolerance/Annoyed/Cut-down/Eye-opener) and TWEAK (Tolerance/Worry/Eye-opener/Amnesia/ K (C)ut-down). Notwithstanding that the T-ACE and TWEAK were developed for pregnant population, there are a number of other screening tools (CAGE, AUDIT, MAST, NET) that are often used in the prenatal population.

Elliott (2008) reported on seven studies that evaluated the T-ACE and/or the TWEAK in pregnant women. Four of the studies were rated as fair and three as poor. All the studies compared T-ACE and/or TWEAK, with modified versions of TWEAK, with medical records or with other screening tools that are not specific to pregnant women (e.g. CAGE, AUDIT, NET).

The studies evaluated the efficacy of the screening tools, and did not assess any subsequent interventions (e.g. counselling following screening). All the studies were interested in one or more of the following outcomes: sensitivity, specificity, PPV (positive predictive value), predictive ability, efficiency, or accuracy indices for the area under the receiver operating characteristics (ROC) curves. All studies, which compared the TWEAK and T-ACE with other screening tools, reported that these two tools had the highest sensitivity and specificity. The MAST (Russell 1994, 1996) and AUDIT (Chang, 1998, 1999a, 1999b) were comparable to the T-ACE and TWEAK in terms of effectiveness, however, their length and complicated scoring system make them less appropriate in a clinical setting (Elliott, 2008).

Parkes (2008) examined 18 studies on screening instruments. One study examined whether asking women about their use of alcohol in pregnancy is likely to generate accurate information. Three studies examined whether or not screening tools can improve the identification of alcohol use among pregnant women. Thirteen studies compared the efficacy of available instruments for screening alcohol use in pregnancy compared to, for example, direct questioning by health care staff (i.e. usual care) and/or the examination of medical records. Another study examined the best way to measure alcohol consumption once usage has been identified. **Overall, the reviewed studies conclude that screening tools are more effective than usual care, or than not using any screening tool in identifying potential alcohol use among pregnant women.** The evidence indicates that the T-ACE and the TWEAK appear to be the most sensitive validated screening instruments for lifetime alcohol diagnoses, risk drinking, and current alcohol consumption among pregnant women. Parkes (2008) also reported that self-administration

screening methods produce a more accurate description of alcohol usage than screening through direct questioning by staff.

The evidence indicates that the most appropriate screening tools are the pregnancy specific T-ACE and TWEAK questionnaires. This is further corroborated by a recent systematic review by Burns, Gray, & Smith (2010) who identify T-ACE, TWEAK and AUDIT-C as promising screening tools for identifying risk drinking in pregnant women during routine prenatal care. The standard cut-point for drinking is a score of ≥ 2 using either the T-ACE or the TWEAK. Elliott (2008) suggests that a score of ≥ 1 or ≥ 3 may be appropriate for unusually high or low-risk populations.

3.6.2b Brief Interventions

Parkes (2008) examined eleven studies on brief interventions. Seven studies targeted pregnant women and four studies targeted non-pregnant women. For pregnant women, the majority of studies compared comprehensive alcohol assessments coupled with motivational interviews (between 45 and 60 minutes) with alcohol assessments only. Other studies assessed the effectiveness of self-help and educational resources (manuals and brochures), and simple advice on abstaining from alcohol in pregnancy. The findings from these heterogeneous studies were mixed (Parkes, 2008). For pregnant women, two studies failed to find a statistically significant difference between control and intervention groups in relation to total alcohol consumption. The other five did reduce women's use of alcohol in pregnancy (Parkes, 2008). They included: motivational interviewing, a single 25-minute brief intervention with postpartum follow-up, basic physician advice on abstaining from alcohol during pregnancy, monthly 10-15 minute counselling sessions from a nutritionist and a self-help intervention with a 10-min education

session and self-help manual. **The evidence from the five studies supports the efficacy of a variety of brief interventions to reduce women’s use of alcohol during pregnancy.**

Three of the four studies targeting non-pregnant women also included contraception counselling in their intervention groups. These brief interventions were also successful in reducing the risk of alcohol-exposed pregnancies. The three studies that included contraceptive and alcohol counselling found that the effective use of contraception increased among the treatment group, alongside a reduction in risk drinking (Parkes, 2008).

Stade (2009) examined the effectiveness of either psychological or educational interventions, or both, for reducing prenatal alcohol consumption among pregnant women or women planning pregnancy. The author reports on four studies that met inclusion criteria. It is important to note that the four studies assessed were captured in both Parkes (2008) and Elliott (2008) under brief interventions and ‘secondary prevention strategies’ respectively. Similar to the other studies, the studies included in this review suggest that educational and counselling interventions *may* encourage women to abstain from alcohol during pregnancy. Specifically, two of the four studies reported statistically significant differences between intervention and control groups. Overall, Stade (2009) reports that there is very little evidence about the effects of educational and psychological interventions aiming to reduce alcohol consumption in pregnancy, and in particular on the effect of such interventions on the health of women and babies.

Elliott (2008) examined 13 secondary prevention strategies. Publications were classified as secondary prevention strategies if (1) they were conducted in pregnant women and did not apply any inclusion criteria based on alcohol consumption or if (2) they included pregnant women who

consumed alcohol in pregnancy. Similar to the above studies, they were all brief interventions and varied significantly. Overall, they can be generalised as one-to-one, educational interventions. Elliott echoes the sentiments of both Parkes and Stade that some brief interventions can be effective in reducing prenatal alcohol consumption. However, Elliott (2008) highlights that there is insufficient information to determine which elements of an intervention or treatment program are most effective, as those that were ineffective often had similar intervention components to those that were effective.

All three systematic reviews reported a variety of limitations of their included studies. One salient limitation that many of the studies reported was that women in both experimental and control groups underwent lengthy assessments of their alcohol consumption, which may have been a confounder for results (Stade, 2009). In addition, the women in the studies were recruited after being screened and identified as being “at risk” for consuming alcohol in pregnancy. Screening interviews or alcohol use assessments may have influenced both intervention and control groups, as drinking levels tended to decrease in both intervention and control groups over time. Parkes (2008) reports this phenomenon as the “screening effect”.

3.6.3 Conclusions

Overall, there is no strong evidence to suggest that any particular type of intervention is effective in preventing alcohol-exposed pregnancies or reducing the number of children born with FASD.

Specifically, there is limited research on universal prevention strategies, of which few are effective in changing behaviour. Of the five studies reported in Elliott (2008), the alcohol ban intervention in the remote Alaskan borough was the only intervention with significant results

(Bowerman, 1997). The social marketing campaigns and legislated alcohol warning labels did not result in decreased rates of prenatal drinking.

The two main components of selective prevention strategies are screening and brief interventions. Studies examining the effectiveness of screening tools to detect risky drinking behaviour in pregnant women purport that the most appropriate screening tools are the pregnancy specific T-ACE and TWEAK questionnaires.

Studies reporting the effectiveness of brief interventions claim that some brief interventions are effective in preventing prenatal drinking. However, it is unclear which components of the interventions are responsible for success, as unsuccessful interventions were comprised of the same components.

Brief interventions that had a contraceptive counselling component targeting non-pregnant women were effective in reducing risk drinking and increasing effective use of contraception.

Studies that compared alcohol assessments only with brief interventions plus alcohol assessments reported that women in the control group decreased their alcohol consumption similar to those in the treatment group. Consequently, it is possible that women who consume low levels of alcohol during pregnancy will reduce their consumption after relatively simple interventions such as being asked about their drinking behaviour and receiving simple advice about the risks of drinking during pregnancy.

All conclusions should be considered in the context of the small number of studies and the low-level of evidence available.

4 Applicability & Transferability

The findings of this rapid review were shared with key stakeholders at Peel Health, including Associate Medical Officers of Health, Manager of Reproductive Health, Supervisor of Reproductive Health, Front line PHN and a Specialist in the Family Health Division. The group, facilitated by an external knowledge broker, discussed the implications of the findings to Peel Public Health in general, and Family Health programming in particular, as it relates to preventing alcohol usage among pregnant women and women planning pregnancy.

The group discussed the efficacy of universal prevention strategies and acknowledged the limitation of using this strategy, namely, social marketing campaigns, to change behaviour. Dr. Ward, the AMOH, stated that, “consistently the research shows that increasing knowledge may not result in behaviour change and this information needs to be shared more broadly”. The group went on to discuss the high level of awareness of the residents of Peel on the deleterious effects of alcohol on pregnancy. Some group members suggested that health education is evidently effective as reflected in the high level of awareness in the Region of Peel; however, it was difficult to determine, precisely, where residents receive their information and if they put their knowledge into practice. It was recommended that Peel Health maintain their question about awareness level of Peel residents in the RRFSS surveys to monitor awareness levels over time. The Manager of Reproductive Health shared that the program has held off on broad campaigns on FASD prevention and will unlikely do a broad campaign in the future on FASD alone. Discussion ensued about the implications of this action on Peel’s partnership with the Peel FASD Steering Committee. Key informants assured the group that given Peel’s role around prevention and providing evidence to support the partnership’s work, that this decision would be agreeable

to all. It was suggested that the messaging around no drinking prior to and during pregnancy should be embedded in other programs, such as the Healthy Sexuality Program. This suggestion is supported by the findings in the review, which report that interventions with contraception counselling and sessions on reducing risk drinking among women at risk of an alcohol-exposed pregnancy are effective. There was agreement that there should be collaboration between the Reproductive Health and Healthy Sexuality programs as appropriate. Dr. Dooling, AMOH, identified the importance of preventing pregnancies among risk drinkers, given that they are the ones at greatest risk of having an alcohol-affected child. While this target population was not considered in this rapid review, it may be the target of a future rapid review, or may be an appropriate target population for Healthy Sexuality programs.

The group went on to discuss the efficacy of selective prevention strategies, agreeing that screening and brief interventions are effective strategies to prevent alcohol-exposed pregnancies. However, these strategies would have limited application to the programs at Peel Health, as these strategies, which are generally individually based, do not typically align with the “Public Health Way”. The group addressed the question: “If not us, then who?” Overall, primary care physicians were identified as the appropriate people to be screening and conducting brief interventions.

There was consensus that the physician community would likely support screening and brief counselling. In August 2010, the Journal of Obstetrics and Gynaecology Canada released clinical practice guidelines for physicians on screening, recording and counselling of alcohol use for women of childbearing age and pregnant women. This may be an appropriate document to use to support physician uptake. Additionally, there was consensus that screening and brief counselling would be socially acceptable to pregnant women, as comprehensive prenatal screening is already

accepted; and as long as there are appropriate addiction support services should a client require them. Furthermore, the group discussed Peel Health's role in designing a pathway for what would happen after a disclosure of drinking by a pregnant woman to a primary care physician. It was decided that the Peel FASD Steering Committee could work on a pathway, leveraging the expertise in the field at that table.

The group discussed the magnitude of the problem, highlighting that with a FASD rate of 1% and a birth cohort of 15,000, approximately 150 people would be affected annually in the Region of Peel. There was some debate about whether the numbers would be higher due to under-reporting of a socially undesirable behaviour, or lower given Peel women have lower drinking rates than the Canadian population. The group agreed that promotion of screening and brief counselling by physicians would not be a resource-intensive endeavour for Peel Health.

Overall, the group agreed that screening would not be a main strategy in Peel Health programming; rather Peel Health will promote screening and the use of validated screening tools to primary healthcare professionals. We will leverage the knowledge of our Physician Outreach Specialist to create a strategy to encourage physicians to screen. Additionally, Peel Health will share the research evidence with their partners and devise an appropriate knowledge translation strategy based on the evidence, including the use of briefing notes, interactive sessions, audit & feedback and academic detailing, where appropriate.

5 Recommendations

The Reproductive Health Program determined it would:

1. Discontinue investing in the development of broad, universal social marketing campaigns related to the effects of alcohol use in pregnancy.
2. Continue to deliver key messages on the effects of alcohol use in pregnancy through existing prenatal education programs (e.g. HBHC & prenatal classes) in accordance with the Nurturing the Next Generation strategic priority, which focuses on optimizing developmental outcomes and trajectories for children.
3. Continue to work in partnership with the Success-by-6 Peel FASD Initiative, providing expertise on research evidence and best practices related to alcohol and pregnancy on various topics pertinent to the group.
4. Support Success-by-6 Peel FASD Initiative, with the development of an outreach strategy, targeting primary healthcare providers, to promote screening of alcohol use and brief interventions for pregnant women and women planning pregnancy. Peel Health will assist this strategy by providing the expertise of our Physician Outreach Specialist.
5. Stay abreast of the literature on alcohol use and pregnancy and continue to monitor the awareness levels of residents through questions on RRFSS surveys.
6. Share the findings of this rapid review with the Peel FASD Steering Committee and internal stakeholders that service women in their childbearing years (e.g. Healthy Sexuality, Substance Misuse, and School Health teams) for reflection on the implication of the results in their respective programs.

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Appendices

Appendix A: Conceptual Model

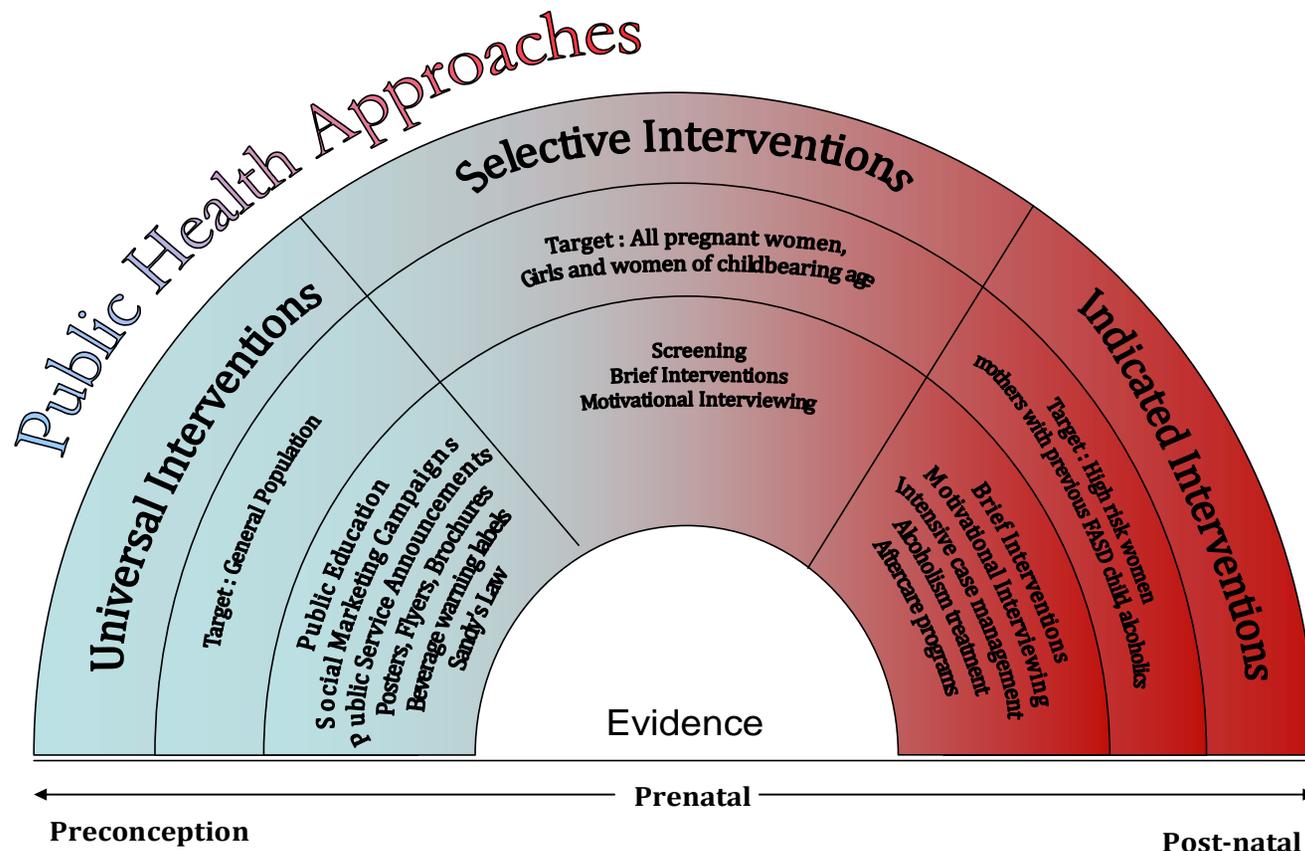
Appendix B: Overview of the Search Process

Appendix C: Search Strategy

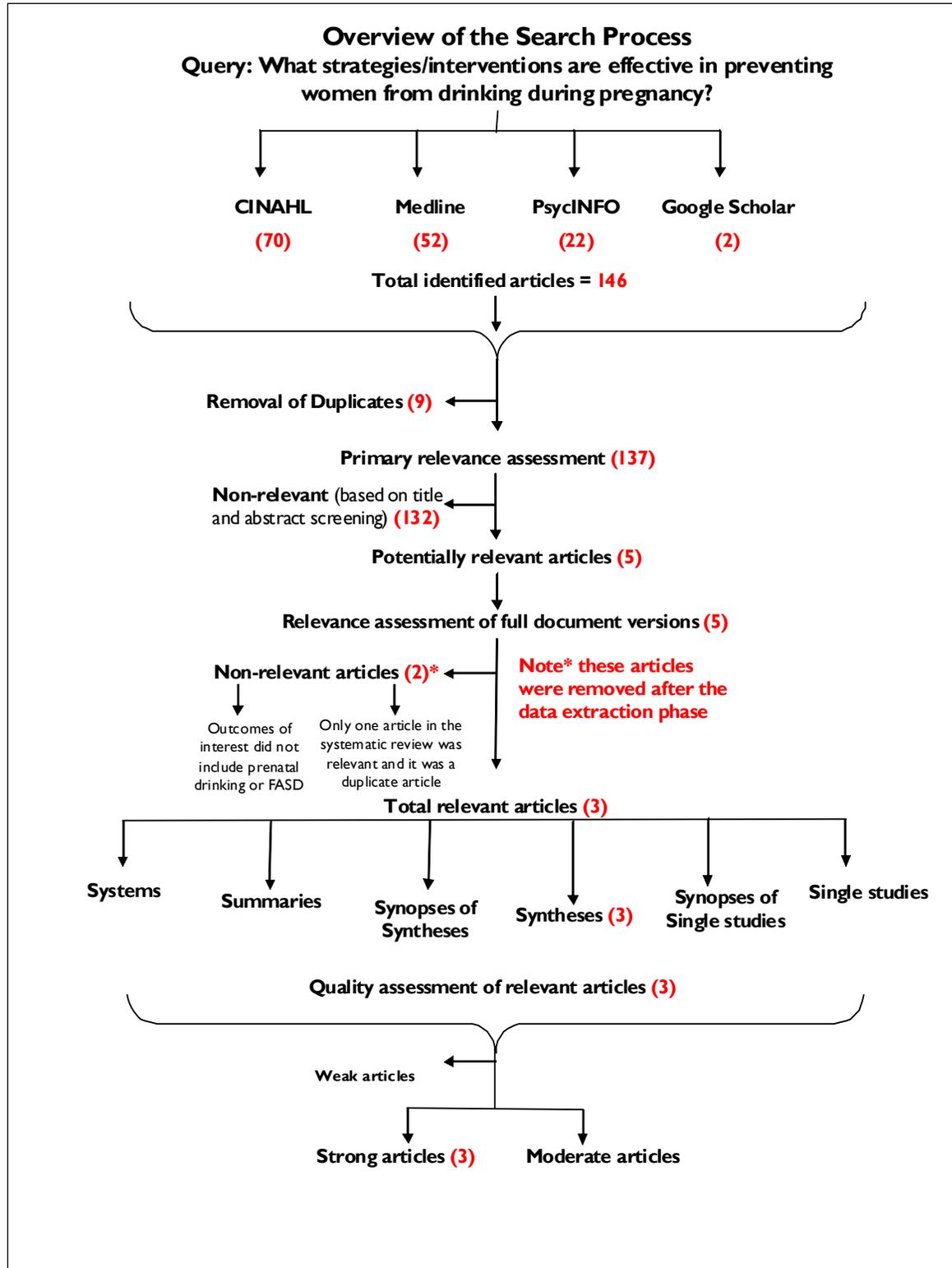
Appendix D: Data Extraction Tables

Appendix A: Conceptual Model

The Intervention Spectrum for Preventing Alcohol Exposed Pregnancies



Appendix B: Overview of the Search Process



Appendix C: Search Strategy

Database: Ovid MEDLINE(R) <1950 to November Week 3 2010>

Search Strategy:

-
- 1 exp Pregnancy/ (650486)
 - 2 prenatal.tw. (54555)
 - 3 Adolescent/ (1401002)
 - 4 sexually active.tw. (5682)
 - 5 childbearing age.tw. (2839)
 - 6 Young Adult/ (124314)
 - 7 Preconception Care/ (1026)
 - 8 preconception.tw. (1064)
 - 9 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 (2060439)
 - 10 intervention\$.tw. (374481)
 - 11 strateg\$.tw. (383847)
 - 12 behavior modif\$.tw. (1766)
 - 13 behavior change\$.tw. (4041)
 - 14 exp Health Promotion/ (41272)
 - 15 health promotion.tw. (13849)
 - 16 policy.tw. (80052)
 - 17 policies.tw. (33106)
 - 18 exp Health Education/ (119174)
 - 19 health education.tw. (17623)
 - 20 prevent\$.tw. (727845)
 - 21 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 (1524151)
 - 22 abstinence.tw. (12273)
 - 23 binge drink\$.tw. (1617)
 - 24 sobriety.tw. (618)
 - 25 alcohol reduction.tw. (68)
 - 26 Alcoholism/ (61748)
 - 27 Temperance/ (2198)
 - 28 social drink\$.tw. (990)
 - 29 Fetal Alcohol Syndrome/ (2908)
 - 30 fetal alcohol syndrome\$.tw. (1789)
 - 31 fas.tw. (18606)
 - 32 fetal alcohol spectrum disorder\$.tw. (335)
 - 33 fae.tw. (526)
 - 34 fasd.tw. (235)
 - 35 fetal alcohol expression.tw. (0)
 - 36 alcohol related birth defect\$.tw. (92)
 - 37 arbd.tw. (28)

-
- 38 arnd.tw. (35)
 - 39 alcohol related neurological disorder\$.tw. (5)
 - 40 Prenatal Exposure Delayed Effects/ (15954)
 - 41 Maternal Exposure/ (3661)
 - 42 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37
or 38 or 39 or 40 or 41 (112996)
 - 43 meta-analysis.mp,pt. (44254)
 - 44 (search or systematic review or medline).tw. (141778)
 - 45 cochrane database of systematic reviews.jn. (7458)
 - 46 43 or 44 or 45 (169137)
 - 47 Harm Reduction/ (1032)
 - 48 42 or 47 (113928)
 - 49 9 and 21 and 46 and 48 (140)
 - 50 limit 49 to yr="1995 -Current" (132)
 - 51 alcohol\$.tw. (182285)
 - 52 50 and 51 (52)

Database: PsycINFO <1967 to December Week 2 2010>
Search Strategy:

-
- 1 exp Pregnancy/ (13204)
 - 2 prenatal.tw. (10450)
 - 3 adolescen*.tw. (132966)
 - 4 sexually active.tw. (2240)
 - 5 childbearing age.tw. (319)
 - 6 young adult*.tw. (21991)
 - 7 preconception.tw. (214)
 - 8 exp Prenatal Care/ (1162)
 - 9 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 (168991)
 - 10 intervention*.tw. (168023)
 - 11 strateg*.tw. (169551)
 - 12 behavior modif*.tw. (4732)
 - 13 behavior change*.tw. (7564)
 - 14 exp Health Promotion/ (9522)
 - 15 health promotion.tw. (8127)
 - 16 policy*.tw. (57525)
 - 17 policies.tw. (23726)
 - 18 exp Health Education/ (11612)
 - 19 health education.tw. (5226)
 - 20 prevent*.tw. (103295)
 - 21 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 (446587)
 - 22 abstinence.tw. (9225)
 - 23 binge drink*.tw. (1511)
 - 24 sobriety.tw. (999)
 - 25 alcohol reduction.tw. (43)
 - 26 exp Alcoholism/ (22156)
 - 27 exp Sobriety/ (1059)
 - 28 social drink*.tw. (1097)
 - 29 exp Fetal Alcohol Syndrome/ (844)
 - 30 fetal alcohol syndrome*.tw. (817)
 - 31 fas.tw. (835)
 - 32 fetal alcohol spectrum disorder*.tw. (261)
 - 33 fae.tw. (119)
 - 34 fasd.tw. (188)
 - 35 fetal alcohol expression.tw. (0)
 - 36 alcohol related birth defect*.tw. (43)
 - 37 arbd.tw. (6)
 - 38 arnd.tw. (29)
 - 39 alcohol related neurological disorder*.tw. (1)
 - 40 exp Prenatal Exposure/ (4080)
 - 41 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37
or 38 or 39 or 40 (37559)

- 42 meta-analysis.mp,pt. (9866)
- 43 (search or systematic review or medline).tw. (38907)
- 44 cochrane database of systematic reviews.jn. (0)
- 45 42 or 43 or 44 (47267)
- 46 exp Harm Reduction/ (1334)
- 47 alcohol*.tw. (77405)
- 48 41 or 46 (38735)
- 49 9 and 21 and 45 and 47 and 48 (24)
- 50 limit 49 to yr="1995 -Current" (22)

Database: CINAHL
Search Strategy:

S56	s55	Limiters - Research Article; Human Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	70	Edit S56
S55	s54	Limiters - Published Date from: 20050101-20111231; English Language Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	163	Edit S55
S54	s53	Limiters - Published Date from: 20000101-20111231; Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	217	Edit S54
S53	s10 and s22 and s50 and s51 and s52	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	899	Edit S53
S52	TX alcohol	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	68056	Edit S52
S51	s43 or s44 or s45 or s46 or s47 or s48	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	224835	Edit S51
S50	s 49 or s42	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	23304	Edit S50

S49	MW harm reduction	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	690	Edit S49
S48	TX guideline*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	137865	Edit S48
S47	TX cochrane	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	22017	Edit S47
S46	TX medline	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	25680	Edit S46
S45	TX systematic review	Search modes - SmartText Searching	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	41	Edit S45
S44	TX search	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	79965	Edit S44
S43	TX meta-analysis	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	31543	Edit S43
S42	s23 or s24 or s25 or s26 or s27 or s28 or s29 or s30 or s31 or s32 or s33 or s34 or	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	23268	Edit S42

	s35 or s36 or s37 or s38 or s39 or s40 or s41		with Full Text		
S41	TX maternal exposure	Search modes - SmartText Searching	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	22	Edit S41
S40	TX prenatal exposure delayed effects	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1187	Edit S40
S39	TX alcohol related neurological disorder	Search modes - SmartText Searching	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1800	Edit S39
S38	TX arnd	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	52	Edit S38
S37	TX arbd	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	28	Edit S37
S36	TX alcohol related birth defect	Search modes - SmartText Searching	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	565	Edit S36
S35	TX fetal alcohol expression	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1	Edit S35

S34	TX fasd	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	153	Edit S34
S33	TX fae	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	320	Edit S33
S32	TX fetal alcohol spectrum disorder	Search modes - SmartText Searching	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1216	Edit S32
S31	TX fas	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	2281	Edit S31
S30	TX fetal alcohol syndrome	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1218	Edit S30
S29	MW fetal alcohol syndrome	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	650	Edit S29
S28	TX social drink*	Search modes - SmartText Searching	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	230	Edit S28
S27	MW alcoholism	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	6242	Edit S27

			with Full Text		
S26	TX alcohol reduc*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1874	Edit S26
S25	TX sobriety	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	732	Edit S25
S24	TX binge drink*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	2556	Edit S24
S23	TX abstinence	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	6939	Edit S23
S22	s11 or s12 or s13 or s14 or s15 or s16 or s17 or s18 or s19 or s20 or s21	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	759178	Edit S22
S21	TX prevent*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	423624	Edit S21
S20	TX health education	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	79223	Edit S20
S19	MW health education	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen -	23056	Edit S19

			Advanced Search Database - CINAHL with Full Text		
S18	TX polic*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	205237	Edit S18
S17	TX health promotion	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	66446	Edit S17
S16	MW health promotion	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	21932	Edit S16
S15	TX behaviour change*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	4392	Edit S15
S14	TX behaviour modification	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	735	Edit S14
S13	TX behavior modification	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	2930	Edit S13
S12	TX strateg*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	208524	Edit S12

S11	TX intervention*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	225879	Edit S11
S10	s1 or s2 or s3 or s4 or s5 or s6 or s7 or s8 or s9	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	268914	Edit S10
S9	TX preconception	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1081	Edit S9
S8	MW preconception care	Search modes - SmartText Searching	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	325	Edit S8
S7	MW young adult	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	9687	Edit S7
S6	TX childbearing age	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	2546	Edit S6
S5	TX sexually active	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	5132	Edit S5
S4	TX adolescen*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	191315	Edit S4

			with Full Text		
S3	MW adolescent	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	12765	Edit S3
S2	TX prenatal	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	25526	Edit S2
S1	MW pregnancy	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	72583	

Appendix D: Data Extraction Tables

Items Reviewed		Review #1 (Elliott et al., 2003)		
General Information & Quality Rating for Review				
Author(s) and Date	Elliott, L., Coleman, K., Suebwongpat, A., Norris, S. (2008)			
Title	Fetal Alcohol Spectrum Disorder: Systematic reviews of prevention, diagnosis and management			
Country	New Zealand			
Quality Rating	Strong Rating of 9 using health-evidence .ca Quality Assessment Tool for Review Articles			
Objectives of Review	<ul style="list-style-type: none"> To review the evidence pertaining to the relative effectiveness of various strategies to reduce the burden of Fetal Alcohol Spectrum Disorders (FASD) 			
Details of Review				
Number of primary Studies Included	67 eligible articles in total			
Types of Studies	Randomized controlled trials (RCT); Non-randomized; Case control; Case series; Single arm; Quasi- randomized trials			
Search Period	The time frame of the search strategy extended over 24 years; from 1983 – 2007			
Number of databases searched	5 electronic data bases were searched [MEDLINE, EMBASE, Scopus, PsycINFO and Cochrane Library] <ul style="list-style-type: none"> They also searched reference lists of included studies for relevant studies 			
Inclusion and Exclusion Criteria	<p><u>Inclusion Criteria</u></p> <p>Publications were included in the review if they:</p> <ul style="list-style-type: none"> Described a prevention strategy that aimed to reduce the incidence of FASD in the general population (primary prevention), pregnant women (secondary prevention) or women at high risk of having a child with FASD (tertiary prevention) Evaluated an alcohol screening tool in pregnant women Had key outcomes: reduction in the incidence of FASD, a reduction in alcohol use during pregnancy and the sensitivity and specificity of the screening tool. 			
Details of Interventions				
Primary Prevention Studies				
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Bowerman, 1997	Pregnant women from remote villages in arctic Alaska N=348.	Alcohol prohibition in the town of Barrow (introduced in 1994)	no alcohol prohibition	Reduction in regional alcohol abuse during pregnancy / Reduction in first trimester alcohol abuse / Reduction in second trimester alcohol abuse/ Reduction in third trimester alcohol abuse

Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Hankin, 1993a, 1993b	Consecutive African American women attending a prenatal clinic. Hankin 1993a: 1986 to 1991 N=12,026 Hankin 1993b: May 1989 to May 1992. N=4,379	Warning labels on alcohol bottles. Women who attended a prenatal clinic after the introduction of the alcohol warning label (defined as after June 1990).	No warning labels on alcohol bottles. Women who attended a prenatal clinic prior to the introduction of the alcohol warning label (defined as prior to June 1990).	<p>Results: significant reduction in alcohol abuse</p> <ul style="list-style-type: none"> Probably clinically relevant <p>Difference in drinking behaviour pre and post label/ Mean alcohol consumption at the time of conception/ Mean alcohol consumption during pregnancy/ Predictors of in-pregnancy drinking / Effect of the warning label by light drinkers and risk drinkers</p> <p>Results: modest reduction in alcohol consumption in light drinkers ($p<.009$) but not heavy drinkers</p>
Hankin, 1996	Consecutive African American women attending a prenatal clinic between 1986 and 1993. N=8,105	Warning labels on alcohol bottles Women who attended a prenatal clinic after the introduction of the alcohol warning label (defined as after June 1990).	No warning labels on alcohol bottles Women who attended a prenatal clinic prior to the introduction of the alcohol warning label (defined as prior to June 1990).	Difference in drinking behaviour pre and post label/ Effect of the warning label by nulliparae and multiparae Results: significant correlation between label and reduced alcohol consumption in nulliparae ($p<0.04$) but not multiparae women
Kaskutas, 1998	Pregnant women who participated in telephone surveys N=365	Exposure to a warning label, a sign, or an ad about drinking during pregnancy or having a personal conversation about the risk of drinking prenatally.	Women who reported different levels of message exposure	Proportion of women who had 2 or more drinks while pregnant/ Relationship between message exposure and alcohol consumption

				Results: no significant correlation
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Olsen, 1989	Pregnant women from two towns in Denmark between April 1984 and April 1987. N=27,630	An educational campaign which included educational strategies aimed at health care providers, brochures, a TV show and stickers Pregnant women from the town of Odense N=13,815.	No educational campaign Pregnant women from the town of Aalborg N=13,815.	Percentage of pregnant women who did not consume alcohol/ Average alcohol consumption per week/ Proportion of women who drank more than 8 or more drinks on a given occasion Results: no significant change
Secondary Prevention Studies				
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
O'Connor and Whaley, 2007	Pregnant women. N=345 Inclusion criteria: Any alcohol consumption after conception.	Brief intervention (including a comprehensive assessment of alcohol use and advice).	Comprehensive assessment of alcohol use and advice only	Correlation between intervention and abstinence. Results: significant increase in proportion of women who were abstinent by the third trimester • Clinically relevant
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Handmaker 1998	Pregnant women attending an obstetrics clinic. N=42 Inclusion criteria: Any alcohol consumption in the month prior to study enrolment.	The women received a 1-hour motivational interview involving discussion of the effect of drinking during pregnancy	Letter informing participants of risks and referring them to their usual healthcare providers.	Correlation between intervention and alcohol consumption/ Analysis of the effect size Results: significant reduction in blood alcohol concentration (p<0.01). No significant change in abstinent days or

				total consumption • Possibly clinically relevant
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Reynolds, 1995	Pregnant women. N = 40 Inclusion criteria: Any alcohol consumption during pregnancy.	Self-help intervention	Standard care.	Proportion of women who quit drinking in the intervention vs control group/ Proportion of women who drank <7 drinks at study entry and who quit drinking at follow-up/ Proportion of women who drank >7 drinks at study entry and who quit drinking at follow-up in the intervention vs control group/ Correlation between quitting drinking and the intervention Results: significant increase in subjects who quit drinking (p<0.058) • Clinically relevant
Waterson and Murray-Lyon, 1990	Pregnant women attending a prenatal clinic. N=75 Inclusion criteria: None	Personal advice and reinforcement by a doctor with and without an educational video. All women also received a leaflet about alcohol use in pregnancy.	A leaflet about alcohol use in pregnancy only.	Abstinence or reduction in alcohol intake/ Change in alcohol consumption in mothers who were drinking >7 units of alcohol per week before pregnancy Results: no change in alcohol consumption
Eisen, 2000	Pregnant women. N=212 Inclusion criteria: Any alcohol	Drug prevention, education and treatment program	No intervention.	Used alcohol in the last 30 days/ Used alcohol to intoxication in the last 30 days

	consumption or drug use during pregnancy			Results: Significant increase in abstinence (p=0.0001) and significant decrease in using alcohol to intoxication
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Sarvela and Ford, 1993	Pregnant teenagers attending a prenatal clinic. N=212	Prenatal care education program	Standard care.	Alcohol use in the last 5 months at pre-test vs post-test Results: No change in alcohol consumption
Meberg, 1986	Pregnant women. N=132 Inclusion criteria: none	Supportive counselling. Two 1 hour visits with midwife. Follow-up post partum.	Standard care Intervention in control group unclear	Changes in alcohol consumption during pregnancy/ Teetolers pre pregnancy vs during pregnancy / Alcohol consumption pre pregnancy vs during pregnancy Results: No change in alcohol consumption
Drinkard, 2001	Pregnant women. N=1,155 Inclusion criteria: None	A healthy pregnancy program.	none	Proportion of mothers who reported using alcohol who said that the program helped them quit or reduce their alcohol use Results: 72% attributed reduction drinking to intervention (significance not stated)
Cziezel, 1999	Pregnant women attending periconceptual care. N=75	Periconceptual care program	none	Alcohol consumption pre and post intervention Results: reduction in

	Inclusion criteria: none			proportion of women who drank > 1 drink per week (significance not stated).
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Allen and Ries, 1985	Pregnant women attending a prenatal clinic. N=75 Inclusion criteria: None	Prenatal education class.	none	Average alcohol consumption per day before pregnancy vs during pregnancy/ Average alcohol consumption per day before prenatal education vs after prenatal education Results: No change in alcohol consumption
Little 1984 and Little, 1985	Pregnant women attending a pregnancy and health program N=304 Inclusion criteria: None	Interventional counselling	none	Proportion of women who reported drinking prior to contacting the pregnancy health program vs after contacting the pregnancy health program/ Correlation between fetal alcohol effects and maternal drinking/ Relationship between intervention and alcohol consumption/ Proportion of women who reported heavy drinking pre vs post pregnancy/ Percent of clients judged to have a problem at the time of initiation vs termination of contact. Results: Significant downward

				trend drinking before and after the intervention (p<0.001). <ul style="list-style-type: none"> Clinical relevance is unclear
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Larsson, 1983	Pregnant women attending a maternal health clinic. N=464 Inclusion criteria: None	Early detection and treatment program	No control group	Proportion of women who reported a reduction in alcohol intake or abstinence Results: > 74% reported a reduction in alcohol consumption (significance not stated) <ul style="list-style-type: none"> Clinical relevance unclear
Tertiary Prevention Studies				
* Tertiary prevention strategies focused on high risk women and were beyond the scope of this paper				
Prenatal Screening Studies				
Authors, Year	Population	Intervention	Comparator	Outcomes
Sokol, 1989	Consecutive pregnant African American women who reported any alcohol consumption in their lifetime N=971	T-ACE CAGE MAST		Sensitivity Specificity PPV Efficiency
Russell, 1994	Consecutive pregnant African American women who reported any alcohol consumption in their lifetime N=4,743	TWEAK T-ACE MAST CAGE NET		Sensitivity Specificity PPV Efficiency Follow-up rate ROC curve
Russell, 1996	Pregnant African American	TWEAK T-ACE MAST CAGE		Sensitivity

	women who reported any alcohol consumption in their lifetime N=2,717 N=1,420 (T-ACE only)			Specificity PPV Efficiency ROC curve
Chang, 1998	Pregnant women attending prenatal care N=350 (250 T-ACE positive and 100 T-ACE negative)	T-ACE SMAST AUDIT Medical record		Sensitivity Specificity ROC curve
Chang, 1999a	Pregnant women attending prenatal care N=350 (250 T-ACE positive and 100 T-ACE negative)	T-ACE AUDIT SMAST Clinical predictors T-ACE plus clinical predictors AUDIT plus clinical predictors		Sensitivity Specificity ROC curve
Chang, 1999b	Consecutive pregnant women attending prenatal care N=135	TWEAK (T1≥2) TWEAK (T1>2) TWEAK (T2>5) Medical records		Predictive ability
Dawson, 2001	Pregnant women who reported any alcohol consumption in their lifetime N=404	TWEAK TWEAK + HIGH4 TWEAK + KEPTFROM TWEAK +INJURE TWEAK +ALCRT TWEAK +PARTNER TWEAK +SMOKER TWEAK +ASSIST TWEAK +UNWANTED		Sensitivity Specificity False positives
Results of Review				
Main Results of Review	<p><u>Primary Prevention</u> From the publications identified, there is no strong evidence that any one primary prevention strategy is more effective in reducing prenatal drinking.</p> <p><u>Secondary Prevention</u> The studies can be broadly described as one-on-one education-based interventions. All the results were generally poor to fair quality. Some interventions were effective in reducing prenatal alcohol consumption. However, it is difficult to identify which factors were critical to the success of the interventions as those that were not successful had similar features.</p> <p><u>Prenatal Screening Studies</u> All identified publications reported that the T-ACE and TWEAK were at least as effective as other general screening tools and were</p>			

	generally shorter and easier to administer. T-ACE and TWEAK are the most appropriate screening tools to use in the clinical setting.
Comments/Limitations	Generally, the quality of identified studies was poor or fair. There were very few strong studies that informed the findings on this review. The findings of the review should be considered in the context of limited and low-quality evidence available.

Items Reviewed	Review #2 (Parkes et al., 2008)
General Information & Quality Rating for Review	
Author(s) and Date	Parkes, T., Poole, N., Salmon, A., Greaves, L., & Urquhart, C. (2008)
Title	Double Exposure: Better Practices Review on Alcohol Interventions During Pregnancy
Country	Canada
Quality Rating	Strong Rating of 10 using health-evidence .ca Quality Assessment Tool for Review Articles
Objectives of Review	<ul style="list-style-type: none"> To identify evidence related to the effectiveness of identification tools and brief and intensive interventions in helping women to reduce their drinking in pregnancy or in the child-bearing years and to propose a list of better practice program components and approaches.
Details of Review	
Number of primary Studies Included	38 papers were included in this review
Types of Studies	Studies included in the review were heterogeneous in design and the type and range of outcomes reported.
Search Period	The time frame of the search strategy covered the period from 1995 to 2007.
Number of databases searched	14 electronic databases were searched [CINAHL, Ebsco Host, ERIC, Ingenta, MD Consult, Medline, PsycINFO, PubMed, Sociofile, CDSR, ASSIA, CINCH, Drugscope, DARE]
Inclusion and Exclusion Criteria	<p><u>Inclusion criteria</u></p> <p>Studies evaluating the efficacy or effectiveness of alcohol interventions aimed at pregnant and postpartum women or women of child-bearing age.</p> <p>Studies in three distinct categories were the focus:</p> <ol style="list-style-type: none"> 1. Studies on the effectiveness of identification and screening tools to detect perinatal alcohol use; 2. Studies on the efficacy of brief interventions in reducing the use of alcohol among pregnant women or women of childbearing age; and 3. Studies on the efficacy of intensive or in-depth interventions in reducing the use of alcohol among pregnant women or women of child-bearing age. <p>*Interventions and programs tested in or targeted in specific subpopulations (e.g. African-American women or Aboriginal women) were also included.</p>

Details of Interventions				
Identification and Screening				
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Bad Heart Bull et al., 1999	Prenatal patients: 85% N= 208	On their first prenatal visit, all patients were approached to do the questionnaire.	Compared to extensive interview and medical record data,	Results: Compared to extensive interview and medical record data, the self-administered questionnaire was sensitive (76.6%) and specific (92.8%) in detecting pregnant women who had consumed alcohol during pregnancy.
Budd et al., 2000	Inner-city pregnant women between the ages 18 to 42 years. N=56	All newly registered patients were approached at their first prenatal visit. PAUI (Prenatal Alcohol Use Interview). ACOG Antepartum record – containing information related to past and current pregnancies and medical history. CDTECT		Results: Women identified as drinkers by CDTECT were more likely to be identified as drinkers by the PAUI(59%) than by the ACOG
Chang et al., 1998	250 T-ACE-positive pregnant women and 100 T-ACE negative women from diverse backgrounds N=350	T-ACE given to pregnant women initiating prenatal care at the hospital. 250 T-ACE-positive and 100 T-ACE-negative women were then scheduled for comprehensive assessment (where other screening tools were administered).	Medical staff assessment of alcohol use	Results: T-ACE was the most sensitive screen for lifetime alcohol diagnoses, risk drinking, and current alcohol consumption

Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Chang et al., 1999	Pregnant/prenatal T-ACE positive pregnant women N=135	1) TWEAK, 2) MAST, 3) alcohol and drug-abuse modules from the structured clinical interview in the DSM-III-R, 4) Addiction Severity Index, 5) Alcohol Use Disorders Identification Test, 6) Timeline Followback, 7) Alcohol Craving Scale.	Medical record assessment	Results: The TWEAK, using the first tolerance question with the cut-off point set at more than two drinks, had the best predictive ability for life-time alcohol diagnosis and risk drinking.
Chasnoff et al., 2001	Pregnant, Medicaid-eligible with <2 visits to prenatal clinics. N=2002	Tailored self-administered questionnaire. Three sets of questions about alcohol and drug use: 1) whether the respondent had ever used drugs, 2) whether she had used any illicit drugs in month before pregnancy 3) whether drugs were used in past month Women were screened as part of routine prenatal care.		Results: Approximately 9% of the sample reported current use of either alcohol, drugs or both.
Chasnoff et al., 2005	Pregnant women of diverse ethnicities and classes from five U.S. sites: Chicago, Southern Illinois, Camden, New Jersey; San Luis Obispo County, California; and Ventura County, California. N=7817	Women were screened as part of routine prenatal care in obstetric clinics in five regions. 4 P's Plus screening instrument was used.		Results: Among 7818 women in 5 communities, 2555 had a positive screen for substance use in pregnancy. Four of the communities conducted follow up assessment on all women with a positive screen. Among these women 15% had continued use after learning of the pregnancy. The 4P's Plus, effectively identifies pregnant women whose drinking is high

Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Dawson et al., 2001	Pregnant, 18 years of age or older, resident of District of Columbia, able to understand and answer in English. N=404	TWEAK administered at initial visit at prenatal clinic.	A series of nine modified TWEAK-based instruments that were constructed by adding selected other risk indicators to the standard TWEAK.	enough to impair functioning. Results: The TWEAK demonstrated a sensitivity and specificity of 70.6% and 73.2% for high risk drinking and a sensitivity and specificity of 65.6% and 63.7% for any (high or moderate) risk drinking during pregnancy.
Flynn et al., 2003	Pregnant women 18 years of age or older from diverse backgrounds N=1131	TWEAK administered during prenatal visits to obstetrics clinics.		Results: 15.1% of the total sample reported any alcohol use during pregnancy with the majority of women reporting relatively low levels of alcohol use
Göransson et al., 2003	Consecutive pregnant women in antenatal care and registered for parenting classes. N=1101	AUDIT		Results: Pre-pregnancy drinking found to be a significant risk factor for drinking during pregnancy.
Göransson et al., 2006	Middle- and high-income pregnant women. N=292	AUDIT and TLFB Pregnancy		Results: Screening in the intervention group found much higher identified cases of alcohol use in pregnancy: the control group found no reported cases, while the intervention found risky consumption / binge drinking in 17% of cases
Gupman et al., 2002	Predominantly African-American women (83%) of low socio-economic status.	T-ACE, MAST, CAGE,	physician detection	Results: Rates of alcohol and illicit drug use varied across assessment instruments;

Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Jacobson et al., 2002	<p>N=360</p> <p>Pregnant, postpartum, and parenting inner-city African-American mothers.</p> <p>N=354</p>	<p>First prenatal visit to 13 months postpartum. MAST and interview.</p>		<p>physician documentation, however, yielded the lowest prevalence estimates.</p> <p>Results: Although higher levels of alcohol were reported retrospectively, the correlations of prenatal alcohol exposure with infant outcome were as strong or stronger for the antenatal measures.</p>
Kaskutas & Graves, 2001	<p>Pregnant and postpartum women. Predominantly African American (58%) and Native American (32%).</p> <p>N=321</p>	<p>Before and during pregnancy. Drink size as a measure of risk assessment.</p>		<p>Results: Difference between self-selected and standard drink sizes $p < .0001$. Self-selected beer 49% above standard; spirits 307% above standard; malt liquor 183% above; fortified wine 153% above. Ethanol content of self-selected drink and absolute alcohol standard at $p < .0001$ level for all beverages except wine.</p>
Kesmodel & Olsen, 2001	<p>Pregnant, first prenatal visit, 15-16 weeks gestation (general population).</p> <p>N=441</p>	<p>15-16 weeks gestation. Diary of alcohol intake, interview 1, interview 2, self-administered questionnaire.</p>		<p>Results: Three of four measures yielded comparable distributions of average alcohol intake but reports of intake within past seven days was an inappropriate measure of average intake, yielding three times as many abstainers as expected when combining methods. Measure of intake for previous week was relevant measure only when studying adverse pregnancy outcomes caused by binge-like</p>

Authors, Year	Population	Intervention	Comparator	Outcomes / Results
McNamara et al., 2005	Pregnant women with >2 T-ACE, consumed alcohol while pregnant, < 28 weeks gestation, intending to carry to term (general population). N=278	During pregnancy T-ACE vs physician assessment		exposure. Results: Physicians identified only 10.8% of women recognized as at risk for alcohol consumption by the T-ACE screening measure. Physicians were significantly more likely to correctly identify non-white participants as being at risk for prenatal alcohol use (odds ratio = 3.59, p = .026), compared with their white counterparts.
Magnusson et al., 2005	Women attending regular antenatal care. N=303	During pregnancy AUDIT, TLFB, and biomarkers (from venous blood sample).		Results: TLFB early in pregnancy found 15% of women drank at risky levels; regular antenatal screening identified only 2.5%, demonstrating a clear inferiority of the regular screening to identify high-risk levels of alcohol use (p = .0001).
O'Connor and Whaley, 2003	Low-income pregnant women in prenatal care. N=826	At enrolment Specially designed self-administered alcohol screen.		Results: TWEAK's high-risk drinking score was the best predictor of drinking during pregnancy (sensitivity = 70.1%. specificity = 88.5%, p < .001).
Whaley & O'Connor, 2003	Low-income pregnant women. Mean age 26.3 years in intervention sites and 26.9 years in control sites. Percent Hispanic: 62% in intervention	Delivered to pregnant women visiting the Public Health Foundation Enterprises Women, Infants and Children (WIC) site.		Results: Rate of reported alcohol use at intervention sites increased significantly, whereas rate of reported alcohol use by the control group did not

	sites, 66% in control sites Intervention: 12 sites Control: 41 sites			change. This effect was significant from the 8th month through to the end of the study
Brief Intervention Studies				
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Chang et al, 1999b/2000	Pregnant women N=250	Comprehensive alcohol assessment and 45-minute interview including; setting goals, identifying triggers, identifying alternatives to drinking, and a take-home manual	Comprehensive alcohol assessment but no active intervention.	Results: Both groups had reductions in antepartum alcohol consumption, but differences in reductions by groups were not statistically significant ($p>.05$). However, subjects who were abstinent pre-assessment that is those who received the brief intervention maintained higher rates of abstinence (86% vs. 72%, $P=.04$)
Chang et al, 2005 and 2006	Pregnant women N=304 (Chang, 2005) N= 115 (Chang, 2006)	Brief intervention plus partner support. Knowledge assessment, and feedback; contracting and goal setting, behavioural modification	Comprehensive alcohol assessment only	Results 2005: The intervention was most effective for women with highest drinking onset ($p<.01$) Brief Intervention was significantly improved with partners' participation ($p<.05$). Results 2006: women who were abstinent at enrolment and chose to maintain abstinence had the highest rates of abstinence (75%)
Handmaker, 1999	Pregnant women N=42	The women received a 1-hour motivational interview involving discussion of the effect of drinking during pregnancy, feedback on the	Letter informing them of risks and referring them to their usual healthcare providers	Results: There were no differences between treatment and control groups on total alcohol consumption. However, among women with

Authors, Year	Population	Intervention	Comparator	Outcomes / Results
		severity, and a chart of fetal development by gestational week		the highest initial intoxication levels, those in the intervention group showed significantly lower blood alcohol concentrations than did controls.
Jones-Webb, 1999	Pregnant women N=683	Physician advice on tobacco and alcohol use during pregnancy	No physician advice	Report of smoking and drinking during pregnancy Results: women who receive advice from a physician to abstain from alcohol during their pregnancy reported a lower lifetime prevalence of smoking and drinking during pregnancy than women who did not receive such advice
O'Connor and Whaley, 2007	Pregnant women N=345	Comprehensive alcohol assessment and 10-15 minute counselling from a nutritionist using a scripted manual	Comprehensive assessment and advisement not to drink during pregnancy	Results: Women who received brief intervention were five times more likely to report abstinence than those who had assessments only ($p < .04$)
Reynolds, 1995	Pregnant women who drink and 25 weeks or less pregnant N=78	Usual care plus a cognitive behavioural self-help intervention based on a pilot study. Including a 10-minute educational session with a self-help manual to be completed by women over 9 days.	Usual care. Information on the effects of alcohol in pregnancy was routinely provided by clinic staff and a video on prenatal care included alcohol advice	Results: A higher alcohol quit rate ($\chi^2(1): 3.6 p < .058$) was observed among the intervention participants (88%) than controls (69%) The effect was strongest for light drinkers

Floyd, 2007	Non-pregnant women N=830	Information plus motivational Interview sessions, one 45-60 minute contraception consultation and services visit	Information; brochures on alcohol use and women's health in general and a referral guide to local services	Results: Both control and intervention groups demonstrated reduced risk for alcohol-exposed pregnancy (AEP) between the three and nine-month follow-ups. The intervention group showed an average of 16.6% lower risk for AEP over the control group.
Authors, Year	Population	Intervention	Comparator	Outcomes / Results
Ingersoll, 2005	Non-pregnant women N=228	Comprehensive assessment and one 60-75 minute motivational counselling session. Activities included recording 90 days of timeline follow-back, data on drinking and contraception, development of goals and change plans for drinking and contraception	Comprehensive assessment	Report of risk drinking/ Effective contraception use Results: Significantly, fewer control subjects (48%) used effective contraception at one-month follow up compared with intervention women (64%). Significantly, more intervention women (74%) were no longer at risk of AEP at one month compared with control subjects (54%).
Manwell, 2000	Non-pregnant women: Problem- drinking women of childbearing age N=205	Information; workbook and work sheets; two 15-minute physician visits; follow-up phone calls after physician visits	Unknown	Results: A significant treatment effect in reducing both seven-day alcohol use ($p=0.0039$) and binge drinking episodes ($p=0.0021$) over 48-month follow-up.
Project Choices Intervention Research Group, 2003 (non RCT—no comparison group)	Non-pregnant: Women at risk for alcohol-exposed pregnancy N=190	Four motivational counselling sessions and one contraceptive counselling session		Report of risk drinking/ Effective contraception use Results: 68.5% of women no longer at risk for AEP; 12.6% reduced drinking only; 23.1%

				used effective contraception only; 32.9% did both
Intensive Intervention Studies				
* All 8 studies aimed at reducing substance use more broadly in pregnant and postpartum women. These studies are not within the scope of this rapid review				
Results of Review				
Main Results of Review	<p>Identification and Screening Reviewed studies conclude that screening tools are more effective than usual care, or than not using any screening tool in identifying potential alcohol use among pregnant women</p> <p>The evidence indicates that the T-ACE and the TWEAK appear to be the most sensitive validated screening instruments for lifetime alcohol diagnoses, risk drinking, and current alcohol consumption among pregnant women</p> <p>The evidence indicates that self-administration screening methods produce a more accurate description of alcohol usage than screening through direct questioning by staff.</p> <p>Brief Interventions Studies reviewed provide evidence that brief interventions can help to reduce alcohol consumption among pregnant women and women of childbearing age</p> <p>However, the findings were mixed in the studies looking at pregnant women.</p> <p>For pregnant women, two studies failed to find a statistically significant difference between control and intervention groups in relation to total alcohol consumption. The other five did reduce women’s use of alcohol in pregnancy. Overall, the evidence from the 5 studies clearly support the efficacy of a variety of brief interventions to reduce women’s use of alcohol during pregnancy.</p> <p>For non pregnant women of child-bearing age, brief interventions were successful in reducing the risk of alcohol-exposed pregnancies. The 3 studies that included contraceptive and alcohol counselling found that the effective use of contraception increased among the treatment group, alongside a reduction in risk drinking</p>			

	<u>Intensive Interventions</u>
	N/A
Comments/Limitations	

Items Reviewed	Review #3 (Stade et al., 2009)
General Information & Quality Rating for Review	
Author(s) and Date	Stade, B.C., Bailey, C., Dzendoletas, D., Sgro, M., Bennett, D. (2009)
Title	Psychological and / or educational interventions for reducing alcohol consumption in pregnant women and women planning pregnancy (Review)
Country	Canada ; Note that the studies were all conducted in the United States
Quality Rating	Strong Rating of 9 using health-evidence .ca Quality Assessment Tool for Review Articles
Objectives of Review	<ul style="list-style-type: none"> To determine the effectiveness of either psychological or educational interventions, or both, for reducing prenatal consumption of alcohol among pregnant women, or women planning for pregnancy To describe any adverse effects on the mother or the fetus when psychological and/or educational interventions are used to reduce prenatal alcohol consumption
Details of Review	
Number of primary Studies Included	4 studies, including 715 pregnant women were included in this review
Types of Studies	All studies were RCTs [3 Randomized Controlled Trials (RCTs); 1 Cluster- RCT]
Search Period	The time frame of the search strategy was not limited, but extended over 30 years; from 1966 to 2007.
Number of databases searched	<p>8 electronic databases were searched [Cochrane Pregnancy and Childbirth Group's Trials Register, CENTRAL, MEDLINE, CINAHL, Counsel.Lit, PsychLIT, PsycINFO]</p> <ul style="list-style-type: none"> Also searched cited references from retrieved articles and reviewed abstracts and letters to the editor to identify unpublished RCTs. The primary investigator was contacted when further data were required
Inclusion and Exclusion Criteria	<p><u>Inclusion Criteria</u></p> <p><u>Types of studies</u> RCTs that compare the effectiveness of psychological and/or educational interventions for reducing prenatal consumption of alcohol among pregnant women, or women planning pregnancy.</p> <p><u>Types of participants</u> Pregnant women or women planning pregnancy who consume alcohol</p> <p><u>Types of interventions</u> Psychological and/or educational interventions during pregnancy or 12 months before conception for women planning pregnancy</p> <p><u>Types of outcomes measures</u> 1. Abstinence from alcohol during pregnancy;</p>

	2. Reduction of alcohol consumption during pregnancy to less than 7 standard drinks a week.			
Details of Interventions				
All studies reviewed educational interventions				
Authors, Year	Population	Intervention	Comparator	Outcomes /Results
Chang, 1999	Pregnant women attending a prenatal clinic at a Boston Hospital. 250 women met inclusion criteria and were randomized. All had consumed some alcohol 6 months before recruitment and scored 2 or more on the T-ACE Note* more than half of the women reported they were abstaining from alcohol at the time of recruitment N=250	Comprehensive alcohol assessment and 45-minute educational counselling intervention including identifying the woman's drinking goal, motivation, risk situation for drinking and alternatives to alcohol. Women were provided with a manual on how to prevent alcohol-related problems at end of counselling.	Comprehensive alcohol assessment but no active intervention. -Both groups received \$50 for completing the assessment and \$75 for the postpartum follow-up interview.	Prenatal alcohol consumption Reductions in and abstinence from alcohol Birth weights and Apgar scores at 1 and 5 minutes of newborns Results: Both groups had reductions in antepartum alcohol consumption, but differences in reductions by groups were not statistically significant ($p>.05$). However, subjects who were abstinent pre-assessment (that is those who received the brief intervention) maintained higher rates of abstinence (86% vs. 72%, $P=.04$).
Handmaker, 1999a	42 pregnant women who had consumed at least 1 alcohol drink in the previous month N=42	All participants completed a 1- hour drinking assessment before randomization The women received a 1-hour motivational interview to raise awareness of the risks to the baby of consuming alcohol and support and encouragement to reduce consumption.	Comprehensive drinking assessment and letter informing them of risks and referring them to their usual healthcare providers.	Abstinence from alcohol Reduction in alcohol consumption Results: significant reduction in blood alcohol concentration ($p<0.01$). No significant change in abstinent days or total consumption • Possibly clinically relevant

Authors, Year	Population	Intervention	Comparator	Outcomes /Results
O'Connor, 2007	Pregnant women attending a special supplemental nutrition program were screened. Those described as 'current drinkers' were included 345 women recruited: 245 followed to 3 rd trimester N=345	Brief 10 to 15 minute intervention by a nutritionist using a script to encourage reduction in alcohol consumption. Reinforcement at each prenatal visit.	Women were assessed for alcohol use and advised to stop drinking during pregnancy.	Maternal abstinence of alcohol during pregnancy Results: significant increase in proportion of women who were abstinent by the third trimester <ul style="list-style-type: none"> Clinically relevant
Reynolds, 1995	Pregnant women who drink and are 25 weeks or less pregnant N=78	Usual care plus a cognitive behavioural self-help intervention based on a pilot study. Including a 10-minute educational session with a self-help manual to be completed by women over 9 days.	Usual care. Clinic staff routinely provided information on the effects of alcohol in pregnancy.	Quantity and frequency of prenatal alcohol consumption Results: significant increase in subjects who quit drinking (p<0.058) <ul style="list-style-type: none"> Clinically relevant
Results of Review				
Main Results of Review	<p>The 4 studies included in this review suggest that educational and counselling interventions <i>may</i> encourage women to abstain from alcohol during pregnancy.</p> <p>However, the evidence of a difference between groups was in some cases weak and results inconsistent.</p> <p>Overall, there is very little evidence about the effects of educational and psychological interventions aiming to reduce alcohol consumption in pregnancy, and in particular on the effect of such interventions on the health of women and babies</p>			
Comments/Limitations	<p>Drawing conclusions on the overall effects of interventions was difficult as the studies were heterogeneous.</p> <p>Also in all studies, women in both experimental and control groups underwent lengthy assessments of their alcohol consumption which may have been a confounder for results.</p> <p>Also, the women in the studies were recruited into the studies after being screened and identified as being "at risk" for consuming alcohol in pregnancy. It is possible that the screening interviews diluted the intervention effects as it may have impacted both</p>			

	<p>intervention and control groups.</p> <p>As pregnancy progressed, drinking levels tended to decrease in both intervention and control groups.</p>
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