

**FASD PREVENTION: AN ANNOTATED BIBLIOGRAPHY,
ARTICLES PUBLISHED IN 2014**

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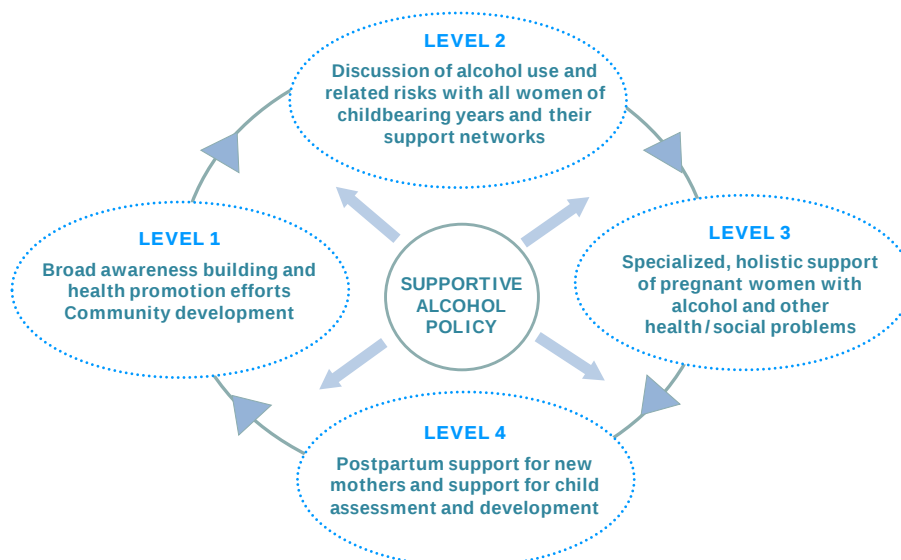
FASD Prevention Literature Search 2014

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Introduction

Annually, researchers associated with the Prevention Network Action Team (pNAT) of the CanFASD Research Network search the academic literature for articles on FASD prevention. The findings are organized using a four-level prevention framework used by the pNAT to describe the wide range of work that comprises FASD prevention. The annual literature search is intended to update those involved in FASD prevention in Canada, so they can inform their practice and policy work with current evidence. The members of the pNAT also have the opportunity in monthly webmeetings to discuss the implications of the findings for their work.



Search Methods

The following databases were searched using Ebsco Host for articles published between January and December 2014:

- 1) Academic Search Complete
- 2) Bibliography of Native North Americans
- 3) ERIC
- 4) Family & Society Studies Worldwide
- 5) LGBT Life with Full Text
- 6) PsycINFO
- 7) Social Work Abstracts
- 8) Women's Studies International
- 9) CINAHL (Cumulative Index of Nursing and Allied Health Literature)
- 10) MEDLINE

Searches of each database were conducted using the following search terms: 1) Fetal alcohol syndrome (SU); 2) FASD (SU); 3) FASD (any) + Prevention (any); 4) FAS (SU) + Prevention (any); 5) Fetal Alcohol (any) + Prevention (any); 6) Fetal (any) + Alcohol (SU) 7) Fetus (any) + Alcohol (SU); 8) Foetus (any) + Alcohol (any); 9) Foetal (any) + Alcohol (any); 10) Alcohol (SU) + Pregnancy (SU) + Prevention (any); 11) Drink* (SU) + Pregnancy (SU) + Prevention (any); 12) Pregnant* (SU) + Alcohol (SU); 13) Conception (SU) + Alcohol (SU); 14) Conception (any) + Drink* (any); 15) Preconception (any) + Alcohol (any); 16) Preconception (any) + Drink* (any); 17) Post-partum (any) + Alcohol (any); 18) Alcohol (SU) + Prevention (SU) + Women (SU); 19) Alcohol (any) + Prevention (any) + Women (any) ; 20) Alcohol (any) + Prevention (any) + Girls (any); 21) Alcohol (any) + Prevention (any) + Youth (any); 22) Alcohol (SU) + Prevention (any) + Teen* (any); 23) Alcohol (any) + Prevention (any) + Aboriginal (any); 24) Alcohol (any) + Prevention (any) + First nation* (any); 25) Alcohol (SU) + Awareness (any) ; 26) Alcohol (SU) + Intervention* (any); 27) Alcohol (SU) + motivational interviewing (any); 28) Alcohol (SU) + Home visits (any); 29) PCAP (any); 30) FASD (SU) + Awareness (any).

All searches were limited to articles published in the English language. A total of 98 unique articles were located. Articles were further screened for relevance to the FASD NAT, and non-relevant articles (e.g. diagnosis of FASD) were removed from the list. For example, in 2014 a number of systematic and narrative reviews on screening and brief alcohol intervention were published, however the majority of these papers are not included in the summary below as they did specifically discuss alcohol use during pregnancy, and some excluded studies on pregnant women. Articles were then categorized into one or more theme, as presented below.

Search Results

Fifty-seven articles were identified. Six articles were assigned to more than one category. Table 1 gives an overview of the number of articles found in each topic area by country. It can be seen that research on FASD prevention, published in English is most often being generated in Canada and the US.

Table 1: Studies identified by topic and country

Country	Number of Studies									Total
	Prevalence	Influences	Level 1	Level 2	Level 3	Level 4	Preconception	Young women	Other	
Australia	1	2	2	1	.	.	.	.	.	6
Brazil	.	1	.	.	.	.	.	.	.	1
Canada	2	4	1	1	2	1	.	1	2	14
England, Ireland and Scotland	1	.	.	2	.	.	1	1	.	5
Finland, Denmark, Sweden and Norway	.	.	2	.	.	.	.	1	.	3
Italy	.	1	.	.	.	.	1	.	.	2
Russia	.	1	.	.	.	.	.	.	.	1
South Africa	.	4	.	1	.	.	.	.	.	5
Switzerland	.	1	.	.	.	.	.	.	.	1
The Netherlands	.	1	.	1	.	.	1	.	.	3
Ukraine	1	1	.	.	.	.	.	.	.	2
USA	2	4	1	7	.	2	.	4	.	20
	7	20	6	13	2	3	3	7	2	63

Prevalence of drinking in pregnancy

1. Botorff, J. L., Poole, N., Kelly, M. T., Greaves, L., Marcellus, L., & Jung, M. (2014). Tobacco and alcohol use in the context of adolescent pregnancy and postpartum: A scoping review of the literature. *Health & Social Care In The Community*, 22(6), 561-574.

This article presents a scoping review of literature on alcohol and tobacco use during adolescent pregnancy published from 1990-2012. The identified research is primarily descriptive and describes prevalence, trends and predictors of use during pregnancy. The authors concluded there is a lack of evidence for effective interventions for adolescents designed to prevent or reduce alcohol and tobacco use during pregnancy, few descriptions of gender-informed prevention or treatment for this population exist, and there is a lack of inclusion of adolescent voices in existing research.

2. Callinan, S., & Ferris, J. (2014). Trends in alcohol consumption during pregnancy in Australia, 2001–2010. *The International Journal Of Alcohol And Drug Research*, 3(1), 17-24.

The authors used the National Drug Strategy Household Survey in Australia to investigate trends in alcohol consumption during pregnancy in 2001, 2004, 2007 and 2010. They found that age was a significant predictor for alcohol consumption during pregnancy in 2010. However, when the data sets were combined they found that younger groups/cohorts decreased consumption at a faster rate over time than the older groups/cohorts. The authors concluded that alcohol consumption among pregnant women is decreasing in Australia.

3. Chambers, C. D., Yevtushok, L., Zymak-Zakutnya, N., Korzhynskyy, Y., Ostapchuk, L., Akhmedzhanova, D., . . . Wiertelcki, W. (2014). Prevalence and predictors of maternal alcohol consumption in 2 regions of Ukraine. *Alcoholism, Clinical And Experimental Research*, 38(4), 1012-1019.

The authors conducted a cross sectional screen of pregnant women in Ukraine during routine perinatal visits to identify alcohol use. They screened more than 11 thousand women over six years and found that: 93% reported ever drinking, of those 55% drank in the month around conception, and in their most recent month of pregnancy 46% reported alcohol use with 9% consuming at least three drinks per day. Significant predictors of heavy alcohol use included not being married, low education, smoking, younger age at drinking initiation and higher scores on the TWEAK screening test for harmful drinking.

4. Hicks, M., Tough, S., Johnston, D., Siever, J., Clarke, M., Sauve, R., Brant, R., & Lyon, A. (2014). T-ACE and predictors of self-reported alcohol use during pregnancy in a large, population-based urban cohort. *The International Journal of Alcohol and Drug Research*, 3(1), 51-61.

The authors used a prospective population-based cohort of pregnant women attending family physicians in Calgary to determine the relationship between T-ACE score and maternal self-reported alcohol use prior to and during pregnancy. At intake 44% of participants had a positive T-ACE score (2 or greater), which was predictive of alcohol use throughout pregnancy, although most women reported no alcohol after the first trimester (93%). Positive scores were significantly associated with younger age, being Caucasian, smoking during pregnancy, lower income, histories of depression, alcohol use, or binge drinking before pregnancy, and lower social support.

5. Kitsantas, P., Gaffney, K., Wu, H., & Kastello, J. (2014). Determinants of alcohol cessation, reduction and no reduction during pregnancy. *Archives of Gynecology & Obstetrics*, 289(4), 771-779.

Using the 2002-2009 data from the Pregnancy Risk Assessment Monitoring System (PRAMS), a population based U.S. monitor coordinated by the Centres for Disease Control (CDC), the authors identified predictive factors for three identified patterns of alcohol use during the third trimester of pregnancy- cessation, reduction and no reduction. In the sample, 50% drank alcohol before pregnancy, and of these 87% quit drinking during pregnancy, 7% reduced use, and 6% did not reduce their consumption. Their results indicated: older women and those with higher education were more likely to reduce rather than quit alcohol; women who were black or Hispanic, or overweight or obese were more likely to quit than reduce their consumption; and stressors such as abuse during pregnancy or having someone close to them with a drinking problem increased the risk of not quitting or reducing consumption.

6. Roberts, S. C. M., Wilsnack, S. C., Foster, D. G., & Delucchi, K. L. (2014). Alcohol Use Before and During Unwanted Pregnancy. *Alcoholism: Clinical & Experimental Research*, 38(11), 2844-2852.

Based on data from 956 women seeking pregnancy termination at 30 U.S. facilities between 2008 and 2010, predictors of alcohol use severity during unwanted pregnancy were identified. About 56% of the sample reported using alcohol in the month before pregnancy, with 35% of these women quitting and 20% reducing consumption one week after seeking termination. Of the women who were denied a termination (because they were past the gestational limit), 71% quit and 14% reduced their consumption. Significant predictors of alcohol severity included having completed college, tobacco use and recent physical violence. The reported rates of drinking before pregnancy recognition is

similar to national samples of women of childbearing age; however the proportion of binge drinking is higher.

7. Smith, L., Savory, J., Couves, J., & Burns, E. (2014). Alcohol consumption during pregnancy: Cross-sectional survey. *Midwifery*, 30(12), 1173-1178.

The authors conducted a cross sectional survey of 505 pregnant women attending their first antenatal appointment (10-11 weeks gestation) in South West England to identify the prevalence and pattern of alcohol consumption pre-conception and during the first trimester using the AUDI, ADIT-C and T-ACE tests. Eighty-one percent (81%) of the women consented to the brief alcohol-screening questionnaire. Of those screened 21% reported drinking alcohol, 2.4% binge drank at least month or weekly in the last three months, 2.2% exceeded recommended drinking limits of one to two units once or twice a week, 5.4% were identified as drinking at hazardous levels with an AUDIT-C score >3, and 22.2% drank at risky levels identified by a T-ACE score >2.

Influences and factors associated with drinking in pregnancy

1. Anderson, A. E., Hure, A. J., Forder, P. M., Powers, J., Kay-Lambkin, F. J., & Loxton, D. J. (2014). Risky Drinking Patterns Are Being Continued into Pregnancy: A Prospective Cohort Study. *PLoS ONE*, 9(1), 1-7.

The authors examined drinking patterns during pregnancy among risky drinkers (drinking weekly, binge drinking or both prior to pregnancy) among a sample of 1577 women in the Australian Longitudinal Study on Women's Health. Women in both binge categories were more likely to experience financial stress, not be partnered, smoke, use drugs, be in their first pregnancy, experience violence in their relationship and have less education. Most women (46%) continued their risky drinking pattern into pregnancy, 40% reduced and 14% ceased alcohol consumption. Women who binged only prior to pregnancy were more likely to continue rather than reduce drinking.

2. Balachova, T., Bonner, B., Bard, D., Chaffin, M., Isurina, G., Owora, A., Tsvetkova, L., & Volkova, E. (2014). Women's receptivity to Fetal Alcohol Spectrum Disorders prevention approaches: A case study of two regions in Russia. *The International Journal Of Alcohol And Drug Research*, 3(1), 5-15.

The authors conducted interviews with pregnant women and women of childbearing age in Russia to determine what influenced women's decisions to drink during pregnancy. They found that women were most influenced by their own knowledge, followed by information from a health care provider including OBGYN or nurse. Women regarded physician recommendations and research data considered as the most credible sources of information. Younger women were more likely to be influenced by their husbands, mothers, friends and coworkers about alcohol consumption during pregnancy. The authors concluded that broad dissemination of credible information about FSD is essential for influencing women's decisions to not drink during pregnancy, and that women's socio-demographic characteristics and alcohol consumptions levels need to be considered during the design of prevention programs.

3. Beijers, C., Burger, H., Verbeek, T., Bockting, C. L. H., & Ormel, J. (2014). Continued smoking and continued alcohol consumption during early pregnancy distinctively associated with personality. *Addictive Behaviors*, 39(5), 980-986.

The authors used the NEO-Five Factor Inventory (personality), the State Trait Anxiety Inventory and the Edinburgh Postnatal Depression Scale to examine the relationship of personality to continued alcohol use and smoking during pregnancy. They found an association between continued alcohol

consumption in pregnancy and higher levels of openness to experience and lower levels of conscientiousness, which was partly explained by both anxiety and depressive symptoms.

4. Bottorff, J. L., Poole, N., Kelly, M. T., Greaves, L., Marcellus, L., & Jung, M. (2014). Tobacco and alcohol use in the context of adolescent pregnancy and postpartum: A scoping review of the literature. *Health & Social Care In The Community*, 22(6), 561-574.

(See abstract above.)

5. Ceccanti, M., Fiorentino, D., Coriale, G., Kalberg, W. O., Buckley, D., Hoyme, H. E., . . . May, P. A. (2014). Maternal risk factors for fetal alcohol spectrum disorders in a province in Italy. *Drug and Alcohol Dependence*, 145, 201-208.

Using a case-control design, the authors used maternal interviews (7 years post-partum) to determine maternal risk factors for FASD in the Lazio region of Italy. Cases were mothers of children with FASD and controls were randomly selected from the community. Mothers with children with FASD were more likely to be married to a man with legal problems, drink three months prior to pregnancy, engage in more current drinking including drinking alone, and have alcohol problems in her family. An alcohol problem in the family was the most significant risk factor.

6. Chambers, C. D., Yevtushok, L., Zymak-Zakutnya, N., Korzhynskyy, Y., Ostapchuk, L., Akhmedzhanova, D., . . . Wertelecki, W. (2014). Prevalence and predictors of maternal alcohol consumption in 2 regions of Ukraine. *Alcoholism, Clinical And Experimental Research*, 38(4), 1012-1019.

(See abstract above.)

7. Choi, K. W., Abler, L. A., Watt, M. H., Eaton, L. A., Kalichman, S. C., Skinner, D., . . . Sikkema, K. J. (2014). Drinking before and after pregnancy recognition among South African women: the moderating role of traumatic experiences. *BMC Pregnancy & Childbirth*, 14(1), 1-22.

The authors explored the relationship between women's drinking levels before and after pregnancy recognition, and the moderating effects of traumatic experiences (childhood abuse and intimate partner violence [IPV]) in a longitudinal cohort of female drinkers in Cape Town South Africa. They found that 73% of women reported drinking a hazardous levels (AUDIT >8) following pregnancy recognition. Drinking prior to pregnancy significantly predicted drinking levels during pregnancy, and this relationship was moderated by childhood abuse and recent IPV. Women with traumatic experiences reported elevated AUDIT scores following pregnancy recognition, even if they were previously low-risk drinkers.

8. Eaton, L. A., Pitpitan, E. V., Kalichman, S. C., Sikkema, K. J., Skinner, D., Watt, M. H., . . . Cain, D. N. (2014). Food insecurity and alcohol use among pregnant women at alcohol-serving establishments in South Africa. *Prevention Science*, 15(3), 309-317.

To investigate the relationship between food insecurity and alcohol use among pregnant women, the authors recruited women attending alcohol-serving establishments in Cape Town South Africa and had them complete a computer-assisted interview. High levels of alcohol use were reported among pregnant women; 65% consumed alcohol at least every month, and 29% consumed alcohol at least two or three times per week. The majority of pregnant women (87%) reported experiencing some

food insecurity in the past month (e.g. food unavailable, eating less), and food insecurity was significantly associated with alcohol use.

9. Esper, L. H., & Furtado, E. F. (2014). Identifying maternal risk factors associated with Fetal Alcohol Spectrum Disorders: A systematic review. *European Child & Adolescent Psychiatry*, 23(10), 877-889.

This article reports the results of a systematic review of papers describing demographic, psychological and social maternal risk factors associated with FASD. Mothers of children with FASD tend to be older at the time of child's birth, have lower education levels, have family members with alcohol problems, have other children with FASD, have little prenatal care, use alcohol before pregnancy, and have frequent episodes of binge drinking.

10. Grant, T., Graham, J. C., Ernst, C. C., Peavy, K. M., & Brown, N. N. (2014). Improving pregnancy outcomes among high-risk mothers who abuse alcohol and drugs: Factors associated with subsequent exposed births. *Children and Youth Services Review*, 46, 11-18.

The authors used a longitudinal design to explore whether the loss of a child into the child welfare system due to substance use is associated with a subsequent birth in a sample of substance-abusing mothers enrolled in the Washington State parent child assistance program (PCAP). Their results indicated that over 20% of women had a subsequent birth by the end of the program, and over half of these women used alcohol and drug during this pregnancy. The adjusted odds of having a subsequent birth were increased nearly two-fold for women who already had a child in the child welfare system, and the odds of having an alcohol exposed subsequent birth were increased three fold.

11. Hammer, R., & Inglin, S. (2014). 'I don't think it's risky, but...': pregnant women's risk perceptions of maternal drinking and smoking. *Health, Risk & Society*, 16(1), 22-35.

Using semi-structured interviews with 50 pregnant women in Switzerland, the authors investigated how pregnancy changed women's consumption of alcohol and tobacco and their perceptions of their riskiness. All of the women knew that smoking and drinking during pregnancy was potentially harmful, and referred to information provided at health care appointments, in public health campaigns, brochures, and books or magazines for expecting mothers. Although the women saw smoking during pregnancy as a risk-taking behaviour that endangered the foetus, under certain conditions they saw moderate alcohol consumption as acceptable and responsible behaviour. Some women identified that their health professional had a flexible position on occasional moderate drinking, while others had personal experiences that shaped their judgment of risk.

12. Hicks, M., Tough, S., Johnston, D., Siever, J., Clarke, M., Sauve, R., Brant, R., & Lyon, A. (2014). T-ACE and predictors of self-reported alcohol use during pregnancy in a large, population-based urban cohort. *The International Journal Of Alcohol And Drug Research*, 3(1), 51-61.

(See abstract above.)

13. Kitsantas, P., Gaffney, K., Wu, H., & Kastello, J. (2014). Determinants of alcohol cessation, reduction and no reduction during pregnancy. *Archives of Gynecology & Obstetrics*, 289(4), 771-779.

(See abstract above.)

14. May, P. A., Hamrick, K. J., Corbin, K. D., Hasken, J. M., Marais, A.-S., Brooke, L. E., . . . Gossage, J. P. (2014). Dietary intake, nutrition, and fetal alcohol spectrum disorders in the Western Cape Province of South Africa. *Reproductive Toxicology*, 46, 31-39.

The authors assessed nutrient adequacy among mothers of children with FASD and compared them to normal control in South Africa. They found that mothers of children with FASD had lower intake of multiple key nutrients including vitamin A, D, E, C, K, thiamine, riboflavin, Vitamin B6, folate, calcium, magnesium, iron, zinc, potassium, and calcium. These lower levels correlated significantly with heavy drinking. The authors concluded that poor diet and multiple nutritional inadequacies, coupled with alcohol use increased the risk for FASD in this population.

15. McDonald, S. W., Hicks, M., Rasmussen, C., Nagulesapillai, T., Cook, J., & Tough, S. C. (2014). Characteristics of Women Who Consume Alcohol Before and After Pregnancy Recognition in a Canadian Sample: A Prospective Cohort Study. *Alcoholism: Clinical & Experimental Research*, 38(12), 3008-3016.

The authors investigated the maternal characteristics associated with binge drinking prior to pregnancy recognition and low to moderate levels after pregnancy among 2,246 women in Alberta who consumed alcohol 1 year prior to pregnancy. Thirteen percent reported binge drinking prior to pregnancy recognition, 46% of these women continued to drink after pregnancy recognition, almost all at low to moderate levels. Significant predictors of binge drinking early in pregnancy included low education levels, first pregnancy, unplanned pregnancy, smoking prior to pregnancy, low levels of optimism and binge drinking the year before pregnancy. Having an unplanned pregnancy, low body mass pre-pregnancy and smoking or binge drinking in the year before pregnancy were predictors of low to moderate consumption during pregnancy.

16. Passey, M. E., Sanson-Fisher, R. W., D'Este, C. A., & Stirling, J. M. (2014). Tobacco, alcohol and cannabis use during pregnancy: Clustering of risks. *Drug & Alcohol Dependence*, 134, 44-50.

The authors examined tobacco, alcohol and cannabis use among pregnant Indigenous women attending antenatal services in Australia using a cross sectional survey. They identified a clustering of risk among a small group of disadvantaged women. Twenty one percent of the women reported current alcohol use, and 60% of women who reported drinking at the start of their pregnancy reported quitting. Women using any one substance were significantly more likely to also use others, and years of schooling and age of starting tobacco use were independently associated with current use of multiple substances.

17. Terplan, M., Cheng, D., & Chisolm, M. S. (2014). The relationship between pregnancy intention and alcohol use behavior: An analysis of PRAMS data. *Journal of Substance Abuse Treatment*, 46(4), 506-510.

Using a large U.S. national sample from the Pregnancy Risk Assessment Monitoring System (PRAMS) the authors examined the relationship between pregnancy intention and the change in alcohol use between 3 months prior to pregnancy and in the last three months of pregnancy. They found no relationship between pregnancy intention and cessation or reduction of alcohol use. Women with unwanted pregnancies were significantly more likely to report binge drinking during pregnancies compared with women who planned their pregnancy. The authors concluded that interventions should target binge drinking particularly among women who drink in the three months prior to pregnancy.

18. Watt, M. H., Eaton, L. A., Choi, K. W., Velloza, J., Kalichman, S. C., Skinner, D., & Sikkema, K. J. (2014). "It's better for me to drink, at least the stress is going away": Perspectives on alcohol use during pregnancy among South African women attending drinking establishments. *Social Science & Medicine*, 116, 119-125.

In depth qualitative interviews were conducted with a convenience sample of currently pregnant or recently post-partum women in South Africa who reported drinking during pregnancy to investigate the factors that contributed to their drinking. The majority of the women had sustained or increased drinking after pregnancy recognition with a typical pattern including multiple days of binge drinking per week. Themes that emerged from the data included women drank to cope with stress and negative emotions, and as a way to retain social connections, social norms in their peer groups supported drinking during pregnancy, women lacked attachment to the pregnancy or were resistant to motherhood, and women's alcohol use was driven by addiction. They authors suggest that interventions that include counselling, contraception, mental health and coping skills, peer based interventions to change social norms, and treatment for alcohol depended women during pregnancy are needed in this population.

19. Witt, W. P., Mandell, K. C., Wisk, L. E., Cheng, E. R., Chatterjee, D., Wakeel, F., . . . Zarak, D. (2014). Predictors of alcohol and tobacco use prior to and during pregnancy in the US: The role of maternal stressors. *Archives of Women's Mental Health*.

Using data from the Early Childhood Longitudinal Study Birth Cohort the authors investigated the association between stressful life events prior to conception and women's alcohol and tobacco use prior to and throughout her pregnancy. Stressful life events included death of a parent, spouse, or child, divorce or separation, or fertility problems prior to conception. Having experienced any stressful life event increased the odds of tobacco use prior to pregnancy, and alcohol and tobacco use during pregnancy.

20. Woodin, E. M., Caldeira, V., Sotskova, A., Galaugher, T., & Lu, M. (2014). Harmful alcohol use as a predictor of intimate partner violence during the transition to parenthood: Interdependent and interactive effects. *Addictive Behaviors*, 39(12), 1890-1897.

Little is known about the role of alcohol use during the transition to parenthood. This study was designed to examine harmful alcohol use as a dyadic and interactive time-varying risk factor for psychological and physical IPV across the transition to parenthood using a sample of 98 couples assessed prenatally and again at one and two years postpartum. They found that changes in harmful alcohol use during the transition to parenthood were significantly related to changes in psychological IPV for both men and women and with physical IPV for men only, whereas harmful alcohol use was actually negatively related to variations in women's physical IPV. From a range of findings from this study the authors conclude that harmful alcohol use by both men and women combines in a dyadic and interactive manner to place couples at risk for IPV during the transition to parenthood. Prenatal interventions may benefit from strategies to reduce the harmful use of alcohol by both men and women during the prenatal and postpartum periods.

Biomedical mechanisms of the effects of alcohol (selected)

1. Kleiber, M. L., Diehl, E. J., Laufer, B. I., Mantha, K., Chokroborty-Hoque, A., Alberry, B., & Singh, S. M. (2014). Long-term genomic and epigenomic dysregulation as a consequence of prenatal alcohol exposure: a model for fetal alcohol spectrum disorders. *Frontiers in Genetics*, 5, 1-12.

This article summarizes recent data on the understanding of the genetic and epigenetic etiology of FASD and the factors that maintain these phenotypes through the lifespan. The authors describe FASD as a continuum of molecular events that begins with a cellular stress and ends with a “footprint” of epigenetic dysregulation across the genome. They report on multiple studies using mouse models and describe ethanol-induced genetic alterations. They conclude that their proposed model suggests the potential for interventions because epigenetic changes are malleable and may be altered by postnatal environment.

2. Mead, E. A., & Sarkar, D. K. (2014). Fetal alcohol spectrum disorders and their transmission through genetic and epigenetic mechanisms. *Frontiers in Genetics*, 5, 1-10.

The authors summarize available literature on the genetic and epigenetic factors related to FASD. They describe what is currently known. They focus on the observed changes in the hypothalamic-pituitary adrenal (HPA) axis and how these changes are related to mental disorders, sensitivity to stress, and other health concerns among those affected by FASD.

Level 1 Prevention

1. Drabble, L., Thomas, S., O'Connor, L., & Roberts, S. C. M. (2014). State responses to alcohol use and pregnancy: Findings from the Alcohol Policy Information System. *Journal of Social Work Practice in the Addictions*, 14(2), 191-206.

The authors describe U.S. state policies related to alcohol use and pregnancy, and the trends in policies over time. They report variability in the types of policies: 19 were primarily supportive, 12 primarily punitive, 12 had a mixed approach and 8 states had no policies. They conclude that there is a need to examine the consequences of these policies, especially punitive and mixed approaches.

2. France, K. E., Donovan, R. J., Bower, C., Elliott, E. J., Payne, J. M., D'Antoine, H., & Bartu, A. E. (2014). Messages that increase women's intentions to abstain from alcohol during pregnancy: results from quantitative testing of advertising concepts. *BMC Public Health*, 14(1), 1-23.

The authors used a computer-based questionnaire with pregnant women and women of child bearing age to evaluate three different advertising concepts related to alcohol use and pregnancy: a threat appeal, a positive appeal promoting self-efficacy, and a combination approach. Participants viewed one of the three ads, or a control ad, and were then asked about their intention to abstain from and reduce alcohol during pregnancy, the perceived main message, and the potential of the ad to promote defensive responses. The concepts containing a threat appeal were significantly more effective in increasing intention to abstain from alcohol. They authors recommend that educational campaigns use a combination of threat and self-efficacy messages as this combination approach balances positive and negative emotional responses.

3. Kavanagh, P. S., & Payne, J. S. (2014). Education, safe drinking practices and fetal alcohol spectrum disorder in the Kimberley region of Western Australia. *Journal of Paediatrics and Child Health*, 50(9), 701-706.

The authors surveyed 99 men and women (39% Indigenous) in a remote community in Western Australia on their knowledge of recommended safe drinking practices during pregnancy and knowledge of FASD and its outcomes. They found that education level was the largest predictor of knowledge of safe drinking practices and having heard of FASD was the biggest predictor of knowledge of the outcomes for children with FASD. The authors suggest that early education on the

consequences of alcohol consumption for women of child bearing age is essential in this, and similar, communities to prevent FASD.

4. Leppo, A., Hecksher, D., & Tryggvesson, K. (2014). 'Why take chances?' advice on alcohol intake to pregnant and non-pregnant women in four Nordic countries. *Health, Risk & Society*, 16(6), 512-529.

The authors conducted a content analysis on health education materials and other government documents, such as guidelines for health professionals, in four Nordic countries (Denmark, Norway, Sweden and Finland). They describe the guidance given to women on alcohol in pregnancy, and examine the rationale for this advice. All four countries advise women to not drink any alcohol during pregnancy, although the authors indicate that there is no sound evidence linking low levels of alcohol intake during pregnancy and foetal harm. The authors also found that in all four countries the printed and widely available health materials did not explain that the abstinence advice was based on a precautionary approach, not on actual evidence. They argue that the observed shift in materials away from "estimation of risk" to the "precautionary principle" is part of a more broad social-cultural push that in the context of pregnancy symbolically protects the purity of a foetus and the construct of a perfect mother.

5. Strøm, H. K., Adolfsen, F., Fossum, S., Kaiser, S., & Martinussen, M. (2014). Effectiveness of school-based preventive interventions on adolescent alcohol use: A meta-analysis of randomized controlled trials. *Substance Abuse Treatment, Prevention, and Policy*, 9.

The authors conducted a meta-analysis of randomized controlled trials published between 1990-2014 on school-based alcohol prevention interventions delivered to adolescents. The majority of studies were conducted in the USA (61%). The total number of baseline participants was 39,289 with a mean age of 13.16 years and equal gender distribution. The majority of the interventions addressed normative and social influence, some provided education on alcohol and life skills training including coping mechanisms and problem solving skills. The meta analysis resulted in a small but significant overall effect in favour of interventions. They also found a significant effect of school-based prevention on quantity of alcohol consumed, but not on frequency of alcohol use. Long-term results showed no significant differences between intervention and control groups beyond one year. The authors concluded that even a small reduction in adolescent drinking can lead to positive health and social outcomes, particularly from universal prevention efforts, and the results of the meta analysis support school based interventions to prevent alcohol use among adolescents.

6. Thomas, G., Gonneau, G., Poole, N., & Cook, J. (2014). The effectiveness of alcohol warning labels for reducing drinking in pregnancy: A brief review. *International Journal of Alcohol and Drug Research (IJADR), Second Special Issue on FASD*, 3(1), 91-103.

The authors describe the results of a scoping review of the literature on the effectiveness of alcohol warning labels for changing attitudes and behaviours related to alcohol use during pregnancy. The authors report that although alcohol-warning labels are popular with the public, the evidence for their effectiveness for changing behaviour is limited. For maximum effectiveness, labels should clearly address the consequences of alcohol consumption and be coupled with coordinated and integrated social messaging campaigns. The authors also note that warning labels are most effective with low-risk drinkers and have not been shown to influence women who drink heavily or binge drink during pregnancy. However, they may contribute to dialogue about alcohol consumption and play a role in shifting social norms around risk reduction.

Level 2 Prevention

1. Chiodo, L. M., Delaney-Black, V., Sokol, R. J., Janisse, J., Pardo, Y., & Hannigan, J. H. (2014). Increased Cut-Point of the TACER-3 Screen Reduces False Positives Without Losing Sensitivity in Predicting Risk Alcohol Drinking in Pregnancy. *Alcoholism: Clinical & Experimental Research*, 38(5), 1401-1408.

The authors validated the TACER-3 screening test to detect maternal risk alcohol use during pregnancy, by comparing results with that of the T-ACE screening test and a semi-structured interview on substance use. Women were categorized into one of three groups: not at risk (negative on both tests), at-risk group (positive on both tests), change risk group (positive on the T-ACE, but not on the TACER-3). The TACER-3 cut point of three yielded fewer false positives than the T-ACE with a cut point of two. Based on their results, they concluded that the TACER-3 was more effective in selectively identify women drinking at risky levels than the original T-ACE.

2. Doi, L., Cheyne, H., & Jepson, R. (2014). Alcohol brief interventions in Scottish antenatal care: a qualitative study of midwives' attitudes and practices. *BMC Pregnancy & Childbirth*, 14(1), 1-27.

A program for screening and brief alcohol interventions (SBI) was implemented in antenatal care in Scotland. Using semi-structured interviews and focus groups with midwives, the authors examine attitudes and practice regarding screening and intervention. Although midwives were generally positive about their involvement in SBI they were not completely convinced of the purpose and value of screening in antenatal care. These programs were seen as being low priority and many felt that sufficient rapport was not established in the first appointment to discuss alcohol issues appropriately. They acknowledged that most women had already stopped consuming alcohol in pregnancy, but feared that those who have not would be alienated by these discussions.

3. Hutton, H. E., Chander, G., Green, P. P., Hutsell, C. A., Weingarten, K., & Peterson, K. L. (2014). A Novel Integration Effort to Reduce the Risk for Alcohol-Exposed Pregnancy Among Women Attending Urban STD Clinics. *Public Health Reports*, 129, 56-62.

The authors describe their experience of integrating and implementing Project CHOICES into STD clinics in Baltimore and Denver. Project CHOICES is an evidence-based brief intervention to lower risk of alcohol exposed pregnancy (AEP) by targeting alcohol and contraceptive behaviour using motivational interviewing. The authors discuss how their experience aligned with the program collaboration and service integration (PCSI) principles from the CDC and describe the results of an evaluation of the programs. At three-month follow up, 81% of enrolled women in Baltimore and 74% of women in Denver reduced their risk of AEP, primarily because of increased effective contraceptive. The authors attributed the differences between sites to differences in age, baseline alcohol consumption and location of the clinics. Based on anonymous client satisfaction surveys both sites received scores of 4.9-5 on a scale of 1-5 (with 5 being very satisfied). The authors concluded that CHOICES has been effectively implemented in these settings and that screening was quick, universal and easily incorporated into usual clinic procedures.

4. Jacobs, L., & Jacobs, J. (2014). 'Bad' Mothers have Alcohol Use Disorder: Moral Panic or Brief Intervention? *Gender & Behaviour*, 12(3), 5971-5979.

The authors used a discourse analytic approach on interviews with South African mothers with drinking problems to describe their life stories and their barriers to accessing treatment. Their findings indicate that the women felt like bad mothers who had been rejected by society because they drink. The women internalized a negative gender script and experienced shame, stigma, guilt

and secrecy that contributed to barriers for seeking health care related to their alcohol use. The authors conclude with policy suggestions including encouraging primary health care providers to conduct brief interventions with women who have alcohol use disorders.

5. Lange, S., Shield, K., Koren, G., Rehm, J., & Popova, S. (2014). A comparison of the prevalence of prenatal alcohol exposure obtained via maternal self-reports versus meconium testing: a systematic literature review and meta-analysis. *BMC Pregnancy & Childbirth*, 14(1), 1-16.

The authors conducted a systematic review and meta analysis of studies that compared maternal self-reports of prenatal alcohol exposure to meconium testing to quantify the disparity between the two methods. Their meta analysis found that the prevalence of prenatal alcohol exposure measured by meconium testing was 4.26 times the pooled prevalence measured by self-report. The authors conclude that if health care professionals rely on only self-report they could miss infants who have been prenatally exposed to alcohol.

6. Miller, C., Lanham, A., Welsh, C., Ramanadhan, S., & Terplan, M. (2014). Screening, Testing, and Reporting for Drug and Alcohol Use on Labor and Delivery: A Survey of Maryland Birthing Hospitals. *Social Work in Health Care*, 53(7), 659-669.

In this study the authors determine the rate of screening, testing and reporting on alcohol and drug use at the time of delivery in Maryland birthing hospitals. Although 97% of the hospitals reported universal screening, only 6% used a valid instrument. Testing was reported by 94%, with 45% universally testing mothers and 7% testing infants. Only 32% reported obtaining maternal consent prior to testing.

7. Moise, I. K., Green, D., Toth, J., & Mulhall, P. F. (2014). Evaluation of an authority innovation-decision: Brief alcohol intervention for pregnant women receiving women, infants, and children services at two Illinois health departments. *Substance Use & Misuse*, 49(7), 804-812.

The authors used surveys and focus groups with staff at two Illinois health departments to explore the obstacles and challenges that shaped the efficacious implementation of prenatal brief alcohol interventions. Their results suggest that implementation of brief alcohol interventions were facilitated by staff perceptions of the benefits, readiness to implement the intervention (based on Roger's theory of Diffusion of Innovation) and organizational support. Barriers to implementation included limitations of information systems, ambiguous screening questions and high caseloads. The authors offer suggestions for effective implementation of brief alcohol interventions.

8. O'Brien, P. (2014). Performance Measurement: A Proposal to Increase Use of SBIRT and Decrease Alcohol Consumption During Pregnancy. *Maternal & Child Health Journal*, 18(1), 1-9.

The authors begin by summarizing three existing practice guidelines in the USA that recommend screening, brief intervention and referral to treatment when necessary (SBIRT) for all pregnant women. They then summarize the evidence related to the implementation of these practice guidelines and existing related performance measure used to assess screening. They propose a performance measure for evaluating the application for universal SBIRT, including how these new measures could be applied to practice settings and potential data sources for the performance measure.

9. Osterman, R. L., Carle, A. C., Ammerman, R. T., & Gates, D. (2014). Single-session motivational intervention to decrease alcohol use during pregnancy. *Journal of Substance Abuse Treatment, 47*(1), 10-19.

This randomized controlled trial evaluated the effectiveness of a single-session of motivational interviewing for decreasing alcohol use during pregnancy. Pregnant women who drank any amount of alcohol in the previous year were randomized to an MI intervention or control group. A single session of MI was not found to be effective in decreasing alcohol use, but the authors attribute this to the low levels of alcohol use reported at baseline and the positive effects of screening for alcohol use used during recruitment.

10. Payne, J. M., Watkins, R. E., Jones, H. M., Reibel, T., Mutch, R., Wilkins, A., . . . Bower, C. (2014). Midwives' knowledge, attitudes and practice about alcohol exposure and the risk of fetal alcohol spectrum disorder. *BMC Pregnancy & Childbirth, 14*(1), 1-26.

The authors used a cross sectional survey to investigate Australian midwives' knowledge, attitude and practice related to alcohol consumption during pregnancy and FASD. The results indicated that nearly all (93%) of midwives asked pregnant women about their alcohol consumption and offered advice in accordance with the Australian Alcohol Guidelines, while 64% informed pregnant women about the effects of alcohol in pregnancy. Less than half used the recommended screening tool (AUDIT), and not all conducted brief intervention when indicated (70%). The vast majority endorsed more professional development about screening tools, brief interventions, and alcohol consumption during pregnancy.

11. Sheehan, J., Gill, A., & Kelly, B. D. (2014). The effectiveness of a brief intervention to reduce alcohol consumption in pregnancy: A controlled trial. *Irish Journal of Psychological Medicine, 31*(3), 175-189.

The authors investigated the effectiveness of screening and one-session brief intervention for reducing alcohol use among pregnant women in Ireland. Six hundred and fifty-six women who drank alcohol before their pregnancy were recruited during their first visit at an outpatient antenatal clinic in Dublin, and were randomly assigned to either the brief intervention or control. Prior to pregnancy, overall 57% of the participants reported binge drinking, with only 4.8% binge drinking during pregnancy. The intervention did find any significant factor related to reduction in alcohol consumption above that attributable to pregnancy and comprehensive screening at antenatal care.

12. van der Wulp, N. Y., Hoving, C., & de Vries, H. (2014). Dutch midwives' experiences with implementing health counselling to prevent prenatal alcohol use. *Journal of Clinical Nursing, 23*(21-22), 3286-3289.

To investigate experiences with the implementation of a brief health counselling intervention to prevent prenatal alcohol use, the authors conducted semi structured interviews with Dutch midwives who had recently participated in a trial assessing the effects of such an intervention. The results indicated that midwives appreciated the standardization of alcohol advice among their colleagues and the simple and clear structure of the intervention. They however found it too extensive when a client immediately indicated intention to stop using alcohol during her pregnancy. Midwives felt capable of applying the intervention into their daily practice, however they doubted the importance of this intervention because their clients used little alcohol, and they saw that it was the client's own responsibility to decide to drink, and saw prenatal alcohol use as less harmful than smoking.

13. Zoorob, R. J., Durkin, K. M., Gonzalez, S. J., & Adams, S. (2014). Training nurses and nursing students about prevention, diagnoses, and treatment of fetal alcohol spectrum disorders. *Nurse Education in Practice*, 14(4), 338-344.

This study reports on a pre- and post-test evaluation of a 1-hour training session on alcohol screening, brief intervention, diagnoses and treatment of FASD with nurses and nursing students in the USA. The results indicated that after training nurses were more likely to know what constitutes binge drinking, be able to identify the facial abnormalities associated with FASD as well as the criteria for diagnosis. They also felt more confident educating women on the effect of prenatal alcohol use, identifying FASD and using relevant resources.

Level 3 Prevention

1. Benoit, C., Stengel, C., Marcellus, L., Hallgrimsdottir, H., Anderson, J., MacKinnon, K., . . . Charbonneau, S. (2014). Providers' constructions of pregnant and early parenting women who use substances. *Sociology of Health & Illness*, 36(2), 252-263.

Drinking alcohol and using other drugs during pregnancy and early parenthood cuts across social divisions and is shaped by socio-structural contexts including health care, yet this use is often conceptualised within an individualised framework. The authors examine qualitative data from representatives of a recent harm reduction intervention for pregnant and postpartum women who are/have used substances to determine their conceptualization of substance use in the perinatal period. They found that most study participants regard any substance use during pregnancy, birth and the postpartum period as fundamentally unacceptable. They describe this framing of problematic substance use as accomplished via gendered responsabilisation of women as foetal incubators and primary caregivers of infants. Some policy implications are offered.

2. Thanh, N. X., Jonsson, E., Moffatt, J., Dennett, L., Chuck, A. W., & Birchard, S. (2014). An economic evaluation of the parent-child assistance program for preventing fetal alcohol spectrum disorder in Alberta, Canada. *Administration and Policy in Mental Health and Mental Health Services Research*. [Published online]

The authors used a decision analytic modeling technique to estimate the incremental cost-effectiveness ratio and net monetary benefit of the P-CAP program in the Alberta Fetal Alcohol Spectrum Disorder Service Network. They estimated that the program prevented between 20-43 live births with FASD, with an incremental cost per prevented case of FASD of \$72,000-153,000 (\$13 - 31 million total) in a three-year period. The results indicate that P-CAP is cost-effective and the effects of the program include not only reduced alcohol use during pregnancy, but also increased effective contraceptive use.

Level 4 Prevention

1. Holland, M. L., Christensen, J. J., Shone, L. P., Kearney, M. H., & Kitzman, H. J. (2014). Women's reasons for attrition from a nurse home visiting program. *Journal of Obstetric, Gynecologic, & Neonatal Nursing: Clinical Scholarship for the Care of Women, Childbearing Families, & Newborns* 43(1), 61-70.

The authors describe mothers' reasons for leaving a home visiting program early using semi-structured interviews with mothers who dropped out of the Nurse-Family Partnership (NFP) and

two focus groups with nurses and nurse supervisors at an NFP site. The reasons for leaving the programming early were: The program was not perceived to fit a mother's needs when she was overwhelmed with other responsibilities, the nurse did not meet her expectations, the content was not of interest, or the mother did not desire visits after the infant was born. Nurses and mothers described the need for mothers to have organizational and communication skills, such as keeping track of appointments, calling to reschedule, articulating needs, and asking for assistance. Disruptive external influences included nurse turnover and unstable living situations, including frequent moves and crowded housing. Each of these types of barriers had potential to interact with the others, creating complex combinations of challenges to retention. The authors concluded that retention might be improved by reframing program relevance to individual mothers and increasing maternal organizational and communication skill development.

2. Marcellus, L. (2014). Supporting women with substance use issues: Trauma informed care as a foundation for practice in the NICU. *Neonatal Network*, 33(6), 307-314.

The authors describe how a trauma-informed practice in neonatal intensive care units (NICU) can improve outcomes for families coping with the effects of substance use. They summarize the current state of knowledge on trauma-informed care and how it relates to women's substance use. They then make recommendations for how this knowledge can be translated to the NICU context, and provide resources for more information.

3. Rubio, D. M., Day, N. L., Conigliaro, J., Hanusa, B. H., Larkby, C., McNeil, M., . . . Kraemer, K. L. (2014). Brief motivational enhancement intervention to prevent or reduce postpartum alcohol use: A single-blinded, randomized controlled effectiveness trial. *Journal of Substance Abuse Treatment*, 46(3), 382-389.

The authors conducted a randomized control trial of a five-session brief motivational enhancement intervention (delivered at study enrolment, 4 and 8 weeks after enrolment, 32 weeks of gestation and 6 weeks postpartum) to reduce postpartum alcohol use among women who consumed alcohol during pregnancy. Compared with usual care, the women in the intervention group were less likely to use any alcohol, and consumed fewer drinks per day in the postpartum period, but these differences were not significant. The intervention did not conclusively decrease alcohol use in the post partum period.

Preconception interventions

1. Agricola, E., Pandolfi, E., Gonfiantini, M. V., Gesualdo, F., Romano, M., Carloni, E., . . . Tozzi, A. E. (2014). A cohort study of a tailored web intervention for preconception care. *BMC Medical Informatics & Decision Making*, 14(1), 1-25.

This article describes the results of an online study of Italian women of childbearing age. Baseline data on health status, lifestyle and knowledge of risk factors for adverse pregnancy outcomes were used to generate tailored health documents and recommendations on a variety of topics including folic acid supplementation, vaccination, smoking and alcohol consumption. At baseline 69% consumed alcohol and at six months follow up they observed a decrease of -46.5%. At follow up 71% of the participants had a preconception visit with a physician, and there was improvement in knowledge about preconception behaviour to prevent adverse pregnancy outcomes.

2. Shannon, G. D., Alberg, C., Nacul, L., & Pashayan, N. (2014). Preconception healthcare and congenital disorders: Systematic review of the effectiveness of

preconception care programs in the prevention of congenital disorders. *Maternal And Child Health Journal*, 18(6), 1354-1379.

The authors conducted a systematic review of preconception interventions to reduce congenital disorders and improve the health of reproductive age women. They included six articles (two systematic reviews, two RCTs and one multi-site study) on interventions to reduce alcohol use including educational sessions, motivational interviews, brief interventions and workbooks. The interventions were targeted at women planning pregnancy, women with risk drinking behaviour or women in a general primary care population. Although alcohol related behaviour changes were reported in the literature, no studies observed women's drinking behaviour to congenital outcomes such as FASD.

3. Temel, S., van Voorst, S. F., Jack, B. W., Denktas, S., & Steegers, E. A. P. (2014). Evidence-based preconceptional lifestyle interventions. *Epidemiologic Reviews*, 36(1), 19-30.

The authors conducted a systematic review of effective preconception lifestyle interventions for reducing risk factors, including alcohol use, smoking, diet, physical activity, and folic acid supplementation and improving pregnancy outcomes. The authors identified one randomized controlled trial related to alcohol. The identified study assessed the effectiveness of a four session counselling intervention that included personalised feedback and goal setting related to risk drinking among women of childbearing age who drank at risky levels. Women who received the intervention self reported a significantly reduced risk of an AEP nine months post intervention. The authors concluded that more evidence is necessary on the effectiveness of interventions for reducing alcohol use in the preconception period.

Interventions reaching adolescent and young women

1. Armitage, C. J., Rowe, R., Arden, M. A., & Harris, P. R. (2014). A brief psychological intervention that reduces adolescent alcohol consumption. *Journal of Consulting and Clinical Psychology*, 82(3), 546-550.

The authors use a randomized control design to test the effects of a self-affirming brief intervention for reducing alcohol consumption among adolescents (both male and female). They found that adolescents in the intervention group significantly decreased their alcohol consumptions, consuming 2.48 grams fewer of pure alcohol per day at the end of the study compared to a control group.

2. Bottorff, J. L., Poole, N., Kelly, M. T., Greaves, L., Marcellus, L., & Jung, M. (2014). Tobacco and alcohol use in the context of adolescent pregnancy and postpartum: A scoping review of the literature. *Health & Social Care In The Community*, 22(6), 561-574.

(See abstract above.)

3. Dembo, R., Briones-Robinson, R., Ungaro, R., Barrett, K., Gullledge, L., Winters, K. C., . . . Wareham, J. (2014). Brief Intervention for Truant Youth Sexual Risk Behavior and Alcohol Use: A Parallel Process Growth Model Analysis. *Journal of Child & Adolescent Substance Abuse*, 23(3), 155-168.

Using a longitudinal design the authors examined whether alcohol use and risky sexual behaviour were related and tested the effectiveness of a brief intervention on alcohol use and sexual risk behaviour in a sample of truant youth (both male and female). The results indicated that alcohol use

and sexual risk were longitudinally related. However, they observed limited treatment effects on alcohol use and risky sexual behaviour.

4. Doumas, D. M., Nelson, K., DeYoung, A., & Renteria, C. C. (2014). Alcohol-related consequences among first-year university students: Effectiveness of a web-based personalized feedback program. *Journal of College Counseling, 17*(2), 150-162.

The authors used a randomized control trial to test the effectiveness of e-CHUG, a brief web-based program designed to reduce high risk drinking using personal feedback and normative data related to drinking and the risk associated with drinking, among first year college students (both male and female). They found that students in the intervention group who binge drank at baseline were significantly less likely to have received a university sanction for campus alcohol policy violations than those in the control group over the academic year.

5. Kenney, S. R., Napper, L. E., LaBrie, J. W., & Martens, M. P. (2014). Examining the efficacy of a brief group protective behavioral strategies skills training alcohol intervention with college women. *Psychology of Addictive Behaviors, 28*(4), 1041-1051.

The authors used a randomized control design to test the effectiveness of a single session intervention based on protective behavioural strategies (e.g. setting a limit on number of drinks, avoiding drinking games) to reduce risky alcohol use among heavy-drinking first year college women. They found that women in the intervention group reported significantly greater use of protective behavioural strategies and reductions in both heavy episodic drinking and alcohol consequences. The intervention was found to be particularly effective among women with high levels of anxiety.

6. Merrill, J. E., Reid, A. E., Carey, M. P., & Carey, K. B. (2014). Gender and depression moderate response to brief motivational intervention for alcohol misuse among college students. *Journal of Consulting and Clinical Psychology, 82*(6), 984-992.

To investigate the effect of a brief motivational intervention to reduce problematic drinking on subgroups college student (by gender and depression level) the authors conducted a randomized control trial. The authors found that compared with controls, women with low-depression in the intervention group significantly reduced their drinking; where as women with high depression did not show a differential improvement. Among men the opposite relationship was observed, with high-depression men significantly reducing their drinking, and low-depression men not showing any improvement.

7. Strøm, H. K., Adolfsen, F., Fossum, S., Kaiser, S., & Martinussen, M. (2014). Effectiveness of school-based preventive interventions on adolescent alcohol use: A meta-analysis of randomized controlled trials. *Substance Abuse Treatment, Prevention, And Policy, 9*.

(See abstract above.)

Other - Articles by pNAT members with relevance to FASD prevention

1. Rutman, D., Poole, N., Hume, S., Hubberstey, C., & Van Bibber, M. (2014). Building a framework for evaluation of FASD prevention and support programs: A

collaborative Canadian project. *The International Journal of Alcohol and Drug Research (IJADR)*, *Second Special Issue on FASD*, 3(1), 71-80.

The authors describe a project that identified promising evaluation methods and created common evaluation frameworks for FASD prevention programs for pregnant women and mothers and supportive interventions for youth and adults living with FASD. The project used mixed-methods including a literature and document review, and iterative consultations with program providers, managers, funders, researchers and evaluators. The authors created three visual maps of evaluation frameworks that depict theoretical foundations, activities and approaches, formative outcomes and participant, community and systemic outcomes for 1) FASD prevention programs, 2) FASD support programs and 3) FASD programs in Aboriginal communities.

2. Rowan, M., Poole, N., Shea, B., Gone, J., P, Myota, D., Farag, M., . . . Dell, C. (2014). Cultural interventions to treat addictions in Indigenous populations: Findings from a scoping study. *Substance Abuse Treatment, Prevention, and Policy*, 9(34).

The authors describe the results of a scoping review of the literature on culture-based programs for treating addiction and promoting wellness. Over half of the studies used a quasi-experimental design (53%). Seventeen different cultural interventions were reported in the literature and the number of different interventions in each study ranged from 1-13 (mean 5), and included sweat lodge ceremonies, sage, cedar or sweet grass smudging, social cultural activities, traditional teachings and dancing. Most articles measured physical wellness (90%), with fewer examining spiritual health (37%). A majority of the located studies reduced or eliminated substance use problems (74%).

Table 2: Summary of included studies by method and country of study

	Author	Methods	Country
Prevalence of Drinking During Pregnancy			
n=7	Bottorff et al.	Scoping Review	Canada
	Callinan & Ferris	Cross sectional	Australia
	Chambers et al.	Cross sectional	Ukraine
	Hicks et al.	Cohort	Canada
	Kitsantas et al.	Cross sectional	USA
	Roberts et al.	Interviews	USA
	Smith et al.	Cross sectional	England
Influences and factors associated with drinking in pregnancy			
n=20	Anderson et al.	Longitudinal cohort	Australia
	Balachova et al.	Cross sectional	Russia
	Beijers et al.	Longitudinal cohort	The Netherlands
	Bottorff et al.	Scoping Review	Canada
	Ceccanti et al.	Case control	Italy
	Chambers et al.	Cross sectional	Ukraine
	Choi et al.	Longitudinal cohort	South Africa
	Eaton et al.	Interviews	South Africa
	Esper & Furtado	Systematic Review	Brazil
	Grant et al.	Longitudinal	USA
	Hammer & Inglin	Interviews	Switzerland
	Hicks et al.	Cohort	Canada
	Kitsantas et al.	Cross sectional	USA

	Author	Methods	Country
	May et al.	Case control	South Africa
	McDonald et al.	Cohort	Canada
	Passey et al.	Cross sectional	Australia
	Terplan et al.	Cross sectional	USA
	Watt et al.	Interviews	South Africa
	Witt et al.	Longitudinal cohort	USA
	Woodin et al.	Longitudinal	Canada
Biomedical mechanisms of the effects of alcohol (selected)			
n=2	Kleiber et al.	Narrative review	Canada
	Mead & Sarkar	Narrative review	USA
Level 1 Prevention			
n=6	Drabble et al.	Policy review	USA
	France et al.	RCT	Australia
	Kavanagh & Payne	Cross sectional	Australia
	Leppo et al.	Content analysis	Finland, Denmark, Sweden and Norway
	Strøm et al.	Meta analysis	Norway
	Thomas et al.	Scoping Review	Canada
Level 2 Prevention			
n=13	Chiodo et al.	Cohort	USA
	Doi et al.	Interviews and focus groups	Scotland
	Hutton et al.	Cross sectional	USA
	Jacobs & Jacobs	Interviews	South Africa
	Lange et al.	Meta analysis	Canada
	Miller et al.	Cross sectional	USA
	Moise et al.	Mixed methods (Cross sectional and focus groups)	USA
	O'Brien	Policy review	USA
	Osterman et al.	RCT	USA
	Payne et al.	Cross sectional	Australia
	Sheehan et al.	RCT	Ireland
	van der Wulp et al.	Interviews	The Netherlands
	Zoorob et al.	Before and after	USA
Level 3 Prevention			
n=2	Benoit et al.	Interviews	Canada
	Thanh et al.	Cost effectiveness evaluation	Canada
Level 4 Prevention			
n=3	Holland et al.	Interviews and focus groups	USA
	Marcellus	Narrative review	Canada
	Rubio et al.	RCT	USA
Preconception interventions			
n=3	Agricola et al.	Cohort	Italy
	Shannon et al.	Systematic Review	UK
	Temel et al.	Systematic Review	The Netherlands
Interventions reaching adolescent and young women			
n=7	Armitage et al.	RCT	UK
	Bottoff et al.	Scoping Review	Canada
	Dembo et al.	Longitudinal	USA
	Doumas et al.	RCT	USA
	Kenney et al.	RCT	USA
	Merrill et al.	RCT	USA

	Author	Methods	Country
	Strøm et al.	Meta analysis	Norway
Other			
n=2	Rutman et al.	Mixed-Methods (Literature/ document review, iterative consultations)	Canada
	Rowan et al.	Scoping Review	Canada