Effectiveness of Approaches to Communicate Alcohol-related Health Messaging:

Review and implications for Ontario’s public health practitioners

Systematic Review  Produced January 2013 | Revised October 2014
PUBLIC HEALTH ONTARIO

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Key findings

The current report describes evidence from reviews regarding the effectiveness of social marketing and health communication strategies for disseminating alcohol-related health messaging for specific populations and settings. The report was developed to assist Ontario public health practitioners in effectively communicating Canada’s Low-Risk Alcohol Drinking Guidelines (LRADGs).

The following key messages were identified from the findings.

- Computer or web-based interventions have been shown to be effective in reducing drinking behaviour, particularly among youth, high-risk drinkers, the general population and students within university and college settings.

- Media interventions have little effect on reducing alcohol consumption among women, youth and the general population, but have been shown to be effective in increasing alcohol-related knowledge and awareness among women.

- Social norm campaigns (i.e., initiatives promoting an expected behaviour in a given situation) have been shown to be effective in modifying normative perceptions (beliefs about how one should act in a given situation) but have mixed evidence on their effectiveness for behavioural consequences among students within college and university settings.

- No reviews on interventions for Francophones, seniors or health professionals were identified, which may highlight the need for future research in these areas.

- Public health practitioners can play an active role in filling research gaps by piloting initiatives, evaluating processes and outcomes, and submitting findings for peer review.
Overview

Background

Canada’s Low-Risk Alcohol Drinking Guidelines (LRADGs) were released across Canada in November 2011 to help Canadians moderate their alcohol consumption and reduce both short- and long-term alcohol-related harms. However, there has been limited analysis of how to effectively communicate the new LRADGs to consumers.

Objectives

A review of reviews was undertaken to: 1) identify effective social marketing and health communication strategies for the public dissemination of alcohol-related health messaging; 2) discuss implications for specific populations and specific settings, and 3) provide evidence-based considerations for public health practitioners.

Methods

A systematic literature search of 13 electronic databases was conducted for review-level evidence such as systematic reviews, narrative reviews, and meta-analyses, published between January, 2002 and September, 2012. The search strategy focused on the effectiveness of social marketing and health communication interventions for alcohol-related health messaging relative to a range of outcomes such as alcohol-related knowledge, attitudes and consumption behaviours. Specific communication approaches were examined for the following populations and settings: 1) youth; 2) high-risk drinkers; 3) women; 4) First Nations, Inuit, Métis; 5) seniors; 6) health professionals; 7) Francophones, 8) universities and colleges; 9) and workplaces.

Results

Twenty-four reviews were eligible for inclusion. There were few reviews on the effectiveness of social marketing and health communication interventions to promote low-risk alcohol drinking guidelines specifically, which may reflect a research gap in this area. In terms of general alcohol-related health messaging, the literature identified the need to explore a variety of channels to communicate alcohol-related health messaging specific to certain populations or settings of interest. There was considerable heterogeneity of outcomes measured across and within included reviews. Many of the reviews examined drinking behaviour (including quantity and frequency), while few examined other outcomes such as knowledge, alcohol-related problems, normative perceptions, alcohol-related road crashes and the use of designated drivers.
Among social marketing and health communication interventions, computer or web-based interventions were found to be effective in changing drinking behaviour particularly among youth, high-risk drinkers, the general population and within university and college settings. Some evidence was found supporting the use of media interventions in reducing alcohol-related road crashes and alcohol impaired driving within the general population; however, beyond this, little review evidence was found regarding the effectiveness of media interventions for reducing alcohol consumption among youth. For specific groups such as Aboriginal populations, culturally-tailored interventions were found to be more effective. No reviews on interventions for Francophones, seniors or health professionals were identified, highlighting the need for future research in these areas.

**Conclusions**

Social marketing and health communication interventions to address drinking behaviour have potential for application to promote and disseminate Canada’s LRADGs; however this area requires further research. Campaigns would benefit from a systematic health communication process to ensure alcohol-related health messaging is effectively communicated, understood and acted upon across various sub-populations and settings.
Purpose

The purpose of this report was to synthesize current review-level evidence on the effectiveness of social marketing and health communication interventions to assist Ontario public health practitioners in communicating Canada’s low-risk alcohol drinking guidelines (LRADGs) and disseminating alcohol related health messaging. Considerations for public health practitioners are discussed along with implications for specific populations and settings.

Background

Burden of alcohol in Ontario

KEY MESSAGES

- For many Ontarians, alcohol is consumed at levels above Canada’s LRADGs, contributing significant harms to individuals and society.
- Alcohol-related harms include both chronic conditions, such as cirrhosis of the liver, type II diabetes, and numerous cancers, and acute events, such as road crashes, injury, and violence.

Although alcohol is a legal substance that is both socially popular and culturally significant, the harmful use of alcohol is considered a serious public health issue in Ontario. Alcohol consumption is highly prevalent, daily consumption is increasing, and a sizeable proportion of the population is engaged in harmful alcohol use. According to the 2012 CAMH Monitor eReport on addiction and mental health indicators, the proportion of adults consuming alcohol is high and increased significantly between 2010 and 2011 (from 78.0 per cent to 81.2 per cent), particularly among women and seniors aged 65 and older. There has also been a significant increase in daily drinking among past year drinkers, from 5.3 per cent in 2002 to 9.3 per cent in 2009, along with an increase in the average number of drinks consumed weekly.

In terms of problematic drinkers, according to the 2012 CAMH Monitor eReport, in 2011, 17.8 per cent of drinkers reported engaging in hazardous or harmful drinking (drinking that could increase physical and mental health problems) and 7.4 per cent of Ontario’s adult population engage in weekly binge drinking (consuming five or more drinks on a single occasion weekly). Additionally, the 2005 CAMH Monitor eReport stated that in 2004/2005 nearly a quarter of drinkers reported experiencing alcohol-
related problems and associated harms from their or others’ drinking. These statistics represent the most recent source of this data at the time of this review.

According to data from the 2009-10 Canadian Community Health Survey (CCHS), on average, approximately 41 per cent of Ontarians 19 years of age and older have consumed alcohol above the gender-specific daily, weekly and special occasion limits outlined in Guidelines 1 and 2 of Canada’s low-risk alcohol drinking guidelines. These guidelines outline weekly and daily alcohol limits to help Canadians moderate their alcohol consumption and reduce their immediate and long-term alcohol-related harm. A more detailed analysis revealed that five per cent of Ontario residents reported alcohol consumption that exceeded only Guideline 1, 19 per cent reported alcohol consumption that exceeded only Guideline 2, and 17 per cent reported alcohol consumption that exceeded both of these guidelines (Figure 1).

![Figure 1: Percentage of Ontarians (aged 19+) exceeding Canada’s LRADGs](image)

Looking across age groups, the prevalence of drinking above Canada’s LRADGs is highest in young adults with 58 per cent of those aged 19-34 years consuming alcohol above the LRADGs, compared with 41 per cent of adults aged 35-44 years, 38 per cent of older adults aged 45-64 years, and 21 per cent of seniors 65 years of age and older (Figure 2).
Alcohol consumption during pregnancy is associated with adverse outcomes such as fetal alcohol spectrum disorders, which can have life-long impacts. According to the Canadian Perinatal Health report, in 2005, 10.5 per cent of Canadian mothers reported drinking alcohol during pregnancy. The 2005 CCHS survey also reported that 1.1 per cent of women who were pregnant in the previous five years reported drinking more than once a week during their pregnancy. Data from the 2007/08 CCHS suggested that 5.8% of Canadian women had consumed alcohol during their last pregnancy.

In a recent collaborative study by Public Health Ontario (PHO) and the Institute for Clinical Evaluation Sciences (ICES) (2012) on the impact of smoking, alcohol, diet, physical activity and stress on health and life expectancy in Ontario, high levels of alcohol consumption were shown to decrease life expectancy by about two years compared to the average Ontarian life expectancy. Individuals with unhealthy levels of alcohol consumption also have a 20 percent greater risk of death than those who do not consume at these high levels (1.2 for males and females). Similarly, Ontarians avoiding the unhealthy use of alcohol have been shown to increase life expectancy by up to three years; a potential 12.8 per cent reduction in deaths in Ontario if unhealthy alcohol consumption were avoided.

In another collaborative report, PHO and ICES (2012) found that in Ontario, alcohol use disorders resulted in a total of 84,199 health adjusted life years (HALYs) lost, with the burden highest for young adults and decreasing with age. HALYs measure the quantity of ‘healthy’ life years lost by estimating the difference between the health of a population and a specified norm or goal, taking into account measures of morbidity (living with less than full function) and mortality (death) associated with disease or injury. In this analysis, alcohol use disorders resulted in 18,465 years of life lost (YLL) due to premature mortality among Ontario residents, and were the largest contributor to YLL across the nine
mental illnesses and addiction conditions studied in this report. This was calculated by taking into account the number of deaths in a particular age group and by gender, as well as the standard loss of function.

Alcohol-related harms include illnesses and deaths due to chronic conditions, such as cirrhosis of the liver and numerous cancers, along with acute events such as road crashes, injury, and violence. Alcohol has been classified as carcinogenic to humans for some cancers including cancers of the oral cavity, pharynx, larynx, esophagus, colon, rectum, liver, and female breast. Regular moderate-to-heavy alcohol consumption has also been causally associated with type-2 diabetes, cardiovascular disease and adverse cardiovascular outcomes. Other chronic conditions resulting from heavy alcohol consumption include fetal alcohol spectrum disorder, and fetal alcohol syndrome. Numerous negative acute events are also associated with alcohol use such as crime, family abuse, motor vehicle crashes, and non-intentional and intentional injuries.

Development of Canada’s Low-Risk Alcohol Drinking Guidelines

KEY MESSAGES

- The National Alcohol Strategy (NAS) recommends public dissemination of Canada’s Low-Risk Alcohol Drinking Guidelines (LRADGs) to encourage a culture of moderation.
- Boards of Health in Ontario are accountable to measure the proportion of the population 19 years of age and older who reported consuming alcohol at levels that exceed Canada’s Low-Risk Alcohol Drinking Guidelines (Guidelines 1 and 2).
- The application of social marketing strategies and techniques by public health practitioners may be helpful to increase knowledge, attitudes and change behaviours regarding alcohol consumption.
- To achieve population-level outcomes, in the field of alcohol policy, social marketing and health communication initiatives should be coordinated with proven population-level policy levers such as pricing policies, availability control, and treatment services.

In November 2011, supported by every provincial health minister across Canada, Canada’s LRADGs were released through the National Alcohol Strategy Advisory Committee of Canada. This release accomplished the first of 41 recommendations put forth by the 2007 National Alcohol Strategy to support the development of a culture of moderate alcohol use and to reduce alcohol-related harms. These guidelines, intended for Canadians of legal drinking age who choose to drink alcohol, were “informed by the most recent and best available research evidence”. Developed in partnership with representatives from academia, non-governmental organizations, the alcohol industry, and other key...
stakeholders, these guidelines are intended to provide consistent information across the country to help Canadians moderate their alcohol consumption and reduce immediate and long-term alcohol-related harms.¹

**RECOMMENDATION 1 FROM THE NATIONAL ALCOHOL STRATEGY**

Develop and promote national alcohol drinking guidelines to encourage a culture of moderation, and aim for consistency and clarity of alcohol-related health and safety messages¹¹

The guidelines outline daily and weekly consumption limits which include no more than 10 drinks a week for women, with no more than two drinks a day on most days, and no more than 15 drinks a week for men, with no more than three drinks a day on most days.¹ Non-drinking days each week are recommended for both men and women. The guidelines also include information on standard drink sizes, safer drinking tips, advice for special occasions, restrictions for those under the legal drinking age and recommendations when no alcohol consumption is advised, such as during pregnancy or when operating a vehicle. See Appendix A for more information on Canada’s LRADGs.

**CANADA’S LOW-RISK ALCOHOL DRINKING GUIDELINE 1: YOUR LIMITS**

Reduce your long-term health risks by drinking no more than:

- 10 drinks a week for women, with no more than two drinks a day most days
- 15 drinks a week for men, with no more than three drinks a day most days

Plan non-drinking days every week to avoid developing a habit.¹

**CANADA’S LOW-RISK ALCOHOL DRINKING GUIDELINE 2: SPECIAL OCCASIONS**

Reduce your risk of injury and harm by drinking no more than three drinks (for women) and four drinks (for men) on any single occasion. Plan to drink in a safe environment. Stay within the weekly limits outlined in Guideline 1.¹

The Ontario Public Health Standards and Accountability Agreement Indicators

The Ontario Public Health Standards (OPHS) – the legislative requirements for fundamental public health programs and services – include initiatives under the domains of assessment and surveillance, health
promotion and policy development, disease and injury prevention, and health protection.\cite{14} Within the Chronic Disease and Injury Program Standards, specifically the program standard addressing the Prevention of Injury and Substance Misuse, Boards of Health are required to increase public awareness of the prevention of injury and substance misuse in the area of alcohol and other substances through:

1. Adapting and/or supplementing national and provincial health communications strategies; and/or
2. Developing and implementing regional/local communications strategies.\cite{14}

In January, 2012, public health accountability agreements were formalized with all 36 Boards of Health across Ontario. Through these agreements, Boards of Health are now responsible for establishing baseline data, measuring, and improving the outcome of the following indicator: the proportion of the population 19 years of age and older who reported consuming alcohol at levels that exceed Canada’s Low-Risk Alcohol Drinking Guidelines (Guidelines 1 and 2).\cite{15}

In terms of meeting the accountabilities inherent in this indicator, the Board of Health outcomes include that “the public is aware of the importance of reduced alcohol use as well as the risk, protective, and resiliency factors associated with injury and substance misuse, and that priority populations have the capacity to prevent injury, substance misuse, and associated harms.”\cite{15}

Coordinated, evidence-based approaches to effective social marketing and health communication interventions for the public dissemination of alcohol-related health messaging can assist Ontario Boards of Health in addressing relevant sections of the OPHS, as well as the indicator noted above. This review aims to provide evidence on the effectiveness of social marketing and health communication interventions to support Ontario Boards of Health in meeting these accountabilities.

Social marketing interventions in public health

Social marketing has been defined in a variety of ways and for a variety of purposes. This review utilized the following broad definition of social marketing in public health: the systematic application of marketing, alongside other concepts and techniques, to achieve specific behavioural goals, for a social good.\cite{16}

Social marketing can also be viewed as a framework that relies on multiple scientific disciplines to create...
programs designed to influence human behaviour on a large scale.\textsuperscript{17} Thompson et al. (2011) make the case that social marketing is a highly systematic approach to social improvement and that authentic social marketing is not about telling people what to do or coercing them into doing it, but rather is the art of understanding what will help people make the choices and take the actions that will lead them to live better lives.\textsuperscript{17} Using this framework, it is apparent that social marketing goes beyond distributing posters and brochures. Furthermore, social marketing is clearly more than social media – which can be classified as a set of tools and technologies that allow different communication pathways. Rather, social marketing includes multi-component interventions that aim to change particular behaviours and specific health outcomes.\textsuperscript{17}

Such a comprehensive approach to addressing alcohol-related harm is embedded in general health promotion theory. Jepson et al. (2010) posit that most public health and health promotion interventions seek to change health behaviours by addressing knowledge, attitudes, and structural barriers and facilitators to behaviour change.\textsuperscript{18} This is achieved using a comprehensive approach which includes health education and knowledge building (e.g., use of media to deliver low-risk drinking or alcohol-related health messaging), motivation and goal setting (e.g., individual alcohol-based counselling and motivational interviewing) and community-based techniques (e.g., community-wide information forums on alcohol-related harm and solutions and strong community partnerships). In changing health behaviours, social psychology theories such as Social Cognitive Theory, the Health Belief Model, or the Theory of Planned Behaviour are commonly used in the development of public health interventions. Key elements of these theories include: knowledge of health risks, perceived self-efficacy, goals and motivations along with barriers and facilitators.\textsuperscript{18}

Although comprehensive social marketing approaches involving individual, population and environmental-level interventions are encouraged, the current review focuses specifically on the broader population-level interventions that can be used by public health practitioners to promote Canada’s LRADGs. Individual-level interventions targeting drinking behaviours (e.g., brief interventions, cognitive behavioural therapy, counselling) and broad policy-based interventions aimed at changing the alcohol environment (e.g., price, availability) can accompany population-level interventions to better facilitate behaviour change; however, these approaches extend beyond the focus of the current review.
Research questions

1. What is the effectiveness of social marketing and health communication interventions for public dissemination of alcohol-related health messaging (e.g., to promote Low-Risk Alcohol Drinking Guidelines)?

2. What is the effectiveness of these interventions for individuals in the following sub-populations and settings:

- Youth – males (24 years of age and younger)
- Youth – females (24 years of age and younger)
- High-risk drinkers
- Women
- First Nations, Inuit, Métis
- Seniors
- Health professionals
- Francophones
- Universities
- Colleges
- Workplaces

Methods

Literature search strategy

A library-assisted, electronic literature search was conducted by Public Health Ontario’s Library Services division in September 2012. Only review-level evidence (e.g., systematic reviews, narrative reviews, and meta-analyses), published from January, 2002, to September, 2012, were included due to the need to synthesize a breadth of information quickly.

Articles were retrieved by searching the following electronic databases: Academic Search Premier, CINAHL, Psychology and Behavioral Sciences Collection, SocINDEX, AgeLine, Child Development &
Adolescent Studies, Database of Abstracts of Reviews of Effects, Cochrane Database of Systematic Reviews, BIOSIS Previews, Embase, Ovid MEDLINE and PsycINFO. For a more detailed description of the search strategy, see Appendix B.

The search was focused on the effectiveness of social marketing and health communication interventions for alcohol-related health messaging relative to a range of outcomes such as alcohol-related knowledge, attitudes and consumption behaviours. Specific communication approaches were examined for the following populations and settings: 1) youth; 2) high-risk drinkers; 3) women; 4) First Nations, Inuit, Métis; 5) seniors; 6) health professionals; 7) Francophones; 8) universities and colleges; 9) and workplaces.

**Study selection**

Two independent reviewers screened and selected reviews for inclusion based first on title and abstract review, and then on full text review. During the primary screen, to be included in the report, reviews had to; a) be published between 2002 to 2012; b) evaluate the effectiveness of social marketing and health communication interventions targeting drinking behaviour; c) include studies that addressed the general population, and/or have a specific focus on the following sub-populations: women, seniors, youth, Francophones, health professionals, First Nations, Inuit, and Métis, high-risk drinkers, or settings: workplaces or colleges and universities; d) contain an evaluative component and have clear outcome data described; e) be available in the English and/or French language; and f) be a peer-reviewed journal article.

Reviews were excluded if they; a) were not available in English or French; b) were published before 2002; c) did not clearly address social marketing or health communication in regards to alcohol interventions; d) did not clearly describe evaluative components or outcome data; e) address populations from developing countries; f) were not peer-reviewed review articles; and g) duplicated studies (i.e., reviews that appeared more than once).

Recognizing that the literature included interventions directed at both population and individual levels, additional inclusion/exclusion criteria were subsequently developed and applied to ensure that the focus of the included reviews was on broad population-level social marketing and health communication interventions (secondary screen). Thus, reviews included from the primary screen were subsequently screened to include only reviews on population level interventions; reviews focused on individual interventions, such as counselling, brief interventions or motivational interviewing were excluded during the secondary screen.

For a complete list of inclusion and exclusion criteria, see Appendix B. Results from these independent screens were compared for both primary and secondary screening, and any discrepancies between the two reviewers were resolved by consensus. Inter-rater reliability was 82 per cent.
Data extraction and quality appraisal

Two reviewers extracted data from the selected articles in the following areas: study objective and description, population, setting, exposure and outcome, main findings, study strengths, study limitations and implications of study. Quality appraisal was not conducted for this report, due to time constraints.

Results of literature search

As shown in Figure 3, the initial search of electronic databases identified 391 publications. After an initial screening of titles and abstracts for inclusion, 68 articles were determined eligible for the full text review. After reviewing the full text against both primary and secondary inclusion and exclusion criteria, 24 reviews were included in the report.

Figure 3: Study selection process
Characteristics of included reviews

Twenty-four reviews met both primary and secondary inclusion criteria and were included in the review. The majority (twenty-two reviews) were systematic reviews and the remaining two were narrative reviews. Of the systematic reviews, two were meta-analyses, and one was a review of reviews.

Several reviews contained information on the general population as well as specific subpopulations or settings. Six reviews included information on the general population; two on youth, one on women, one on high-risk drinkers and three reviews focused on Aboriginal peoples. There were no reviews specifically targeting seniors, health professionals or Francophones.

Beyond colleges and universities, few reviews examined evidence of effectiveness in specific settings. Ten reviews included primary studies in the college or university setting; however, only one review described interventions in a workplace setting. The remainder of reviews either did not focus on specific settings, or targeted settings that were not of our primary interest. Characteristics of the twenty-four reviews captured in this synthesis are shown in Table 2.

Supplementary studies

In addition to searching and synthesizing findings from the included reviews, selected primary research studies cited within reviews were identified and summarized when applicable to provide implementation information relevant to public health practitioners. Primary studies cited within reviews are described as “promising practices” within adjacent textboxes rather than being synthesized into the findings of the main body of the report. Promising practices are examples of primary studies selected from included reviews that highlight details of studies from reviews that illustrate features of effective interventions.

Table 2: Characteristics of included reviews

<table>
<thead>
<tr>
<th>Population or setting</th>
<th>Reviews from systematic search</th>
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<tbody>
<tr>
<td>General population</td>
<td>• Lehto &amp; Oinas-Kukkonen, 2011 19</td>
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<tr>
<td></td>
<td>• *Jepsen et al., 2010 18</td>
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<td></td>
<td>• Vernon, 2010 20</td>
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<td>• Bewick et al., 2008 21</td>
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<td>• Ditter et al., 2005 22</td>
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<td>• Elder et al., 2004 23</td>
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<td>Youth</td>
<td>• Tait &amp; Christensen, 2010 24</td>
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<tr>
<td></td>
<td>• Spoth et al., 2008 25</td>
</tr>
<tr>
<td>High-risk drinkers</td>
<td>• Riper et al., 2011 26</td>
</tr>
<tr>
<td>Women</td>
<td>• Deshpande et al., 2005 27</td>
</tr>
</tbody>
</table>
### Population or setting | Reviews from systematic search
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**First Nations, Inuit, Métis** | • Montag, et al., 2012 28
• Jiwa et al., 2008 29
• Hawkins et al., 2004 30

**Seniors** | • No reviews identified.

**Health professionals** | • No reviews identified.

**Francophones** | • No reviews identified.

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<table>
<thead>
<tr>
<th>Population or setting</th>
<th>Reviews from systematic search</th>
</tr>
</thead>
</table>
| **Universities and colleges** | • Lehto & Oinas-Kukkonen, 2011 19
• Heron & Smyth, 2010 31
• Reavley & Jorm, 2010 32
• Moreira et al., 2009 33
• Larimer & Cronce, 2007 34
• Carey et al., 2009 35
• Toomey et al., 2007 36
• Lewis & Neighbors, 2006 37
• Walters et al., 2005 38
• Hunter et al., 2004 39 |

| **Workplaces** | • Webb et al., 2009 40 |

*Note: each review and study in this table is classified by the type of populations or settings it includes. Some reviews or studies may include content for more than one population and/or setting and therefore appear multiple times within the table.*

**Review of reviews**

## Findings

The main social marketing and health communication findings from the included reviews are discussed below. Findings are organized by target population and setting. Most reviews presented results without differentiating gender. For this reason, male and female youth populations are described together within the report. Additionally, due to similarities between settings, the findings on university and college settings were combined. The report also discusses implications of the findings for public health practitioners.
FINDINGS FROM SYSTEMATIC REVIEWS

Six reviews included information on the effectiveness of interventions for the general population, (i.e., interventions that had not been examined in any one particular setting and/or sub-population).18-23 Web- or computer-based interventions and media interventions were two of the most commonly studied alcohol-related prevention interventions designed for the general population. The effectiveness of each of these interventions is described below.

KEY FINDINGS

FINDINGS FROM SYSTEMATIC REVIEWS (6 REVIEWS)

• There is some evidence supporting the use of web- or computer-based interventions for reducing alcohol consumption.

• Interventions may be particularly effective when personalized feedback is provided along with additional self-help materials.

• There is some evidence supporting the use of media interventions for reducing alcohol impaired driving and alcohol-related road crashes.

• No evidence was found regarding effects of media campaigns in reducing alcohol consumption.

PROMISING PRACTICES FROM SUPPLEMENTARY STUDIES

The following strategies were associated with effective interventions:

• Single (90 minute) or multiple session (nine weeks) web-based programs providing assessment, normed and personalized feedback, links to online resources including information on goal setting, decision making, maintenance of gains and relapse prevention, and self-monitoring.

• Longer duration (three months to two years) television and radio media campaigns promoting the use of designated drivers.
COMPUTER AND WEB-BASED INTERVENTIONS

Three reviews examined the effectiveness of computer and/or web-based interventions for the general population demonstrating some support for the use of web- or computer-based interventions for reducing alcohol consumption.\textsuperscript{19, 21} Each review is discussed in more detail below.

Lehto and Oinas-Kukkonen (2011) conducted a literature review on the effectiveness of web-based interventions, and identified five studies targeting drinking behavior.\textsuperscript{19} Of these, three studies included interventions that were effective in reducing alcohol consumption in comparison with control groups, one had no statistically significant results, and the remaining study did not have a sample size adequate for evaluating treatment effects on drinking.\textsuperscript{19}

Overall, the results from Lehto and Oinas-Kukkonen suggest that web-based interventions can be beneficial for changing drinking behaviour in regular drinkers or heavy/problem drinkers.\textsuperscript{19} They also concluded that many users, particularly those who are less likely to access traditional alcohol-related services, such as women, young people and at-risk users can benefit from online interventions.\textsuperscript{19} Additionally, because some of these interventions were able to produce small but meaningful reductions in the amount of alcohol consumed by users, they conclude that web-based interventions may be more efficacious than general education about alcohol.\textsuperscript{19}

PROMISING PRACTICES

Cited in the review by Lehto and Oinas-Kukkonen et al. (2010), a primary study by Hester et al. (2009) examined the effectiveness of a web-based program for adults (problem drinkers AUDIT scores >7) promoting moderate drinking.\textsuperscript{41} In this program, participants accessed the online program at least once a week for nine weeks. The program was divided into modules focused on topics such as building motivation and self-confidence, setting drinking goals/limits, abstinence, self-monitoring drinking (with personalized feedback relative to personal goals), rate control, setting personal drinking rules, self-monitoring urges to drink, identifying and managing triggers, developing alternatives, general problem solving, dealing with lapses and/or relapses, and self-monitoring one's mood. Follow-up at three months revealed that both the intervention and control groups reduced both the number of standard drinks consumed per week and their mean estimated blood alcohol concentration while increasing the percent days abstinent.\textsuperscript{41} However, individuals who received the web-based program had better outcomes in terms of the percentage of days abstinent and the number of drinks per drinking day compared to the control group. These findings demonstrate that providing online resources through a moderate drinking web application can help drinkers reduce their drinking and alcohol-related problems.\textsuperscript{41}
In a second review, Vernon (2010), examined eight computer-based alcohol interventions designed for the general public. Although it was unclear what the most effective computer-based intervention was, all interventions reviewed were successful in reducing drinking-related outcomes, including alcohol consumption, regardless of how this was measured. Many of these programs involved normed feedback (i.e., personal information provided relative to population norms), links to online resources, and support for goal-setting, maintenance of gains, relapse prevention, and self-monitoring components. The findings from this review also indicated that there is a demand for online assessment and intervention services among members of the general public, further supporting the need for computer-based interventions within the field of public health.

**PROMISING PRACTICES**

Also cited within Vernon’s (2010) review, Hester et al., examined the effectiveness of a computer-based brief motivational intervention called *The Drinkers Check Up*. This program was associated with the greatest effect size (d = 1.31-2.32) in terms of drinking behaviour. The program was 90 minutes long and involved assessment, feedback and decision-making components. The assessment module asked participants about their drinking behaviour as well as their positive and negative perceptions about drinking. In the feedback module participants received information about their drinking behaviour and how it compared with that of the rest of the population. The decision-making module provided participants with exercises to evaluate their reasons for changing versus not changing their drinking behaviour. It also provided options on how to change their drinking and helped participants determine how they could achieve and maintain those changes. The results of the study indicated that participants who took part in the program reduced the quantity and frequency of their drinking by 50 per cent. These reductions were maintained through a 12-month follow-up period, suggesting that the program was effective in promoting motivation for change.

The final review article identified was a systematic review by Bewick et al. (2008) on the effectiveness of web-based interventions designed to decrease alcohol consumption. Of the 10 primary studies identified in the review, five reported results on the effectiveness of the interventions. The results of these studies were mixed; two studies demonstrated reductions in alcohol consumption among those who received the web-based intervention, while two did not report any meaningful differences. The remaining study did not have outcome measure results available.

Specifically, web-based personalized feedback combined with additional self-help materials resulted in better outcomes (less drinking, fewer alcohol-related consequences) over interventions in which web-based personalized feedback was provided alone. Additionally, when comparing web-based interventions with or without personalized feedback, no differences were found, suggesting that personalizing feedback may be beneficial only when combined with additional support materials.
Overall, the results from the above three reviews suggest that there is some evidence supporting the use of web- or computer-based interventions for reducing alcohol consumption, particularly those that provide personalized feedback along with additional self-help materials.

MEDIA INTERVENTIONS

Few reviews were identified with regards to the effectiveness of media or educational interventions for reducing alcohol consumption. However, three reviews examined the effectiveness of these campaigns for targeting driver-related outcomes including alcohol impaired driving, alcohol-related crashes, use of designated drivers, self-reported drinking and driving or riding in a car with an intoxicated driver.18,22,23 The review-level evidence reported here represents findings from a large number of studies and offers higher-level evidence regarding broad alcohol consumption behaviours.

Jepson et al. (2010) (a review of reviews) examined two reviews on media interventions aimed at individuals who drink and drive; these demonstrated mixed evidence of effectiveness.18 One included review by Ditter et al. (2005) demonstrated insufficient evidence of effectiveness of these campaigns for increasing the number of designated drivers,22 while another included review by Elder et al. (2004) did report that mass media interventions were effective for reducing alcohol and driving-related outcomes.23 However, no reviews evaluating evidence related to mass media interventions for promoting ‘safe’ drinking levels or reducing ‘risky drinking’ were identified.18

The review by Elder et al. (2004), examined the effectiveness of eight mass media interventions for reducing alcohol impaired driving or alcohol-related crashes and found that the campaigns decreased driver-related crashes by 13 per cent (median decrease).23 The results of their review suggest that when media interventions are carefully planned, well-executed, and have adequate exposure, they are effective in reducing alcohol impaired driving and alcohol-related crashes. Additionally, a further examination of the content of the messages within these campaigns found no clear difference in the effectiveness of campaigns using legal deterrence messages versus those that used social and health consequences messages.23

PROMISING PRACTICES

One particularly effective media intervention described in the review by Elder et al. (2004) was a public education campaign by Worden et al. (2006) on alcohol and highway safety.43 The two-year campaign primarily used radio, television, drive-in theatre and interpersonal communication to reduce fatal crashes caused by drinking. The program resulted in a 158 per cent decrease in the number of drivers with illegal blood alcohol concentrations, but no significant difference in the number of fatal crashes was found.43

In the review by Jepson et al. (2010), Ditter et al. (2005), identified only one population-based media intervention promoting the use of designated drivers.44 This three-month Australian mass media intervention called Pick a Skipper encouraged 18 to 35 year-old
drinkers to choose a designated driver before consuming alcohol. Newspaper coverage was used to launch the campaign, and during the campaign, 210 television public service announcements were aired. The results of this campaign indicated a 13 per cent increase in respondents ‘always’ selecting a designated driver and greater awareness of the ‘skipper’ (designated driver) concept, but no significant change in self-reported alcohol-impaired driving or riding with an alcohol-impaired driver was found. Overall, the evidence suggests that population-based media interventions may provide benefits with regards to reducing alcohol-impaired driving and alcohol-related crashes. However, further research is needed to examine the effectiveness of media interventions on more direct drinking outcomes such as awareness of media interventions and reductions in alcohol consumption.

CONSIDERATIONS FOR PUBLIC HEALTH PRACTICE

Reach is one component of effective intervention implementation. Media interventions or those that direct consumers from the general population to websites and web-based programs are likely to improve reach and thus facilitate program implementation.

Public health unit websites can be used to provide information on the new LRADGs (including standard drink sizes and disclaimers) as well as web-based programs which offer personalized feedback to individuals using these sites. These online programs can be single or multiple session programs that provide assessment, normed and personalized feedback and links to online resources including information on goal-setting, decision-making, maintenance of gains and relapse prevention, and self-monitoring components. For public health units which may not have the resources to provide these type of web- or computer-based interventions, it may be beneficial to partner with workplaces, universities or colleges with the technological infrastructure, experience and capacity to assist in the development and hosting of these types of interventions.

Media interventions are also effective in targeting a large audience and can be used to reduce alcohol-impaired driving. Public health practitioners may wish to design media interventions (lasting for at least three months) that include the use of billboards, radio or television and provide messages at times and locations which ensure immediate impact. Some examples may include placing signs in washroom stalls in pubs, in bus stops, on billboards in close proximity to bars, or airing television and radio ads in the evening when individuals are more likely to drink. These approaches may help increase the probability that media messages will be relevant and effective, particularly when promoting Guideline 2 specifying appropriate drinking behaviour for special occasions.
Youth

KEY FINDINGS

FINDINGS FROM SYSTEMATIC REVIEWS: (2 REVIEWS)

• Web-based interventions are effective in reducing drinking behaviour in youth.
• Little evidence supports the use of media interventions alone for reducing alcohol consumption.

PROMISING PRACTICES FROM SUPPLEMENTARY STUDIES:

The following strategy was associated with effective interventions:
• Web-based programs providing personalized feedback.

FINDINGS FROM SYSTEMATIC REVIEWS

Two reviews that reported on the effectiveness of social marketing and health communication interventions for targeting drinking behaviour in youth that met inclusion criteria for this review are summarized below.\textsuperscript{24, 25} For the purpose of this report, youth were defined as individuals aged 24 years and younger. However, because different definitions of youth have been used across studies (i.e., some studies looked at individuals aged 25 years and younger), all reviews in which the majority of studies included participants aged 24 years and younger were included in this section of the report. Any reviews that were specifically targeted towards university and college students were not included, and are described in the University and college setting section of this report.

COMPUTER AND WEB-BASED INTERVENTIONS

With the growing use of the internet by young people, web-based interventions may be a promising approach for targeting the drinking behaviour of youth. A review by Tait and Christensen (2010) that examined web-based interventions for young people found that web-based interventions were equally effective as brief in-person interventions in reducing alcohol consumption or heavy drinking frequency, although the effects were small.\textsuperscript{24} However, these interventions appeared to have minimal impact on preventing the development of alcohol-related problems such as missing school, getting into fights or physical dependence on alcohol in those who were not currently drinkers at baseline.\textsuperscript{24}
PROMISING PRACTICES

One study by Doumes et al. (2008), cited in Tait and Christensen’s (2010) review, examined the efficacy of a web-based alcohol personalized feedback program for youth ages 18 to 24.47 They compared the web-based feedback (WB) program with a program involving web-based feedback plus a 15-minute motivational interviewing session (WB + MI) and a control group. Individuals in intervention groups (WB or WB+MI) reported significantly lower levels of drinking including weekend drinking, frequency of drinking and peak consumption, than those in the control group in a 30-day follow-up.47 However, no additional benefit of the motivational interviewing component was found. Thus, their findings support the use of web-based feedback programs as a stand-alone alcohol prevention program for youth.

MEDIA APPROACHES

A second review included studies that assessed media interventions for youth.25 Evidence from this review suggests that media interventions alone seem to increase awareness, but have little effect on changing alcohol consumption.25 More comprehensive programs may be required to produce change in drinking behaviour.

CONSIDERATIONS FOR PUBLIC HEALTH PRACTICE

Despite the limited evidence supporting the use of media interventions, combining these initiatives with more interactive programs such as web-based programs (which have been shown to reduce alcohol consumption and heavy drinking frequency24) may be more effective.
High-risk drinkers

KEY FINDINGS

FINDINGS FROM SYSTEMATIC REVIEW: (1 REVIEW)

- Web-based interventions are effective in reducing drinking behaviour among high-risk drinkers, particularly those that provide personalized normative feedback and are extended in nature (i.e., involve multiple sessions).

PROMISING PRACTICES FROM SUPPLEMENTARY STUDIES:

The following strategies were associated with effective interventions:

- Short (<10 minutes) multi-session formats for web interventions;
- Initiatives grounded in the trans-theoretical model of behaviour change theory; and
- Web-based interventions that provide personalized normative feedback regarding alcohol consumption and drinking perceptions as well as personalized feedback on how to reduce drinking behaviour.

FINDINGS FROM SYSTEMATIC REVIEWS

Many populations are considered to be high-risk including university and college students and some Aboriginal sub-populations. However, in order to avoid an overlap of findings with these populations, only those reviews that targeted populations defined as ‘high-risk drinkers’ or ‘problem drinkers’ were included in this section of the report. Of the twenty-four reviews included in this synthesis, only one review (a meta-analysis) included studies that target these high-risk populations. Findings from this review support the use of web-based interventions.

COMPUTER AND WEB-BASED INTERVENTIONS

Web-based self-help interventions are self-help programs delivered over the internet. Riper et al., (2011) conducted a meta-analysis examining the effectiveness of web-based self-help interventions for curbing drinking behaviour in adult problem drinkers, defined as individuals who consume alcohol beyond the guideline for low-risk drinking. They analyzed the effectiveness of nine randomized controlled trials in high-income countries and found that these programs were effective in reducing alcohol consumption among problem drinkers. They also found significant differences between single-session personalized normative feedback interventions and more extended electronic self-help
programs in which the latter were found to be more effective. However results were based on a rather limited number of studies with small sample sizes, and thus should be interpreted with caution.

**PROMISING PRACTICES**

As cited within the review by Riper et al., (2011), one Canadian study by Cunningham et al. (2009) examined the effectiveness of a web-based self-help program called Check Your Drinking which targeted problem drinkers. After completing an online assessment, participants in the program received a personal drinking profile that included normative feedback pie charts that compared the participant’s drinking to others of the same age, gender and country of origin as well as a summary of the participant’s alcohol problems. The intervention was short, taking less than 10 minutes. Individuals who received the intervention had a 30 per cent reduction (six or seven drinks) in typical weekly drinking at both three and six month follow-ups compared to only a one-drink per week reduction among control group respondents.

Also cited in the review by Riper et al., (2011), a similar study by Boon et al., (2012) examined the effectiveness of a web-based personalized feedback intervention in the Netherlands for adult participants who either had heavy alcohol use (>20 units of alcohol/week) or were binge drinking (>5 units of alcohol in a single occasion on at least one day per week).

Participants were given a web-based personalized feedback intervention in which they were asked to provide information on their alcohol consumption, perception of their drinking and their intentions to reduce their intake. Based on this information, participants received information on possible consequences of their drinking behaviour, as well as normative feedback comparing their alcohol consumption to that of others with similar demographics. In the second phase of the study, participants also reported self-efficacy, attitudes, intentions and behavioural stage in accordance with the trans-theoretical model and received personalized feedback on how to reduce their intake depending on their situation. Results from the study indicated that 42 per cent of individuals in the intervention group significantly reduced their drinking levels to that below the threshold at one month compared to 31 per cent of those in the control group (who received only a brochure on ‘Facts about alcohol’). At six months, no statistical differences in drinking behaviour were found between groups suggesting that web-based personalized feedback can be effective in reducing drinking behaviour among heavy drinkers, particularly in the short-term (one month).
Overall, the review by Riper et al. (2011) suggests that web-based interventions without professional contact are effective for curbing drinking among adult problem drinkers, particularly interventions including personalized feedback and multiple sessions. These web-based programs may be a promising approach for targeting problem drinkers at the population level due to their relatively low cost, wide reach, and moderate effectiveness. Information on standard drink sizes and explicit low-risk drinking information can be included to accompany such interventions.

CONSIDERATIONS FOR PUBLIC HEALTH PRACTICE

Based on the findings above, web-based interventions are effective in reducing drinking among high-risk drinkers. These web-based interventions could take the form of multiple, short (<10 minutes) sessions and provide personalized normative feedback on alcohol consumption and drinking perceptions as well as suggestions on how to reduce drinking behaviour based on behaviour change theory (i.e., trans-theoretical model). These interventions can be provided at a relatively low cost and have the ability to reach a potentially large audience making them more feasible within a public health setting. The LRADGs can easily be provided within these web-based interventions. Recommendations and opportunities to speak with a health professional about alcohol use can enhance acceptance of the guidelines among problem drinkers. It may also be beneficial to pair these web-based interventions with skills training workshops to help high-risk or problem drinkers achieve success in meeting the recommended LRADGs.
**KEY FINDINGS**

**FINDINGS FROM SYSTEMATIC REVIEW: (1 REVIEW)**

- Education and media interventions are effective in increasing knowledge among pregnant women, but there is little review-level evidence supporting effects on behaviour change.

**PROMISING PRACTICES FROM SUPPLEMENTARY STUDIES:**

The following strategies were associated with effective interventions:

- Media interventions providing messages through multiple (rather than single) channels (i.e., print channels such as posters in restaurants and bars, and media advertisements);

- Using posters, radio, newspaper, television and use of pamphlets, to communicate alcohol-related health messages has also demonstrated effectiveness.

**FINDINGS FROM SYSTEMATIC REVIEWS**

One review included information on the effectiveness of educational and media interventions for women and described the effectiveness of these approaches for targeting pregnant women specifically. Although our search included reviews targeting all women, this review focused on pregnant women and synthesized interventions that may help to address Canada’s fourth LRADG, which promotes abstinence among women who are pregnant or breastfeeding, and among those planning to become pregnant.

**CANADA’S LOW-RISK ALCOHOL DRINKING GUIDELINE 4: PREGNANT? ZERO IS SAFEST**

If you are pregnant, planning to become pregnant, or about to breastfeed, the safest choice is to drink no alcohol at all.¹

**EDUCATIONAL AND MEDIA INTERVENTIONS**

One review by Deshpande et al., (2006) looked at health communication interventions geared towards pregnant women. This review examined a number of educational, media, and community-based programs that have been used to promote drinking abstinence. Results indicated that educational
campaigns including those that use mass media or mailings have had limited success in preventing drinking behaviour among pregnant women. Many of these campaigns appeared to increase both knowledge and motivation, but had little effect on behavioural outcomes. The absence of behavioural change may have been due to a lack of interventions, such as programs providing behavioural change strategies to aid in abstaining from alcohol.

**PROMISING PRACTICES**

Cited in Deshpande’s (2006) review, Olsen et al. (1989), examined a campaign where several communication activities highlighted the risks of smoking and drinking during pregnancy between the years of 1985-1987. These activities involved airing commercials in local cinema halls, on the radio, in newspapers and on television. Other activities involved distributing pamphlets and stickers in several public places. They found that the campaign was positively received by pregnant women who reported motivation to reduce their alcohol consumption. However, these positive reactions did not translate into behaviour change as 18-19 per cent of pregnant women within the city of the campaign continued to binge drink.

Similar results were found in the use of personalized education campaigns such as the one described by Belizan et al., (1995), also cited in Deshpande’s review. In this study, a face-to-face home education program targeting at-risk pregnant women, delivered by trained social workers or obstetric nurses was examined. The visits aimed to educate on a variety of issues including an anti-alcohol program for pregnant women and provided a support person. No changes in behavioural outcomes such as alcohol consumption were found. However, the program’s failure to impact behaviour may have been due to its shorter duration (three months).

Lastly, communication-only campaigns providing messages through multiple channels may be more effective than providing messages through one single source or providing no message at all. For instance, in a study by Kaskutas and Graves (1994), (identified in Deshpande’s (2006) review), exposure to one, two, and three different message channels (including government warnings on alcoholic beverage containers, warning posters in restaurants and bars, and media advertisements on the risks of drinking during pregnancy) resulted in more conversations about drinking during pregnancy than exposure to no messages. Additionally, reductions in alcohol consumption were associated with exposure to messages from two and three different channels.
Overall, educational and media interventions showed some success for increasing knowledge and awareness of the risks associated with drinking during pregnancy. However, limited evidence supports the effectiveness of single messages alone in changing actual behaviour.

CONSIDERATIONS FOR PUBLIC HEALTH PRACTICE

The above evidence suggests that education and media interventions showed some success in increasing knowledge but had little impact on behaviour change. Based on this, health units may wish to use multiple media channels such as radio, newspaper and television to increase awareness of the health risks of alcohol use among pregnant women. However, it may be beneficial for these educational messages to be combined with more behaviour-based strategies such as skills training or brief interventions, to allow for this knowledge and awareness to better translate into behavioural change.
First Nations, Inuit and Métis

KEY FINDINGS

FINDINGS FROM SYSTEMATIC REVIEWS: (3 REVIEWS)

• Incorporating traditional and cultural values into community-based alcohol programming including educational components may help to change drinking behaviour among Aboriginal populations.

• Limited review-level evidence supports the use of curriculum-based programs.

PROMISING PRACTICES FROM SUPPLEMENTARY STUDIES:

• The following strategies were associated with effective interventions: Community approaches fostering cultural awareness through traditional methods such as talking/healing circles, medicine wheels, spirit dances, and tribal history;

• Year-long curriculum-based education programs on abstinence, incorporating traditional and cultural values; and

• Programs that focus on health awareness, alcohol awareness, refusal and life skills.

FINDINGS FROM SYSTEMATIC REVIEWS

Although no reviews examined social marketing and health communication interventions regarding First Nations, Inuit and Métis populations specifically, three reviews did examine alcohol prevention strategies among other Aboriginal groups. The findings from these reviews suggest that community interventions that incorporate traditional and/or cultural values may be useful when targeting drinking behaviour of Aboriginal populations. Community interventions were included in order to capture any potentially-relevant interventions that may have involved First Nations, Inuit and Métis populations.

TRADITIONAL AND COMMUNITY-BASED APPROACHES

Community approaches, particularly those that incorporated traditional or cultural values, have been commonly cited as strategies for targeting drinking behaviour among Aboriginal populations. Montag et al. (2012) suggest that community-based approaches that incorporate traditional methods, structures and rituals, such as talking circles, medicine wheels, spirit dances, and tribal history, can provide benefits such as decreased alcohol consumption and dependence, increased alcohol abstinence and a shift towards Aboriginal communities becoming less tolerant of drinking.
Jiwa et al. (2008) also support the use of cultural activities within community-based programs to target alcohol abuse among Aboriginal populations. They noted that programs that included cultural activities or raised cultural awareness through healing circles, family involvement or employing elders resulted in lower rates of drug and alcohol use compared with control group participants who had not participated in cultural activities. They also suggested that cultural relevance was important in educational programs and that successful programs required: 1) strong leadership in this area; 2) strong community member engagement; 3) funding for programming; and 4) the ability to develop infrastructure for long-term program sustainability.

**CURRICULUM-BASED APPROACHES**

Hawkins et al. (2004) concluded that curriculum-based approaches and community empowerment may be promising strategies for developing culturally-relevant substance abuse prevention programs for Native American adolescents. They looked at substance abuse prevention strategies for Native American adolescents. Of the two culturally-focused school-based curriculum prevention programs examined, both programs resulted in lower rates of alcohol use compared to pre-program time points or in comparison to other schools that had not participated in the program.

**PROMISING PRACTICES**

One education program by Dorpat (1994) described in the review by Hawkins et al. (2004) was called Positive Reinforcement in Drug Education (PRIDE) which was developed to target substance abuse among Aboriginal students. This one-year educational program was implemented in middle, elementary and high schools in Tacoma, Washington and included students from over 50 tribes. The program involved four components: 1) cultural aspects (development of students' cultural identity); 2) a comprehensive, "no use" curriculum focussing on issues of health awareness, drug/alcohol awareness, refusal skills, and life skills; 3) building and program security (policy-based and environmental reduction of in-school drug use) and 4) social service access (counselling, case management services, and referral/after-care programs). The program resulted in high rates of expected school completion, positive attitudes about health among students and only 22 per cent of participating high school students reporting drunkenness, which was significantly lower than the 46 per cent of local high school students who reported getting drunk once a month. Although these results appear positive, there was no direct comparison or control group, so firm conclusions attributing differences to the program cannot be made.

Overall, the results of the above studies demonstrate that incorporating cultural factors into prevention efforts and providing educational components within these programs can enhance the effectiveness of community-based programs. However, this requires an understanding of the strengths and values inherent within Aboriginal populations, as well as the diversity of these cultural values which may be
unique to each community. Additionally, limited evidence was found supporting curriculum-based educational programs for Aboriginal children.

**CONSIDERATIONS FOR PUBLIC HEALTH PRACTICE**

Incorporating Aboriginal cultural and traditional values may be beneficial in targeting drinking behaviour in First Nations, Inuit, and Métis populations. Public health practitioners should consider involving community leaders in intervention planning to ensure their cultural and traditional relevance. This approach may maximize the impact of the intervention for community members and increase their acceptance of the LRADGs. These interventions can include traditional methods such as talking/healing circles, medicine wheels, spirit dances and incorporating tribal history and focus on health and alcohol awareness, refusal and life skills, while incorporating the LRADGs.
Seniors

KEY FINDINGS

FINDINGS FROM SYSTEMATIC REVIEWS: (0 REVIEWS)

- No reviews on alcohol-related social marketing and health communication interventions for seniors emerged from the literature search.

FINDINGS FROM SYSTEMATIC REVIEWS

For the purposes of this report, seniors were defined as individuals aged 65 or older. None of the included reviews focused on seniors, nor did they describe individual studies targeting this population. Therefore, conclusions and/or considerations regarding the effectiveness of alcohol-related social marketing and health communication interventions for seniors could not be determined based on review-level evidence available at the time of this review.

CONSIDERATIONS FOR PUBLIC HEALTH PRACTICE

Public health practitioners can help to address the gap in research evidence by evaluating relevant interventions in this population. Considering the lack of findings related to alcohol use, public health practitioners may wish to explore other substance use literature such as that of tobacco or other drug use to identify potentially beneficial interventions for this target population which can be adapted to promote Canada’s LRADGs.
Health professionals

KEY FINDINGS

FINDINGS FROM SYSTEMATIC REVIEWS: (0 REVIEWS)

• No reviews on alcohol-related social marketing and health communications interventions for health professionals emerged from the literature search.

FINDINGS FROM SYSTEMATIC REVIEWS

For the purposes of this report, health professionals included physicians, nurses, midwives, general practitioners and other individuals working to ensure the health of others. None of the included reviews focused on health professionals, nor did they describe individual studies targeting this population. Therefore, conclusions and/or considerations regarding the effectiveness of alcohol-related social marketing and health communication interventions for health professionals could not be determined based on review-level evidence available at the time of this review.

CONSIDERATIONS FOR PUBLIC HEALTH PRACTICE

Public health practitioners can help to address the gap in research evidence by evaluating relevant interventions in this population. Considering the lack of findings related to alcohol use, public health practitioners may wish to explore other substance use literature such as that of tobacco or drug use to identify potentially beneficial interventions for this target population which can be adapted to promote Canada’s LRADGs.
Francophones

KEY FINDINGS

FINDINGS FROM SYSTEMATIC REVIEWS: (0 REVIEWS)

- No reviews on alcohol-related social marketing and health communication interventions for Francophones emerged from the literature search.

FINDINGS FROM SYSTEMATIC REVIEWS

For the purposes of this report, Francophones were defined as individuals whose mother tongue is French. None of the included reviews focused on individuals who are Francophone, nor did they describe individual studies targeting this population. Therefore, conclusions and/or considerations regarding the effectiveness of alcohol-related social marketing and health communication interventions for Francophones could not be determined based on review-level evidence available at the time of this review.

CONSIDERATIONS FOR PUBLIC HEALTH PRACTICE

Public health practitioners can help to address the gap in research evidence by evaluating relevant interventions in this population. Considering this lack of findings related to alcohol use, public health practitioners may wish to explore other substance use literature such as that of tobacco or drug use to identify potentially beneficial interventions for this target population, which can be modified to promote Canada’s LRADGs.
University and college settings

KEY FINDINGS

FINDINGS FROM SYSTEMATIC REVIEWS: (10 REVIEWS)

- Computer and web-based interventions are effective in reducing both the frequency of drinking and the quantity of alcohol consumed by college students.

- Education programs alone are not effective in reducing alcohol consumption.

- Social norm campaigns have been shown to be effective in modifying normative perceptions but have mixed evidence regarding their effectiveness for behavioural consequences.

PROMISING PRACTICES FROM SUPPLEMENTARY STUDIES:

The following strategies were associated with effective interventions:

- Web-based programs that provide research related to college alcohol use, social norms, and alcohol-related consequences through the use of video clips, personalized feedback, discussion forums and selected readings;

- Ecological momentary interventions which involve sending daily individual tailored messages (2 week duration) through the use of hand-held mobile devices (i.e., cell phones) addressing consequences of alcohol use matched to respondent’s reported behaviour, self-efficacy, and outcome expectancies;

- Informational curriculum (weekly 90-minute sessions) involving lectures or films emphasizing the negative consequences of drinking;
  - Sessions may include information on dispelling myths about alcohol and its behavioural effects, the alcohol industry, alcohol-related laws, and responsible decision-making; and
  - Normative education, marketing campaigns or short (one hour) normative educational sessions presenting campus-wide data regarding students’ typical alcohol consumption and normative perceptions.
FINDINGS FROM SYSTEMATIC REVIEWS

Ten reviews were identified which examined alcohol-related social marketing and health communication interventions in universities and colleges (nine systematic reviews and one meta-analysis).\textsuperscript{19,31-39} These settings are frequently examined with regards to alcohol research because of the high rates of drinking on campus. As a result, a number of interventions have been extensively studied with regards to their effectiveness, including web-based or computer delivered interventions, ecological momentary interventions, social norm campaigns, and educational or informational approaches.

WEB-BASED, COMPUTER OR MOBILE INTERVENTIONS

Three reviews examining computer or web-based interventions demonstrated positive effects on alcohol-related outcomes for students in university or college settings.\textsuperscript{19,35,38} In a meta-analysis by Carey et al. (2009) examining the efficacy and moderators of computer delivered interventions (CDIs) to reduce alcohol use among college students, 35 separate interventions were examined.\textsuperscript{35} Results from this study suggested that, overall, CDIs were effective in reducing the quantity and frequency of drinking among college students at both short and long-term follow-ups and that CDIs were equally effective compared to other more intensive interventions such as face-to-face communication programs.\textsuperscript{35}

PROMISING PRACTICES

Cited within the review by Carey et al. (2009), a study by Butler and Correia (2008) compared the efficacy of computer-delivered interventions with face-to-face interventions targeting alcohol consumption in college student drinkers.\textsuperscript{54} All participants completed an evaluation on their drinking habits and received personalized feedback on their reported alcohol use. Participants in the face-to-face feedback condition met with a graduate clinician who incorporated aspects of motivational interviewing while reviewing students’ personalized feedback forms. Students in the computer delivered condition received identical feedback in the form of a self-paced slide presentation.\textsuperscript{54} In a one-month post-intervention assessment, individuals in both the computer-delivered, and face-to face intervention groups had significantly better drinking outcomes (i.e., drinking occasions, binge episodes) compared with the control groups who did not receive any intervention. However, no significant differences were found between the face-to-face or computer-delivered interventions for behavioural measures including alcohol use days, binge drinking days per month, standard drinks consumed during a typical week, and alcohol-related consequences suggesting that computerized interventions can be used to efficiently reduce alcohol use among college students and are as face-to-face feedback.\textsuperscript{54}

A second review by Lehto and Oinas-Kukkonen (2011) examining the persuasive features of web-based alcohol and smoking interventions found that the majority of studies targeting alcohol consumption
reported positive results in terms of heavy drinking, days abstinent, drunkenness, and negative alcohol-related consequences.

PROMISING PRACTICES

Cited within Lehto and Oinas-Kukkonen’s review, a study by Bersamin et al. (2007) described a three hour web-based college education course called College Alc which presented the latest research related to college alcohol use, social norms, consequences, harm prevention, and treatment through the use of interactive assignments, streaming video clips, personalized feedback, discussion forums, selected readings, and a student-generated harm-prevention plan. Incoming college freshmen who reported any alcohol use in the past 30 days were compared with those who did not report any alcohol use in that time frame. The intervention was conducted during the first six weeks of the fall semester. At a one month follow-up the program was found to significantly reduce the frequency of heavy drinking, drunkenness, and negative alcohol-related consequences among freshmen who already drank. However, for students who did not report drinking in the month before starting college, no beneficial effects were found regarding drinking behaviour.

Lastly, a review by Walters et al. (2005) examined computer focused on alcohol reduction studies targeting college drinkers. Most of the programs examined used a combination of educational, skills-based, and motivational strategies and included assessment questions providing personalized drinking feedback or other information that was customized to each user. Although there was limited research on program outcomes, many of the interventions resulted in increased knowledge and reduced drinking frequency.

ECOLOGICAL MOMENTARY INTERVENTIONS

Ecological momentary interventions (EMIs) are interventions that are ecologically valid (i.e., accurately reflect the real-world that is being examined) because they occur in a natural environment and provide support at specific moments in everyday life, which can be used to target a variety of health behaviours, including alcohol consumption. EMIs often include the use of hand-held communication devices such as mobile phones. Heron and colleagues (2010) conducted a review of EMIs aimed at improving a variety of health behaviours. Of the 27 studies identified, only one EMI targeted college student drinkers and aimed to reduce negative consequences and alcohol consumption. In this study, students completed a survey about their drinking behaviour on a hand-held mobile device and received tailored messages every day for two weeks on the consequences of alcohol use which were matched to their reported behaviour, self-efficacy and outcome expectancies regarding alcohol-related consequences. Participants who received the tailored messages reported drinking significantly fewer drinks per drinking day and had lower outcome expectancies regarding alcohol-related consequences as a result of alcohol.
consumption than did control group participants who completed the assessment but did not receive feedback.\textsuperscript{56} This suggests that EMIs conducted on mobile devices may be promising in changing alcohol consumption among students within a college or university setting.\textsuperscript{31}

**INFORMATIONAL APPROACHES**

Similar to the findings on informational approaches for youth, there is also limited review-level evidence of effectiveness for providing information (i.e., risks of drinking), to students in a university or college setting.\textsuperscript{32,34,39,57} For instance, two reviews examining information and knowledge-based approaches, including pamphlets, mail, or birthday cards with alcohol-related messages for college students, and found limited effectiveness of these approaches in reducing alcohol consumption.\textsuperscript{32,34} Hunter Fager et al. (2004) also concluded that education alone is ineffective as an intervention strategy for undergraduate students in a college setting.\textsuperscript{39}

Additionally, of the seven studies examined by Larimer and Cronce (2002), several reported changes in knowledge and attitudes, but only one study reported reductions in drinking behaviour.\textsuperscript{58} This program was an 8-week informational curriculum for moderately heavy drinking students.\textsuperscript{58} Students assigned to this program met weekly for 90-minute informational sessions which involved lectures or films emphasizing the negative consequences of drinking and were based on the disease model of alcoholism. Session content included dispelling myths about alcohol, behavioural effects of alcohol, effects of other drugs and their interactions with alcohol, the alcohol industry, alcohol-related laws, and responsible decision-making about alcohol. At the 12-month follow-up, participants who attended the information sessions reduced their consumption from 19.4 to 12.7 drinks per week.\textsuperscript{58} However, despite overall reductions in alcohol consumption, most subjects continued to report occasional heavy drinking.

Overall, the results from Larimer and Cronce’s (2002) review suggest that little evidence exists for the utility of educational or awareness programs and that pursuing approaches based solely on information or awareness models is a poor use of resources on college and university campuses.\textsuperscript{57}

**SOCIAL NORMATIVE INTERVENTIONS**

One approach that may be a better use of resources on university and college campuses is the use of social normative interventions. Social normative interventions are based on the premise that individuals will overestimate the alcohol consumption of others while underestimating their own consumption as well as their risks.\textsuperscript{32} These interventions are typically delivered in the form of personalized feedback and through social norm marketing campaigns.\textsuperscript{32-34,36,37,57,59}

Reaveley et al. (2010) examined alcohol misuse prevention interventions for higher education students and concluded that while interventions delivered using computers or in individual face-to-face sessions were effective, the evidence supporting social norm mass media interventions was mixed.\textsuperscript{32} They suggested that social normative media interventions could be an effective component of campus efforts to reduce heavy drinking among first-year students. For instance, a three-year multi-site study involving eighteen randomly assigned campuses demonstrated that social norm media interventions aimed at correcting misperceptions of subjective drinking norms (and thus lowering alcohol use) were effective in lowering perceptions of student drinking levels and alcohol consumption.\textsuperscript{60} However, a replication of
this study concluded that the social normative campaign was not associated with lower perceptions of student drinking level or reductions in self-reported alcohol consumption. A review by Larimer and Cronce, (2007) also noted that normative re-education interventions were effective in modifying perceptions of both behaviours and attitudes, but had mixed evidence of effectiveness for actual behavioural consequences.

**PROMISING PRACTICES**

Cited within Larimer and Cronce’s (2007) review, Peeler et al. (2000) evaluated the efficacy of adding a small group normative re-education component to a 15-week self-management class for college students with some focus on alcohol. The normative re-education component was a one-hour procedure that attempted to change students’ perceptions of others’ drinking and thereby reduce the group’s drinking overall. This was done by presenting students with campus-wide data on students’ typical alcohol consumption as well as a quantitative summary of participants’ perceptions of alcohol norms for comparison. They found that adding the normative re-education component resulted in a greater reduction in students’ perceived drinking norms as well as more moderate alcohol attitudes compared to those who did not receive the normative re-education component. However, no reduction in alcohol use was found for either group.

Four other reviews found mixed evidence on the effectiveness of social norming interventions in university or college settings. However, in a Cochrane Review by Moriera et al. (2009), web-based and individual face-to-face normative interventions for college students were found to be effective in reducing alcohol misuse, with significant effects more apparent for short-term outcomes measured up to three months after the intervention.

Despite the unclear results on effectiveness, Lewis et al. (2006) noted these social marketing interventions had the advantage of reaching a large segment of students at a low cost. They suggest personalizing normative information to be more effective in reducing heavy drinking behaviours in students. They also suggest that because changes in drinking behaviour appear to be directly related to changes in perceived norms, social marketing campaigns are likely to be successful to the extent that they correct these normative misperceptions. Thus, in order to maximize the effectiveness of normative interventions, practitioners should attempt to provide more personal information and ensure that normative misperceptions are corrected.

**CONSIDERATIONS FOR PUBLIC HEALTH PRACTICE**

Because of the widespread access to computers and the internet among university and college campuses (e.g., within libraries, student centres, and in residences), public health practitioners may wish to promote the LRADGs in web-based interventions that provide
personalized feedback to students. Providing personalized feedback has been shown to correct normative misperceptions, and may help students meet Canada’s LRADGs. These normative misperceptions can be addressed through the use of video clips, discussion forums and selected readings.

Personalized feedback can also be easily delivered with the use of mobile technology. For instance, ecological momentary interventions which occur in a natural setting such as sending text messages to students throughout the day on a university or college campus may also be an effective way to target a large population of students at one time, regardless of their location. These types of health messages may be beneficial, provided they address consequences of alcohol use matched to respondents’ reported behaviour, self-efficacy, and outcome expectancies and the interventions reviewed lasted for approximately two weeks. These mobile interventions can help to increase reach, feasibility, and cost-effectiveness within university and college campus settings.

Lastly, public health practitioners may wish to provide education to students through the use of marketing campaigns or short (one hour) normative education sessions presenting campus-wide data on students’ typical alcohol consumption and alcohol normative perceptions statistics. This may help to facilitate behavioural change within the student population by helping to target perceived drinking norms and attitudes towards moderate drinking.
Workplace settings

KEY FINDINGS

FINDINGS FROM SYSTEMATIC REVIEW: (1 REVIEW)

• Workplace interventions involving education approaches are effective in producing changes in drinking behaviour, particularly those that provide personalized feedback on drinking behaviour and information on the negative effects of alcohol use.

PROMISING PRACTICES FROM SUPPLEMENTARY STUDIES:

The following strategies were associated with effective interventions:

• Mailed or electronic feedback regarding drinking behaviour;
• Classroom information-type sessions including videos about the negative effects of alcohol use, and a review of workplace policies and employee assistance programs.

Findings from systematic reviews

One review addressed workplace interventions and examined the effectiveness of workplace programs in changing drinking behaviour of employees. Results from this review suggest that workplace programs may be effective in reducing drinking behaviour among employees, particularly when programs provide employees with personalized feedback and information on the negative effects of substance use.

WORKPLACE INTERVENTIONS

In the review cited above by Webb et al. (2009) which examined workplace interventions addressing alcohol-related problems, ten studies on workplace alcohol interventions demonstrated promising behavioural results. Of these, three studies focused specifically on educational programs involving personalized feedback and informational training sessions.

Overall, results suggest that workplace interventions that provide both feedback on drinking behaviour as well as information on the negative effects of alcohol use are effective in producing positive drinking-related outcomes. However, future research is needed to identify the most effective components of these interventions and the types of employees who would benefit from them the most.
PROMISING PRACTICES

Cited within the review by Webb et al. (2009) is a study by Matano et al. (2007) of a web-based intervention for employees of a worksite in California that provided feedback on individuals’ stress levels and coping strategies. Some individuals also received individualized feedback regarding their risk for alcohol-related problems. The results provide some evidence of greater alcohol reduction among those who received the individualized feedback, and the study provides preliminary support for the use of web-based programs for addressing alcohol use for workplace employees.

Also cited within the review by Webb et al. (2009) a study by Walters et al. (2003) provided drinkers with feedback on their drinking behaviour either immediately or after an eight-week waiting period. After viewing their feedback, participants reported greater importance of changing their behaviour, as well as significant decreases in their alcohol consumption. The authors suggest that providing feedback through email is cost-effective and successful, and may be a useful component of workplace alcohol reduction programs.

Lastly, cited in Webb’s (2009) review, a study by Bennett and colleagues (2004), examined the effectiveness of 4-hour classroom-format training sessions to improve work climate and alcohol outcomes and to assess the effects of the program on improving problem drinking beyond that of standard workplace alcohol policies. The educational program included a video about the negative effects of substance use, a thorough review of different sections of their workplace policy (e.g., testing and disciplinary procedures), and a participative quiz. Employees also received two hours of information about their employee assistance program (EAP), including a video with follow-up discussion, a brief game-oriented quiz, and a review of all EAP services. Employees who received the informational program reduced problem drinking from 18 per cent to 10 per cent.
CONSIDERATIONS FOR PUBLIC HEALTH PRACTICE

To promote the use of these programs in workplaces, public health practitioners may wish to use the *Healthy Workplace Handbook* developed by the Ontario Workplace Health Coalition which outlines a number of guiding principles for developing healthy workplace programs. While adhering to these guiding principles, practitioners may wish to focus on web-based interventions which provide immediate feedback to employees. Such interventions are low-cost, and can reach a large population with few resources. This may be particularly important for targeting employees of large workplaces.
Discussion and implications for public health practice

To help determine the best ways to communicate the new LRADGs which were released in Canada in November 2011, this review was undertaken to 1) identify evidence on the effectiveness of social marketing and health communication interventions for the public dissemination of alcohol-related health messaging, 2) discuss implications for the general population and for specific sub-populations and settings and 3) offer evidence-based considerations to public health practitioners.

FINDINGS FROM SYSTEMATIC REVIEWS

Our review identified a variety of empirically-supported interventions for a number of populations and settings including the use of computer or web-based interventions for youth, high-risk drinkers, and the general population as well as within college and university settings.

Computer or web-based interventions have been shown to be effective in reducing drinking behaviour, particularly among youth, high-risk drinkers, the general population and students within university and college settings. Media interventions have little effect on reducing alcohol consumption among women, youth and the general population, but have been shown to be effective in increasing alcohol-related knowledge and awareness among women. There was also some support for the use of media interventions in reducing alcohol-related crashes and alcohol impaired driving for the general population. For specific groups like Aboriginal populations, culturally tailored interventions were found to be effective. Lastly, social norm campaigns (i.e., initiatives promoting an expected behaviour in a given situation) have been shown to be effective in modifying normative perceptions (beliefs about how one should act in a given situation) among college and university students but have mixed evidence on their effectiveness for behavioural consequences among students within those settings.

IMPLICATIONS FOR PUBLIC HEALTH PRACTICE

A number of gaps in the evidence were identified; none of the selected reviews targeted interventions for seniors, Francophones or health professionals, highlighting the need for future syntheses in these areas. Public health practitioners, including those at the local, provincial and national level can play an active role in filling these gaps by piloting initiatives for these groups and settings, evaluating processes and outcomes, and submitting results for peer review publication. Although beyond the scope of this report, extrapolation of research on the effectiveness of social marketing and health communication interventions in other public health fields such as tobacco cessation and obesity prevention may prove useful for developing alcohol-related messaging in this area.
When designing social marketing and health communication initiatives, it is prudent to follow a systematic process to allow for the greatest chance of success in achieving desired outcomes. For example, Public Health Ontario’s resource *At a glance: the twelve steps to developing a health communication campaign* outlines twelve practical and fluid steps to consider when undertaking health communication planning. It is recommended to employ comprehensive approaches, including education, policy, and environmental considerations, and multi-level approaches, including individual, network, organizational and societal considerations.  

Overall, our results suggest that different populations and settings require different approaches to communicate low-risk drinking and alcohol messaging, as outlined in the Key Findings sections throughout this report. Public health can benefit from applying current evidence-based social marketing approaches within a systematic health communication approach to ensure messaging is effectively communicated and understood. As with comprehensive tobacco control, in the field of alcohol policy specifically, social marketing, educational and persuasion strategies require a coordinated approach with proven population-level policy levers including pricing policies, availability control, treatment options and others.  

**STRENGTHS**

The strengths of this report include the systematic search for reviews to capture research related to social marketing and health communication interventions targeting alcohol use over a ten-year period. Second, previous reviews have focused on specific age groups, interventions and settings; however, to our knowledge, this is the first review to compile findings among a variety of populations, interventions and settings relevant to this specific question. Moreover, because review-level evidence was primarily used, the full range of published, primary study evidence was included. Lastly, two reviewers were used for abstract selection and data extraction, minimizing selection and interpretation bias.

### HEALTH COMMUNICATION ACTION STEPS

1) Project management  
2) Health promotion strategy  
3) Audience analysis  
4) Communication inventory  
5) Communication objectives  
6) Channels and vehicles  
7) Combining and sequencing  
8) Message strategy  
9) Identity development  
10) Production of materials  
11) Implementation  
12) Evaluation
LIMITATIONS

This review has several limitations which must be addressed. First, only reviews published in English and/or French were included, resulting in the exclusion of three potentially relevant articles that were published in other languages.

Another notable limitation is that, due to time constraints, the quality of each of the included reviews was not assessed using a critical appraisal tool. Had more time been available, the review of reviews would ideally comment on the quality of included evidence.

The studies included within the reviews also had a high degree of heterogeneity. Many of the included studies within the reviews assessed diverse outcomes using different measures and tools making it difficult to compare the effectiveness of similar interventions across studies in the reviews. The majority of the reviews focused on behavioural outcomes with little evidence regarding other outcomes such as knowledge and attitudes. There was also diversity among the components of similar interventions, further hindering our ability to assimilate findings.

Lastly, a variety of definitions existed for different terms within studies included in the reviews reported; for example, the age range associated with the term “youth”. Efforts were made to cluster studies with different but very closely-related definitions wherever possible.

Conclusions

The current report highlights the reported impacts and limitations in the systematic review literature pertaining to the effectiveness of social marketing and health communication interventions for disseminating alcohol-related health messaging, especially with regards to specific sub-populations and settings. These findings point to the need for a comprehensive review of the primary research literature (including grey literature) in this area. Furthermore, as there is almost certainly a gap in the primary research literature (based on targeted additional searches – data not shown) there is a need for public health unit personnel to collaborate with researchers, evaluators and others to contribute to the peer-review literature through publication of evaluated interventions. Findings from the available review-level evidence suggests that different populations and settings require different approaches to communicate alcohol-based health messaging and that public health can benefit from applying current social marketing practices and systematic health communication processes to ensure messaging is effectively communicated and understood.
References


33. Moreira MT, Smith LA, Foxcroft D. Social norms interventions to reduce alcohol misuse in university or college students. *Cochrane database of systematic reviews (Online)*. 2009(3):CD006748.


43. Worden JK, Waller JA, Riley TJ. The vermont public education campaign in alcohol and highway safety: A final review and evaluation. 1975;CRASH report I-5


Appendix A (Canada’s Low-Risk Alcohol Drinking Guidelines)

Drinking is a personal choice. If you choose to drink, these guidelines can help you decide when, where, why and how.


Guideline 1 (Your limits)
Reduce your long-term health risks by drinking no more than:
• 10 drinks a week for women, with no more than 2 drinks a day most days
• 15 drinks a week for men, with no more than 3 drinks a day most days

Plan non-drinking days every week to avoid developing a habit.

Guideline 2 (Special occasions)
Reduce your risk of injury and harm by drinking no more than 3 drinks (for women) and 4 drinks (for men) on any single occasion. Plan to drink in a safe environment. Stay within the weekly limits outlined in Guideline 1.

Guideline 3 (When zero’s the limit)
Do not drink when you are:
• driving a vehicle or using machinery and tools
• taking medicine or other drugs that interact with alcohol
• doing any kind of dangerous physical activity
• living with mental or physical health problems
• living with alcohol dependence
• pregnant or planning to be pregnant
• responsible for the safety of others
• making important decisions

Guideline 4 (Pregnant? Zero is safest)
If you are pregnant, planning to become pregnant, or about to breastfeed, the safest choice is to drink no alcohol at all.

Guideline 5 (Delay your drinking)
Alcohol can harm the way the body and brain develop. Teens should speak with their parents about drinking. If they choose to drink, they should do so under parental guidance; never more than 1–2 drinks at a time, and never more than 1–2 times per week.
Appendix B (Methods)

The following electronic databases and search strategies were used to conduct the systematic literature search:

Databases

Academic Search Premier; CINAHL with Full Text; Psychology and Behavioral Sciences Collection; SocINDEX with Full Text; AgeLine; Child Development & Adolescent Studies; Database of Abstracts of Reviews of Effects; Cochrane Database of Systematic Reviews

Limiters - Published Date from: 20000101-20121231
Search modes - Boolean/Phrase: Interface – EBSCOhost

Search Strategy

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Effectiveness of Approaches to Communicate Alcohol-related Health Messaging

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Databases

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<td>limit 19 to (&quot;adult (19 to 44 years)&quot; or &quot;middle age (45 to 64 years)&quot; or &quot;all aged (65 and over)&quot;) [Limit not valid in BIOSIS Previews,Embase,PsycINFO; records were retained]</td>
<td>4767</td>
</tr>
<tr>
<td>25</td>
<td>limit 24 to female</td>
<td>2640</td>
</tr>
<tr>
<td>26</td>
<td>19 and 21</td>
<td>5185</td>
</tr>
<tr>
<td>27</td>
<td>22 or 23 or 25 or 26</td>
<td>6012</td>
</tr>
<tr>
<td>28</td>
<td>limit 27 to english language</td>
<td>5428</td>
</tr>
<tr>
<td>29</td>
<td>limit 28 to yr=&quot;2000 -Current&quot;</td>
<td>3874</td>
</tr>
<tr>
<td>30</td>
<td>remove duplicates from 29</td>
<td>2985</td>
</tr>
<tr>
<td>31</td>
<td>exp asia/ or exp africa/</td>
<td>1494735</td>
</tr>
<tr>
<td>32</td>
<td>30 not 31</td>
<td>2785</td>
</tr>
<tr>
<td>33</td>
<td>32</td>
<td>2785</td>
</tr>
<tr>
<td>34</td>
<td>limit 33 to (evidence based medicine or concensus development or meta analysis or outcomes research or &quot;systematic review&quot;) [Limit not valid in BIOSIS Previews,</td>
<td>146</td>
</tr>
<tr>
<td>#</td>
<td>Searches</td>
<td>Results</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td></td>
<td>Ovid MEDLINE(R), Ovid MEDLINE(R) In-Process, PsycINFO; records were retained</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>limit 33 to &quot;review articles&quot; [Limit not valid in Embase, PsycINFO; records were retained]</td>
<td>2384</td>
</tr>
<tr>
<td>36</td>
<td>Ethanol/po or alcohol-related disorders/pc or exp alcohol-induced disorders/pc or alcoholic intoxication/pc or alcoholism/pc or alcohol drinking/ or ((low-level or low-risk or social or moderate or minimal or guidelines or reasonable or responsible or sensible or high-risk or problem or bing$ or overconsum$ or abuse or misuse or hazardous or excessive or episodic or heavy) adj2 (drink$ or alcohol$)).mp.</td>
<td>159993</td>
</tr>
<tr>
<td>37</td>
<td>18 and 36</td>
<td>5788</td>
</tr>
<tr>
<td>38</td>
<td>(synthes$ or pooled or ((literature or systematic or evidence or quantitativ$ or integrativ$ or research$ or critical) adj5 (review$ or overview$)) or (integrative$ adj3 research$) or meta-analy$ or metaanaly$ or (meta adj1 analy$) or metanaly$.tw. or (extract$ or (search$ adj5 (medline or embase or cinahl or psycinfo or psychinfo or Cochrane or (science adj1 citation) or (web adj2 science) or (web adj2 knowledge) or scopus)) or handsearch$ or (hand adj1 search$) or (manual adj1 search) or bibliography or bibliographies or (reference$ adj1 list$)).ab.</td>
<td>3314158</td>
</tr>
<tr>
<td>39</td>
<td>33 and 38</td>
<td>179</td>
</tr>
<tr>
<td>40</td>
<td>19 and 38</td>
<td>348</td>
</tr>
<tr>
<td>41</td>
<td>from 40 keep 200-348</td>
<td>149</td>
</tr>
</tbody>
</table>

Note: the above search strategy was conducted a second time limiting results to French only which identified 4 additional articles.

**Primary inclusion and exclusion criteria**

The following inclusion and exclusion criteria were used during the initial screening process:

<table>
<thead>
<tr>
<th></th>
<th><strong>Inclusion criteria</strong></th>
<th><strong>Exclusion criteria</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Language</strong></td>
<td>Studies that are available in the English and French language</td>
<td>Non-English and non-French studies</td>
</tr>
<tr>
<td><strong>Year</strong></td>
<td>Studies published between 2002 to 2012</td>
<td>Studies published before 2002</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>Studies that measure the effectiveness of social marketing</td>
<td>Studies that do not clearly address social marketing or</td>
</tr>
<tr>
<td>Inclusion criteria</td>
<td>Exclusion criteria</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------</td>
<td></td>
</tr>
<tr>
<td>or health communication concepts in regards to alcohol interventions</td>
<td>health communication in regards to alcohol interventions</td>
<td></td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Studies that contain an evaluative component and that have clear outcome data described</td>
<td>Studies that do not clearly describe evaluative components or study outcome data</td>
<td></td>
</tr>
<tr>
<td><strong>Population</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Studies that address the general population, and/or specifically focus on the following sub-populations and settings: (1) women, (2) seniors, (3) youth (4) Francophones (5) health professionals, and (6) First Nations, Inuit, and Métis (7) high-risk drinkers; (1) workplaces, (2) colleges, (3) universities</td>
<td>Studies that address populations from developing countries</td>
<td></td>
</tr>
<tr>
<td><strong>Publication type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer-reviewed journal articles that review a body of literature (i.e., systematic reviews, meta-analyses etc.)</td>
<td>Studies that are not peer-reviewed review articles that review a body of literature (i.e., single studies)</td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duplicate studies</td>
<td></td>
</tr>
</tbody>
</table>

**Secondary Screening Process**

Additional inclusion/exclusion criteria were subsequently developed and applied to ensure that the focus of the included reviews was on broad population-level social marketing and health communication interventions. Thus, reviews focused on individual interventions such as counselling and brief interventions or motivational interviewing, were excluded during the secondary screen.
## Appendix C (Summary of Findings)

<table>
<thead>
<tr>
<th>Population</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Computer/Web-based intervention</td>
</tr>
<tr>
<td>General population</td>
<td>There is some evidence supporting the use of web- or computer-based interventions for reducing alcohol consumption, particularly those that provide personalized feedback along with additional self-help materials. ¹⁹⁻²¹</td>
</tr>
<tr>
<td>Youth</td>
<td>Web-based interventions were equally effective as brief in-person interventions in reducing alcohol consumption or heavy drinking frequency, although the effects were small. ²⁴</td>
</tr>
<tr>
<td>High-risk drinkers</td>
<td>Web-based interventions without professional</td>
</tr>
<tr>
<td>Population</td>
<td>Computer/Web-based intervention</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>n/a</td>
</tr>
<tr>
<td>First Nations, Inuit, Métis</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Contact are effective for curbing drinking among adult problem drinkers, particularly interventions including personalized feedback and multiple sessions.\(^\text{26}\)
<table>
<thead>
<tr>
<th>Population</th>
<th>Computer/Web-based intervention</th>
<th>Educational/Media interventions</th>
<th>Curriculum interventions</th>
<th>Ecological Momentary interventions</th>
<th>Social normative interventions</th>
<th>Workplace interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seniors</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Health professionals</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Francophones</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Universities and colleges</td>
<td>Web-based programs that provide research related to</td>
<td>Education programs alone are</td>
<td>n/a</td>
<td>Ecological momentary</td>
<td>Social norm campaigns have</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Components may help to change drinking behaviour among Aboriginal populations. Limited review-level evidence supports the use of curriculum-based programs.
<table>
<thead>
<tr>
<th>Population</th>
<th>Computer/Web-based intervention</th>
<th>Educational/Media interventions</th>
<th>Curriculum interventions</th>
<th>Ecological Momentary interventions</th>
<th>Social normative interventions</th>
<th>Workplace interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>college alcohol use, social norms, and alcohol-related consequences through the use of video clips, personalized feedback, discussion forums and selected readings were shown to have positive outcomes.</td>
<td>not effective in reducing alcohol consumption.</td>
<td>interventions addressing consequences of alcohol use matched to respondent’s reported behaviour, self-efficacy, and outcome expectancies demonstrated some positive effects.</td>
<td>been shown to be effective in modifying normative perceptions but have mixed evidence regarding their effectiveness for behavioural consequences.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workplaces</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Workplace interventions that provide both feedback on drinking behaviour as well as information on the negative effects of alcohol use are effective in</td>
<td></td>
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<tr>
<td>Population</td>
<td>Interventions</td>
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</tr>
<tr>
<td></td>
<td>Computer/Web-based intervention</td>
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</tr>
<tr>
<td></td>
<td>Educational/Media interventions</td>
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<tr>
<td></td>
<td>Curriculum interventions</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Ecological Momentary interventions</td>
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<td></td>
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<tr>
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<td>Social normative interventions</td>
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<tr>
<td></td>
<td>Workplace interventions</td>
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<td></td>
<td>producing positive drinking-related outcomes.</td>
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<td></td>
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<td></td>
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</tr>
</tbody>
</table>