

Acute Alcohol Poisoning and Sweetened Alcoholic Beverages

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Preface

On October 26, 2017, the National Assembly passed the following motion:

- THAT the National Assembly instruct the National Public Health Director to examine cases of alcohol poisoning following the consumption of beverages with high sugar and alcohol content, especially among young people;
- THAT the Minister of Public Health report to the National Assembly on her inquiry with findings and recommendations as soon as possible.

The Ministère de la Santé et des Services sociaux asked the Institut national de santé publique du Québec to produce a scientific advisory on this public health issue for the beginning of the winter 2018 parliamentary session.

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Key messages

Acute alcohol poisoning occurs frequently in Québec. Between January 1 and November 26, 2017, provincial emergency rooms admitted 2,332 young people age 12–24 for acute alcohol poisoning. That is equivalent to 214 cases per month, 49 cases per week, or 7 cases per day.

These cases are serious. One quarter of young people age 12–24 admitted to the emergency room at the Centre hospitalier de l'Université de Sherbrooke for alcohol-related problems had a priority level indicating that their lives were at risk.

The available data do not conclusively demonstrate that products with high alcohol and sugar content were the main cause of acute alcohol poisoning cases treated in Québec emergency rooms in 2017. Nonetheless, analysis of the data underscores a serious problem that justifies stronger preventive action.

Sales of sweetened alcoholic beverages are up in grocery and convenience stores in Québec. Products with the highest alcohol content show the highest sales growth: a more than threefold increase (319%) for products with more than 11% ABV in one year. Many of these products are inexpensive and their advertising is aimed specifically at young people.

A range of measures is needed to prevent alcohol-related problems, including acute alcohol poisoning. The priority is to set a minimum price for all alcoholic beverages, adjusted according to alcohol content. This is the best way to prevent alcoholic beverages from being sold too cheaply.

Cases of acute alcohol poisoning among young people occur predominantly at certain times of the year. Preventive measures should be stepped up during graduation season, during Québec's Fête nationale holiday, and at the start of the school year at cégeps and universities. It is also important to provide follow-up to young people admitted to emergency departments for alcohol poisoning or other alcohol-related problems. Lastly, content published on brand social media pages, including comments made by Internet users, must be considered as content advertising under the *Regulation respecting promotion,*

advertising and education programs relating to alcoholic beverages.

Abstract

During the summer and fall of 2017, the media in Québec reported a link between the consumption of sweetened alcoholic beverages and cases of acute alcohol poisoning among young people. These are malt-based alcoholic beverages that come in a variety of flavours. The products raised concerns because of their high alcohol and sugar content—11.9% ABV and the equivalent of 13 teaspoons of sugar. They generally contain the equivalent of four standard drinks.

Cases of acute alcohol poisoning are frequent in Québec. Between January 1 and November 26, 2017, 7,055 people visited emergency rooms for this reason. 2,332 of these cases involved young people age 12–24, which is equivalent to 214 cases per month, 49 cases per week, or 7 cases per day. There were 485 cases involving minors. The highest rates are among young people age 18–24. Between 2014 and 2017, rates increased for this age group and for 25–34-year-olds.

The majority of young victims age 12–24 arrived at the emergency room by ambulance (86%). Emergency room visits for this problem vary depending on the time of year. Among minors, visits are more frequent during the weeks corresponding to the end of the school year and the Fête nationale holiday. Among young adults they are more frequent at the beginning of the school year and at Halloween.

A Sherbrooke-based study on emergency room visits for alcohol-related problems among young people age 12–24 corroborates province-wide analysis and underscores the seriousness of these cases. One quarter of young patients admitted to ER triage had a priority level indicating that their lives were at risk. Over half (57%) had complications such as coma, head injury, or hypothermia. Three quarters of young patients had been drinking beverages with high alcohol content.

Flavoured malt beverages accounted for 4.7% of the total volume of beer products compiled in banner grocery and convenience stores in Québec in 2017. These products contain between 5% and 12% ABV and are sold in sizes ranging from 341 mL to 4 L. Some

contain the equivalent of about four standard drinks¹ but are packaged in a container that looks like a single serving. Sales of products with the highest alcohol content (minimum 11% ABV) more than tripled (319%) between 2016 and 2017. This market is changing rapidly as new products, flavours, and levels of alcohol content are constantly being introduced, with a trend towards higher alcohol content. At certain times of the year, discounts can bring prices as low as \$0.74 per standard drink. Given that they are available in all grocery and convenience stores in Québec and that their prices are generally well below the recommended price of \$1.71 per standard drink, these products are very accessible.

Lastly, it is well documented that alcohol consumption behaviours among young people are influenced by advertising for alcoholic beverages. Sales specialists for these beverages are particularly aggressive when it comes to marketing, using a range of unregulated web-based platforms that are popular among young people.

Based on these observations, we recommend the following preventive measures:

- That the government, as a matter of priority, adopt a policy that sets a minimum price per standard drink for all alcoholic beverages, adjusted annually based on the consumer price index;
- That a study be carried out to examine the effectiveness and feasibility of adjusting beverage sizes so that the contents do not exceed the equivalent of one standard drink in products viewed by consumers as single-serve products;
- That preventive interventions on alcohol consumption be strengthened in educational settings, especially surrounding events associated with heavy drinking;
- That all postsecondary educational institutions be required to adopt alcohol policies;
- That individuals admitted to the emergency room for alcohol-related problems receive a brief intervention and that young adults be provided with therapeutic contact in the days following their discharge from the ER;
- That the Régie des alcools, des courses et des jeux (RACJ), in enforcing the *Regulation respecting promotion, advertising and educational programs relating to alcoholic beverages*, recognize that posts published on brand social media pages, including comments made by Internet users, are content advertising.

¹ The amount of alcohol in a serving should be based on the definition of “a drink” in Canada’s Low-Risk Alcohol Drinking Guidelines. According to this definition, “a drink” corresponds to 17.05 mL or 13.45 g of ethanol.

1 Introduction

Acute alcohol poisoning is a serious consequence of heavy drinking. Symptoms of alcohol intoxication begin with a sense of stimulation and well-being caused by the suppression of normal inhibitory mechanisms (Kleinschmidt, 2007). As the blood alcohol level increases, the following effects are observed: sedation; decreased sensory ability, coordination, and reflexes; and increased reaction time and emotional instability. The most severe cases can lead to coma and death (Kleinschmidt, 2007).

Sweetened alcoholic beverages are malt-based alcoholic beverages that come in a variety of flavours.² They were introduced to the North American market in the 2000s as alcohol-caffeine blends (Rossheim & Thombs, 2013). In the early 2010s, following an increase in hospitalizations and deaths associated with these beverages, producers removed the caffeine (Rossheim & Thombs, 2013). In the past few years, some companies have been marketing “supersized alcopops” — drinks with high sugar and alcohol content that are sold in very large formats (Rossheim & Thombs, 2017). Although they are sold in what appears to be a single-serve can, they may actually contain the equivalent of several standard drinks.³ These amounts exceed Canada’s Low-Risk Alcohol Drinking Guidelines, which recommend that young adults age 24 and under never exceed two drinks per day for women or three drinks per day for men (CCDUS, 2014). Some products even contain a quantity of alcohol that corresponds to heavy drinking, defined as four or more drinks per day for women and five or more drinks per day for men (National Institutes of Health, 2004). For example, a 695 mL container of a product with 12% ABV is equivalent to 4.8 standard drinks.

Consumption of 695 mL of 12% ABV “alcopop” over two hours results in a blood alcohol level of 130 mg per 100 mL of blood for an 18-year-old woman weighing 58 kg, and 70 mg per 100 mL of blood for an 18-year-old man weighing 68 kg. A man aged 20 to 29 who drinks two cans of this product would have a blood alcohol level over twice the legal limit for driving. A

woman of the same age would be more than three times over the legal limit (Rossheim & Thombs, 2017).

In 2015, the attorneys general in 17 U.S. states formally requested that Phusion Project—the company that produces the Four Loko brand of alcoholic beverages—reduce the alcohol content in its 23.5-oz containers from 12% to 8% (reducing the number of standard drinks in a single can to 3.3) (State Attorneys General, 2015). Instead, the company continued to sell products at over 8% ABV and even introduced new products with up to 14% alcohol content (Rossheim & Thombs, 2017).

The low prices and advertising for these products are other important considerations. The price of alcoholic beverages has been shown to be a major factor in alcohol consumption and related problems (Booth et al., 2008). Young people’s exposure to alcohol advertising influences the age at which they start drinking as well as drinking frequency and quantity (Jernigan, Noel, Landon, Thornton, & Lobstein, 2016) and high-risk behaviours (Carrotte, Dietze, Wright, & Lim, 2016; Hoffman, Pinkleton, Weintraub Austin, & Reyes-Velázquez, 2014).

From a health perspective, the high sugar content in some of these products could be seen as a problem in itself. This issue is not addressed here.

This report aims to document the problem of acute alcohol poisoning, particularly among young people, and pinpoint the role of sweetened alcoholic beverages in this problem. Experts in the field of alcohol, clinical epidemiology, and communications contributed to this report. The analysis is based on relevant and readily available data: data on emergency room visits for alcohol poisoning in Québec, data from a study carried out at the Centre hospitalier de l’Université de Sherbrooke (CHUS) on emergency room visits for alcohol-related problems by young people age 12–24, data on sales of sweetened, malt-based flavoured beverages in banner grocery and convenience stores in Québec, and a description of advertising for some of these products.

² This report uses several terms to describe these products, including “sweetened alcoholic beverages,” “flavoured malt-based beverages,” and “flavoured beverages.”

³ A standard drink contains 13.45 g or 17.05 mL of pure alcohol (ethanol). A 341 mL bottle of 5% ABV beer, a 142 mL glass of 12% ABV wine, and a 43 mL “shooter” of 40% ABV spirits are standard drinks. This notion comes up several times in this report.

The report is divided into the following sections:
 1) description of emergency room visits for acute alcohol poisoning; 2) description of sales of malt-based flavoured drinks; 3) description of advertising strategies used to promote these products; 4) recommendations for preventive interventions.

2 Emergency room visits

2.1 Emergency room visits in Québec for acute alcohol poisoning

The data on emergency room visits in Québec for acute alcohol poisoning cover the period from April 1, 2013, to November 26, 2017.⁴ The database does not contain information on the types of products consumed. It is therefore impossible to correlate cases of alcohol poisoning with the consumption of sweetened alcoholic beverages.

Visits among the general population

From January 1, 2017, to November 26, 2017, 7,055 individuals were admitted to emergency rooms in Québec for acute alcohol poisoning, which translates to a gross rate of 96.18 admissions per 100,000 people age 12 and up. This is equivalent to 649 cases per month, 150 per week, or 21 per day. The rates for the 18–24 age group are at least two and a half times higher than the rates for other age groups (Figure 1; Tables 1 and 2 in Appendix).

Figure 1 illustrates the number of cases from 2014 to 2017.⁵ Comparing 2015 with 2017, rates increased for 18–24- and 25–34-year-olds, but decreased for individuals age 35 and up (Appendix, Table 2).

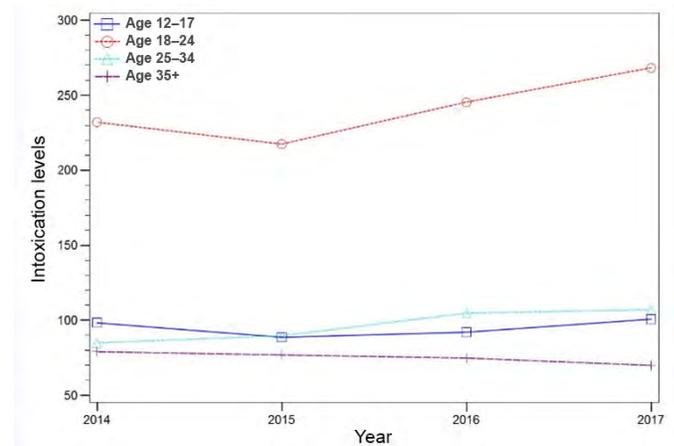
There is no difference between the 2017 rate and the 2014–2016 rate (grouped years, not shown here) for the general population (age 12 and up). We cannot conclude that there was a statistically significant increase for the 12–17 age group. There is, however, a significant increase for the 18–24 and 25–34 age

groups. There was also a significant decline in cases of acute alcohol poisoning among people age 35 and up.

In short, young people age 18–24 are most at risk and acute alcohol poisoning is on the rise in that age group.

More details on cases of acute alcohol poisoning among Quebecers age 12 and up are provided in the Appendix.

Figure 1 Rate of acute alcohol poisoning by year and age group, population age 12 and up, Québec, 2014 to 2017



Given that the problem we are examining specifically affects young people, the data presented below specifically concern the 12–24 age group.

⁴ The data were sourced from the MSSS database Système d'information de gestion des départements d'urgence (SIDGU) (MSSS, 2004). Code F10.0 visits for acute alcohol poisoning were selected.

⁵ The 2013 data could not be used for the year-based analyses because the first three months of the year were not available. For 2014 to 2017, the rates were calculated for the period from January 1 to November 26 in order to maintain comparability.

Visits among young people age 12–24

Frequency and severity of alcohol poisoning

Between January 1, 2017, and November 26, 2017, 2,332 people age 12–24 were admitted to emergency rooms in Québec for acute alcohol poisoning. That is equivalent to 214 cases per month, 49 cases per week, or 7 cases per day.

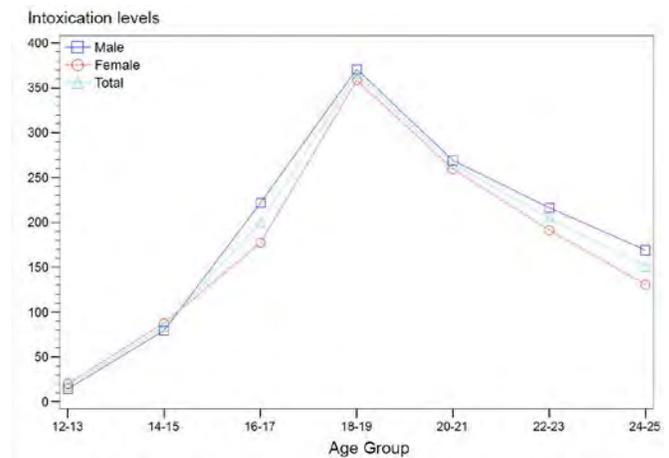
The majority of young people arrived by ambulance (86.2%), some arrived by their own means of transportation (12.3%), and others were brought in by police (1.5%). Upon discharge from the emergency room, 95.7% of young people returned directly to their homes and 1.7% left the ER before care was provided. 1.6% had to be admitted to hospital and 1.1% were either transferred or referred to other services.

Visits by age

Over the same period, the number of visits by age was as follows: 485 visits for 12–17-year-olds and 1,847 for 18–24-year-olds.

In order to more accurately determine the age group most at risk for acute alcohol poisoning, rates were calculated based on two-year age groups. Rate calculations were based on total visits for 2014–2016, for which we have year-round data.⁶ The data presented in Figure 2 show that cases occur as early as age 12–13 and the rate increases rapidly, peaking at age 18–19, where 365 cases per 100,000 people were recorded. Rates then gradually decline, reaching 151 cases per 100,000 people at age 24–25.

Figure 2 Rate of acute alcohol poisoning by age group and gender (per 100,000 people), from 2014 to 2016



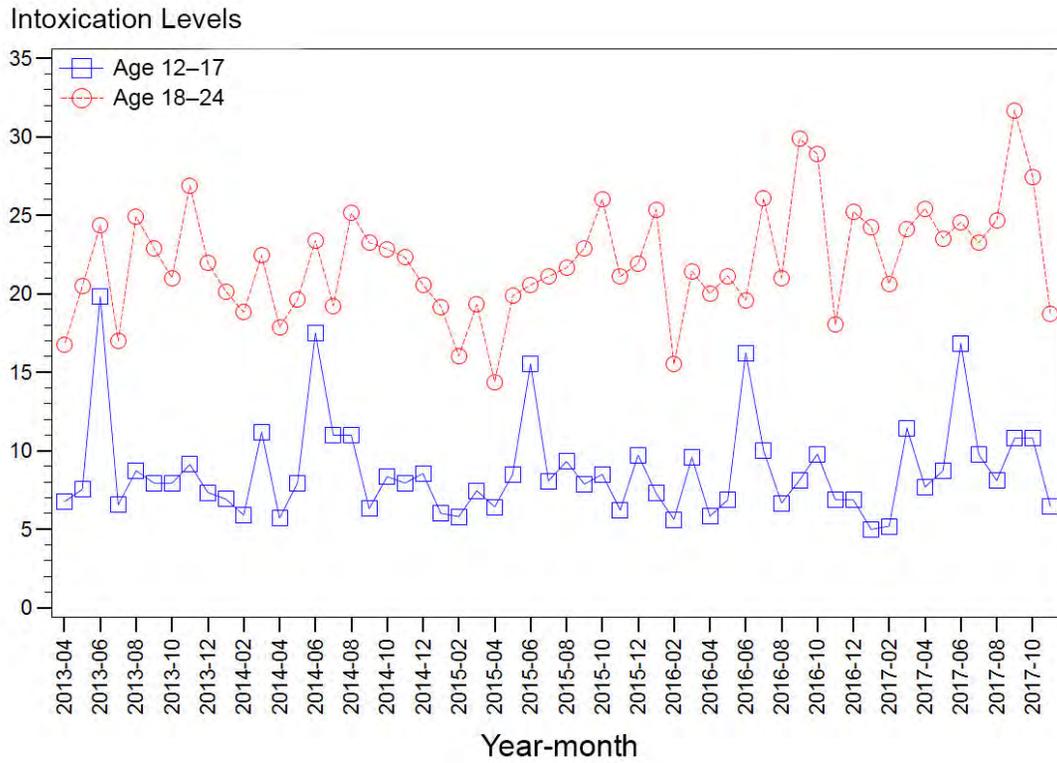
Visits by time of year

Analysis of monthly rates of emergency room visits for acute alcohol poisoning shows that the problem varies depending on the time of year.

For the period between April 2013 and November 2017, the data presented in Figure 3 show that peak visit frequency occurred in June for minors and in September for 18–24-year-olds.

⁶ This method assumes that there is little variation in at-risk age groups from year to year. It has the advantage of taking more cases into account and increases the precision of the results.

Figure 3 Rate of acute alcohol poisoning by month and age group, age 12–24 (per 100,000 people), April 1, 2013, to November 26, 2017,



More detailed analyses by age and week⁷ are presented in Table 1. Among 15-year-olds, poisonings that required a visit to the emergency room were more frequent in the weeks ending between June 21 and July 4 (weeks 25 and 26). The situation was similar for 16-year-olds (week 25) and 17-year-olds (week 26). For both 16- and 17-year-olds there was also a peak in mid-March, spring break for many of them (week 11).

For 18- and 19-year-olds, peak frequency was at the end of October, which is Halloween (week 44). For 20-year-olds, cases were most frequent during late August and early September (weeks 35 and 36). There was a second peak at the end of October. Similar trends were observed for 21- and 22-year-olds, with the exception of a peak in late June and early July for 21-year-olds and early August for 22-year-olds. It is more difficult to determine peak times for acute alcohol poisoning among 23- and 24-year-olds.

We note from these data that the risk of acute alcohol poisoning is particularly high for minors at the end of June, which coincides with the end of the school year and the Fête nationale. For young people age 18–20, risk is elevated during the weeks that cégep and university classes start and at Halloween.

⁷ Centers for Disease Control weeks (Centers for Disease Control, 2017). These data are a weekly compilation of cases between 2014 and 2016 (full years in the database).

Table 1 Peak periods for emergency room visits for acute alcohol poisoning in decreasing order by age (data from 2014–2016)

Age	Weeks			
	Highest peak	Second peak	Third peak	Fourth peak
15	Late June, early July			
16	Late June	Mid-March		
17	Late June, early July	Mid-March	Late October	
18	Late October	Mid-March	Late August	Late December
19	Late October	Early September	Late December	
20	Late August, early September	Late October		
21	Late June, early July	Early September	Late October	
22	Late October	Early August	Late December	

Note: Peak periods are based on the weeks of the year as established by the CDC.

2.2 Alcohol-related visits to emergency rooms in Sherbrooke

While this report was being written, a team of researchers in Sherbrooke was completing a study on visits to the Centre hospitalier de Sherbrooke (CHUS) for alcohol-related medical emergencies by adolescents (age 12–17) and young adults (age 18–24) for the period of January 1, 2012, to January 1, 2017 (Cyr, Paradis, Cyr, Goupil, & Proulx, 2017).

The data were collected from medical records. All alcohol-related visits were analyzed, including acute alcohol poisoning (loss of consciousness, vomiting, convulsions, etc.), alcohol-related injuries (car accidents, falls, accidents involving objects), and assaults (physical and sexual). In each case, alcohol consumption was confirmed by the patient, a third party, or a positive blood alcohol level.

Between 2012 and 2017, there were 855 visits by 790 patients. Every other day, a young person between the ages of 12 and 24 was taken to the CHUS for an alcohol-related medical emergency.

The results for Sherbrooke are comparable to those for Québec as a whole, specifically with respect to the average age of young patients (19.6), the proportion who arrived by ambulance (76% at the CHUS and 86% across Québec) and the weeks of the year when visits were most frequent (weeks 25 and 26 for minors and weeks 35, 36, and 44 for young adults).

The study contains other useful information that is relevant to this report. Clinical data from medical records show that the average blood alcohol level for young patients was 208.8 mg/dL and that one in ten (9.7%) had a blood alcohol level over 300 mg/dL. One quarter (23%) of patients admitted to ER triage had a priority 1 or 2 status, indicating their lives were at risk. An altered level of consciousness was observed in 68% of patients, including 8% presenting a severe coma (Glasgow scale ≤ 8). Nearly 10% of young people had to be hospitalized for more than 24 hours and 5% had to be intubated, mechanically ventilated, or admitted to intensive care. More than half the young people (57%) had complications such as coma, head injury, or hypothermia.

We can conclude that visits for alcohol-related medical emergencies among young people are not only frequent—one every other day in Sherbrooke—but that they often involve serious or very serious cases that are routinely downplayed. During their visits to the ER, despite the availability of services, only 40% of young patients were offered follow-up with a physician or psychosocial worker and only 52% were offered counselling on the harmful effects of alcohol. Parents or friends were notified in only 59% of cases.

It is recognized in alcoholology that immediate context (what, where, when, and with whom you drink) has a significant influence on the consequences of alcohol consumption (Andreuccetti et al., 2014; Paradis et al., 2011; Wells et al., 2008). The Sherbrooke data corroborate this view and reveal strong trends. The location where young people had been drinking prior to their arrival at the emergency room was identified in

60% of medical records and varies by age. One third of minors (35%) reported consuming alcohol in a private residence, while bars were the most common location for young adults age 18–24 (41%). With respect to the products they consumed, it should be noted that 71% of young people had only consumed alcohol, i.e., they had not mixed alcohol with illicit drugs. In addition, notes in the medical records show that the vast majority of youth admitted to the emergency room (75%) had been drinking beverages high in alcohol content (spirits or pre-mixed drinks containing spirits).

Given the context of this report, additional analyses approved by the research ethics committee were conducted on new cases from 2017 (unpublished data provided by Dr. Claude Cyr). Between January 1 and September 30, 2017, 137 young people age 12–24 were admitted to emergency. Sixty-nine of them were admitted between June 1 and September 30. Of these 69 cases, one in five (19%) involved sweetened alcoholic beverages consumed in large quantities or in combination with spirits, beer, or medications.

3 Sale of sweetened alcoholic beverages in Québec

In order to assess sales of sweetened alcoholic beverages in Québec, we analyzed the Nielsen-compiled data from banner grocery and convenience stores in Québec.⁸ The Nielsen report has a list of items in the “beer products” category that includes all malt-based products.⁹ It lists monthly sales volumes by litre for each product over two 1-year periods, the first ending November 16, 2016, and the second ending November 11, 2017. We will call these periods “2016” and “2017.”

There are 307 items on the Nielsen list that qualify as flavoured malt-based beverages. These correspond to 32 major brands, which make a range of products with various flavours and levels of alcohol content. These products may be packaged in cans or bottles and are sold by the unit, case, or box (i.e., bag-in-box wine). We note that the market is dynamic—products are constantly being introduced and withdrawn from sale.

3.1 Sales volume

A total of 9,559,760 L of malt-based flavoured drinks were sold in banner grocery and convenience stores according to the 2016 Nielsen report. In 2017, 10,159,410 L were sold (Table 2). These beverages accounted for 4.3% of beer product sales in participating stores in 2016 and 4.7% in 2017.

The highest-selling products contained less than 8% ABV, accounting for 91.6% of total sales volume in 2016 and 83.7% in 2017.¹⁰ However, sales volume increased for products containing more than 8% ABV between 2016 and 2017 (Table 2). Sales growth was highest for drinks containing 11% or more ABV, with an increase of 319%.

⁸ Nielsen continuously compiled purchasing information from product barcodes in a network of retail stores.

⁹ As a result, this report does not include sales data for spirits-based sweetened alcoholic beverages because they can only be sold at the SAQ.

¹⁰ Some products were taken off the market in December 2017, i.e., after the end of our data collection period on November 11, 2017. It should be noted that the media has reported that the companies involved are planning to reintroduce their products into the market.

Table 2 Sales volume (in litres) of malt-based alcoholic beverages in 2016 and 2017 in banner grocery and convenience stores in Québec

Alcohol Content	Products		Volume in 2016		Volume in 2017		Variation in Volume 2016–2017
	No.	%	No. (litres)	%	No. (litres)	%	%
Less than 5%	28	9%	1,716,130	18%	1,760,490	17%	3%
5.0–5.9%	94	31%	3,202,200	33%	3,366,080	33%	5%
6.0–6.9%	42	14%	1,192,650	12%	648,400	6%	-46%
7.0–7.9%	57	19%	2,642,270	28%	2,723,900	27%	3%
8.0–8.9%	11	4%	130,210	1%	508,260	5%	290%
9.0–9.9%	18	6%	306,190	3%	534,430	5%	75%
10.0–10.9%	12	4%	79,760	1%	186,710	2%	134%
11.0% and over	27	9%	81,170	1%	340,060	3%	319%
Unknown	18	6%	209,180	2%	91,080	1%	-56%
Total	307	100%	9,559,760	100%	10,159,410	100%	6%

3.2 Low-cost products

Price is a major factor in binge drinking, especially among young people (Booth et al., 2008). In 2017, a committee of experts recommended setting a minimum price per standard drink in order to reduce alcohol-related harm, including acute alcohol poisoning (this topic is addressed in Section 5). The expert panel's recommendation for 2017 was that no alcohol sold for home consumption should cost less than \$1.71 per standard drink (CCDUS, 2017).

We found it relevant to determine whether or not sweetened alcoholic beverages were being sold at discount prices, that is to say, below \$1.71 per standard drink. To do so, we visited the websites of two grocery chains (IGA and Metro) on December 12, 2017, and January 11, 2018.¹¹ Prices were available for 120 of the 273 malt-based alcoholic beverages listed in grocery stores.¹² These products accounted for 62% of the total sales volume of the 273 listed malt-based beverages. At the time of the price checks, some products were on sale and some were at regular price. For our purposes, we used the lowest price.

At the beginning of 2018, 34 products from 9 different brands were sold at unit prices ranging from¹³ \$1.04 to \$21.11, which in reality came out to between \$0.74 and \$1.65 per standard drink. The products were offered in containers ranging in size from 341 mL to 4 L. Of the 34 products, one was 5% ABV, 11 were 7% ABV, and 22 were 9–11.9% ABV. The analysis revealed that the per-standard-drink price of a product could vary considerably depending on size. For example, a 7% beverage could sell for \$0.74 per standard drink in a 945 mL can, \$1.37 per standard drink in a case of twelve 341 mL cans, and \$1.44 per standard drink in a case of four 341 mL bottles.

¹¹ For Four Loko, which was taken off the market in December 2017, we used the price from the summer of 2017.

¹² Our price check did not include convenience stores.

¹³ Unit prices presented here represent the lowest price observed during the price check. They include taxes but do not include the cost of the container deposit. When products were sold in packages, the cost of the package was divided by the number of units (containers) it contains.

4 Advertising for sweetened alcoholic beverages

Alcoholic beverages are advertised on many media, including radio, television, websites, social media, and mobile phones, as well as through product placement in movies and TV shows (PAHO, 2016). The industry is constantly evolving as new broadcast channels emerge on web-based platforms.

It is well documented that alcohol advertising in traditional media can influence alcohol consumption, especially among young people. In the past few years, the industry has shifted towards social media as a means of generating and sharing content in the form of text, images, and videos. The process is interactive and reciprocal (Westgate & Holliday; 2016, Weaver, Wright, Dietze, & Lin, 2016; Moreno, D'Angelo, & Whitehill, 2016).

One study showed that people age 16–29 find “user-generated” advertising on social media more effective and credible because it gives the impression that the content was produced by a “real person” (Weaver et al., 2016). A study focusing on students has suggested that alcohol advertising on social media can contribute to heavy drinking (Hoffman et al., 2014). Another study of young people age 15–29 found that individuals who “like” or “follow” pages that advertise alcohol are twice as likely to engage in risky behaviour (Carrotte et al., 2016). It is therefore important to examine the use of social media by the most popular brands of sweetened alcoholic beverages. To do so, we visited the Facebook, Twitter, Instagram, and YouTube pages of three brands—Four Loko, FCKDUP, and Poppers—in January 2018.

Advertisements for these products are easily accessible online on the beverage makers’ websites and on social media. Visitors are required to enter their date of birth and declare that they are of legal drinking age before accessing the company websites. This restriction does not apply to social media, where the sign-up rules allow minors not only to view advertising, but also to share and contribute to it. The following table gives an estimate of brand reach (number of followers or views) and activity (number of photos, posts, or videos published) for each social media platform we visited.

Table 3 Number of followers and posts for each brand by social media platform

	YouTube	Facebook	Instagram	Twitter
Brands*	Highest number of views for a single video (number of videos published)	Number of Facebook “Likes” (number of photos and videos published)	Number of followers on Instagram (number of posts)	Number of Twitter followers (number of Tweets)
Four Loko	100,437 (76)	1,035,764 (277 photos, 7 videos)	26,500 (504)	55,200 (50)
FCKDUP	142,513 (2)	4,318 (46 photos, 8 videos)	3,083 (43)	5 (4)
Poppers	44,113 (17)	9,595 (797 photos, 64 videos)	1,864 (184)	83 (531)

* These data were collected on February 5, 2018. The data for Four Loko were global, whereas the data for the two other brands were from French-speaking Canada.

** In the vocabulary of Facebook, “Liking” a brand’s page means subscribing to the page and letting your own subscribers (Facebook friends) know that you have done so. It is also possible to “follow” a page without letting members of your own network know you have done so.

The table does not provide a complete overview of the situation. Companies use social media to share advertising content and get consumers involved in promoting their products and encouraging social interactions around their products. Therefore, the goal of an effective social media strategy is not only to increase the number of subscribers, but also to increase the reach of social media posts and encourage more engagement with the brand by Internet users.

Content of messages produced by brands of sweetened alcoholic beverages

We observed that all three brands use techniques that appeal specifically to young people. The drinks are sold in a range of brightly coloured cans. All three brands use photos and videos that depict young people drinking their beverages to advertise their products. This practice is prohibited on Canadian TV and radio stations. The CRTC (1996) *Code for Broadcast Advertising of Alcoholic Beverages* prohibits “scenes in which any such product is consumed, or that give the impression, visually or in sound, that it is being or has been consumed.” This restriction does not seem to apply to social media.

The use of techniques associated with minors is noteworthy. In a number of videos published on the Poppers Coolers Facebook page, a plush fox named “Popz the Fox” appears, exclaiming the phrase “*Su’a Pop!*” (On a Pop!). In one photo a man wearing a plush Popz head with a Poppers-fuelled toy water gun teams up with an inflatable dinosaur.¹⁴ Poppers’ posts feature a range of characters more likely to be associated with minors: coloured dolphins, a mechanical panda bear with a skunk’s tail,¹⁵ a raccoon riding a mini bicycle with training wheels,¹⁶ etc. An ad featuring a number of these characters and elements (the plush fox, coloured dolphins, inflatable animals, mechanical dinosaur, giant

Rubik’s Cube, etc.) had 8,851 views on YouTube.¹⁷ A shorter version had 44,108 views.¹⁸ But according to the *Regulation respecting promotion, advertising and educational programs relating to alcoholic beverages*, which is enforced by the Régie des alcools, des courses et des jeux du Québec and applies to all forms of advertising, any advertisement that “uses or alludes to a fictitious or real character associated with persons of minor age” is prohibited (Québec, 2017).

The *Regulation respecting promotion, advertising and educational programs relating to alcoholic beverages* also expressly prohibits the use of minors in advertising for alcoholic beverages (Québec, 2017). Yet there is a video on the Poppers Coolers Facebook page in which a young person who appears to be below age 14 challenges “Melissa from Poppers and all of Zoofest” to gather together “the largest number of comedians and audience members” to break an #IcebucketChallenge record to raise funds for the Amyotrophic Lateral Sclerosis Society of Quebec.¹⁹ Despite the fact that the post aims to raise funds for charity, it is still an advertisement insofar as the brand underscored its association with charity work by broadcasting the video on its Facebook page. If the CRTC (2016) code applied to social media, this post would violate it because it states that advertisements for alcoholic beverages cannot “contain an endorsement of the product, personally or by implication, either directly or indirectly, by any person, character or group who is or is likely to be a role model for minors because of [. . .] association with charities.”

The Regulation respecting promotion, advertising and educational programs relating to alcoholic beverages also prohibits advertising for alcoholic beverages “where the advertising directly or indirectly portrays consumption of alcoholic beverages as a means of

¹⁴ Poppers Coolers. 2017. “Sangria, cuir et rugissements, le team de feu #DinoPopz est prêt à dominer les interwebs!,” *Poppers Coolers* Facebook page, <https://www.facebook.com/popperscoolers/photos/a.180546805326103.36003.151923874855063/1408326785881426/?type=3&theater>, September 4. Accessed February 4, 2018.

¹⁵ Poppers Coolers. 2017. “Quand tu sors de ta razzia à la friperie avec un ensemble,” *Poppers Coolers* Facebook page, <https://www.facebook.com/popperscoolers/videos/1371495759564529/>, July 25. Accessed February 4, 2018.

¹⁶ Poppers Coolers. 2017. “Quand t’apprends que ton dépanneur vient de recevoir une cargaison de Poppers Coolers!,” <https://www.facebook.com/popperscoolers/videos/1372742036106568/>, July 26. Accessed February 4, 2018.

¹⁷ Poppers Coolers. 2017. “Poppers Coolers - Su’a Pop ! Notre nouvelle publicité Poppers Coolers pour la campagne SU’A POP !” *YouTube*, https://www.youtube.com/watch?v=9eP3_ZpbIPU, March 20. Accessed February 4, 2018.

¹⁸ Poppers Coolers. 2017. “Poppers Coolers - Su’a Pop !” *YouTube*, https://www.youtube.com/watch?v=TpfC_EydWLo, July 17. Accessed February 4, 2018.

¹⁹ Poppers Coolers. 2016. “Le défi de Laurent Tessier.” *Poppers Coolers* Facebook page, <https://www.facebook.com/popperscoolers/videos/1048758308504944/>, July 20. Accessed February 4, 2018.

improving athletic performance” (Québec, 2017). Yet there is an ad on the Poppers Coolers Facebook page with the slogan “*Su’a Pop*” that shows one person snowboarding and another skiing and asks the question, “*Es-tu plus snow ou ski?*” (Do you prefer snowboarding or skiing?).²⁰ On the same Facebook page, there is a video of a man playing with a Rubik’s Cube while waterskiing with upbeat music playing in the background. The accompanying text includes the phrase “*Comment résoudre un cube Rubik en étant #suapop*” (How to solve a Rubik’s cube while #OnAPop).²¹ The expression “*Su’a Pop!*” (On a Pop!) suggests that the person depicted drank Poppers alcoholic beverages, which is also in violation of the *Regulation* subsection prohibiting advertising for alcoholic beverages which “shows a person or persons engaged in the consumption of alcoholic beverages in an irresponsible manner” (Québec, 2017). In terms of irresponsible behaviour, the Poppers Coolers Facebook page also features a video of a young man going up an escalator by hanging onto the moving handrail with one hand, while his body slides outside on the exterior ramp up to the next floor. At the end of the video the plush fox appears and says, “*Su’a Pop!*”²² The accompanying text reads, “*La façon la plus #SUAPOP de monter un escalier roulant, ever. #popperscoolers*” (The most #ONAPOP way of going up an escalator, ever). In the comments on the video, which had 6,000 views, a young man wrote, “gotta try that.”

These brands’ pages all feature dynamic videos characterized by short sequences and jump-cut editing. As explained earlier, the brands’ advertising strategies rely on participation by Internet users. Users are given the opportunity to participate in contests to win prizes (e.g., trips) by doing things that increase the brands’ visibility on their personal accounts. The three brands we examined each have distinguishing characteristics. Four Loko has videos that showcase its products in crowded dance clubs or at big beach parties. Many videos feature DJs performing electronic dance music for crowds of young people who are drinking the beverage while they dance. Other promotional videos are more like humorous short films depicting young people drinking the beverage. Four Loko also posts photos on social media showing their advertising at sporting events that are popular among young people. Poppers differentiates itself with a video game available on its website. FCKDUP partnered with a band that is popular among young people for one of its promotional videos. The video also features the stars of *Barmaids*, a reality show broadcast on V, MusiquePlus, and Max in which there is considerable heavy drinking. FCKDUP also posts messages encouraging responsible drinking on its pages. But the outlandish nature of the posts is such that they can be made fun of in comments written by the page’s followers, contributing to the brand’s humorous image.

In short, all of the following techniques have been recognized by experts for their potential appeal to young people: public participation in advertising on social media, advertising at youth sports events, youth-oriented artistic and musical styles, the representation of young people in advertising, videos that associate a product with television stars, the use of animation in videos, and the use of short films in advertising (Canada’s Centre for Digital and Media Literacy, 2018; Padon et al., 2018).

²⁰ Poppers Coolers. 2018. « *Es-tu plus snow ou ski?* ». *Poppers Coolers* Facebook page, <https://www.facebook.com/popperscoolers/photos/a.180546805326103.36003.151923874855063/1540164412697662/?type=3&theater>, February 2. Accessed February 4, 2018.

²¹ Poppers Coolers. 2017. « *Comment résoudre un cube Rubik en étant #suapop* ». *Poppers Coolers* Facebook page, <https://www.facebook.com/popperscoolers/videos/1378905478823557/>, August 2. Accessed February 4, 2018.

²² Poppers Coolers. 2018. « *La façon la plus #SUAPOP de monter un escalier roulant, ever* ». *Poppers Coolers* Facebook page, https://www.facebook.com/popperscoolers/?hc_ref=ARRDBgsiMk-rbrJlhGkWD1H7BI90uj5T_FH5sLGleJC4PowbP0XbDpgjZBuy2njsKGk&fref=nf, July 20. Accessed February 4, 2018.

Traditional media

Although the popularity of social media is growing all the time, the alcohol industry continues to invest in traditional media, especially product placement in TV programs and movies. The partnership between Poppers and *Occupation Double* is interesting in this regard. In fall 2017, Poppers was a major sponsor of the program, which regularly attracted between 400,000 and 683,000 viewers. The show was broadcast in the early evening during prime time. A study conducted with adolescents found that *Occupation Double* influenced their romantic behaviour.²³

5 Main findings and recommendations for preventive measures

Emergency room visits for acute alcohol poisoning are frequent in Québec: in 2017, there were a total of 7,055 cases, including 2,332 cases involving young people age 12–24, which is equivalent to 214 cases per month, 49 cases per week, or 7 cases per day involving young people. There were 485 cases involving minors. The highest rates were among young people age 18–24. Between 2014 and 2017, rates increased for the 18–24 and 25–34 age groups.

Acute alcohol intoxication is a serious problem—the majority of patients arrive at the emergency room by ambulance. At the Centre hospitalier de l'Université de Sherbrooke (CHUS) emergency room, one out of four young people age 12–24 admitted for alcohol-related problems had a priority level indicating that their lives were at risk. Most of these patients were able to return home following treatment. Only half of these youth received counselling at the ER (52%) and a minority were offered follow-up with respect to their use of alcohol (40%). We don't have other data of this nature from anywhere else besides the CHUS, but the situation may be similar at other ERs across Québec.

The number of cases of acute alcohol poisoning varies depending on the time of year. ER visits are more frequent for minors age 12–17 during the weeks corresponding to the end of the school year and the

Fête nationale holiday. For young adults age 18–24, peak weeks correspond to the start of the school year and to Halloween.

In 2017, the media reported cases of acute alcohol poisoning that were associated with the consumption of sweetened alcoholic beverages among young people. With the data available, it is not possible to establish a link between cases of alcohol poisoning and this particular type of alcoholic beverage. However, a study carried out at CHUS emergency rooms revealed that the vast majority (75%) of cases involved high-alcohol beverages (i.e., spirits and premixed spirits-based drinks). In summer 2017, one in five youths consumed sweetened alcoholic beverages on their own or in combination with spirits, beer, or medications.

Sweetened alcoholic beverages are widely available in grocery and convenience stores across Québec. The sales volume for products with 11% ABV or higher more than tripled between 2016 and 2017. The market changes rapidly as products are constantly being introduced and taken off the market. Numerous sweetened alcoholic beverages are very affordable. Some are sold for the equivalent of less than \$1.00 per standard drink. Despite recommendations for low-risk drinking and the dangers of heavy drinking, some of the beverages are sold in cans that look like “single-serve” containers, but actually contain the equivalent of about four standard drinks. This seems to be a relatively recent phenomenon.

Advertising influences young people's consumption of alcohol. Advertising for sweetened alcoholic beverages specifically targets young people using a range of means, including web-based platforms. Regulating advertising, especially the use of the Internet for advertising and promotional purposes, is a major challenge given the globalization of the alcohol market. Governments have difficulty regulating Internet use while the industry easily circumvents regulations.

In short, our analyses of ER visits for alcohol poisoning and of sales volumes, pricing, and advertising practices for flavoured malt-based drinks allow us to paint a portrait of the situation at the origin of the mandate we have been given. Based on the available data, we cannot, however, conclude that sweetened alcoholic

²³ Berthiaume, Vicky. 2013. “Occupation Double et le cœur des adolescents.” Magazine *Découvrir*, Montréal: ACFAS, September 29, <http://www.acfas.ca/publications/decouvrir/2013/10/occupation-double-coeur-adolescents>. Accessed February 4, 2018.

products are the main cause of cases of acute alcohol poisoning or other alcohol-related problems that require emergency room visits. Nevertheless, the data collected do show that cases of acute alcohol poisoning are frequent and serious among young adults and also involve minors. Sales of sweetened alcoholic beverages are increasing and many of these products are very affordable. These products specifically target young people. Together, these factors point to a problem that could well become more severe.

The extensive body of knowledge available on the prevention of alcohol-related problems provides a basis for suggesting preventive measures that are tailored to the findings presented above.

5.1 Set minimum prices for alcoholic beverages based on alcohol content

The price of alcohol is recognized as the primary determinant of alcohol consumption among the population. High prices help reduce consumption and related harms, while low prices have the opposite effect (Booth et al., 2008; WHO, 2014). Young people, heavy drinkers, and alcoholics are most sensitive to the price of alcoholic beverages. According to the World Health Organization, limiting economic accessibility by keeping prices high is one of the cheapest and most critical and effective ways of protecting public health (WHO, 2011).

Setting a minimum price per standard drink is the best way to restrict access to low-cost alcohol (CCDUS, 2017). This measure applies to all types of alcoholic beverages and takes alcohol content into account, preventing the substitution of one drink for another lower-priced drink. More specifically, minimum pricing “is an approach that sets a uniform minimum price for all alcohol products sold and exactly adjusts this price according to alcohol content. Optimally, minimum prices should be set high enough to meaningfully affect consumption and be adjusted regularly for inflation so that their value does not decline over time” (Thomas, Stockwell, & Wettlaufer, 2017, 193).

The minimum price must apply to all alcoholic beverages: beer, wine, spirits, cider, coolers, mixed drinks, and others. It will vary depending on whether the alcohol is purchased in a store for off-premise consumption (e.g., grocery store) or consumed in bars or restaurants (on-premise consumption). In 2009, the

recommended minimum price for alcohol purchased in stores was \$1.50 per standard drink. Adjusted for inflation that is \$1.71 in 2017 (CCDUS, 2017; Thomas, Stockwell, & Wettlaufer, 2017). At a minimum price of \$1.71 per standard drink, a 341 mL bottle of 5% ABV beer could not be sold for less than \$1.71, a 341 mL bottle of 8% ABV beer for less than \$2.74, a 750 mL bottle of 12% ABV wine for less than \$9.03, and a 700 mL bottle of 40% ABV spirits for less than \$28.08. A 710 mL can of sweetened malt-based beverage at 9% ABV containing the equivalent of 3.75 standard drinks could not be sold for less than \$6.41.

All Canadian provinces except Québec and Alberta set a minimum price for all alcoholic beverages sold in stores, bars, and restaurants. A number of European countries set a minimum price for alcoholic beverages, and other countries are planning to do so (CCDUS, 2017). In November, the United Kingdom’s highest court dismissed an appeal by the Scottish Whiskey Association and allowed Scotland to set a minimum price for alcohol to reduce alcohol-related harm.

In Québec, regulations set a minimum price for beer, but not other alcohol products (Québec, 2017). The minimum price for beer is established per litre (not per standard drink) according to four categories of alcohol content (less than 4.1%, 4.1–4.9%, 5–6.2%, and more than 6.2%). The increase in minimum price between categories is not proportional to the increase in alcohol content. As a result, the minimum price per standard drink for beer with high alcohol content is lower than the minimum price for beer with low alcohol content. For example, in 2017, the minimum price of a 3.5% ABV beer was \$1.64 (including taxes) per standard drink, while the minimum price for an 8% ABV beer was \$0.81.

To avoid the sale of sweetened alcoholic beverages at low prices and prevent substitution by other alcoholic beverages that are sold too cheaply, the INSPQ recommends:

That the government, as a matter of priority, adopt a policy that sets a minimum price per standard drink for all alcoholic products, adjusted annually based on the consumer price index.

5.2 Explore solutions to address concerns about the sale of alcoholic beverages in large cans conducive to heavy drinking

When a beverage, be it a soft drink, fruit juice, or 5% ABV beer, is sold in a standard 341 mL (12 oz) can, it is usually consumed in its entirety by one person in one sitting. Cans of this size are not conducive to sharing among people or to consumption spread over a period of hours or days. The sweetened alcoholic beverages discussed in this report are sold in cans that range in size from 341 mL to 710 mL. Many of them contain the equivalent of more than one standard drink and some contain more than three, which exceeds guidelines for low-risk drinking. In some cases the cans contain the equivalent of more than four standard drinks, which corresponds to binge drinking. The fact that the alcohol content or a warning encouraging caution, moderation, or the sharing of the can's contents is shown on the label does not change the fact that the container chosen by the manufacturer encourages consumption by one individual.

The issue of large-size containers for sweetened alcoholic beverages has not received very much attention in the scientific literature, perhaps because it is a recent phenomenon. One solution would be to adjust the size of the cans based on alcohol content in such a way that any single-use format container would contain the equivalent of one standard drink. Products with 11.9% ABV would be available in 143 mL cans, those with 9% ABV in 189 mL cans, and those with 7% ABV in 244 mL cans. Small and very small cans are already sold in stores, e.g., 156 mL cans of vegetable juice. Before moving forward with this seemingly logical solution, a more detailed examination of the situation and consultations with experts and some segments of the population would help us understand all of the aspects of the issue. In the past, preventive measures have led to unpredictable and undesired effects.

To prevent sweetened alcoholic beverages from being sold in sizes that consumers consider as single-use when they may in fact contain the equivalent of several standard drinks, the INSPQ recommends:

That a study be carried out on the effectiveness and feasibility of adjusting beverage sizes so that the contents do not exceed the equivalent of one standard drink in products viewed by consumers as single-serve products.

5.3 Increase prevention at specific times of the year in school and campus environments and during events that are conducive to heavy drinking.

The end of the school year, the Fête nationale holiday, the beginning of classes, and Halloween are key target periods for preventive measures. Many alcohol awareness campaigns and activities already exist. Éduc'alcool is a key player in this area and the data presented in this report suggest the need to bolster its efforts.

Strengthening preventive interventions at the end of the school year and around the Fête nationale holiday could reduce instances of excessive consumption that can have very serious consequences. For young adults attending cégep and university, the beginning of the school year is a critical time for preventive measures. Orientation activities have often been singled out for being conducive to binge drinking.

Educational institutions should adopt alcohol policies, including regulations governing alcohol use on campus and alcohol sponsorships that make alcohol easily accessible to students. Currently, 12 Québec universities have signed on to the Postsecondary Education Partnership – Alcohol Harms (PEP – AH).²⁴ The partnership is based on a framework for action that encourages institutions to implement prevention initiatives, provide on-campus services, establish regulations on pricing and advertising, and work with municipalities²⁵ to reduce alcohol-related harm. Cégeps could also join this partnership to ensure that all postsecondary institutions adopt similar alcohol

²⁴ <http://pepah.ca/members/>

²⁵ The study on CHUS emergency room visits for alcohol-related emergencies is the result of a collaboration between Sherbrooke Ville en Santé and PEP – AH. The region's two universities (Bishop's University and Université de Sherbrooke) are members of the partnership.

policies and foster a culture of moderation. Student participation in developing these policies is essential to ensure feasibility, acceptability, and adherence.

To help ensure that secondary and postsecondary institutions contribute to the development of low-risk alcohol consumption habits and provide a safe environment for the students that attend them, the INSPQ recommends:

That preventive interventions on alcohol consumption be strengthened in educational settings, especially surrounding events associated with heavy drinking.

That all postsecondary institutions be required to adopt alcohol policies.

5.4 Provide follow-up for youth who visit emergency rooms for acute alcohol poisoning

Visits to the emergency room are a critical time to intervene with patients treated for alcohol-related problems. Screening and brief interventions with proven effectiveness are recommended (Moyer, 2013). For young adults age 18–24, effective interventions must include at least one therapeutic contact in the days following their discharge from emergency (Merz, Baptista, & Haller, 2015). However, evidence of effectiveness is lacking for adolescents (Moyer, 2013).

The use of digital tools has proven effective for screening and brief interventions for alcohol-related problems in the adult population (Tansil et al., 2016). The technology could also be used for follow-ups after severe alcohol poisoning, but no evidence is currently available.

To prevent the recurrence of alcohol poisoning and other alcohol-related problems among people treated in emergency rooms, the INSPQ recommends:

That individuals admitted to emergency rooms for alcohol-related problems receive a brief intervention and that young adults be provided with therapeutic support in the days following their discharge from the ER.

5.5 Restrict advertising

The industry is creative in its efforts to reach young people through social media and television. Transmedia storytelling makes it possible to migrate television audiences to platforms where it is easier to use humour and entertainment related to the enjoyment of alcohol. Moderation and responsible behaviour are not always part of the message. Dangerous behaviour is even portrayed as something to laugh about on social media. Many of the means used by brands to attract young people are particularly attractive to minors. Young people themselves produce promotional messages for alcoholic beverages, even if only by commenting on videos posted by the brand. Brands use derision to emulate the scathing humour of youth culture, but in doing so they encourage participation in an online culture that celebrates public drunkenness within a broader context that virally promotes recklessness and risk-taking. In short, action is needed to reduce the risks of promoting sweetened alcoholic beverages to young people.

There is a regulation in Québec that, in theory, should apply to all forms of advertising for alcoholic beverages: the *Regulation respecting promotion, advertising and educational programs relating to alcoholic beverages* (Québec, 2017). The Régie des alcools, des courses et des jeux (RACJ) is responsible for enforcing the regulation.

To counter industry efforts to skirt the government's objective of protecting minors from advertising, the INSPQ recommends:

That the Régie des alcools, des courses et des jeux (RACJ), in enforcing the *Regulation respecting promotion, advertising and educational programs relating to alcoholic beverages*, recognize that posts published on brand social media pages, including comments made by Internet users, are content advertising.

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Appendix Emergency room visits for alcohol poisoning within the population age 12 and up

Table 1 Number and rate per 100,000 people of emergency room visits for acute alcohol poisoning within the general population age 12 and over by age and sex, January 1 to November 26, 2017.

Age group	Male			Female			Total		
	No.	Gross rate	CI	No.	Gross rate	CI	No.	Gross rate	CI
Age 12–17	271	109,89	(97.55–123.78)	212	90,21	(78.85–103.1)	485	100,70	(92.13–110.07)
Age 18–24	963	275,89	(259.00–293.87)	882	259,96	(243.36–277.70)	1,847	268,33	(256.37–280.85)
Age 25–34	727	128,76	(119.73–138.47)	467	84,62	(77.28–92.65)	1,195	107,03	(101.13–113.27)
Age 35 and +	2,523	101,91	(98.01–105.97)	1,004	39,02	(36.68–41.51)	3,528	69,88	(67.61–72.23)
Total	4,484	123,32	(119.77–126.99)	2,565	69,34	(66.71–72.08)	7,055	96,18	(93.96–98.45)

Note: CI at 95%

Table 2 Rate of emergency room visits in Québec for acute alcohol poisoning within the population age 12 and up by year and age group (per 100,000 people), 2014 to 2017 (January 1 to November 26 in each year)

Age group	2017		2016		2015		2014	
	Gross rate	CI						
Age 12–17	100,70	(92.13–110.07)	92	(83.81–100.99)	88,61	(80.60–97.41)	98,24	(89.86–107.40)
Age 18–24	268,33	(256.37–280.85)	245,48	(234.22–257.29)	217,43	(206.99–228.39)	232,02	(221.33–243.23)
Age 25–34	107,03	(101.13–113.27)	104,75	(98.90–110.95)	89,70	(84.29–95.47)	84,92	(79.65–90.55)
Age 35 and +	69,88	(67.61–72.23)	74,79	(72.43–77.23)	76,83	(74.42–79.32)	79,01	(76.55–81.55)
Total	96,18	(93.96–98.45)	97,11	(94.88–99.40)	93,76	(91.55–96.01)	97,06	(94.81–99.36)

Note: CI at 95%

Between 2015 and 2016, a statistically significant increase was observed in the 18–24 and 25–34 age groups.

Between 2016 and 2017, a statistically significant increase was observed in the 18–24 age group.

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