HEALTH EFFECTS OF MODERATE BEER CONSUMPTION
The Brewers Association of Canada and its member companies are proud to present the first edition of the *Health Effects of Moderate Beer Consumption* publication. The information contained in this publication is intended to inform readers on the beneficial effects of moderate alcohol consumption, in particular beer, and various aspects of human health. The research you will find here is a compilation, in non-scientific language, of some of the most recent science available. However, as negative health effects of alcohol misuse are well known and documented in a number of publications, they are not covered in this publication.

In addition to this literature, in late 2009, the Centre for Responsible Drinking held its first Beer & Health Symposium. Speakers included Dr. Mack Mitchell Jr., President of ABMRF/The Foundation for Alcohol Research, Dr. Louise Nadeau, Chair of the Canadian Foundation for Fetal Alcohol Research, Dr. Gideon Koren, of Toronto’s Hospital for Sick Children’s Motherisk Program, Dr. Sherry Stewart of Dalhousie University, and many others. Government officials, medical professionals, public policy experts, representatives from non-governmental organizations and industry, and many others attended the event. The day’s proceedings provided a significant venue to present recent research related to beer and health. The event was the first of a series of Centre for Responsible Drinking events that will cover a full range of alcohol-related issues.

Finally, we wish to acknowledge The Brewers of Europe, for permitting the Brewers Association of Canada to reproduce large parts of their booklet, *The Effects of Moderate Beer Consumption, Fourth Edition, 2008*.

Ian Faris, President and CEO
Facts

1. Beer is a refreshing enjoyable beverage with relatively low alcoholic strength which brings pleasure and social interaction to many people.

2. It is reassuring for those who consume beer regularly to know that it can also be a part of an adult’s healthy lifestyle.

3. Beer contains essential vitamins and antioxidants from the raw materials which can all contribute to a healthy diet.
4. Beer is the only significant dietary source of hops so any beneficial effects they have are unique to beer.

5. Research shows that drinking beer in moderation has beneficial effects on many aspects of health, including reducing the risk of cardiovascular disease, diabetes, osteoporosis, etc.

6. Moderate beer consumption also plays a vital part in most consumers’ quality of life.

The health benefits described are the result of light to moderate, or responsible, consumption of beer and the effects on health are quite the opposite when consumption levels rise.

Adverse effects are mainly associated with immoderate drinking but for some individuals, and in some situations even moderate consumption may be too much (misuse).

The research described in this publication sums up the current state of knowledge on the positive effects of moderate beer consumption. More studies are underway to examine whether some of the potentially beneficial components of foods and beverages, such as beer, can be used by the body for the prevention of disease.
This publication concentrates on the effects of responsible or moderate consumption of beer. It must be stressed that the beneficial effects reported apply only to moderate consumption by healthy adults. Heavy drinking whether in binges or on a regular basis, can be harmful and is associated with many chronic health problems. Likewise underage drinking even in moderation may have particularly harmful effects.

Dr. Erik Skovenborg, one of the world’s leading experts on alcohol and its health effects, defined moderation in the following terms “To drink moderately is to drink within the limits set by your health, the society in which you live and your obligations towards your family and friends: one to three drinks a day for most men”.

“Women are more sensitive to alcohol so they are advised to drink less than men: one to two drinks a day”.

For the purpose of reference, a drink as referred to in this publication represents a 341 ml bottle of beer, containing 5% alcohol by volume, or about 13.6 grams of absolute or pure alcohol.

It should also be noted that “saving up” the daily intake guidelines for a binge at the weekend, for example, is not healthy at all.

While these are useful guidelines there are also some situations where even moderate drinking means misuse. Examples of situations where it may not be appropriate to drink at all include: during pregnancy or when trying to conceive, when operating machinery, or when taking certain medication or suffering from certain conditions.

The medical profession is understandably reluctant to advocate moderate drinking to abstainers in order to gain the associated health benefits, because of the fear that this might lead to over-indulgence or be interpreted as an excuse for some people to drink too much. There are also problems in transferring results from population studies to medical advice. What is true for the population may not be true for a particular individual who may have a family history or lifestyle which counters the general trend. For personal, individually-tailored advice, the best course of action is to consult a doctor.

The brewing sector is mindful of the dangers of alcohol misuse. To this end it has supported numerous educational programs and campaigns to avoid misuse such as those to prevent drinking and driving, discourage drinking by people under the legal drinking age and educate women about the dangers of alcohol use during pregnancy. A recent publication by the Worldwide Brewing Alliance details over 3,000 initiatives funded by brewers.
MODERATE CONSUMPTION OF BEER CAN BE GOOD FOR YOUR HEART

Many epidemiological studies report on the overall balance of risks and benefits of alcohol consumption. They show a U or J shaped relationship with a decreased risk of premature death (mortality) in moderate drinkers compared to heavy drinkers and non drinkers of all ages. It is also clear that men and women differ - the beneficial effect being seen at lower consumption levels in women than in men.

A recent statistical analysis (meta-analysis) of 34 studies from all over the world found that consumption of alcohol (up to four drinks per day in men and two in women) leads to a reduction of premature mortality of up to 18% compared to abstainers and heavy drinkers. The analysis illustrates the J shaped relationship between alcohol consumption and the risk of deaths from all causes for men and women. At moderate levels of consumption, in all places and in both men and women, the risk of early death is reduced relative to the risk in abstainers and heavy drinkers. The conclusion from this meta-analysis was that “people who already regularly consume low to moderate amounts of alcohol should be encouraged to continue”.

**Coronary Heart Disease (heart attack)**

Cardiovascular disease (CVD) that includes cardiovascular stroke and coronary heart disease (CHD) (heart attack) is the leading cause of death and disability among adults, representing 32% of all deaths or almost 73,000 Canadians killed in 2004. Preventative measures include modification of lifestyle factors such as adopting a healthy diet and taking exercise. Moderate consumption of beers, wines and spirits can be part of a healthy lifestyle.

There is strong evidence that people who are moderate consumers of beer, wine or spirits have a substantially (30-40%) reduced risk of coronary heart disease when compared to teetotalers and heavy drinkers. Similar results have been shown by many studies throughout the world. The WHO Global Status Report on Alcohol (2004) describes this as the “most important health benefit of alcohol”.

This reduction in risk (associated with consumption of one to a little over two drinks a day) is on a par with preventative measures such as the use of aspirin, weight control and exercise.
Additionally, a comparison of moderate alcohol consumption and exercise showed that both were important in the reduction of risk.

The benefit applies to a broad range of individuals including those considered to be of higher risk of cardiovascular disease for example with high blood pressure, diabetes or metabolic syndrome and those with a lower risk (have a healthy lifestyle).

There are several well-established explanations for this observed reduction in risk of coronary heart disease. The mechanisms below have been shown to account for almost all of the association in men and approximately 75% in women.

### Blood cholesterol levels

The mechanism which has been shown to be responsible for the majority of the effect is that the amount of “good cholesterol” (HDL cholesterol) in the blood increases when alcohol is consumed. Higher levels of “good cholesterol” have been shown to be associated with lower risk of coronary heart disease. Research has shown that one glass of beer a day can significantly increase HDL levels.

### Clotting

Scientists have also shown that alcohol has a beneficial blood thinning effect and reduces the tendency of blood to form clots, with moderate beer consumption being associated with favourable changes on the blood lipid profile.

### Inflammation

Atherosclerosis, which leads to heart attacks, is an inflammatory disease and local inflammation in the vessel wall contributes to the increased risk of constriction and blockage. There is growing evidence that alcohol also has an anti-inflammatory effect and that this may contribute to the reduction in cardiovascular risk.

### Insulin resistance

Insulin is the hormone which controls blood sugar. One of the first steps in developing diabetes mellitus is when the body becomes resistant to insulin. Moderate alcohol consumption may help in the prevention of insulin resistance and may reduce the risk of diabetes (see page 11). Insulin resistance is also linked to cardiovascular disease so this may be an additional mechanism by which alcohol consumption reduces risk of cardiovascular disease.
There have been many studies that have attempted to compare the effect of beer, wine and spirits to see whether they have the same risk reduction properties against cardiovascular disease but when the evidence is examined, it is clear that the major protective agent is alcohol itself. The protective effects of moderate alcohol consumption are seen in many different countries with different cultures and drinking habits and this, combined with the established mechanisms described above, confirms that it is the alcohol that is having the major protective effect and no individual type of drink can claim the monopoly in relation to cardiovascular disease.

There is also evidence that regular, light to moderate drinking may reduce the risk of other vascular diseases.

Ischemic stroke, the most common form of stroke, has been the subject of a statistical review showing consistently reduced risk and since then studies have shown the risk reduced by 50% at consumption levels of up to two drinks per day. Moderate alcohol consumption has also been shown to be associated with a slight decrease in cardiovascular and total mortality in people who have already had a heart attack or who have had heart surgery and can reduce the risk of lower extremity arterial disease in older adults.

OTHER VASCULAR DISEASES
Evidence is growing that a lifestyle which includes regular light or moderate consumption of alcoholic drinks may be protective against many other conditions, such as diabetes mellitus, osteoporosis and dementia. The reasons for these beneficial effects are not yet clearly understood and more research is needed to explain the mechanisms. As with cardiovascular disease a little seems to be protective whereas heavy consumption is harmful\(^{\text{30}}\). Neither can the benefits usually be tied convincingly to one particular type of drink.

**Diabetes Mellitus**

Late onset diabetes (type II diabetes mellitus) is a growing health problem in the Western world affecting about 8% of the population (over 60 million people are estimated to have the condition). It is associated with many life-threatening complications including cardiovascular disease.

Several studies have shown that moderate alcohol consumption is associated with a reduced risk of type II diabetes compared to both abstaining and heavy drinking. The present evidence suggests a 30% reduced risk\(^{\text{31}}\) and the reduction in risk is seen in older women\(^{\text{32}}\). The way in which moderate alcohol consumption reduces risk is not fully understood but several possibilities are being studied; for example, it may change how the body produces insulin\(^{\text{33}}\).
Obesity

Obesity is a significant health problem because it is associated with many other types of ill health including type II diabetes, cardiovascular disease, osteoarthritis and liver cirrhosis and is thought to reduce overall life expectancy on average by approximately 10 years. It is strongly influenced by lifestyle and many factors can account for a change in body weight such as calorie intake, fat intake and activity level, themselves often linked to socio-economic status.

Moderate alcohol consumption of about three-quarters a drink to slightly more than two drinks per day represents about 10% of total energy intake in developed countries so it has been assumed until recently that this consumption, with beer receiving a disproportionate amount of the blame, has been contributing to the obesity epidemic. This has now been shown to be unjust where low to moderate consumption is concerned and indeed there may be a beneficial effect i.e. reduced risk of obesity, at such levels. It is important to note that any benefit disappears at consumption levels above three drinks per day and studies confirm that heavy alcohol consumption (whatever the drink) is associated with increased weight and abdominal obesity (a higher risk factor for cardiovascular disease).

The way in which people consume alcohol influences weight and it is now clear that to understand the effect of alcohol consumption on weight it is the drinking pattern, rather than the average volume, which needs to be evaluated. Alcohol may contribute to excess body weight in certain individuals, those who drink infrequently or to excess, by serving as an energy source and facilitating food consumption but several studies have indicated that drinkers who consume small amounts of alcohol on a regular basis (daily) are shown to be slimmer than those whose consumption pattern is to only binge occasionally. One of these studies shows that at a fixed level of alcohol consumption, the risk of obesity is almost 30% lower for those consuming the alcohol over 7 days per week compared to 2-4 days per week.

The reason for this continues to be a matter of debate. One possible reason is that alcohol consumption, including beer, with meals may stimulate energy expenditure by increasing temperature but that this is only efficient when consumption is small quantities at regular intervals. It is, however, difficult to recognize and statistically account for all the lifestyle factors such as level of physical activity and it is probable that several factors are involved.
Metabolic Syndrome

The diagnosis of Metabolic Syndrome is given to people with a cluster of conditions including: high abdominal obesity; insulin resistance; high blood triglyceride; low blood HDL (good cholesterol) and high blood pressure. It is associated with an increased risk of developing type II diabetes mellitus, cardiovascular disease and cirrhosis.

Heart and Stroke Foundation researchers Dr. Sonia Anand and Dr. Salim Yusuf of McMaster University have established a Canadian prevalence rate for metabolic syndrome of 25.8% but warn that this changes dramatically by ethnic group. For example the rate is 41.6% among First Nations people, 25.9% among South Asian, 22% among Europeans and 11% among Chinese.

Although unhealthy lifestyles may contribute to the risk of Metabolic Syndrome researchers are looking at the part played by light alcohol consumption. There is growing evidence that light to moderate alcohol consumption is associated with a lower risk of the metabolic syndrome.

Weakening Of Bones

Osteoporosis (weakening of bones) is common in elderly people especially women after menopause. Weak bones are at greater risk of fracture. Fractures due to osteoporosis affect one woman in three and one man in five over the age of 50 years. Because of demographic changes occurring in the population, the number of fractures and their cost will double over the next few decades unless effective preventive strategies are developed.

A growing body of evidence suggests that alcohol consumption is also associated with osteoporosis in a U shaped relationship i.e. that light to moderate consumption has a beneficial effect on bones, which could reduce the risk of osteoporosis and fractures. One study estimated that moderate drinkers were 38% less likely to have osteoporosis than non drinkers, another showed a 20% lower risk of hip fracture. This protective effect can be explained in part by moderate alcohol consumption suppressing the gradual bone loss that increases with age (resorption) but this does not fully account for it. There is mounting evidence to support a biological role for silicon in bone health and it is suggested that the silicon component of beer may explain or contribute to some of these positive effects.
Dementias

According to the World Alzheimer Report, released by Alzheimer’s Disease International (ADI), an estimated 35.6 million people worldwide will be living with dementia in 2010. According to the report, globally dementia prevalence will nearly double every 20 years, to 65.7 million in 2030 and 115.4 million in 2050.

Almost half a million elderly people in Canada or 1.5% of Canada’s population have dementia (cognitive decline associated with ageing) and as life expectancy increases, dementias are becoming more prevalent and of increasing concern. By 2038 this figure is expected to increase to over a million or 2.8% of the population, with a new case being diagnosed every two minutes.

There is now growing evidence that suggests a J or U shaped relationship between alcohol consumption and cognitive functioning such that light to moderate drinking in middle to late life is associated with better cognitive decline than either abstention or heavy drinking. Some studies show a considerable (about a quarter) reduction in risk. There are several plausible explanations for this beneficial effect which include: the prevention of narrowing of blood vessels in the brain; the psychological benefits of moderate alcohol consumption; or possibly the decreased risk of diabetes. More research is needed before this apparent effect can be fully understood.

Parkinson’s Disease

Parkinson’s disease is a common neurodegenerative disease mainly affecting people over the age of 50.

Several studies have found that moderate beer drinking and some additional lifestyle factors are associated with a lower risk of developing Parkinson’s disease.

Gallstones

Development of stones in the gall-bladder is one of the most common and costly digestive diseases in Western populations. By the age of 60, almost 30% of men and women will have had gallstones.

Several studies have shown an association between moderate alcohol consumption and a decreased risk of developing gallstones. This has been reported with consumption of all drinks and the risk is lowest in those who consume small quantities at regular intervals. There are several plausible explanations for this finding which include the effect of alcohol on cholesterol levels and reduced bile concentration.
“Well-Being” (Psychotherapeutic Value)

One of the main reasons why moderate drinking of beer, wine and spirits is a common practice is that many people enjoy the relaxing pleasant effect produced by one or two drinks and the psychotherapeutic value of this should be regarded as a potential health benefit. Positive psychological benefits associated with moderate intake are acknowledged by many experts but are more difficult to measure scientifically. A review of several studies confirmed earlier findings that alcohol in moderate amounts is effective in reducing stress and tension and increasing feelings of well-being. The review found that, “to a greater degree than either abstainers or heavy drinkers, moderate drinkers have been found to experience a variety of psychological benefits”. Studies are now trying to assess subjective health, the way individuals perceive/report their own health, and alcohol consumption in terms of mental health and one showed that regular moderate daily drinking was associated with better mental health in women compared to the non-drinkers.

Many studies have reported increased sociability, friendliness and helpfulness immediately following moderate alcohol consumption and these findings have been enhanced by recent research which has also shown an alcohol induced increase in agreeableness and decrease in quarrelsome behaviours. However, more research is needed to explain mechanisms to account for the improved functioning and the part, if any, played by the social setting.

“Well-Being” (Physical Health)

Subjective health has been shown to be a good predictor of total mortality and there is increasing interest in understanding the relationship between this and alcohol consumption.

Several researchers report that people who drink moderately report above average “good health” and believe they are more healthy. This results in them feeling better about and having more positive attitudes to their health. This is an area that needs further investigation.
Ageing

Life expectancy is increasing and the number of older people is growing rapidly worldwide. More than 580 million people are older than 60 years and the number is projected to rise to 1.2 billion by 202570.

Between 1981 and 2005, the number of Canadians aged 65 to 74 increased from 1.5 million to 2.2 million, and their share of the total population increased from 6.0% to 6.9%. As individuals from the baby boom generation enter this age group, the number of 65 to 74 year olds is projected to increase to 4.8 million by 2031, accounting for 12.4% of the total population at that time71.

As a result, conditions such as diabetes, dementia and osteoporosis are becoming more prevalent in society, causing an increasing economic burden on health services and decreasing the quality of life. Consequently, research is focusing on risk factors, including lifestyle and dietary factors, and strategies to prevent such conditions.

The last few years have also seen the publication of a number of papers examining the health and well being of elderly people. Older people have different biological reactions to alcohol, they are more susceptible to falls and are often taking medicine so they may question whether it is safe to continue to consume alcohol as they grow old.

The evidence suggests that the same U shaped curve is seen in older people and moderate drinkers survive longer and are in better health than abstainers or heavy drinkers72. While the alcohol is clearly continuing to produce the main benefit, other factors, such as the social and pleasurable benefits of drinking and improved appetite and nutrition that accompanies modest alcohol intake may also play a part. This seems to indicate that a healthy lifestyle does not mean giving up drinking beer or other drinks, provided consumption is moderate74.

BEER-SPECIFIC CONTRIBUTIONS TO A HEALTHY DIET

Beer contains essential vitamins and minerals and can contribute to a healthy balanced diet.

Beer is made from wholesome raw materials, malted barley, cereals, hops, yeast and water. All of these contribute to a healthy balanced diet. As with any natural food, thousands of components can be identified in beer including antioxidants, vitamins (particularly B vitamins), minerals such as silicon and fibre.

Beer is 93% water and is a thirst quenching long drink which is relatively low in alcohol.

While moderate consumption of beer can provide many essential vitamins and minerals75, it is important to remember that no single source can provide the full range of elements essential for life so beer must always be consumed in moderation as part of a balanced diet.
Scientists who have studied the reduced risk of coronary heart disease in beer drinkers report that the reduction is greater than would be expected from the alcohol alone and speculate that other factors in beer such as vitamins and antioxidants could also be protective\textsuperscript{76}.

The other components in beer continue to be studied and beneficial effects, such as anti-inflammatory activity have been recorded in the laboratory\textsuperscript{78}. Research which has looked at the properties of alcohol-free beer indicates that the potential beneficial effects from the natural ingredients are likely to apply equally to this type of beer\textsuperscript{79}. One small study compared the effects of de-alcoholized and regular beer and showed that the beer without alcohol could have a significant positive effect on the blood (blood thinning) immediately after consumption\textsuperscript{80}. Beer is also a source of soluble fibre which is derived from the cell walls of barley. Two glasses of beer contains an average of 10% of the recommended daily intake of soluble fibre and some beers can provide up to 30%\textsuperscript{81}. Other than keeping you regular, fibre has a further benefit by slowing down the digestion and absorption of food and reducing cholesterol levels which may help to reduce the risk of heart disease\textsuperscript{83} and metabolic syndrome\textsuperscript{84}.

Some research has shown that people who drink beer moderately have a degree of protection from the bacterium Helicobacter pylori\textsuperscript{85} which is known to cause the majority of stomach ulcers and may be a risk factor for stomach cancer. Beer (and wine) consumption is thought to facilitate eradication of the organism possibly due to an antibacterial effect.
**ANTIOXIDANTS**

Beer contains natural antioxidants which may have a positive health effect.

Natural antioxidants are found in fruits, vegetables and cereals. They are present in beer, where they come from both the malt (barley) and hops from which beer is brewed. The total amount of antioxidants in beer will depend on the style of beer and therefore the raw materials and the brewing process used.

Research has shown that the antioxidant content of blood is raised following beer consumption suggesting that the antioxidants in beer are readily absorbed and perhaps more readily than that from solid foods. Researchers working on animals have suggested a direct effect of antioxidants in beer reducing the risk of cardiovascular disease.

The health significance of antioxidants is that they are thought to reduce the risk of heart attacks by inhibiting blood clotting. They may also play a role in the protection against cancer through their action against free radicals. Thus, the antioxidants in beer may have a positive health effect on the consumer.

**VITAMINS**

Beer provides a rich source of dietary folate and other B vitamins.

Like bread which is also made from cereal, beer is a good source of many vitamins which are essential for life. To make beer, the barley is sprouted first (malted), which actually increases the nutritional value of the cereals used. Beer is particularly rich in most B type vitamins for example niacin, riboflavin (B2), pyridoxiline (B6), folate (B9), and cobalamin (B12). Particularly important for those vegetarians who enjoy drinking beer is the fact that it is a natural source of B12. Bioavailability of these vitamins has been confirmed by research that has shown an increased absorption level of B vitamins when moderate beer consumption is introduced into the diet.

As well as adding to a healthy diet, the vitamins and minerals in beer may confer additional health benefits. Recent research suggests that the B vitamins (B6, B9 and B12) may give beer drinkers additional protection against cardiovascular disease compared to drinkers of wine or spirits. High homocysteine levels, like “bad cholesterol” (LDL), are associated with a higher risk of heart attacks. Numerous population studies confirm that moderate beer consumption, in contrast to wine and spirits, reduces homocysteine levels and suggest that this may be due to beer’s high B vitamins content. Clinical research is underway to examine whether the folate (vitamin B9) in beer could be active in reducing homocysteine levels.
Beer provides a rich source of dietary silicon.

Beer has a favourable balance of some essential minerals. It is relatively high in potassium and low in sodium. It is low in calcium and rich in magnesium which may help to protect against gallstones and kidney stone formation. This may be one reason why daily consumption of a glass of beer was reported to reduce the risk of kidney stones. The increased intake of water and increased formation and exertion of urine (diuresis) may also play a part here.

Moderate alcohol consumption is also associated with higher bone density but few studies have looked specifically at the effect of different drinks. Beer is a rich source of dietary silicon which is readily absorbed by the body and has been shown to be the major contributor of silicon in men’s diet. This silicon comes from two natural sources – water and especially barley.

There is mounting evidence to support the importance of silicon for healthy bones and in laboratory experiments, it has been shown to prove several aspects of human bone formation and increase bone mineral density in animals when taken orally. It has also been shown to improve bone mineral density in women given dietary silicon supplements.

Research is underway to investigate whether the dietary silicon provided by moderate beer consumption actually reduces the risks of developing osteoporosis. This may explain in part the protective effect described above.

Silicon in beer may also help reduce the risk of developing Alzheimer’s disease.
Hops

Hops have been used in herbal medicine for many years.

Small quantities of the “flowers” from hops are used to preserve and flavour beer. Beer is the only significant dietary source of hops so, although their effect on human health is not yet fully understood, any potential health benefits they have are unique to beer.

Every year, the number of publications on the potential therapeutic effects of compounds derived from hops grows. Many studies have shown that the flavonoids in hops may have the potential to protect against some diseases.

For example, they may help to reduce the risk of developing cancer\textsuperscript{111,112}, have a positive effect on bone\textsuperscript{113}, reduce the risk of diabetes\textsuperscript{114}, improve the levels of good cholesterol\textsuperscript{115}, or help fight obesity\textsuperscript{116}. Most of this research has been done in the laboratory and does not indicate whether moderate beer consumption provides sufficient concentrations of these compounds to affect the health of humans. Additional research is planned to investigate these potential effects and whether the flavonoids can be absorbed well in people\textsuperscript{117,118}.

Beer does not contain fat or cholesterol and is low in simple sugars. The calories in beer come largely from the alcohol content.

The term “beer belly” is associated with obesity in beer drinkers. The section on Page 12 showed that this is unlikely to be the result of moderate beer consumption so it may be due to excessive consumption or often other behavioural characteristics of beer drinkers. For example, several studies have shown a link between beer consumers and poor dietary choices\textsuperscript{119-121} and it may be that often the “belly” results from consumption of food high in calories and rich in fats.

One recent study set out specifically to test the notion that “beer drinkers are on average more obese than either non-drinkers or drinkers of wine or spirits” and concluded that it is unlikely that beer intake is associated with measures of obesity such as body mass index (BMI) or waist hip ratio (WHR)\textsuperscript{122}. This study also showed that, in women, moderate beer consumption was in fact associated with a lower BMI.
For some individuals, the risk of alcohol consumption, even in moderation, may outweigh any potential benefits.

The large body of scientific evidence associated with reduced mortality among middle-aged and older people in industrialized societies is due mainly to the reduced risk of death from coronary heart disease (heart attack).

Alcohol has though been shown to cause a number of cancers and, while these are mainly associated with heavy drinking, current evidence does not identify a generally “safe” threshold below which there is no risk. This means that for some individuals, the risk of alcohol consumption, even in moderation, may outweigh any potential benefits.

In particular, alcohol consumption has been associated with a slightly elevated risk of breast cancer and appears to be a risk factor in the onset of gout.

On an individual basis, general practitioners will be able to assess their patient’s risk more precisely in the light of their health and family history of conditions such as cancer, certain types of stroke and high blood pressure.

Other individual temporary situations where even moderate alcohol consumption may be inadvisable include, among others, when pregnant or taking medication.
COMPICATING FACTORS

It is vital that lifestyle factors are taken into account in any research into the effects of alcohol on health. There are many other factors, apart from what people drink, that influence their health. These factors include: lifestyle; diet; health; behaviour; social status; and pre-existing disease, all of which, to some extent, are determined by familial, social, cultural and even geographical environments. Some researchers have suggested that these factors may be entirely responsible for the apparent protective effect of moderate consumption\(^{123}\). Research has shown that moderate drinkers generally have healthier lifestyles than those who abstain or drink heavily\(^{124}\) but a recent study examined exclusively subjects with a healthy lifestyle and also observed reduced risk of heart disease with moderate alcohol consumption.

Several publications have suggested that wine confers more health benefits than beer\(^{126}\) but it seems that dietary habits, other lifestyle differences connected with wine preference and even personality may explain this apparent difference\(^{127-129}\). For example, wine drinkers are more likely to have a better diet. In general, they may also take more exercise, smoke less, have a better education and social status, all of which are independently associated with better health\(^{130}\). It is therefore vital that these factors are taken into account in any research into the effects of alcohol on health.

**Lifestyle**

The growth in non-communicable diseases is a major health burden in industrialized countries and research has shown that many of these illnesses have their roots in unhealthy lifestyles\(^{131}\). It is clear that good health is affected by everything we do, including eating a balanced diet, exercising regularly, drinking moderately, etc. Generally lifestyle habits are characteristic of an individual’s way of life\(^{132}\), an important part of their social life and provides a significant measure of enjoyment. Pleasure and happiness are essential parts of a healthy lifestyle.

+ Research has shown that moderate drinkers generally have healthier lifestyles than those who abstain or drink heavily\(^{125}\)
**Drinking Patterns**

The manner or pattern in which people are drinking is also the subject of research. It is undisputed that drinking too much is unhealthy but it is not just “how much” – “how often” is important too\(^{133,134}\). These types of data are difficult to interpret and there is no consensus on the best ways to collect the information or analyze its significance\(^{135,136}\). Researchers have to dissect the effects of total alcohol consumption away from the influence of drinking patterns in order to establish how each of these variables affect the risk of disease, as it is likely that they are independent risk factors\(^{137}\).

Generally there is scientific agreement that a higher frequency of drinking is better for health, in particular lower risk of heart attack, than drinking a similar amount on only a few occasions per week\(^{138}\). People who occasionally “binge” (in academic literature “binge drinking” is usually defined as five or more drinks consumed in one sitting) show an increased risk of coronary heart disease even when their consumption is moderate\(^{139,140}\) and may not benefit from the reduced risk of type II diabetes seen in moderate consumers\(^{141}\). Plausible explanations for this include an increased risk of high blood pressure in binge drinkers. It has also been reported that in addition to increasing the risk of personal harm binge drinking carries a substantial (three times greater) increase in risk of developing cognitive decline or dementia later in life possible by directly killing brain cells\(^{142}\). It should be emphasized that reduction of consumption level could improve the chance of survival of heavy drinkers\(^{143}\).

It is also thought that consuming beer, wine or spirits with a meal is better than drinking on an empty stomach as this has been shown to increase the risk of high blood pressure\(^{144}\) although the researchers are not unanimous on this subject.

**Diet**

The type of diet eaten is another important part of lifestyle and certain diets are associated with longer life expectancy\(^{145}\). A combination of four healthy behaviours, (not smoking, not physically inactive, alcohol consumption of up to eight drinks per week and intake of at least five fruit and vegetable servings per day), has been recently shown to be equivalent to being 14 years younger in chronological age\(^{146}\) and to prevent three out of four heart attacks\(^{147}\).
ENDNOTES


6 Ibid.


16 Ibid.


27 Ibid.


29 Beulens JWJ, Grobee DE, Stolk RW et al. (2005). “Alcohol consumption and risk of Type 2 Diabetes among older women”. Diabetes Care, 28(12): 2933-2938.


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50 Ibid.


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127 Mortensen EL, Jensen HH, Sanders SA et al. (2001). “Better psychological functioning and higher social status may largely explain the apparent health benefits of wine”. Archives of Internal Medicine, 161: 1844-1848.
For more information on the health benefits of beer consumption, please visit www.brewers.ca.