
BEST ADVICE FOR PREVENTING GAMBLING PROBLEMS IN NOVA SCOTIA

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EXECUTIVE SUMMARY

Gambling can be an enjoyable and quite benign activity for individuals, and it can also lead to great suffering and financial costs. It has the same potential to confer benefits and harms to communities and societies. Teasing out the economic benefits and costs associated with different forms of gambling is complex. For instance, an influx of new gambling forms into a community results in redistribution of jobs, income and expenditures from one sector of the economy to another. However, the economic benefits and social costs appear linked in that the prevalence of gambling problems typically increases as new forms of gambling are introduced. It also appears that the greater proportion of negative individual and family impacts is borne by persons of lower socio-economic status.

The vast majority of Nova Scotians gamble at least occasionally and a small percentage experience problems that may be mild, moderate or severe. Problem gambling has been defined as gambling behaviour that creates negative consequences for the gambler, others in his or her social network, or for the community. Studies consistently point to adolescents and young adults, particularly males, Aboriginal populations and those with less education as being at highest risk for gambling problems. While the prevalence of problems is lower among older adults, gambling problems within this population may emerge as an important issue simply by virtue of the increasing size of this population.

In considering the prevalence of gambling problems in Nova Scotia, it is important to note that fairly stable prevalence figures may hide significant change at the individual level. There appears to be significant movement in and out of periods when individuals experience gambling problems (particularly among young people and those with less severe problems). Due to their much greater numbers, the population of gamblers experiencing less severe problems represent a greater public health burden to society than those experiencing more severe problems, and should consequently be considered a priority for prevention.

A range of factors at the individual, interpersonal, and community levels contribute to gambling problems. A number of individual-level factors are at play, and individuals ultimately need to bear responsibility for

their choices and behaviours, however, it is apparent that the immediate gambling environment and broader socio-cultural factors represent barriers to healthy choice-making. Consequently, society's efforts to prevent gambling problems need to be similarly broad.

Among the various policy frameworks, the public health model best supports and guides a broad response to individual and societal gambling problems. By recognizing the range of factors that play into individual and societal gambling problems, the public health model calls for similarly broad solutions, including those that question the way gambling opportunities are presented and even how society is presently structured. Implicit in this perspective is the view that individual and population health are maximized when individuals take responsibility for their decisions and actions, and when society and governments perceive a duty-to-care and protect.

Public health-oriented prevention distinguishes between demand reduction, supply reduction and harm reduction activities, and broader initiatives that address broad factors (e.g. income, education, early child development, etc) that aren't specific to gambling but which affect the health of individuals and populations. A gambling prevention strategy needs to strive for a balanced and integrated array of evidence-based measures from each of these areas.

Demand reduction: Though demand reduction activities (media campaigns, information dissemination, school programs) have dominated problem gambling prevention activity in this country and elsewhere, there is as yet little solid scientific evidence to support these activities. Promising uses of media include well resourced efforts to increase awareness of risks (particularly erroneous thinking around the randomness of events) and consequences, and online self assessment tools. Prevention messages presented on VLTs show promise but need to be further evaluated in real-world settings. Very few school-based gambling prevention programs have been studied, but the current evidence suggests that these programs need to give attention to erroneous thinking as well as to coping and self-monitoring skills.

Substance abuse research shows that multi-sectoral community action, school programming that doesn't insist

on abstinence, comprehensive school health programming that gives attention to the social environment, structured family programming and brief interventions to be among the more promising demand reduction measures.

Supply reduction: gambling problems increase as opportunities to gamble increase in a jurisdiction, however few measures to reduce supply or access to gambling have been mounted or studied. Nova Scotia-based research on the effect of restricting hours of access to VLTs and to reduce the number of machines shows promise and warrants further study. It makes sense to reduce youth access to gambling but youth report easy access to gambling opportunities and no studies of this type of measure were found through this review.

Harm reduction: in the sense used in this report, harm reduction measures are those that aim to reduce harms without necessarily requiring a person to change their gambling pattern. A number of harm reduction modifications for VLTs have been tested in lab and “real world” settings. No evidence was found for decreasing speed of reels; some evidence was found for reducing maximum bet size, displaying a running total of cash spent on the machine and removing all devices that give a (false) sense of control over the machine (e.g. stopping device).

Giving players the ability to track their expenditures (current and longer-term), and to limit time and/or money spent through a player card appears promising. Nova Scotia research shows that these features reduce expenditures and are well accepted by users – and it appears that the voluntary (rather than imposed) use of the features is important to their acceptance and use.

Health promotion: Research has shown that broad health promotion policies and programs that address basic factors (e.g. income, quality jobs, family cohesion, school engagement) linked to a number of health and social

problems (e.g. substance abuse, delinquency, early sexual activity, gambling) can potentially reduce the incidence of these problems without specifically focusing on them. Although direct research evidence was not found to support this contention, problem gambling prevention stakeholders need to consider engaging with others to promote population health, as these efforts may well impact on the incidence of gambling problems.

While more research on the effectiveness of various measures is necessary, it is also important to recognize that there will be no magic bullet for preventing gambling problems. A focused, evidence-based approach provides the best value for Nova Scotians. This means investing in research on the harms and costs arising from gambling problems, giving priority to the greatest harms/costs and testing, implementing and monitoring the impact of policies and programs designed to avoid them. Gambling problems arise from many factors and a mix of health promotion and supply, demand and harm reduction measures will be needed to address them. What that mix actually consists of in each community or jurisdiction needs to be based on careful assessment of protective/risk factors and community capacity.

A long-term strategic approach with all stakeholders participating is needed. A strategic approach calls for balancing the interests of everyone with a stake as fully as possible. It means that stakeholders need to fundamentally agree on the aims of the strategy and strive to coordinate and integrate their activities for optimum effect. It also means agreeing that reducing harms and costs to a level acceptable to Nova Scotians may mean somewhat reduced revenue derived from gambling activity. Giving priority to the health of Nova Scotians is ultimately sound, sustainable economic and social policy.

SECTION 1: INTRODUCTION

AIM OF THE REPORT

The Nova Scotia Department of Health Promotion and Protection has initiated a process to establish standards of practice for prevention field workers that are informed by evidence. This report, and a companion report, *Best Practices for Preventing Substance Use Problems in Nova Scotia*, support this initiative by providing summaries of the current scientific evidence in the two areas of practice. The findings of this review, particularly the best advice statements, will inform the drafting of provincial prevention standards.

This report assembles current research on what is known about how best to prevent gambling problems. Current research evidence does not permit articulation of “best practices” as they are commonly understood; rather the aim is to identify most promising directions or “best advice” based on the most rigorous research available. When designing prevention initiatives, knowledge of the nature, extent and impact of gambling problems, and the factors that contribute to them are necessary, so these will also be summarized. This information is in some cases drawn from reviews of the literature by credible sources rather than from the primary sources.

The report is primarily intended for prevention professionals in the province. Technical terms are used and are defined where they arise in the report (either in the text or in a footnote), and are listed in the Glossary on page 44. Though primarily intended for prevention professionals, the report presents recommendations for research that will be of particular interest to researchers and policy-makers.

METHOD

In the August 2006 issue of the *Journal of Gambling Issues* (17), Ferentzy, Turner, and Skinner of Ontario’s Centre for Addiction and Mental Health presented “The Prevention of Pathological Gambling: An Annotated Bibliography”, which aimed to bring together all English peer-reviewed literature pertaining to prevention, regardless of quality of methodology. This bibliography became the basis of the literature reviewed for this report. Using Scholar’s Portal databases, English peer-reviewed sources from 2006-2007 were searched to identify any relevant articles

published since Ferentzy and colleagues compiled their bibliography. Phrases with a variation of the words “problem”, “pathological”, “gambling”, “prevention”, and “intervention” were used to search articles.

Following this, a search of the following journals was conducted:

- Journal of Gambling Studies
- International Gambling Studies
- Journal of Gambling Issues (JGI)
- International Journal of Mental Health and Addiction
- Gaming Law Review
- UNLV Gaming Research and Review Journal
- Gambling Research (National Association for Gambling Studies Journal)

Relevant English language grey literature (including government documents and conference presentations) was searched through the library databases or publication lists of the Nova Scotia Department of Health Promotion and Protection, Canadian Centre on Substance Abuse, and Ontario’s Problem Gambling Research Centre and Centre for Addiction and Mental Health.

Retrieved were studies that: discussed the impact of gambling; estimated the prevalence of gambling problems; identified risk and protective factors, and; evaluated intervention effectiveness. Priority was given to high quality empirical studies, particularly Canadian studies, but also included were credible discussions on prevention topics.

This report is a companion to the report, *Best Practices in Preventing Substance Use Problems in Nova Scotia*, also prepared for the Department of Health Promotion and Protection. Because prevention research for substance use problems has had a longer history, evidence for what works and what doesn’t is increasingly clear; consequently, it has been suggested that gaps in the younger science of gambling problem prevention are best filled by findings from this closely-related field (Dickson et al., 2002; Derevensky and Gupta, 2004). Where this is the case, readers are referred to the companion report.

CONCEPTUAL BASIS OF THE REPORT

As old as human history, gambling became much more available to Nova Scotians and other Canadians after 1969, when the criminal code of Canada was amended to permit government controlled gambling. Gambling opportunities grew exponentially after 1985 when provincial governments gained the right to conduct and manage electronic forms of gambling such as video lottery terminals (VLTs) and slot machines.

In this country as of 2005 there were over 33,000 lottery ticket centres, 60 permanent casinos, 87,000 gambling machines (slot machines and VLTs), 20,000 annual bingo events, and 250 race tracks and tele-theatres, and 25,000 licenses to run various bingo, temporary casinos, raffles, pull tickets and other activities (Azmir, 2005).

This dramatic expansion has benefited many, not the least being provincial governments. The Nova Scotia government, for example, obtained 4.3% of its own-source revenues from gambling in fiscal year 2003/04 (the provincial average was 3.8%) (Azmir, 2005). At the same time, gambling has emerged as a prominent public health and social issue, exacting significant harms on individuals, families and communities, and costs to society generally (Wynne and Anielski, 2000).

Growing awareness of the various harms associated with widely available gambling opportunities has led to research on the issues and a variety of measures aimed at addressing them. Yet, research and practice in this area is young and much remains to be learned about how best to prevent gambling problems (Dickson, Derevensky, and Gupta, 2002); indeed more needs to be learned about the contributing factors and conditions (Shaffer et al., 2004). Yet prevention is recognized as a critically important component of a broad response to gambling problems, so while knowledge in this area continues to evolve, guidance is necessary for those responsible for prevention policy and practice.

Gambling refers to activities involving the wagering of money or something else of value on games of chance (National Research Council, 1999). Today, opportunities for gambling are boundless. Gambling may, for example include cards, dice, and board games with family and friends; betting on games of personal skill, such as pool and bowling; playing arcade or video games for money or prizes; buying raffles tickets; sports betting with friends at

school or at off-track satellite betting parlours; wagering at horse race tracks; gambling in bingo and card rooms; playing slot machines and table games in casinos; buying pull tabs and lottery tickets; playing on video lottery terminals; playing the stock market; wagering on the Internet, and placing bets with a bookmaker (Jacobs, 2000).

This report focuses on the prevention of problems that arise from this activity. A number of theories have been proposed to explain or frame gambling problems (American Psychiatric Association, 1994; Dickerson and Baron, 2000; Blaszczynski and Nower, 2002; Brown and Newby-Clark, 2005). Diagnostic and screening criteria have been developed, tested and used clinically and in population surveys, but the question of what constitutes a gambling problem and how to clearly distinguish between non-problematic gambling and problems of greater and lesser severity has not been fully resolved by researchers and clinicians.

While a full analysis of the various theoretic frameworks and associated screening criteria is beyond the scope of this report, it is important to recognize that the way gambling problems are defined and conceptualized determines to a large extent the kinds of efforts proposed to prevent the problems (McMillen and Wenzel, 2006).

It is generally accepted that gambling problems lie on a continuum of severity and that there is no sharp distinction between problematic and non-problematic gambling (Ferris and Wynne, 2001; Shaffer et al., 2004; Dickerson, 2003). The emergence of negative consequences and a sense of loss of control are hallmarks of most definitions of problematic gambling (Blaszczynski and Nower, 2002). How it is that a person begins to experience negative consequences and a sense of loss of control can be understood in different ways. Perhaps the most commonly cited interpretation is based on a mental health orientation as presented in the Diagnostic and Statistical Manual (DSM)-IV published by the American Psychiatric Association (1994). While this model has been instrumental in giving credibility to the study of gambling problems and in advancing understanding, it has been criticized as being too focused on the individual (Dickerson, 2003). That is, the model implies that gambling problems are the result of “pathology” within the individual, disregarding the various external factors and influences that may contribute to the individual’s problem. However, an extensive Australian investigation (Productivity

Commission, 1999) concluded that anyone who gambles has the potential to develop problems (especially if they regularly gamble on electronic gaming machines). Also, pathology on the part of an individual implies a chronic life-long condition, whereas studies are showing that a significant percentage of individuals experiencing severe gambling problems recover naturally (that is, without outside intervention) from this level of severity (Slutske, 2006).

The public or population health model has been proposed as a framework that can more fully and accurately explain why there are people who experience problems as a result of their gambling activity (Korn, Gibbins and Azmier, 2003). The public health model recognizes the broad range of factors at play and distinguishes between factors pertaining to the host, the agent and the environment. In the context of gambling, individual (i.e. host) factors include genetic, personality and mental health issues; factors pertaining to the agent focus on gambling machines and the immediate gambling environment; and the environment includes such factors as family and peer factors, community and cultural norms, and broad “determinants of health”. Acknowledging the determinants of health (i.e. income and social status; social support networks; education; employment/working conditions; social environments; physical environments; personal health practices and coping skills; healthy child development; biology and genetic endowment; health services; gender; and culture) is an explicit aspect of a public or population health perspective (Public Health Agency of Canada, 2004).

The model recognizes that gambling can be seen as healthy or unhealthy behaviour, with healthy gambling entailing informed choices with no negative outcomes, and unhealthy gambling referring to different levels of gambling problems (Korn, Gibbins and Azmier, 2003). It also recognizes that gambling machines, the immediate gambling environment and broader societal factors can pose barriers to healthy choice-making by individuals (Dickerson, 2003).

The public health model is favoured in this and several other countries and is the framework employed in this report. Because an individual’s or indeed society’s gambling problems are broadened beyond an individual’s “pathology”, the broader, more neutral terms “gambling problems” or “problem gambling” are preferred over the term “pathological gambling”. The term “problem gambling” reflects all patterns of gambling behaviour that “compromise, disrupt or damage personal, family or vocational pursuits, and that lead to adverse consequences ... and may be mild, moderate or severe” (Korn, Gibbins and Azmier, 2003, p. 244). When appropriate the term “gambling problem” is used – the term more accurately conveys the fact that problems have consequences beyond the individual and is viewed as less stigmatizing.

SECTION 2: IMPACT OF GAMBLING PROBLEMS

To arrive at appropriate prevention policy and programming (i.e. that which balances economic benefits with public health) it is important to understand the benefits and harms associated with gambling activity. Many commentators have presented discussion and data on the economic and social impacts of gambling on individuals and societies, yet this is a complex area and much remains unclear (Wynne and Anielski 2000; Korn, Gibbins and Azmier, 2003). A fundamental challenge to estimating the costs is that many factors associated with gambling may be either contributors to the problems (i.e. risk factors) or consequences, both, or neither (that is, several factors may be independent of each other and the result of more primary determinants or causes) (Shaffer and Korn, 2002). Much of the current understanding of gambling problems is based on cross-sectional research¹ that is not able to confirm a causal direction for the various problems associated with gambling.

Gambling forms (e.g. lotteries, VLTs, horse racing) differ in various ways, such as the timing of the gambling sequence, stake size, accessibility and availability, frequency and amount of payouts, amount of skill involved, level of involvement, and the settings in which they occur (Dowling et al., 2005). So, it is important to be specific when considering impacts (both positive and negative) because they vary according to the type of gambling in question. For instance, in Nova Scotia, the majority (64%+) of adults who report problems with gambling (past or present) identified VLTs as their primary concern, though they may participate in a range of gambling activities (Schrans and Schellinck, 2004).

Economic benefits to the community are not easily arrived at since an influx of gambling activity results in redistribution of jobs, income and expenditures in the economy from one sector to another (Wynne and Anielski, 2000). It is apparent however that economic benefits and social costs are linked in that the prevalence of gambling problems typically increases as new forms of gambling are introduced (Topp et al., 1998). Indeed, the gambling industry benefits greatly from those who experience problems with their gambling.

In Nova Scotia it was estimated that approximately 40% of gambling expenditures (i.e. losses) in the province come from the 6.9% of adults in the province who report experiencing some level of risk or problem with their gambling (Schrans and Schellinck, 2004). While persons with higher income gamble greater amounts on average, persons with lower income spend a greater proportion of their earnings (McMullan, 2005).

Recognizing the limitations, the following impacts have been proposed within several domains – the individual and family, community, and broader society (Azmier, 2005; Wynne and Anielski 2000; Shaffer and Korn, 2002; Gupta and Derevensky, 1998; Topp et al., 1998).

INDIVIDUAL AND FAMILY

Possible benefits:

- family enjoyment
- stress-reducing outlet
- temporary escape from daily cares
- memory enhancement
- problem solving through game tactics
- mathematical proficiency
- a sense of connectedness and socialization
- improved concentration
- hand-to-eye physical coordination

Possible harms:

- stress, anxiety
- stress-related ailments (e.g. ulcers, colitis, high blood pressure, heart disease, migraines and skin problems)
- adolescent delay in learning healthy coping methods
- substance use
- depression
- suicide and suicide ideation

¹ A research design where a large cross-section of the population is assessed at a single time and the differences between individual groups within the population compared. This study is efficient at identifying association but may have trouble deciding cause and effect because data are collected at only one time point.

- financial problems
- marital conflict, family break-up, violence
- loss of family time; child neglect
- loss of quality long-term relationships
- criminal activity
- poor work performance

COMMUNITY

Possible benefits:

- charitable, health care and community groups derive funds from gambling revenue
- contributes to leisure options in a community

Possible harms:

- other leisure and commercial venues may suffer financially and close
- erosion of social fabric or cohesion

SOCIETAL

Possible benefits:

- reduced taxation due to gambling revenues that go toward provincial infrastructures; provides for debt repayment, health care, education and social services, grants to charities and treatment of gambling addiction

Possible harms:

- increased public costs (i.e. health, addiction, child and social welfare, criminal justice, and lost productivity costs)
- Loss of government tax revenues from other sectors
- public sector gambling regulation costs
- environmental harms (noise, land use impact)

Public perception of the benefits and costs were a subject of a national survey. Azmier (2000) found that 68% of respondents did not feel gambling had improved the quality of life in their province while 14% felt gambling was beneficial to quality of life. Nine percent agreed that gambling had an overall positive impact on their community, while 24% perceived the overall impact of gambling to be negative.

CONCLUSION AND BEST ADVICE

It appears that the greater proportion of negative individual and family impacts is borne by persons of lower socio-economic status. With this being the case, and with gambling expansion having occurred during a period when various governments sought revenue without increasing taxes, there is justification for viewing gambling expenditures as a voluntary regressive tax with greater impact on lower income Canadians (Korn, 2000). If this pattern has the effect of widening the disparity of material wealth among Nova Scotians it may affect population health – a widening disparity has been shown to have a negative impact on the health of populations (Evans et al. 1994).

Best advice:

1. Conduct, participate in or support research that clarifies the social and economic costs and benefits of gambling, with particular attention to the impacts on lower socio-economic populations.

SECTION 3: EPIDEMIOLOGY OF GAMBLING PROBLEMS

FACTORS CONTRIBUTING TO GAMBLING PROBLEMS

Gambling as a leisure activity has an innate appeal to humans – the hope of winning something of material value in a context of risk and uncertainty has made it a popular pastime in all cultures through history. Most people who gamble do not experience problems from the activity but loss of control and negative consequences do arise from gambling and some forms of gambling appear more likely to bring these about. The science of prevention is interested in determining the factors that are known to either contribute to these problems (i.e. risk factors) or help avoid the problems (i.e. protective factors). This is based on an understanding that as the number of risk factors accumulates for a person or population the more likely various health and social problems are to occur (Hawkins et al., 1992). These problems may take any one of a number of forms (e.g. tobacco use, hazardous alcohol and other substance use, mental health, gambling academic/work-related problems, crime), and they often occur together. That is, a person with mental health issues is more likely to experience substance use or gambling problems (Dickson, Derevensky and Gupta, 2002; Shaffer and Korn, 2002).

Conversely, it is known that communities or persons with a number of protective factors are less likely to experience problems – protective factors moderate the negative effects of exposure to risk. Prevention practitioners are advised to address both risk and protective factors to prevent social and health problems (Hawkins et al., 2002). They are also advised to view these factors as dynamic and shifting (in the lives of adolescents particularly), best viewed through a developmental pathways perspective (see Best Practices in Preventing Substance Use Problems, for a discussion of developmental prevention).

In some related social and health areas, such as with substance use problems, there is a reasonably clear understanding of the contributing or determining factors. Unfortunately, there is less certainty of the factors contributing to gambling problems (Dickson, Derevensky and Gupta, 2002). While there is a growing literature identifying the factors associated with gambling problems,

in many cases the causal direction is uncertain (as mentioned in the above discussion on impacts). For example, it is known that material poverty can be a risk factor for gambling problems, but it can of course also be a consequence. The nature of these associations awaits longitudinal studies that can clarify the relationships and causal direction. In the meantime, below is a summary of the risk and protective factors for gambling problems that have been identified (to reflect the developmental nature of these factors, a life-stage breakdown is used). Spanning the various life-stages are broad socio-cultural factors that have been shown to affect the health of populations. Although the direct effect of these broad determinants of health on gambling problems is not completely clear, the current evidence will be presented.

1. Prior to birth and early childhood

Genetic Predisposition: Two twin studies have found a genetic influence in the development of gambling problems (Eisen et al., 1998 and Slutske et al., 2000, reported in Smith and Wynne, 2004, p. 40). It is apparent from these studies that the genetic influence is mediated by the person's environment. An Ontario study failed to find an association between problem gambling and three particular genes (Jain et al., 2002). There is some indication that genetic vulnerability to problem gambling and alcohol dependence in men is linked (Ibáñez et al., 2003).

2. Later childhood and adolescence

Developmental stage: "Adolescence" as a developmental stage may be viewed as a risk factor given that normal adolescent development often includes an interest in risk taking (the essence of the gambling experience), and a sense of invulnerability to problems. Young people appear to experience gambling problems at a higher rate than adults, and may be more susceptible to the glamorization of gambling in popular culture (Gupta and Derevensky, 1998).

Parental influence: Youth who gamble are likely to indicate that they were introduced to gambling through their parents or older relative (e.g. through cards, dice and board games, scratch cards, and accompanying parents to bingo); persons with gambling problems are more likely than non-problematic gamblers to report having

a parent with a gambling problem (Fabiansson, 2006; Griffiths, 2000; Gupta and Derevensky, 1998; Jacobs, 2000; Magoon and Ingersoll, 2006). Even young children living in an environment where gambling is common learn risk-taking games. Children from families with a history of gambling problems appear more likely to learn cognitive distortions (e.g., believing that they are able to control or predict gambling outcomes) (Korn and Tepperman, 2002).

Personality: Being excitable, sensation seeking, extroverted, impulsive, susceptible to boredom, and having difficulty with self-discipline and conforming to societal norms, are associated with adolescents who experience gambling problems (Gupta and Derevensky, 1998; Gupta, Derevensky, and Ellenbogen, 2006; Hardoon and Derevensky, 2002). Young people with gambling problems are also more likely to experience dissociative states² when they gamble than other young people (Gupta and Derevensky, 1998; Jacobs, 2000).

Mental health: Having Attention-deficit / hyperactivity disorder (ADHD), lower self-esteem, anxiety disorder and depression are associated with adolescents with gambling problems; they are more likely to gamble to alleviate depression, to promote relaxation, and to cope with loneliness (Gupta and Derevensky, 1998; Hardoon and Derevensky, 2002).

Coping methods: A review by Dickson, Derevensky and Gupta (2002) identified poor general coping skills as a risk factor for adolescent gambling problems; a more recent Ontario study supported this finding (Bergevin et al., 2006).

Gender: Overall, boys are more likely to gamble, to start earlier in life, to gamble more often, to spend more time and money on it, and to experience gambling problems than girls. However, there are exceptions to this general pattern, with some studies showing similar prevalence rates for particular forms of gambling, for example VLTs (Gupta and Derevensky, 1998; Jacobs, 2000). It has been suggested that boys prefer games requiring greater skill/knowledge (e.g. card and board games, games of personal skill, and sports betting) while girls are drawn more to games of pure chance like raffles, bingo, lotteries and pull tabs (Jacobs, 2000). It has also been suggested that rates of gambling among boys and girls may converge as various

forms of gambling become more available (Gupta and Derevensky, 1998).

Video games: One study found that youth (both boys and girls) who played video games frequently were more likely to gamble suggesting that frequent video-game playing among adolescents may lead to heavy electronic machine gambling play in adulthood (Gupta and Derevensky, 1998; Smith and Wynne, 2004).

Family cohesion: Parental monitoring and supervision, good family relationships and having a trusting and communicative relationship with one's parents are protective factors against gambling problems in adolescents (Gupta and Derevensky, 1998; Magoon and Ingersoll, 2006; Ste-Marie, 2005).

School connectedness, achievement and problems: A study of Ontario youth found school connectedness was a protective factor against gambling problems in adolescents, while poor academic achievement and various other school problems were linked to youth with gambling problems (Dickson, Derevensky and Gupta, 2003).

Peer influence: Adolescents with close friends who gamble are much more likely to have a gambling problem than adolescents who do not have close friends who gamble (Dickson, Derevensky and Gupta, 2003). Although parents serve as prime influences on the lives of youth, peer influences strengthen over time. As youth mature, they are more likely to gamble with friends or at their friends' homes (Gupta and Derevensky, 1998), and peer influences may be heightened by poor parental influences (Magoon and Ingersoll, 2006).

3. Adulthood

Gender: Among Nova Scotians age 19-35, men are more likely to report some level of "risk" or "problem" but with less difference at the problem level (women comprise about 40% of those reporting problem gambling levels in the province in that age group) (Schrans and Schellinck, 2006).

A study of a large sample representative of the U.S. adult population found that among those with sub-clinical³ gambling problems, men were significantly more likely than women to also have substance use problems,

² A transient mental state described as a sense that things are not real, or that one is performing actions in an automatized or disconnected manner.

³ A stage in the development of a health problem before the symptoms are observed.

while women were significantly more likely than men to have lifetime mood and anxiety disorders. With respect to “clinical” gambling problems (i.e. those that would benefit from treatment), women had later ages of onset of gambling problems, and were significantly more likely than men to report gambling to relieve depressed mood (Blanco et al., 2006). Women’s gambling problems are also thought to progress at a faster rate than is the case for men (Smith and Wynne, 2004).

Substance use: Although the nature of the relationship isn’t clear, there is a strong link between problem gambling and alcohol problems, smoking and other substance use (Blanco et al., 2006). For instance, the 2003 Nova Scotia Gambling Prevalence Study found that smoking, self-reported problems (past and current) with alcohol, medical and non-medical use of prescription and other drugs all increase as risk for problem gambling increases (Schrans and Schellinck, 2004). Rates of smoking among “problem gamblers” are twice as high as in the population at large (54% versus 23.5%). During a gambling session, even consumption of relatively small amounts of alcohol may have a significant effect on self-control and gambling decisions (Dickerson and Baron, 2000).

Mental Health: Antisocial personality disorder, depression and Attention-deficit/hyperactivity disorder (ADHD), and impulse control disorder are associated with gambling problems in adulthood (Jain et al., 2002; Shaffer and Korn, 2002; Smith and Wynne, 2004; Martin, 2004); this means that mental health problems may contribute to gambling problems, and the reverse may also be true.

Ethnicity: Although more needs to be learned about the role of culture as a factor in influencing gambling problems, it is apparent that culture or ethnicity does play a role (Korn and Tepperman, 2002). For example, it appears Aboriginal North Americans are more likely to experience gambling problems (Shaffer et al., 2004; Wardman, El-Guebaly, and Hodgins, 2001) and there is some indication that Asian cultures are also more likely to experience gambling problems (Shaffer et al., 2004; Tse et al., 2004).

Working in a gambling environment: Casino employees, a population with direct exposure to gambling, have higher rates of gambling problems than the general population (Shaffer et al., 2004).

4. Older adulthood

Mental health: Low self-esteem and loneliness have been reported as risk factors for gambling problems among older adults (Hirsch, 2000). An Ontario study found that, among older people, the only mental health issues associated with gambling problems were alcohol and other substance dependence (McCready et al., 2005).

Challenging transition: Retirement and the accompanying shift in identity, and loss of spouse or friends may contribute to gambling problems among older adults (McCready et al., 2005; Wiebe and Cox, 2005).

Lack of leisure options: Having large amounts of discretionary time, being bored and wanting to feel part of what is going on have been cited as factors for older adults with gambling problems (Wiebe and Cox, 2005; McCready et al., 2005).

Low fixed income: Having a low, fixed income can lead to gambling problems for older adults because losses may represent a greater proportion of their assets and they have more difficulty recovering from losses (Wiebe and Cox, 2005).

Changes in cognitive functioning: For example, traumatic brain injury may influence the decision to gamble and the extent of gambling (Potenza et al., 2006).

Table 1: Factors associated with gambling problems by life stage

	Prior to Birth - Early Childhood	Later Childhood	Adulthood	Retirement
Individual	Genetic Factors	Adolescence as a time of risk taking Gender Aggression Social and emotional competence Shy temperament and personality Delinquency and conduct problems Sensation seeking and adventurous personality Favourable attitudes toward substance use Ineffective coping methods	Earlier substance use behaviour Gender Unemployment in early adulthood Mental health problem Use of alcohol when gambling	Earlier high levels of non-problematic use Challenging transition into retirement Low fixed income Lack of leisure options Loneliness and boredom Overall health and increasing age (adverse drug reactions) Mental health Changes in cognitive functioning
Family	Parents who gamble Material poverty Poor family management and breakdown	Parental abuse and neglect Unsettled home situation Attachment to family Parental harmony and parent-adolescent conflict Parental attitudes to substance use Alcohol and other drug problems in the family Parental communication and monitoring Family rules and discipline (parenting style) Religion	Marriage in early age	Change in role
Peer		Substance-using peers		
School		Poor academic performance and other school programs		
Community		Access to gambling venues not enforced Advertising	Working in a gambling environment Ethnicity	Social isolation
Factors spanning the life stages				
Lack of healthy leisure identity and leisure options Erroneous beliefs about the nature of random events Public acceptance Availability of gambling opportunities Western Culture Demographic and economic factors Social inequity Social cohesion				

5. Broad factors affecting several or all life stages

a. Gambling as a leisure option

For most people (with the exception of professional gamblers and persons with a strong dependence) gambling is a leisure choice. That is, gambling is pursued during discretionary time instead of other options. Why individuals choose to pursue a gambling activity is a complex question. The pursuit of risk, novelty and uncertainty is often presented as a primary motivation. This is undoubtedly so for some but research has shown that motives for gambling are in fact wide-ranging; beyond risk-taking, individuals have shown they gamble for cognitive stimulation, to experience a rush, to compete, to escape, to experience control, to define or classify oneself vis-à-vis others, to spend time with others, and to learn new skills (Cotte, 1997; Loro, 2004; Platz and Millar, 2001). Adolescent and older adult populations are known to have more discretionary time than others, and having more leisure time has been linked to more frequent gambling behaviour (Moore and Ohtsuka, 2000). Understanding the role of gambling as a leisure option for various populations will inform and give prominence to educational and policy measures that focus on healthy recreation.

b. Erroneous thinking

Erroneous thinking may for example take the form of: sensing that a random event that has not occurred recently is more likely to occur; sensing that a level of skill is required to successfully predict the outcome of chance events; or having an illusion of personal control and skill. Studies have found that, during play, most people exhibit erroneous thinking even if before and after play they demonstrate an understanding of the randomness of events (Benhsain et al., 2004). However, persons with gambling problems exhibit stronger convictions around these beliefs, making them more likely to chase their losses (Ladouceur, 2004).

c. Public attitudes toward gambling

Turner et al. (2005) found that public perception of what constitutes gambling varied widely in the province of Ontario. For example, many people did not consider lotteries to be gambling, and respondents were generally less likely to call a particular game (e.g. raffles) gambling

if they played that game. Nearly all respondents agreed that slot machines, casino games and racetrack bets were gambling, however, 30% of respondents did not consider bingo to be a form of gambling and 40% did not consider speculative investing to be gambling.

Attitudes that are tolerant of gambling provide fertile ground for gambling activity. Overall, Canadians appear to tolerate the current level of gambling opportunities in the country, seeing gambling as an acceptable activity and a personal right; however according to a national survey, the majority of Canadians feel that gambling problems had increased in the past three years in their province, and don't feel that it has added to the quality of life (Azmier, 2000). The 1999 Australian Productivity Commission investigation found that 70 percent of Australians surveyed believe that gambling does more harm than good and 92 percent did not want further expansion of gaming machines (Productivity Commission, 1999).

Level of acceptance clearly differs with gambling format; in this country, video lottery terminals (VLTs) have proven controversial and generally enjoy much less public support than other formats. For instance, in Nova Scotia, attitudes toward VLTs have been decidedly negative, with 66% indicating disapproval of them in the late 1990s (Nova Scotia Annual Gaming Report, 1998-1999, Vol. I, 1999). On the other hand, poker has emerged as a significant ratings winner for television networks, reflecting a growing popularity for that form of gambling (Azmier, 2005).

Considering attitudes toward gambling problems, Turner et al. (2005) found that the general Ontario population had a very narrow view. Gambling was viewed as largely an individual problem, with little indication of awareness of the consequences of gambling to society in general. Respondents often focused on the most obvious consequence of gambling problems – financial difficulties – with little awareness of other harms such as family neglect, mental health concerns, problems at work, chasing losses and stealing for the purposes of gambling (Turner et al., 2005).

d. General availability of gambling opportunities

Expanding gambling opportunities, and the societal acceptance this implies, has clearly led to an increase in gambling. For instance, according to Jacobs (2000), the introduction of state or provincial lotteries has invariably

produced an increase in the numbers of adults and adolescents who gamble in that jurisdiction. Although some evidence does not support the link, the weight of evidence suggests that increased availability of gambling opportunities is also associated with an increase in gambling problems in a jurisdiction (Shaffer, Hall and Vander Bilt, 1999; Orford, 2005a; Cox et al., 2005; Abbott et al., 2004; Productivity Commission, 1999). For example, an analysis of gambling problem prevalence rates from the Canadian Community Health Survey (Cycle 1.2) by Cox and colleagues (2005) found a rough association between rates of gambling problems and the number of VLTs and casinos in each province.

The Australian Productivity Commission concluded that the prevalence of gambling problems is related to the degree of accessibility of gambling, particularly gaming machines (Productivity Commission, 1999). A meta-analysis of 120 problem gambling surveys in North America conducted between 1975 and 1996 concluded that the prevalence of gambling problems among adults increased significantly during this period of rapid expansion (Shaffer, Hall and Vander Bilt, 1999). Studies in the U.S. have found the prevalence of gambling problems to be greater in states with high per-capita lottery sales and within 50 miles of casinos (Korn, 2000).

The current generation of adolescents is the first to have been raised in an environment of extensive legalized and government-sanctioned gambling (Shaffer, Hall and Vander Bilt, 1999; Poulin, 2000). During the past 25 years, a period when gambling opportunities increased dramatically, rates of problem gambling among youth did not increase over time (Shaffer et al., 2004). Shaffer and colleagues suggested it may be that young people are less affected by the increased availability of legal gambling because it has generally remained illegal for them and they are engaged in less mainstream forms. Discussing the state of knowledge on this issue with respect to adolescents, Derevensky and Gupta (2004) call for research on the relationship between gambling opportunities/marketing and the onset and maintenance of adolescent gambling and gambling problems.

Wilson and colleagues (2006) attempted to determine whether there was a link between VLT availability, neighbourhood socio-economic status and the level of youth VLT use in Montréal. They found that as neighbourhood socio-economic status declined the density

of VLT placement increased. There was 40% greater use of VLTs among youth in neighbourhoods with greater access. The authors acknowledge that local gambling culture is an important factor, but concluded that the heavier density of VLTs in lower income neighbourhoods may have an effect on gambling behaviours of students in those neighbourhoods, especially those with individual risk factors. They suggest that efforts to reduce gambling-related public health costs and youth gambling problems need to consider how VLTs are distributed in local neighbourhoods.

e. Advertising and marketing

It is fair to speculate that the heavy lottery and casino advertising found in Canada may foster more favourable attitudes and increased gambling activity. Felsher et al. (2004a; 2004b) suggest that the aggressive advertising of lottery products as enjoyable, even thrilling forms of entertainment may serve to groom non-wagering segments of the population (e.g. adolescents) for various gambling activities. Indeed, youth participating in focus groups in Ontario reported that lottery advertisements were both familiar and engaging (Korn, 2003).

Various groups internationally have raised concerns about aggressive and misleading government advertising of lotteries. However, no studies linking attitudes and behaviours with levels of advertising were found. Griffiths (2005), in a review of the impact of advertising on gambling behaviours noted that, unlike many governmental promotions, which are straightforward, low-tech, and serious, lottery advertising could be characterized as persuasive, glitzy, and humorous. Government lotteries themselves have attributed their success to marketing at least in part. They spend enormous amounts of money on messages that most would consider to be unbalanced, being extremely persuasive and rarely presenting information on the odds of winning and losing (Griffiths).

The perception that aggressive and persuasive advertising contributes to increased gambling activity has strong intuitive appeal. However, as is the case with alcohol advertising, there is currently no solid evidence that gambling advertising increases gambling problems. Just as alcohol advertising studies have found that heavier drinkers are more likely to recall alcohol advertising, so too with heavier gamblers and gambling ads; but causal influence cannot be drawn from these studies. A recent

study of middle school students and exposure to various forms of alcohol advertising in a US state found evidence that exposure to advertising predicted alcohol use, but its findings need replication (Ellickson et al., 2005).

f. Laws, regulations and their enforcement

Are legislated measures to reduce problems more effective than voluntary self-regulatory approaches? Following a period of self-regulation and reports highlighting problems, gambling clubs in New South Wales (NSW) Australia came under legislation (the Gambling Legislation Amendment (Responsible Gambling) Act 1999) designed to set minimum standards for reducing problems. In summary, the legislation required that clubs

- provide information to patrons on counselling services, the use and operation of gaming machines, the chances of winning and the problems caused from excessive gambling
- limit the cashing of cheques
- place limits on the payment of prizes by cash
- locate cash dispensing facilities away from poker machine areas
- place limitations on gambling-related advertising
- prohibit the offering of inducements to gamble
- require the secretary and certain employees to undertake an approved training course in the responsible conduct of gambling
- provide clear information on self-exclusion schemes
- institute other miscellaneous controls

Following the enactment of the legislation in NSW, Hing (2003b) found a tendency among some clubs to adhere to only the minimum requirements. Voluntary practices going beyond the law appeared to be less widely practiced. Many of these related to the gambling environment (e.g., having windows, adequate lighting, and encouraging breaks in play). Others related to promotions that provide strong inducements to gamble and lack of signage on self-exclusion and local counselling services. Further, some clubs didn't even comply with some legal obligations, specifically relating to allowing minors and intoxicated people in gambling areas.

Hing also studied club members' awareness and sense of effectiveness of these strategies in ten Sydney clubs. Patrons generally saw little value in signage but saw environmental changes and modifications to the machines to be potentially more effective. They were somewhat sceptical about whether the clubs were truly embracing responsible gambling practices. While many responsible gambling measures had been implemented, other venue practices were perceived as being against the spirit of responsible gambling (e.g. promotions, ATMs very close to gaming areas), and were seen as detracting from the positive efforts made.

In the alcohol and tobacco fields, it is known that enforcement of underage access laws can reduce the rate of use of these products by minors (Stockwell, 2006). It is reasonable to consider whether active enforcement of underage gambling legislation would have a similar effect. While most government statutes prohibit children and adolescents from engaging in legalized/regulated forms of gambling, it is apparent that most youth who want to purchase lottery tickets and access other forms of gambling have little difficulty doing so (Felsher et al., 2004a).

In Nova Scotia, the age restriction for access to gambling opportunities such as casinos, lottery tickets, video lottery terminals and sports betting is 19 years of age. Underage gambling is relatively common with about 63% of students reporting having participated in at least one of 8 gambling activities, at least once in the past year (Poulin, 2002b). Ten percent of the student population (Gr. 7-12) report using deception to obtain lottery tickets, scratch tabs or break opens, while 4% did so to play VLTs. Males and older students were more likely to report using deception to participate in these activities (with the exception of VLTs where there was no age difference) (Poulin, 2002b).

g. Game formats as risk factors

Technology has always played a role in the development of gambling practices (Griffiths, 2003). Recent technologies have led to two forms of gambling – Electronic Gaming Machines (EGMs) and Internet gambling – that some observers contend are, themselves, risk factors in that their features foster excessive play (Abbott et al., 2004; Dickerson, 2003).

i. Electronic Gaming Machines (EGMs)

EGMs are a worldwide phenomenon, known as video lottery terminals (VLTs) in Canada (and pokies or fruit machines elsewhere). With these machines, outcomes are randomly generated and prizes won when a certain pattern or configuration of images is produced. Research in Canadian and overseas conclude that VLTs (or similar electronic gambling machines) are more associated with gambling problems than any other gambling format (Schrans and Schellinck, 2004; Smith and Wynne, 2004; White et al., 2006). The 2003 Nova Scotia Gambling Prevalence Survey found that almost one in two (43%) regular VLT gamblers (i.e. playing at least once/month) were scoring at some level of risk for problem gambling.

The prevalence of VLT-related problems is felt to be a function of the following features (Smith and Wynne, 2004):

- continuous play - a high number of gambling opportunities in a given time period
- frequent near-misses and small wins, with infrequent larger wins
- variable betting levels, coupled with the illusion of skill, promoting an illusion of control over the outcome
- a highly effective variable and random reinforcement⁴ schedule based on B.F. Skinner's theory of operant conditioning
- appealing light, color and sound effects

These various features have led some to suggest that VLTs bring about gambling problems more rapidly than other forms. Dowling et al. (2005) found that the level of empirical evidence to support this contention is inadequate yet suggested that the link cannot be discounted (and that it is therefore appropriate to attempt to evaluate the impact of modifying machine characteristics on problem gambling behaviour).

A study of electronic gaming machines conducted for the Saskatchewan Liquor and Gaming Authority (comprising a literature review, and key informant and focus group input) concluded that fast speed of play, direct electronic fund transfers (allowing patrons to access bank or credit card funds directly while sitting at an EGM), the appearance of near-misses, and bill acceptors were the EGM features that contributed most to problem gambling (White et al., 2006).

ii. Internet gambling

Internet gambling has expanded dramatically in the past 10 years with an estimated 15 million playing by 2004 and billions being spent (Ialomiteanu and Adlaf, 2002; Mitka, 2001; Sinclair, 2000). The Internet has vastly increased exposure to gambling opportunities for Canadians – it is estimated that between 5-15% of Internet gamblers are Canadians (Azmir, 2005), but the percentage of Canadians reporting online gambling was low in 2004 with between .2% (Nova Scotians) and 2% (Quebecers, British Columbians) reporting having gambled online (MacKay, 2004). Nevertheless, the dramatic growth of gambling activity through this medium, combined with features it shares with other electronic gaming forms along with features unique to the medium has generated a number of concerns in the scientific literature (Ialomiteanu and Adlaf, 2002; Smeaton and Griffiths, 2004).

As with actual EGMs, Internet electronic gambling features rapid event frequency and interactivity, a mix that can fuel immersion and dissociation. Also (as with other electronic forms) credit cards are used, decreasing the perceived value of the money spent (Smeaton and Griffiths, 2004).

Beyond these features shared by other EGM, Internet gambling has several others unique to the medium. It's convenient, easy to access, available 24 hours a day, 365 days a year and is one of the most heavily advertised products on the Internet (Smeaton and Griffiths, 2004). The medium permits anonymity and the lack of regulation means that vulnerable groups such as youth, and persons with gambling or substance use problems who might otherwise face restricted access in traditional venues have easy access (National Gambling Impact Study Commission, 1999; Griffiths, 2003). Due to the lack of personal contact with the customer, the medium affords very little opportunity to offer help to those who may have a gambling problem (Griffiths, 2003; Smeaton and Griffiths, 2004). Moreover, lack of regulation means there is no pressure brought to bear on venues to take on this kind of "gate keeping" responsibility (Griffiths, 2003). To illustrate, Smeaton and Griffiths found just four of a representative selection of 30 UK-owned sites did a credit check on the gambler. The vast majority of this sample provided no information on gambling problems, gambling telephone help-lines, or self-help groups.

⁴Positive reinforcement strengthens a behaviour by providing a consequence an individual finds rewarding.

Given that today's youth have grown up with the Internet and have a high degree of comfort with the medium, it is not surprising that some adolescents gamble online. A Manitoba student survey found that 3.6% of students (Gr. 8-12) had gambled online in the past year, and that these students, were more likely to be problem gamblers, use alcohol hazardously, use illegal substances, have been prescribed medication for anxiety and depression, report lower parental monitoring, have lower grades and engage in delinquent activities (Mackay et al., 2005).

While there is a basis for concern over Internet gambling, Shaffer (2007) cautions that there is currently too little empirical information concerning the nature and extent of the problem on which to base a public health policy response.

h. Determinants of health

A body of international research has identified a number of “determinants” that have great influence on the health of a population: income and social status; social support networks; education; employment/working conditions; social environments; physical environments; personal health practices and coping skills; healthy child development; biology and genetic endowment; health services; gender; and culture (Public Health Agency of Canada, 2004). Determinants of health theory holds that by improving the lives of individuals and populations in these areas, various health problems, possibly including gambling problems, would be ameliorated without specifically targeting them.

Among these determinants are several that pertain to social position (i.e. income, occupation, education); much research has documented that the higher one falls in the social strata, the better health enjoyed (other factors being equal). Shaffer and Korn (2002) have suggested a mechanism by which income might influence gambling problems – Psycho-economics of Gambling Theory.

Psycho-economics of Gambling Theory holds that people living in poverty perceive greater potential to change their lives from a gambling win than more affluent people and are thus more likely to take financial risks. While Shaffer and Korn suggest that psycho-economics is a powerful determinant of gambling, empirical evidence to support the theory is not fully clear.

The 2003 Nova Scotia Gambling Prevalence Study found the likelihood of having gambled over the past year

increased with annual household income, although the majority in all income brackets had gambled in the 12 months preceding the survey (Low: 85%; Mid: 89%; High 95%). For those in the highest income bracket (\$60K+), the increased involvement did not translate into greater risk but rather into higher rates of “no risk” gambling as compared to those with household incomes under \$30,000 per year (Schrans and Schellink, 2004).

Canada-wide data have historically shown a similar pattern. Gambling participation rates generally increase with household income, a trend that held for the purchase of government lottery tickets, spending at casinos and use of slot machines. Bingo was the only gambling activity studied for which there was an inverse correlation with income. In terms of actual expenditures, high-income households spent more than low-income households on gaming activities. Of note, however, is the finding that lower-income households spent proportionately more than higher income households (Korn, 2000; Shaffer and Korn, 2002). Over time this pattern may have the effect of increasing the disparity in wealth between high and low income groups, which has been shown to have a negative impact on the health of populations (Evans et al., 1994).

Analysis of the more recent Canadian Community Health Survey (Marshall and Wynne, 2003) found that Canadians with less education were significantly more likely to experience problems with gambling but didn't find a strong association between income level and gambling problems.

i. Western culture and values

Western culture has undergone tremendous change in the past 20 years as a result of various factors, for example, unprecedented freedom, a decline in the role of traditional institutions, economic globalization, rapid spread of various technologies, and dominance of neo-liberal political theory (Spooner, 2006; Schwartz, 2000; Coburn, 2004; Hamilton, 2004). Of course it is not possible to characterize these macro-level changes and factors simply; some changes, for example increased tolerance of diversity, may be beneficial to the health of the Canadian population; however, it is fair to ask whether some values such as individualism, secularism and consumerism, may have a negative effect on population health (for a discussion on these points, see Best practices for preventing substance use problems). For instance, Coburn (2004) shows that governments that have adopted neo-liberal economic

policies (such as Canada and the U.S.), have witnessed increasing levels of poverty and income disparity and poorer population health status than governments with a social democratic tradition (i.e. Scandinavian countries) that have resisted these policies.

Although no study or discussion was found in the literature, it is an open question as to whether Canadian governments would have embraced gambling and its accompanying revenues so enthusiastically if the need for new revenue hadn't been so great during the early and mid-nineties when these governments perceived themselves to be under severe pressure from economic globalization. Shaffer and Korn (2002) do identify the desire of North American governments to identify new sources of revenue without invoking new or higher taxes as one of three primary forces that have encouraged the growth of gambling on this continent (along with development of new destinations for entertainment and leisure by tourism entrepreneurs; and the rise of new technologies and forms of gambling).

6. Integrative theories of gambling problems

How the various factors discussed in this section play out in the lives of different individuals varies enormously, with some factors assuming a more primary role. Blaszczynski (2002b) brought together what he considers to be the most prominent factors associated with problem gambling and proposed three clinically and aetiologically⁵ distinct pathways for the onset of gambling problems. Because the pathways also have implications for prevention work (for example see Macdonald, et al. (2003) for a review of a school-based curriculum that gives attention to emotional factors), they are briefly described here:

- **Pathway 1:** “Normal Problem Gambler” pathway describes a person who is otherwise “normal” (free of psychiatric symptoms) but develops a gambling problem by virtue of being in an environment which endorses problem gambling, and who experiences intermittent and exciting experiences, and behavioural reinforcement.
- **Pathway 2:** “Emotionally Vulnerable” pathway describes a problem gambler who has difficulty managing stress or dealing with crisis situations; their behaviour is characterized by high levels of depression and/or

anxiety, low self-esteem and a history of poor social support and emotional neglect by parents or caregivers.

- **Pathway 3:** “Impulsive” or “Physiologically Vulnerable” pathway describes a person who has a pre-existing impulse control problem such as Attention-deficit/hyperactivity disorder (ADHD) and develops a gambling problem as a result of their impulse control difficulties.

Concerning adolescents, evidence indicates that a number of problem behaviours (e.g., tobacco use and risky use of other substances, early school leaving, mental health issues, gambling problems and precocious sexuality) share many of the same risk and protective factors. Consequently, broad models that see problem gambling within a larger range of problematic behaviours (for example Jessor's Problem Behaviour Theory, and Jacobs' General Theory of Addiction) have been proposed as useful theories for understanding adolescent gambling behaviour (Derevensky and Gupta, 2004; Dickson et al., 2002). Researchers at McGill's International Centre for Youth Gambling Problems conclude that the current theoretical and empirical evidence of common risk and protective factors across adolescent risky behaviours calls for prevention strategies that are more comprehensive and target multiple risk behaviours (Derevensky and Gupta, 2004; Dickson et al., 2002). They also conclude that there is sufficient evidence to warrant incorporating gambling into more general addiction and adolescent risk behaviour prevention programs.

Borrell and Boulet (2005), in a critique of the literature on gambling problems warn that the science behind the identification of risk factors is not completely helpful because it has the effect of removing the person from their context, and does not reflect the complex and dynamic manner in which factors play out in people's lives. It can, they suggest, contribute to an overemphasis on individual human deficit (as illness or pathology) while de-emphasizing other possible causations, such as marketing, machine construction, atmosphere creation, that are not so easily understood through typical experimental research. They underscore that the study of causality is complex, and that viewing risk patterns through a “person-in-context” lens is more helpful than simple models of causality and intervention.

⁵ Aetiology is the study of causes or origins of a problem or ill health.

They suggest this mode of analysis and thinking will inevitably have implications not only for research but also for prevention. Because population health promotion, particularly as articulated in the 1986 Ottawa Charter, emphasizes real-world environment and context (that is, where people live, work and play) in determining the health of individuals and populations, they suggest it provides a sound frame for understanding the complexity of the various factors in people's lives and for promoting the health of individuals and communities.

7. Conclusion and best advice

The many factors that appear to be linked to gambling problems need to be better understood. Longitudinal research is needed to clarify whether the various factors cause gambling problems, are caused by gambling problems, or are dependent on other variables. In the meantime, it is clear that a range of factors contribute to gambling problems, so it is critical that society's response become similarly broad. While a number of individual-level factors are at play, and individuals ultimately need to bear responsibility for their choices and behaviours, it is apparent that the immediate gambling environment and broader socio-cultural factors represent barriers to healthy choice-making.

Best advice:

2. Conduct or support further research on:

- the factors that predict gambling problems, using a longitudinal study design
- the relationship between gambling problems and socio-economic status and other determinants of health
- the role of gambling as a leisure option for various populations, particularly adolescents and older adults
- environmental factors associated with gambling problems, for instance, the effect of advertising and expanded availability of gambling opportunities, particularly on adolescents

PREVALENCE OF GAMBLING AND GAMBLING PROBLEMS

A clear picture of the prevalence of gambling problems has been elusive. Many surveys report response rates of less than 50%, rendering the findings open to question (Abbot et al., 2004). There is also evidence that people

experiencing problems with their gambling do not disclose the full extent of their problems in surveys, and indeed are less likely to be home to respond to surveys (Productivity Commission, 1999). Moreover, there is no consensus on how to define gambling problems or those at risk of gambling problems (McMillen and Wenzel, 2006). A particular challenge is developing an instrument that captures the multi-dimensional nature of gambling problems (Rossow and Molde, 2006). Nevertheless, findings from various surveys using different methodologies show strong consistency, lending credence to the findings (Abbot et al., 2004; Shaffer and Korn, 2002).

A dominant screening and surveying model, the South Oaks Gambling Screen (SOGS) distinguishes between "problem gambling" and "probable pathological gambling". The SOGS-RA is an adapted version that is often used to survey adolescent populations which distinguishes between "non-problematic gambling", "at-risk" and "problem gambling" (for example, see Poulin, 2002). Another prominent model, the DSM-IV, distinguishes between "non-problematic gambling", "problem gambling" (i.e. gambling problems that do not meet the criteria for a clinical disorder) and "pathological gambling" (i.e. a clinical disorder).

The SOGS and DSM-IV were originally developed to identify persons with gambling problems for treatment purposes in the US, but they have also been widely used to measure the prevalence of problem gambling in general populations. This led to criticism that the screens were being applied inappropriately (McMillen and Wenzel, 2006). Because the way gambling problems are defined and measured will heavily influence understanding of these problems and the nature of the efforts implemented to address them, this is an important issue. For instance, a weakness of all current screens is that they view gambling problems from the perspective of the gambler – an instrument that also accounts for the perspective of family members and others in the community would better reflect a broad public health perspective on the harms and opportunities for prevention (McMillen and Wenzel, 2006).

To build on the existing state of the art, Canadian researchers developed the Canadian Problem Gambling Index (CPGI) for both screening and surveying purposes (Ferris and Wynne, 2001). Viewing gambling problems on a continuum, the CPGI aims to distinguish between "non-problematic", "at-risk", and "problem" gamblers". The

CPGI defines “problem gambling” as gambling behaviour that creates negative consequences for the gambler, others in his or her social network, or for the community. Some population surveys use the Problem Gambling Severity Index (PGSI), which is a nine-item sub-scale of the CPGI. The PGSI distinguishes between four gambler sub-types: “non-problem”, “low-risk”, “moderate-risk”, and “problem”. Although the CPGI/PGSI will benefit from further refinement stakeholders from Canada and elsewhere consider it the best available instrument for prevalence surveys (McCready and Adlaf, 2006; McMillen and Wenzel, 2006).

1. Overall

The Nova Scotia government commissioned a study of gambling prevalence in the general adult population (19 years of age and older) in 2003 (Schrans and Schellinck, 2004):

- 89.3% gambled in the previous year
- lottery tickets were the most popular gambling activity with 44.5% purchasing tickets at least monthly
- 6.6% of adults participated in VLTs and casino gambling at least monthly, spending an average of \$3,760 in the past year and contributing about 43% of the province’s annual gambling expenditures
- among seven provinces that had used the CPGI to measure general gambling rates, Nova Scotia rates of “at-risk” and “moderate problem” gamblers were lower than the others while rates of “severe problem gambling” were similar
- about 2.5% (about 18,000 adults) reported having ever experienced problems with some type of gambling, with 56% (about 10,000) of these same people continuing to report problems with some aspect of their gambling
- men were 1.5 times more likely to score at any level of risk for problem gambling than women (8.3% versus 5.5%)
- adults at all levels of annual household income were equally likely to score “at risk+”

The Canadian Community Health Survey Cycle 1.2 included several questions about gambling based on CPGI definitions (Marshall and Wynne, 2003).

General prevalence:

- 75% of Canadians 15 and over (18.9 million) gambled in 2002
- the vast majority of gamblers in Canada (93.7%) did so without any reported problems
- lottery tickets were the most popular form of gambling (65.0% participation rate)
- playing video lottery terminals was less common (6.1% participation rate); however, it was the most likely to be associated with problems, with 25.6% of players falling into the at-risk or problem gambling categories

At-risk or problematic gambling:

- 5.7% of gamblers exhibited at-risk gambling behaviour, while 0.6% reported problem gambling
- those significantly more likely to be at risk or to have a gambling problem included men (7.8%), Aboriginal persons (18.5%), those with less education (7.6%), and weekly (14.3%) or daily (30.3%) gamblers

Compared with gamblers not experiencing problems, those with a problem had significantly higher rates of alcohol dependence (15% versus 2%), psychological distress (29% versus 9%), and family problems due to gambling (49% versus 0%) (Marshall and Wynne, 2003).

2. Adolescents

Defining adolescent gambling problems has proven particularly challenging with various instruments coming under criticism for possibly exaggerating the prevalence of gambling problems (Jacques and Ladouceur, 2003; Ladouceur et al., 2000). Consequently, while there is a consensus that adolescent populations have higher rates of gambling problems than adults (Derevensky et al, 2003; Shaffer et al., 1999; Williams, 2002), it is important to exercise caution in citing actual figures.

Shaffer and Hall (2001) found adolescent gambling problems at rates almost twice those of adults when reviewing 32 studies of the prevalence of adolescent gambling problems. In one particular study, adolescents with gambling problems preferred card games, sports betting, and playing pool (activities involving some measure of objective skill and very high perceived levels

of skill), while gamblers not experiencing problems were more likely to prefer games of pure luck such as raffles, lottery, scratch tickets, and bingo (particularly girls) (Gupta and Derevensky, 1998).

The most current data on gambling activity among Nova Scotia adolescents are from the Nova Scotia Student Drug Use Survey 2007 (Poulin and McDonald, 2007) and unless otherwise noted, adolescent figures are drawn from this survey, which used the SOGS-RA (Poulin, 2002).

General prevalence:

- 40% did not gamble for money (in any one of nine gambling activities) in the past year
- boys were more likely to have participated in a gambling activity (68%) than girls (53%)
- the most common activity was scratch tabs (38%), while Internet gambling for money was least common (5%)
- 26% of all students played on internet gambling sites for points or play money (the first time NS students were asked this question)
- student gambling participation has generally decreased between 1996 and 2007

Age of onset:

- lottery tickets are typically the first gambling experience for young people; the average age of onset among a sample of Ontario students was 10 years of age for playing scratch tickets, 11 years of age for lottery draws, and 12 years for sports lottery tickets (Felsher et al., 2004b)

At-risk or problematic gambling:

- about 3% of Nova Scotia students met the definition of at-risk gambling and 2% met the definition of problem gambling
- boys were more likely to report either at-risk or problem gambling (7%) than girls (2%)
- rates of at-risk and problem gambling did not vary greatly by grade
- rate of problem gambling did not differ significantly between 1998 and 2007
- less than 1% of students felt they needed help for their gambling

3. Young adults

Gambling activity is very prevalent in this age group in Nova Scotia; moreover rates of gambling problems are high compared to other age groups, and they have increased in recent years (Schrans and Schellinck, 2004; Schrans and Schellinck, 2006):

- the 2003 Nova Scotia Gambling Prevalence Study found young adults (under 35 years) to have the highest level of risk for gambling problems – at least twice as high as that found for adults over 35 (Schrans and Schellinck, 2004)
- a study of this population in 2006 (Schrans and Schellinck, 2006) found that the rate of risk or problem gambling (scored according to the CPGI) had increased significantly since 2003 (15.2% versus 10.7%)
- severity of risk also increased with twice as many young adults scoring at moderate to severe problems levels than was the case in the previous study
- the amount spent by gamblers experiencing some level of risk or problem had also gone up, with the 15% of adults 19-34 years who scored “at-risk+” for gambling problems in 2006 contributing about 68% of gambling expenditures by adults in this age group, compared to 41% in 2003
- VLTs continued to be implicated most often in past and present gambling problems at a rate at least three times that of any other gambling option
- those scoring “at-risk+” for gambling problems were significantly more likely than “no-risk” gamblers to have reported experiencing the following issues over the past year:
 - health problems (24% vs. 12%)
 - work problems (24% vs. 12%)
 - loneliness or increased isolation (26% vs. 11%)
 - death of a significant person (29% vs. 15%)
 - problems with alcohol use (9% vs. 3%)
 - problems with drug use (7% vs. 2%)

Researchers suggest that the youngest population of adults (those 19 to 25 years of age) are a particularly high-risk group for gambling problems (Messerlian et al., 2005). In Nova Scotia, those 19-24 years of age had somewhat higher rates of moderate or severe problems than those ages 25-34 (8.6% versus 5.8%); notably these rates jumped from 2003 (2.4%) to 2006 (8.6%) (Schrans and Schellinck, 2006).

A sub-population of young adults, Canadian undergraduate students, was surveyed using the CPGI (Adlaf et al., 2005).

General prevalence:

- 61.5% of undergraduates had bet or spent money on at least one gambling activity during the school year
- the most commonly reported activities were lotteries (51%), slots and video lotteries (22.7%), casino gambling (19%), cards and dice games (17.7%) and sports betting (10.8%), the latter being a male dominated activity (19.4% of men vs. 4.0% of women)
- reporting any gambling activity increased with the year of study; significantly more third and fourth year students (62.9% and 67.9%) reported gambling than first and second year students (57.2% and 59.6%)
- students in Atlantic universities were more likely to gamble than their counterparts (71.9% vs. 61.5% nationally)

At-risk or problematic gambling:

- 7.9% of all students were identified to be at-risk for developing gambling problems, 2.7% scored moderate problems and 1.0% severe problems
- although gambling was equally reported by men and women (62.2% of men vs. 61.0% of women), male gamblers were more likely to be at-risk for gambling problems (17.1% of men vs. 9.9% of women) and to have moderate or severe problems (10.9% of men vs. 2.2% of women)
- Atlantic students who reported gambling were somewhat more likely to be gamblers at-risk for problems (15.4% vs. 13.2% nationally)

4. Older adults

Older adults have generally been less likely to gamble and exhibit lower rates of problem gambling than younger adults (McCready et al., 2005). However, many older adults have the time and motivation to gamble, and some have limited and fixed income with less ability to recover from losses (Govoni et al., 2001). It has been suggested that older persons with gambling problems have a later age of onset, develop problems over a longer period of time, are more likely to gamble as a result of boredom, and are more likely to be slot machine gamblers (Grant et al., 2001 reported in McCready et al., 2005, p. 10).

Older adults (55 years +) in New Brunswick were surveyed in 2002 on gambling activity using the CPGI (Schellinck et al., 2002). Main findings were as follows:

- approximately 74.3% of all seniors in New Brunswick participated in at least one gambling activity within the past year
- participating in gambling activities declined significantly with age (e.g., those 75 and over were only one-third as likely as persons aged 55 to 64 years to have gambled in the past year)
- gender, marital status, education level, and annual household income were not related to participation in any gambling activities within the last year; however regular (1+ times per month) gambling patterns were significantly related to gender, age, and education with males, younger seniors and those with lower education more likely to gamble regularly

An Ontario gambling prevalence survey by McCready et al., 2005 (using the CPGI) compared gambling rates of older adults (55 years and over) with those of younger adults:

- older adults were as likely to gamble as younger adults
- among older adults, the most common gambling activities were lottery tickets (reported by 65.3% of the sample), instant win tickets (reported by 32%) and VLTs at casinos (24.1%)
- in general, older adults spent more on gambling in absolute terms, and also in terms of the proportion of household income spent on gambling
- older adults were more likely than younger adults to report more frequent purchase of lottery and instant win tickets, and were less likely to report participating in sports lotteries and games other than slots or VLTs

At-risk and problematic gambling:

- among New Brunswick adults 55 years and over, 2.8% either had or were at any risk of developing problems with their gambling behaviours; almost all of these were at “low risk”, with less than 1% at “moderate risk”, or “problem gamblers” (Schellinck et al., 2002)
- among Ontario adults aged 60 years and older, 2.0% had moderate problems, and 0.1% had severe problems with gambling (Wiebe, Single, and Falkowski-Ham, 2001)

- among Manitoba adults 60 years and older 1.6% were problem gamblers and 1.2% were probable pathological gamblers (Wiebe and Cox, 2005)

Wiebe and Cox found that, compared to non-problem older adult gamblers, “at-risk”, “moderate problem”, and “severe problem” gamblers participated in significantly more casino slot/VLT play.

A study by the Alberta Alcohol and Drug Commission (AADAC), using focus group and random telephone survey techniques, concluded that older Albertans (aged 65 years and older) were healthy and well-adjusted in regard to gambling and alcohol use, and that the prevalence of gambling problems was low in this group. Approximately two-thirds of this population gambled, mainly buying lottery, raffle, scratch, and pull tickets (Hirsch, 2000).

5. Conclusion and best advice

Although the study of prevalence would benefit from further refinement, studies consistently point to adolescents and young adults, particularly males, Aboriginal populations and those with less education as being at highest risk for gambling problems. While the prevalence of problems is lower among older adults, gambling problems within this population may emerge as an important issue simply by virtue of the increasing size of this population.

In considering the prevalence of gambling problems in Nova Scotia, some observers speculate that fairly stable prevalence figures may hide significant change at the individual level. Research reveals significant movement in and out of periods when individuals experience gambling problems (particularly among young people and those with less severe problems), suggesting that “natural recovery” (i.e. improvement without outside intervention) is not uncommon (Abbot et al., 2004; Brown and Newby-Clark, 2005; Schrans and Schellinck, 2006; Slutske, 2006).

For instance, the 2006 Nova Scotia study of gambling activity among adults 19-35 years of age found that compared to 2003, twice as many of these adults self-

identified past gambling problems as compared to 2003 (6.7% versus 3.2%), but that the percent reporting current problems had not changed (1.6%), suggesting a fair amount of movement in and out of problems (Schrans and Schellinck, 2006). Nevertheless, Schrans and Schellinck suggest that the increased risk seen among the younger age groups in earlier studies has translated into higher rates of problem gambling in Nova Scotia as younger adults moved into later life stages.

It is also noteworthy that in a given population a greater number of harms are associated, not with the population of severe cases, but with the group of gamblers with less severe problems due to their greater numbers. This “prevention paradox” also occurs with alcohol problems and implies that preventative efforts need to give priority to this population that experience harms less frequently as individuals, but collectively constitute a greater public health burden (Shaffer and Korn, 2002).

Best advice:

3. Continue to regularly conduct gambling prevalence surveys of students and general populations.
4. Study the factors contributing to gambling problems in populations found to be at greater risk.
5. Clarify factors associated with patterns of movement in and out of periods of problem gambling.
6. Give priority to policies and programs for adolescents and young adults, particularly males, Aboriginal populations and those with less education.

SECTION 4: THE PREVENTION OF GAMBLING PROBLEMS

OPTIONS FOR FRAMING POLICY TO PREVENT GAMBLING PROBLEMS

1. Public health-oriented policy

Many stakeholders argue for gambling public policy to be based on a public health foundation (e.g., Blaszczynski et al., 2004a; Korn, 2000; Korn et al., 2003; Law, 2004; Marotta and Hynes, 2003; Messerlian et al., 2004; Shaffer, 2003). The New Zealand government has employed a public health framework for its legislation on responsible gambling (New Zealand Ministry of Health, 2004). The 1999 Australian Productivity Commission explicitly rejected a medical or psychological interpretation of problem gambling in favour of a public health perspective (Productivity Commission, 1999).

A public health perspective is viewed as an important advancement because it encourages a multidimensional understanding of gambling issues. This perspective calls for attention to macro-level factors (such as income, employment and poverty) that are often otherwise overlooked in favour of more individually-oriented (e.g. biological and behavioural) factors (Shaffer, 2003; Shaffer and Korn, 2002).

In arguing for the adoption of a public health model, Shaffer (2003) proposes four guiding principles:

1. Scientific research is the foundation of public health knowledge.
2. Public health knowledge derives from population-based observations.
3. Health initiatives are pro-active (e.g., health promotion and prevention are primary while treatment is secondary).
4. Public health is balanced and considers both the costs and benefits of gambling.

Korn (2000) argues that because gambling is in the public domain in Canada, government has a special responsibility to demonstrate public accountability, and makes five recommendations for a public health policy:

1. Balance the public interest with respect to revenue generation and gambling-related harm.

2. Monitor gambling advertising.
3. Gauge the impact on quality of life.
4. Develop a research agenda.
5. Adopt a harm reduction approach.

Messerlian et al. (2004) support the view that gambling policies must balance public health interests with the economic gains of governments and industry and the entertainment value afforded to the consumer. They suggest that the public health model provides a sound conceptual basis for understanding and addressing youth gambling problems and outline four public health goals for youth gambling problems:

1. de-normalization
2. prevention
3. protection, and
4. harm-reduction

According to Shaffer and Korn (2002), a public health orientation needs to at the very least, include:

1. Healthy-gambling guidelines for the general public (i.e., similar to low-risk drinking guidelines).
2. Vehicles for the early identification of gambling problems.
3. Non-judgemental moderation and abstinence goals for gamblers experiencing problems.
4. Surveillance and reporting systems to monitor trends in gambling participation and the incidence and cost of gambling-related problems.

Referring to the prevention paradox mentioned earlier (i.e. “at risk” or people with “early stage” gambling problems greatly outnumber people with severe problems and consequently represent a greater public health burden by virtue of their greater numbers), they suggest that relatively small changes in gambling activity among the middle-risk group can result in a greater overall reduction of problems in a population than would greater changes in those with more severe problems. Because of this and the fact that these individuals may be more amenable to shifting their gambling activities through brief interventions and social policy measures, Shaffer and Korn contend that they constitute an important public health target.

2. Harm reduction-oriented policy

A number of articles in the gambling prevention literature propose harm reduction-oriented policy as a framework that is compatible with the public health model. Harm reduction or minimization has been cited as a pragmatic aim for those that are not likely to accept abstinence, such as adolescents (Derevensky and Gupta, 2004), but as has been the case in the substance abuse field, the exact meaning of the term isn't clear. For example, Smith and Wynne (2004) include measures ranging from restrictions on advertising, to education in the form of warnings on machines as harm minimization options.

It may be helpful for the gambling field to consider the distinctions between “supply reduction”, “demand reduction” and “harm reduction” proposed by Stockwell in defining options for alcohol use problems (Stockwell, 2006).

Supply reduction: strategies that are intended to achieve social, health, and safety benefits by reducing the physical availability of a particular substance (or gambling format).

Demand reduction: strategies which succeed by motivating users to consume (gamble) less overall and/or less per occasion, but don't necessarily call for abstinence.

Harm reduction: strategies that reduce the likelihood of harm to health and safety without necessarily requiring a change in the pattern or level of substance use (gambling).

The breakdown reflects the original thinking around harm reduction by the International Harm Reduction Association. It also aligns with the public health model which recognizes the need to address the agent (through supply reduction), the individual (through demand reduction), and the environmental context (harm reduction).

This conceptualization narrows the definition of harm reduction from the ways the term is most often used (i.e. either any measure that aims to reduce harm, including abstinence-oriented measures; or any measure that aims to reduce harm without insisting on abstinence) but adds important conceptual clarity.

According to Dickson et al. (2004a), a harm reduction model for youth reflects the following:

- An underlying philosophy maintaining a value-neutral stance, accepting the adolescent's decision to engage in gambling and other illicit or risky behaviours as

an inevitable consequence of typical adolescent experimentation.

- A humanistic perspective whereby the adolescent is treated with dignity, respect, and as an individual with value.
- A view of adolescents as having an active role in prevention programs.
- A broad framework within which other approaches are integrated.
- A neutral stance on the long-term goals of programming (i.e. abstinence).

3. Responsible gambling-oriented policy

The term “responsible gambling” is much used, but like harm reduction, its meaning is not completely clear. It is the preferred policy orientation of gambling operators and those sensitive to their interests. The policy implications of a responsible gambling perspective may be best represented by the Reno model, proposed by Blaszczynski, Shaffer and Ladouceur (2004) which advocates policy that addresses problems while protecting the business interests of the operators. The six assumptions of the Reno responsible gambling model are that:

1. Safe levels of gambling participation are possible.
2. Gambling provides a level of recreational, social and economic benefits to individuals and the community.
3. A proportion of participants, family members and others can suffer significant harm as a consequence of excessive gambling.
4. The total social benefits of gambling must exceed the total social costs.
5. Abstinence is a viable and important, but not necessarily essential, goal for individuals with gambling-related harm.
6. For some gamblers who have developed gambling-related harm, controlled participation and a return to safe levels of play represents an achievable goal.

The model places a premium on individual choice and the information necessary to inform sound choices. Consequently, education and awareness initiatives are favoured, and the industry is seen as having a responsibility to accurately disclose information regarding probabilities and the likelihood of winning. Interventions that shift the environment or manipulate game structures

to reduce problems are seen as unjustified intrusions by proponents, due to what they perceived at the time as a lack of an evidence base for these measures and the fact that the majority of gamblers do not have problems, and should not have their gambling experience compromised.

Offering another perspective, Hing (2003a) suggests that responsible gambling provision may be seen as a subset of corporate social responsibility policy, which is concerned with how organizations manage their social impact.

Drawing on three central constructs in this literature, she proposes a definition of responsible gambling provision as:

The conduct of gambling in a manner that meets key stakeholder expectations for socially responsible principles, socially responsive processes and socially desirable outcomes in managing the corporate social impacts of gambling (Hing, 2003a, p. 38).

Stakeholders may include community and social service agencies, gamblers (including those experiencing problems), investors, governments and special interest groups (Hing, 2003a). While responsible provision of gambling is an important issue for many stakeholders, according to Hing and Mackellar (2004) three areas hinder the resolution of issues between gambling providers and key stakeholders: lack of agreement over the issue; lack of agreement over the goals to be achieved; and lack of agreement over the means to achieve these goals.

4. Consumer protection-oriented policy

Dickerson (2003) has articulated a policy orientation that places greater onus on gambling operators than the responsible gambling model. The consumer protection orientation sees the industry as having primary responsibility to present a product that reflects governments' "duty-to-care". Dickerson contends that continuous gambling activities, particularly electronic gambling machines, lead most regular gamblers to lose some measure of control of time and expenditures. He contends this is a purely natural human response to playing EGMs as they are currently configured and that it does not reflect pathology on the part of the individual. Policy oriented to consumer protection would have as its primary principle "defending the ability of all gamblers to make rational, controlled choices" (p. 21). Dickerson suggests this can be managed very simply by removing the decision to continue gambling from the midst of the

gambling experience (and the loss of control process inherent in the gambling sequence itself) to a point in time prior to beginning the session, and to a place away from the gaming room floor.

Reflecting a consumer protection orientation, a "Halifax" model of research and policy development has been articulated by Schellinck (2004). This orientation reacts to the Reno model by arguing that:

- Gambling product design does impact on the safety of the product.
- Marketing and venue design also impact on the incidence of problem gambling.
- There is a basic conflict between marketing practices of the gambling provider and responsible gambling.
- There are gambling products and services where no amount of information will provide enough information for the gambler to make an informed choice.
- Consumers of gambling products and services should expect them to be safe by a clearly defined standard.

In contrast to the Reno model which places a premium on individual choice, the Halifax model distributes responsibility, understanding that the structure and environment of gambling activities also greatly influence the nature and extent of gambling problems. Hence the main features of the Halifax model in relation to the Reno model have been cited as (Schellinck, 2004):

- Broader in scope.
- Based on risk management principles – not just scientific method.
- Draws from many disciplines, not only psychology and medicine.
- Not primarily focused on public health; more emphasis on consumer safety.
- More active role on part of gaming supplier and government with respect to researching new products, and the effects of marketing and interventions.
- Recognizes that simply supplying information does not lead to a reasoned choice.
- Policy decisions must be made based on standards set by policy makers.

5. Conclusion and best advice

Among the various policy frameworks, the public health model best supports and guides a broad response to individual and societal gambling problems. By recognizing the range of factors that play into individual and societal gambling problems, the public health model calls for similarly broad solutions, including those that question the way gambling opportunities are presented and even how society is presently structured. Implicit in this perspective is the view that individual and population health are maximized when individuals take responsibility for their decisions and actions, and when society and governments perceive a duty-to-care and protect. In that sense, the public health model easily accommodates the consumer protection model.

The public health model receives firm empirical support from the numerous studies that together point out the importance of structural or social determinants in influencing the health of populations. Coburn's (2004) comparative study of a number of countries provides further support to social determinants research which indicates societies endorsing a "duty-to-care" in the broadest sense have healthier populations.

The public health model also derives empirical support from the alcohol prevention field, a field that closely parallels the gambling field. Research on the prevention of alcohol problems has clearly shown that public health-oriented supply reduction measures such as increased taxation and limiting hours of sale and density of outlets are more effective in reducing problems than individual-oriented measures such as media campaigns or school-based alcohol education (Holder, 2003; Stockwell, et al. 2005; Stockwell, 2006).

Best advice:

7. Invite all stakeholders to adopt a public health framework that accommodates supply, demand and harm reduction measures as well as a consumer protection orientation for preventing gambling problems in Nova Scotia.

THE CURRENT STATE OF GAMBLING PROBLEM PREVENTION

1. Challenges in designing prevention initiatives

Prevention efforts have emerged in response to concerns over the social and economic costs of gambling problems, and in recognition of the limits of treatment (evidence indicates that only 3–5% of people with gambling problems seek professional counselling) (McMillen and Wenzel, 2006). But the development of prevention initiatives has outpaced a solid evidence base; researchers and programmers concede that the development of effective problem gambling prevention programs is in its infancy (Dickson et al., 2002; Eber and Shaffer, 2000; Gupta and Derevensky, 2000; Marotta and Hynes 2003; Sharpe et al., 2005; Williams et al., 2004). As a result, there is what one observer describes as a "significant absence of credible research data" to inform and guide policy and decision making (Blaszczynski, 2002a, p. 7). The need for more research to inform policy and program development, as well as monitoring and evaluation to ensure effectiveness is clear (Abbott et al., 2004).

The uncertainty about the prevalence of gambling problems, the contributing factors and the impacts of legal gambling on society remain a fundamental impediment to arriving at evidence-based responses (Abbott et al., 2004). The way legalized gambling is structured in various countries may also be a factor. Because funding for research is generally derived from the proceeds of gambling, a fundamental conflict or bias in funded research may arise (Orford, 2005a; Orford, 2005b; Room, 2005).

2. Prevention in Canada

In Canada, governments (primarily provincial) are major beneficiaries of gambling revenue (Azmer, 2001). The commercial gambling industry earns a fee for operating a casino, for example, but it is illegal to otherwise profit from gambling unless it is for a charitable cause, government revenue or is recycled within the horse racing industry (Blaszczynski, 2002a).

As with the sale and control of alcohol products, the very significant revenue derived from gambling activity sets up the potential for a conflict of interest for governments who must also address the associated health and social problems (Blaszczynski, 2002a). Efforts to prevent

gambling problems in Canada have largely been spearheaded by the same provincial government agencies that provide services for substance abuse (Williams et al., 2004). These efforts have typically included public awareness campaigns, posters and pamphlets distributed in gaming establishments, videos on gambling problems, and presentations to high school classes or other interested groups (Williams et al., 2004).

Most provinces have established or supported agencies with mandates that include prevention and research initiatives (Blaszczynski, 2002a). Illustrative initiatives include:

- The Nova Scotia government has published and begun to act on the 2005 report, *A Better Balance: Nova Scotia's First Gaming Strategy*, a collaboration between the Gaming Corporation (NSGC) and the (then) Office of Health Promotion (Province of Nova Scotia, 2005). Prior to that the NSGC implemented the 1999 VLT Retailer Responsible Gaming Program, requiring that harm minimization interventions be programmed into new video lottery terminals (Blaszczynski, 2002a). Nova Scotia has been one of the more active jurisdictions in evaluating and implementing policies and measures to alter the structure and delivery of gambling activities.
- In Quebec, the International Centre for Youth Gambling Problems located at McGill University, is a leader in conducting research on the prevention and treatment of youth gambling problems. Loto-Quebec has collaborated with the Universities of Laval and McGill, providing funding for gambling-related research and education programs, including the Count Me Out school awareness program. Launched in 1998, the Count Me Out program provides teaching materials, including a CD-ROM and video designed for the prevention of gambling problems among Quebec's primary and high school students (Blaszczynski, 2002a).
- In Ontario, the Ontario Problem Gambling Research Centre has implemented a broad research agenda that includes studies that inform prevention design. The Centre for Addiction and Mental Health (CAMH) has worked with several partners to develop and evaluate a student curriculum (MacDonald et al., 2003). CAMH also sponsors ProblemGambling.Ca, a web site providing assistance with gambling problems. Posters on gambling problems have been placed in casinos, and a 24-hour problem gambling help-line number is printed on lottery tickets and located on slot machines (Turner et al., 2005).
- In Alberta, the Alberta Alcohol and Drug Abuse Commission (AADAC) is mandated to address gambling problems through research, education, prevention and treatment. AADAC has produced brochures and educational materials designed to increase public awareness of gambling problems and available treatment resources, including an adolescent gambling high school presentation kit and videos on gambling for high school students (Williams, 2002).

3. Prevention internationally

In the United States, all states (with the exception of Hawaii and Utah) have some form of legalized gambling; licenses are granted to private enterprises with licensing and regulations enforced by Commissions (Blaszczynski, 2002a). Many treatment programs are based on an abstinence model and therefore less effort is directed toward prevention initiatives beyond consumer information and education (Blaszczynski, 2002a). Problem gambling prevention initiatives are variably implemented across states and gambling sectors, but include self-exclusion, educational programs and responsible gambling promotion (including limitations on wager size, on the amount of money players can spend per excursion, and on where casino gaming can be offered) (Blaszczynski, 2002a). A few states have introduced gambling prevention programs into schools, including "Facing the Odds" in Louisiana (grades 5 to 8) and "Wanna Bet" in Minnesota (grades 3 to 8). However, there has been no published evaluation of most of these programs (Williams et al., 2004).

A number of industry- or government-supported organizations and research institutes have been established in the U.S. to address gambling issues. Most notable is the National Center for Responsible Gambling (NCRG), established in 1996 by the American Gaming Association (an advocacy group for casinos in the US) to help individuals and families affected by gambling problems, and provide funding for research (Blaszczynski, 2002a). Given its affiliation to the casino industry, it is not surprising that NCRG research agenda focuses on individual-level factors rather than those that lie at the structural or system-level.

Beyond North America, legalized gambling is characterized by a mixture of government-owned, government-regulated and private commercial ownership (Blaszczynski, 2002a). Problem gambling services are largely funded through

either voluntary or mandatory taxes on revenues derived from legalized gambling operations. Such funding generally flows through major academic institutions or quasi-governmental bodies (Abbott et al., 2004). For example, in the United Kingdom commercial operators are required to support treatment and educational programs (Blaszczynski, 2002a). Australia has been active in testing and implementing prevention policy aiming to affect the structure and delivery of gambling opportunities. In New South Wales, Australia, gambling is regulated by legislation that includes requirements for the provision of a range of ‘harm minimization’ measures, as well as programs for research, counselling, community education and community projects.

The prevention of gambling problems among youth has received the most attention from stakeholders internationally (Abbott et al., 2004). For example, in Australia, the Council of Australian Governments agreed in 2000 that education programs on gambling problems should be developed for school-aged youth (Glass, 2002). School programs include “Don’t Bet on It” in South Australia for ages 6 to 9 and “Gambling, Minimising Health Risks” in Queensland for levels 5 and 6. No published evaluation of these programs exists (Williams et al., 2004), and very little empirical evidence exists to guide the prevention of problematic gambling among youth (Dickson et al., 2002).

4. Conclusion and best advice

Demand reduction activities (media campaigns, information dissemination, school programs) appear to have dominated problem gambling prevention activity in this country and elsewhere. There is no empirical reason for demand reduction activities to be given more attention than supply and harm reduction measures – in fact as later sections indicate, the evidence largely favours these latter approaches. Demand reduction measures may be more common because they are less threatening to the gambling industry and less controversial than supply and harm reduction measures. Nova Scotia and Australian jurisdictions are notable exceptions, having tested and implemented supply and harm reduction oriented prevention policies.

Best advice:

8. Ensure that supply and harm reduction policies are a part of the discourse among stakeholders (along with demand reduction measures) when considering problem gambling prevention options and priorities.

EVIDENCE SUPPORTING PREVENTION MEASURES

According to the definitions for supply, demand and harm reduction proposed by Stockwell (2006), the problem gambling prevention literature is dominated by demand reduction activity (e.g., educational and public awareness initiatives). Perhaps because they contain revenue implications for governments, supply reduction measures are less prevalent. However, examples include moratoria or reductions in VLT numbers in several provinces including Nova Scotia (Azmer, 2005), restriction on gambling hours (Corporate Research Associates, 2005), and efforts to enforce underage gambling laws. Operating from a “public health” or “duty to care” orientation, some argue that government policy needs to give greater attention to supply reduction measures (Dickerson, 2003). According to the definitions proposed by Stockwell, examples of harm reduction measures would include restrictions on high value bill acceptors, bet size and alcohol consumption during gambling activity. A number of modifications to the structural characteristics of electronic gaming machines or the immediate gambling environment have been evaluated. These have various aims – to reduce either time or money spent or to increase personal control – but don’t necessarily require a person to gamble “less” in one sense or another, so may also be viewed as harm reduction measures.

Research has shown that broad health promotion policies and programs that address basic factors (e.g. income, quality jobs, family cohesion, school engagement) linked to a number of health and social problems (e.g. substance abuse, delinquency, early sexual activity, gambling) can potentially reduce the incidence of these problems without specifically focusing on them. Although no evidence was found to support the link between health promotion activities and gambling problems, problem gambling prevention stakeholders need to consider aligning with others seeking to promote the overall health of populations in their district. To the extent those efforts are successful

they may well serve to prevent gambling problems. For a discussion on Health Promotion see the report Best practices for preventing substance use problems in Nova Scotia.

The following review of evidence pertaining to the prevention of gambling problems distinguishes between supply, demand and harm reduction measures. Another common distinction is between broad universal prevention directed to whole groups or populations, and targeted prevention directed to those who possess relevant risk factors or who gamble at high-risk levels. For the most part, gambling problem prevention to date has been universal in nature. Two targeted prevention measures have received evaluation attention – self-exclusion and brief intervention – and will be reviewed in the supply reduction and demand reduction sections respectively.

1. Supply reduction measures

Measures to reduce the supply or availability of gambling activities have only rarely been tested or instituted, likely due to their potential for reducing gambling revenues.

a. Reduced hours of play

Among several measures taken by the Nova Scotia Gambling Corporation to reduce harms associated with VLT gambling in recent years was a restriction on the hours of play for VLTs as of July 1, 2005 (Corporate Research Associates, 2005). The initial impact (first three months) of requiring VLTs to cease play at twelve midnight was assessed by surveying a representative sample of adults as well as a sample of current VLT players. The measure was implemented because in previous research problem gamblers were found to account for 40% of all regular after-midnight VLT players in the province. Initial findings appeared to support the rationale because 18% of all problem gamblers decreased their spending due to the time change (compared to only 2% of non-problem players). Most gamblers did not shift their play so this reduced level of activity was roughly estimated to have resulted in a 5.1% to 8.7% loss in net revenues. However, public support for this change was high; indeed, the players with the highest risk profile were the most supportive of the reduction in hours. These positive results bear monitoring to determine whether they are sustained over the longer term.

b. Reduced supply of gambling machines

In addition to the above measure, the Nova Scotia gambling strategy (Province of Nova Scotia, 2005) also included a reduction in the number of VLTs by approximately 30%, from 3,234 to 2,234. The impact of this measure alone was not reported on; an assessment of the impact of a bundle of VLT-focused measures that included the removal of VLTs, reduction of hours, as well as two harm reduction measures (disabling of the stop button feature and reduction in speed of play) found these measures to be associated with broad reductions in self-reported time and money spent on VLTs, with problem gamblers most affected. According to VLT users, these particular supply reduction measures had less impact on their reduction of gambling activity than the harm reduction measures (Corporate Research Associates, 2007).

Australian states have implemented legislation intended to reduce access to EGMs (VLTs). For example, the Gambling Legislation (Responsible Gaming) Act in Victoria (2000) restricted the number of EGMs in disadvantaged communities. Showing effectiveness in reducing harm as a result of this measure proved complex and ultimately not possible. The study authors felt that, among other problems, their criteria for availability – the number of gaming machines per adult resident in a local area – was too simplistic. Gambling accessibility has a number of dimensions that can vary considerably from one location to the next that also need to be considered when investigating availability (e.g. the proximity of venues to community facilities, venue marketing strategies, convenient travel routes and parking facilities) (McMillen and Doran, 2006).

c. Measures to limit youth access to gambling

It makes sense to try to limit youth access to gambling but current evidence suggests that youth have easy access to many gambling opportunities. For example, while participation in provincially regulated gambling venues in Ontario is restricted to individuals 18 years and over for lottery playing and bingo, many underage youth report few if any difficulties in purchasing lottery tickets (Felsher et al., 2004b). In their study of 10-18 year old youth, Felsher and colleagues found that 74% reported gambling for money in the past year, with 21% having gambled once a week or more. Playing the lottery was the most popular gambling activity, with 17% of underage youth reporting playing the lottery within the past week and 39% doing so

within the past month.

Messerlian et al. (2004) suggest that “increasing the age of first exposure to gambling participation by limiting the availability of gambling products and venues is a necessary goal” (p. 74). Although there is a general perception that age restrictions to purchase tickets will discourage gambling among underage youth, the findings of the Felsher et al. study suggest that stricter enforcement of existing laws is required to effectively prevent the potential harm associated with such levels of gambling. Although no studies were found on the effectiveness of underage gambling laws, the evidence base for similar laws restricting alcohol sales to minors is strong, when the laws are enforced (Stockwell, 2006).

d. Voluntary self-exclusion programs

The intervention directed to persons with gambling problems that has received the most attention is voluntary self-exclusion from casinos or other gambling venues of persons who perceive that they have a gambling problem (Blaszczynski et al., 2004b). Individuals who believe that they have a problem with gambling enter into an agreement to be banned from entering specified gambling venues, or to be removed from those venues. The ban may be permanent or for a limited time. (Blaszczynski et al.).

The first gambling self-exclusion program was initiated in Manitoba in 1989 coinciding with the opening of Canada’s first permanent casino; similar programs were introduced between 1993 and 2000 in all provinces with casinos: British Columbia, Alberta, Saskatchewan, Manitoba, Quebec and Nova Scotia (Blaszczynski et al.) Self-exclusion programs have also been introduced in Europe, Australia and several US States. In most cases, self-exclusion is voluntary; however in Europe relatives may initiate such exclusion.

Self-exclusion provides an immediate opportunity for persons with gambling problems to limit further financial loss by being refused direct access to gambling venues, and demonstrates a degree of acceptance by individuals that their gambling has become problematic. The process can provide a gateway and referral pathway for treatment (Blaszczynski et al.).

Voluntary exclusion has been available in Nova Scotia since 1995. Individuals may obtain registration forms from the Nova Scotia Alcohol and Gaming Authority (NSAGA)

offices or website, the Gaming Corporation, and casinos in Halifax and Sydney. Nova Scotia is the only province that requires a hearing for reinstatement. Between 1997 and 2002, 49 requests for reinstatement were approved, 22 were denied, and 8 were adjourned or rescinded for various reasons (Nowatzki and Williams, 2002).

A process evaluation of a VLT self-exclusion program was published by the Nova Scotia Gaming Corporation (Schrans and Schellinck, 2004). The purpose of the test was to determine retailer identification rates and compliance by users. The authors found that over the 3-month period, VLT retailers were unable to sustain even modest levels of success in identifying and reporting on participating players. Lack of compliance of the retailers was less of an issue than their inability to recognize and accurately report on program participants. The report concluded that detection of “excluded” players through staff recognition was not effective and that sponsors should explore other options for player monitoring, such as player card technology or “restricted access” gaming areas (Schrans and Schellinck).

Several studies have examined the effectiveness of self-exclusion programs. Ladouceur et al. (2000) studied the characteristics of individuals who had “self-excluded” from a Quebec casino. Almost the entire sample of 220 individuals scored as probable pathological gamblers according to the SOGS. In general, the program was found to be useful to many gamblers who needed assistance but who were not ready to seek professional help. Significantly, 30% of the participants completely stopped gambling once enrolled in this program, based on self-report. Participants offered a number of suggestions for improving the program, including more publicity and providing professional help and follow-up at the point of commitment to the program (e.g. being asked at the time they join the program if they would like to receive a phone call from a professional).

A report prepared for the Gambling Research Panel in Australia focused on the effectiveness of the self-exclusion programs operating in Victoria (O’Neil et al., 2003). The study included face-to-face interviews with self-excluded gamblers, data requests regarding numbers of patrons who chose to self-exclude, a survey mailed to venues, interviews with stakeholders, and a literature review. The study found that these programs had a low utilization rate, and were seen as having little or no effect on gambling problems overall. In addition, self-exclusion was found to be

very difficult to enforce and received inadequate industry support, contrary to the expectations of self-excluded patrons, counsellors, the media, and the community.

In a paper providing advice to industry, treatment providers, regulators and the community, Blaszczynski et al. (2004b) suggested a new model for self-exclusion to address the reported inadequacies of current programs. They argue that a misunderstanding of the roles and responsibilities of the industry and the individual in self-exclusion often results in dissatisfaction, resentment and criticism of the program. The current system, in their estimation, is hampered by a focus on external control, in which individuals are active in initiating the program but, once initiated, become passive, as responsibility shifts to gambling venues to detect possible breaches.

They propose a strategy shift – from a punitive approach to one where the point of commitment to self-exclusion is taken as an opportunity for education and access to various services such as counselling, stress-management and problem-solving training, assistance with financial management, and referral to self-help groups. Implicit in this approach is a move away from a detection-based enforcement model, to an approach promoting greater responsibility on the part of both the individual and the venue.

Individuals, when committing to a self-exclusion program, are usually in a state of personal crisis. It is a point of heightened motivation that signals a readiness for personal change that is more likely to be sustained if well supported. To maximize the opportunity, it has been proposed that self-exclusion programs need to have ready access to professional counsellors and a range of referral options. They need to be well promoted and take pains to avoid reinforcing stigma around gambling problems – a sense of shame has been found to be a barrier to seeking help for gambling and substance use problems (Schrans et al., 2000; Poole and Isaacs, 1999). The level of motivation reflected in a commitment to a self-exclusion program may be loosely analogous to that displayed by young people found in emergency ward settings due to alcohol-related injuries. Brief, motivational interventions in those settings have been found to be effective in instigating sustained change among these individuals (Spirito et al., 1999).

Upon reviewing the state of the international literature on self-exclusion programs Nowatzki and Williams (2002) offered the following recommendations to increase

utilization and effectiveness and to serve as bases for further research:

1. Mandatory promotion of the self-exclusion program.
2. Irrevocable contracts and a minimum ban length of 5 years.
3. Jurisdiction-wide programs administered by the jurisdictional regulatory body.
4. Extending exclusion to all gaming venues and restricting all gambling to gaming venues.
5. Computerised identification checks for enforcement of self-exclusion contracts.
6. Penalties for both venue and gambler upon violation of the contract.
7. Optional counselling and a mandatory gambling education seminar prior to reinstatement.
8. Increased training and education of casino employees.

It is important to bear in mind that self-exclusion programs attract only a very small proportion of gamblers experiencing problems (Nowatzki and Williams (2002) estimated .4% to 1.5% of problem gamblers in Canada use self-exclusion). It is possible that with changes as proposed above self-exclusion programs could become better subscribed; nevertheless these initiatives need to be seen as just one element of much more comprehensive efforts.

The Saskatchewan Gaming Corporation's casino iCare program is an example of a more comprehensive approach. Chief among a range of measures are broad staff training and player tracking software. The software allows casino operators to identify players displaying high risk gambling behaviors, providing a basis for trained staff to start a dialogue with players about their gambling. The player tracking data provides a basis for ongoing monitoring and evaluation of the program which will be of interest to a range of stakeholders (Saskatchewan Gaming Corporation, 2006).

e. Measures to restrict Internet gambling

As a result of concerns over the effects of Internet gambling, the U.S. Unlawful Internet Gambling Enforcement Act (2006) makes it a crime to accept or facilitate funds for unlawful Internet gambling from U.S. citizens (i.e. it targets online gambling operators, not

participants in online betting or wagering). Some forms of Internet gambling, such as horse racing, lottery, and fantasy league games, remain legal. The legislation may have the effect of reducing gambling activity and problems among U.S. citizens but it is too early to evaluate. Some concern has been expressed that the legislation may have the unintended effect of pushing online betters to unregulated or disreputable web operators that attempt to sidestep the law (Shaffer, 2007).

f. Conclusion and best advice

The evidence base for supply reduction measures is slender because few studies have been mounted. However, there is a broad consensus among researchers that increased availability of gambling opportunities results in an increase in gambling problems and Nova Scotia-based research is suggesting early promising outcomes and solid public support for measures to restrict availability. Moreover, forty years of research in the field of alcohol policy (which bears many similarities) has demonstrated that supply reduction measures tend to be the most effective. Measures that restrict supply remove some of the burden from demand reduction initiatives (which are costly and have generally shown limited effectiveness) to prevent problems. Measures well supported by alcohol research that bear some relationship to the gambling field include (Holder, 2003):

- Enforcement of purchase age laws.
- Operator codes of conduct or responsible service, when supported by adequate enforcement.
- Restrictions on outlet density.
- Community action on alcohol for structural policy change (e.g. reducing access, increasing enforcement).

Experience from the alcohol field suggests these measures tend not to be well accepted by the public unless there is a clear understanding of the relationship between supply of the product and problems that arise. This understanding appears to have been in place among Nova Scotians concerning VLTs. Implicit in these measures is the view that effectively reducing problems (and their costs to society) may entail some reduction in economic benefits associated with legalized gambling activities.

Although direct research evidence was not found to support this contention, problem gambling prevention stakeholders need to consider engaging with others to promote population health, as these efforts may well impact on the incidence of gambling problems (for related discussion, see the companion report *Best practices for preventing substance use problems*).

Best advice:

9. Conduct and monitor research on the links between the supply of gambling opportunities and gambling problems.
10. Continue to monitor the impact of existing provincial supply reduction measures.
11. Test other supply reduction measures, viewing them as essential components of a broader prevention strategy.
12. Through active public education and community action, develop a strong “health literacy”⁶ on the link between gambling availability and problems among Nova Scotians.
13. Problem gambling prevention stakeholders need to align with others seeking to promote the overall health of populations in their district.

2. Demand reduction measures

a. Media-based initiatives

Media-based initiatives can comprise a range of options, from broadly distributed print literature, signage and broadcast advertisements based on social marketing principles, to warning messages delivered to gambling participants. No rigorous outcome studies of media-based initiatives were found.

i. Social marketing campaigns

Najavits et al. (2003) studied the effectiveness of a universal media campaign aiming to increase awareness of problem gambling signs and available resources for help. The campaign targeted adults aged 18 to 54 through various media including radio, billboards, brochures, newspaper advertisements, posters, and items such as

⁶The ability to access, understand, evaluate and communicate information as a way to promote, maintain and improve health in a variety of settings across the life-course.

pens and T-shirts. A pre- and post-campaign telephone survey of 800 randomly selected Indiana residents was conducted to evaluate the impact of the campaign. Most respondents had not seen or heard the ad, and no significant differences were found on pre- and post-campaign questionnaires. However, the few respondents who had seen the ad reported that it increased their knowledge of gambling problems, suggesting that advertising does hold promise in educating the public about gambling problems. While the authors conclude that the advertising campaign did not appear to have any demonstrable impact overall, they suggest that the need for future advertising campaigns and research to evaluate their impact remains strong, and that future advertising campaigns may benefit from a more targeted approach, as well as the use of more powerful media such as television.

YouthBet (www.youthbet.net) is a Canadian interactive multimedia website that uses a public health approach to prevent gambling problems in youth. The goals for YouthBet are: to promote informed and balanced attitudes, behaviours and policies towards youth gambling; to prevent youth gambling-related problems; and to protect at-risk youth from gambling-related harm (Korn et al., 2006). The website was designed by youth for youth, beginning with focus groups, followed by a roundtable of young people, and finally a working group who developed and designed the look, feel and content of the site. Subsequently 34 youth participated in usability testing of the site. These participants indicated that they liked the interactive way gambling information was presented in realistic games and quizzes, and that they would return to the site and would recommend it to a friend if they were having a problem with gambling.

Researchers with the International Centre for Youth Gambling Problems and High Risk Behaviour at McGill University in Montreal have investigated the usefulness of media campaigns for this population. In a review of the literature on drug, alcohol, and tobacco use prevention media campaigns, Byrne et al. (2005) examined 25 health communication programs for their applicability to youth problem gambling. Of the 25 campaigns that were analyzed, 12 addressed tobacco use, 7 addressed alcohol use, and 6 addressed drug use. Each was analyzed in terms of campaign goals, target group, campaign duration, message channel and vehicle, message content, outcome, exposure, and reach. The authors found that further research and rigorous focus group testing is required to

determine which messages are most meaningful to youth as well as to identify media use patterns and preferences among different youth (i.e. by age, gender, culture, and levels of engagement in gambling activities), but concluded that a youth gambling campaign could be an effective strategy to reduce youth gambling problems. Specific recommendations included identifying negative health effects and risks associated with gambling, de-normalization strategies, giving attention to industry manipulation messages, and targeting different age groups.

Researchers from the McGill Centre (Messerlian and Derevensky, 2006) conducted a qualitative study to identify campaign strategies used in the prevention of other health compromising behaviours to determine their applicability to the context of youth gambling. The study involved 30 focus groups in nine participating schools, consisting of 175 participants aged 12–18 years. Focus group participants identified the types of messages that would be useful in a youth gambling social marketing campaign based on their exposure to existing prevention campaigns. Participants were highly critical of campaigns that focused primarily on the negative and harmful aspects of the behaviour. Furthermore, campaigns employing a “don’t do it” approach were viewed unfavourably, as were those using a de-normalization approach (contrary to the recommendation by Byrne et al. (2005) above and the popularity of this approach in tobacco prevention), except perhaps among younger adolescents.

Recommended tactics included presenting the extent to which the government and industry profit from gambling; and using real-life stories of adolescents that have been affected by gambling problems. The vast majority of participants agreed that television should be the primary method to reach the largest audience, followed by radio. Most felt that gambling prevention advertisements on the Internet would be ineffective.

ii. Warning messages at gambling venues

Floyd et al. (2006) studied the effectiveness of warning messages in the context of roulette gambling in a laboratory setting with 120 undergraduate students who used imaginary money that could be exchanged for a prize drawing. Participants were randomly assigned to both warning message and control groups. Participants in the warning-message group received an educational session on common irrational beliefs among gamblers and, while

playing roulette, viewed brief messages that addressed those beliefs. In the control condition, participants received an educational session on the history of roulette but no warning messages.

The warning messages drew insights from the communication literature on brief messages (e.g., effective messages are noticeable, memorable, include variations on the message, and present both risks and ways to avoid them). The warnings were brief, simply written and focused on irrational beliefs. They were prominently presented and continued play required active removal of the message. As predicted, participants in the warning-message condition reported significantly fewer irrational beliefs and demonstrated less risky gambling behaviour than those in the control condition. Although this study was not conducted in a real-world setting, players indicated that the messages did not detract from their experience.

The Safe@play Risk Quiz is an on-line self-assessment tool designed to provide users with an awareness of risk factors for gambling problems and to enable them to assume control of their gambling. The quiz can be placed on video lottery terminals, video kiosks in gambling venues, and interactive slot machines. An initial evaluation (Horton et al., 2001) found that the quiz was effective in alerting people to risk factors, though awareness tended to diminish over time. However, the authors note that the 306 university undergraduates involved in the study were not regular gamblers and were exposed to the quiz only briefly. They suggest that people exposed to this tool more regularly at casinos might benefit more, and called for further testing of the quiz in a real casino setting.

Through a number of studies, Ladouceur and colleagues have shown that many gamblers have a poor understanding of the randomness of events, and tend to forget what they do know under game conditions. They point out that a reminder of the “principle of independence of events⁷” during the game could discourage the development of illusions of control created by a game’s intrinsic characteristics. With a randomly assigned sample of 31 occasional gamblers, Benhsain, Taillefer and Ladouceur (2004) studied the effect of this type of reminder presented prior to a game of American roulette. The reminder reduced erroneous perceptions and weakened the motivation to pursue the game among

“experimental” gamblers. Ladouceur and Sevigny (2003) tested the effect of a similar brief reminder message inserted into VLTs every 15 games, in comparison to a condition where just the word “Break” appeared or a third condition where play was continuous. Those playing on machines with no break played more games than the other two, but counter to expectations, the Break and Message groups played about the same number of games.

b. Universal school prevention programming

Schools are viewed as having the potential to play an important role in preventing gambling problems (Katzman, 2002); however, very few school-based prevention programs exist, and even fewer have been evaluated (Williams et al., 2004).

Several reasonably rigorous studies of problem gambling school programming were found, ranging from elementary school to university level. School programs tended to focus on correcting the cognitive errors underlying gambling fallacies, providing information on the nature of random events and on gambling odds. Such programs have been found to be somewhat effective in increasing students’ knowledge at least in the short term, but are not generally able to effect even short-term change in actual behaviours (e.g., decision making and coping skills), or in some cases, attitudes toward gambling. Blaszczynski (2002a) argues that long-term study will be required before the value and impact of educational programs, particularly those aimed at informing students of the mathematical and statistical properties of odds and potential hazards associated with excessive gambling may become apparent (however, if short-term effects are not seen, longer-term effects are unlikely).

In an Alberta study (Williams, 2002), a school-based problem gambling prevention program was designed and tested among high school students (primarily Grade 10). Schools were randomly selected to receive the program, taught in Alberta’s Career and Life Management (CALM) class.

The curriculum combined promising elements of substance abuse prevention programs with key gambling-specific knowledge and skill development:

- Information concerning the nature of gambling and problem gambling.

⁷When a random event last occurred has no bearing on whether it is more or less likely to occur soon.

- Exercises to make students less susceptible to common cognitive errors.
- Information on the true odds involved in gambling activities and exercises on how to calculate these odds.
- Teaching and rehearsal of decision-making and social problem-solving skills.
- Teaching and rehearsal of coping skills.

The program's process was viewed as important as the content. This included an entertaining and engaging delivery – all lessons were highly interactive and involved group discussions, games, and small group exercises. The format emphasized skill learning and application of knowledge, and targeted students' social environment.

Evaluation of students at the end of the program and three months later found significantly increased knowledge of gambling, significantly more negative attitudes toward gambling, and significantly fewer cognitive errors. However, no significant decreases in the amount of time spent gambling were evident. Improved ability to calculate gambling odds was found at the end of the program, although at the three month follow-up this effect was not significantly different from the control group.

Another Canadian school-based program focused on the nature of random events and prevention of cognitive error. Over a number of years and phases, Macdonald et al. (2003) developed a prevention curriculum with a strong theory base consisting of six lessons and including group activities, handouts, a resource text, overheads, an interactive CD-ROM and a VHS tape. A sample of schools in Ontario was randomly assigned to either control or experimental conditions. Students in experimental schools received the prevention curriculum over 6 weeks, while control schools received no instruction on problem gambling.

The study group hypothesized that school prevention programs need to give attention to erroneous thinking as well as to coping and self-monitoring skills. The role of emotions (that is, being caught up in the moment) in contributing to erroneous thinking has been identified as an important issue (Benhsain et al., 2004; Delfabbro et al., 2006) and was incorporated into the program. Based on two evaluations of the program, they concluded that students can be effectively taught about the utility of coping skills and their understanding of random events and critical thinking skills can be improved, but that

more work needs to be done in developing an effective intervention to teach students about self-monitoring.

Gambling-related cognitive errors were again the focus of a randomized control trial that targeted both university and high school students (Williams et al., 2004). In the first part of the study, a 10-session program was delivered to 470 university students. The intervention was designed to improve knowledge of true gambling odds and the impossibility of winning in the long run.

At 6-month follow-up, students in the experimental group showed significantly improved ability to calculate gambling odds as well as awareness of and resistance to cognitive errors. However there was no significant decrease in their likelihood of gambling or of having gambling problems, or in the amount of time or money spent gambling. There was also no significant change in their attitude toward gambling. The fact that knowledge gain does not necessarily translate into behaviour change should not be surprising as this is well accepted in drug education research and practice (Tobler and Stratton, 1997; Tobler, 2000).

In the second part of the study, a 5-session program was delivered to high school students (grades 9 to 12) at several sites in southern Alberta. At least one school in each school district served as a control school, and comparisons between intervention and control schools were made at baseline and 3-months following the end of the intervention. The program was offered in the Career and Life Management (CALM) class in the senior grades and Health classes in grade 9.

The program had similar goals to the first part of the study, aiming to improve students' knowledge of gambling and problem gambling, reduce the errors in thinking that underlie gambling fallacies, and improve generic decision/problem-solving skills and general coping skills. Program delivery featured an entertaining style, a strong emphasis on skill development and application, concerted intensity and duration and a focus on the social environment of the students.

As with the university-level study, the intervention proved effective in significantly improving students' knowledge of gambling and problem gambling as well their awareness of and resistance to gambling fallacies. However, no apparent improvement in decision-making or coping skills was found. Unlike the university project, high school students receiving the program significantly reduced the

amount of time and money they spent gambling, and reported a negative shift in their attitude toward gambling. Because this article reports on data from only one-third of the students, the findings regarding behaviour change, while very encouraging, should be viewed as preliminary (Williams et al.).

Given the challenges in effecting knowledge, attitude and particularly, behaviour change, universal single-session interventions should be viewed as potentially useful only in the context of larger initiatives. Canadians have tested the value of a video format with populations of elementary (Lavoie and Ladouceur, 2004) and middle school students (Ferland et al., 2002). The video format was viewed as an effective means of attracting students' attention and interest, as well as an easy to use and inexpensive tool for providing standardized information.

The video tested by Ferland and colleagues was designed to correct misconceptions and increase knowledge about gambling, and was tested on 424 students in randomly assigned grade 7 and 8 classes. The study found that the video significantly increased students' knowledge about gambling and corrected their misconceptions at post-intervention. The video plus a 20-minute lecture/activity session rendered the best results.

The same video was the subject of a similar study of 273 students in randomly assigned grade 5 and 6 classes (Lavoie and Ladouceur, 2004). The effectiveness of the video was compared with the video supplemented by discussion. The video was found to significantly increase gambling knowledge and decrease errors in thinking. Unlike the Grade 7/8 study, the additional discussion did not add to the effect of the video. While these studies provide encouraging results, it will be important to test the durability of the findings (particularly behaviours) over a longer period (i.e. a year or more following the program).

c. Universal prevention programming for older adults

Older adults form a unique group in relation to gambling in that they have ample time and motivation to gamble, but often have limited resources, fixed incomes, and little or no opportunity to recoup financial losses (Govoni et al., 2001). A Canadian study used a participatory

action research (PAR)⁸ approach to addressing gambling problems among older adults (55 years and over). Data were gathered through a telephone survey of 335 randomly selected persons, interviews with 10 key agencies and community organizations, and eight focus groups (8-10 members each) consisting of older adults who gamble (including those who have experienced problems) and service providers. In the second stage of the study, 24 community members with representation from the above groups were brought together and prepared the following recommendations for the prevention of gambling problems among older adults (Govoni et al.)

1. Utilize a wide variety of sources of information, such as TV, radio, newspapers, senior's magazines, shopping malls, churches, banks, and financial advisors to present information on gambling problems.
2. Take the focus off problem gambling and instead provide such information as how to gamble safely, and personal interest stories of people who gamble, including those who have experienced problems.
3. Since excessive gambling appears to be the result of situational factors, such as boredom, loneliness and depression, programs designed to address these issues should also include the prevention of problem gambling.
4. Develop a range of educational materials for the community to educate doctors, lawyers, community health care providers, financial experts, social service providers, media etc.; these educational aids will enable a wide range of service providers to be aware of and address the issue.

In Alberta, the Alberta Alcohol and Drug Commission (AADAC) conducted an exploratory study of gambling in relation to Albertans aged 65 years and older (Hirsch, 2000). The report concludes with the following recommendations relating to problem gambling prevention among older adults:

1. Explore opportunities to enhance existing problem gambling awareness campaigns with messages targeted at older adults.
2. Problem gambling awareness messages should be targeted to the 'key influencers' identified by older adults.

⁸ Systematic inquiry, involving close involvement of those affected by the issue being studied, for the purposes of education, taking action or effecting social change.

3. Explore opportunities to build the capacity of older adults to address problem gambling among themselves.
4. Explore research opportunities that focus on learning more about how and why older adults develop gambling problems.
5. A range of prevention and intervention strategies, including collaborative initiatives, should be developed to address the diversity of the older adult population. In addition, gambling trends among this population should be monitored.

d. Brief interventions for at-risk or low severity problem gamblers

Interest in the use of brief interventions to address gambling problems exists (Hodgins, 2005), but few empirical studies were found. Two studies focusing on brief, cognitive-behavioural interventions⁹ found promising results, but both require more rigorous testing for reliable data.

Robson et al. (2002) conducted a study of Gambling Decisions, a program designed as a brief cognitive-behavioural treatment program for early stage problem gamblers, offering clients a choice of goals between control and abstinence. The goals of the program were to reduce the number of gambling sessions, time spent gambling, and money lost gambling; and to reduce the problems encountered by participants in their home, workplace, and community. The program was designed to be completed in 6 weeks.

The program was advertised via flyers and posters distributed to health and social agencies and gambling venues, news releases sent to local media, and paid ads placed in local newspapers. During a three month recruitment period, 223 individuals called the Gambling Decisions program line; 117 people (52%) were eligible and enrolled in the program, but 38 clients never attended, or attended only once, leaving 79 actual participants in the program. No random assignment to treatment format was done; rather, participants were given a choice of either a self-help plus or group format intervention and a goal of either control or abstinence (i.e. no control group was used).

Four questionnaires were administered: immediately prior to the program, immediately after the program, at 6 months, and at 12 months. Results of this trial suggest that controlled gambling can be an effective treatment option for early stage problem gamblers. Significant reductions were observed in time spent gambling and in money lost gambling. Participants also reported significant reductions in everyday life problems related to gambling after completing the program. While the results are suggestive, more rigorous study will be needed to confirm the effectiveness of the intervention.

Takushi et al. (2004) developed and tested the feasibility of a one-session intervention for college students at risk for gambling problems. The intervention combined cognitive-behavioural skills-training and motivational interviewing, including personalized normative feedback, cognitive correction, discussion of gambling consequences, and relapse prevention techniques.

A sample of 302 students aged 18-21 (recruited via flyers, campus newspaper ads, and an introductory psychology course) were screened using the SOGS; of these, 32 were identified as at risk for problem gambling, and 28 were randomly assigned to experimental or assessment only control groups. The qualitative data in this study suggest that a brief intervention among university students is feasible and may reduce high risk gambling. Recruitment of at-risk participants to the study was successful in this setting, all participants completed the intervention, and students responded positively to the style and content of the intervention. While showing promise, outcome analysis of behavioural change over an extended period will be required to determine the effectiveness of this approach.

Investigation of the effectiveness of physicians in providing brief advice to persons with gambling problems is warranted. There is reasonable evidence that physicians can be effective providing brief interventions on alcohol problems (Room et al, 2005). In Nova Scotia, family doctors are accessed as often as designated problem gambling services by persons with gambling problems, suggesting a role for family doctor offices/GP clinics as a point of information dissemination (Schrans and Schellinck, 2004) and brief advice.

⁹ A therapeutic approach that combines the cognitive emphasis on the role of thoughts and attitudes in influencing motivations and response, with the behavioural emphasis on changing performance by giving attention to reinforcement and reward.

e. Conclusion and best advice

The empirical evidence base for demand reduction measures is limited. Broad media campaigns have been discussed in the problem gambling literature but no rigorous outcome studies were found. While social marketing through mass media is a potentially powerful vehicle for effecting changes in the overall environment and possibly, in problematic behaviours, the evidence in support of stand-alone health promotion campaigns is not strong, particularly for campaigns targeting addictions (Snyder et al., 2004). A central problem for health-related campaigns is a lack of financial resources to enable the message to be sufficiently “heard” by the target audience. More promising are localized media campaigns in support of community action; particularly so when the aim of these campaigns is to change attitudes (e.g. acceptance of a policy change), which may be more feasible than behaviour change.

Messages presented on electronic gambling machines show promise but need to be further evaluated in real-world settings. One question to be answered is how best to balance consumers’ need for information at a point of emotional vulnerability with their enjoyment of the gambling experience.

School-based educational programs have seen limited research but are moving in a promising direction by combining gambling-specific information with related skill development. A challenge in the current environment is to find time in the curriculum for problem- or issue-specific programs. More research attention needs to be given to programs that take a broad approach to problematic social behaviours that include attention to gambling. The school-based programs considered most promising are those that imbed curriculum into a comprehensive approach that also gives attention to the school environment and services, and those that do not necessarily call for abstinence. These may be referred to as harm reduction approaches by some – Stockwell (2006) suggests that because these programs encourage students to change their patterns and reduce their consumption (e.g. avoid binge drinking, or avoid spending too much money or time on gambling) they may be more accurately termed demand reduction programs¹⁰.

Research and practice directed to gambling among older adults needs to reflect good design principles – that is, it needs to engage the target group and see this population as their own best resource.

Brief interventions for gambling problems have seen some research interest, but there is a need to further explore this method shown to be effective in the alcohol field.

Other evidence-based or promising demand reduction strategies in the alcohol field that may have some application to gambling are low-risk drinking guidelines, family skills programs and multi-component community action strategies (see Best practices for preventing substance use problems).

Best advice:

14. Test the effectiveness of problem gambling prevention social marketing, ensuring that the tested campaigns are well resourced, focused and supported by community-based activity.
15. Test the effectiveness and acceptability of venue- or machine-based warning messages in real-world settings.
16. Gambling-specific school programming should be imbedded into comprehensive school health programs that also give attention to the school environment and services.
17. Test the role of family physicians in providing brief advice and disseminating information on gambling problems.

3. Harm reduction measures

a. Measures to modify the structure or environment of electronic gambling machines

Modifications to electronic gambling machines and to the gambling environment itself are measures most closely associated with the public health and consumer protection models. Some see the aim of these types of modifications to be the reduction of problematic gambling without negatively affecting the revenue of the operator (Błaszczynski et al., 2004a). While this is a preferred scenario, others are unsure whether it is realistic to expect to find adjustments that can have that effect (Dickerson,

¹⁰ An alcohol education and counselling tool that may be useful in school-based gambling education is the Decisional Balance, which helps a person explore the pros and cons of pursuing or not pursuing an activity. Because it assumes that a person perceives some value in pursuing the activity, it takes a neutral rather than abstinence-focused stance. The educational message becomes, “are there ways you can derive these same benefits without the risks or harms (or while reducing them)?”

2003; Smith and Wynne, 2004; Turner and Horbay, 2004). Nova Scotia-based research has been prominent in this area with the provincial government active in introducing and evaluating features to minimize gambling-related harms (referred to as responsible gaming features (RGFs)) with VLTs in the province.

Loba and colleagues at Dalhousie University evaluated the effectiveness of three modifications to VLTs in a “lab-bar” setting (2001). The modifications tested were:

1. Decreasing the speed of play and turning off sound (i.e. reducing sensory appeal).
2. Displaying a running total of cash (rather than credits) spent.
3. Inability to stop reels.

The study found that the cash counter helped problem gamblers stop playing (while having no effect on non-problem gamblers). Not having the ability to stop the reels did not affect the play of either group in this study. Even though the study would need to be replicated in a real-world setting, it does provide suggestive evidence for the effectiveness of cash counters to help problem gamblers reduce their gambling activity.

Also in Nova Scotia, Schrans et al. (2004) evaluated a series of what were referred to as “modified responsible gaming features” (RGFs) for VLTs for the Nova Scotia Gaming Corporation (NSGC). The RGFs were designed to introduce reality checks and breaks in play and to encourage sound management of time and expenses. The three primary modifications introduced were the “time limit option”, “30 minute pop-up message” (vs. the existing 60 minute message) and “changes to the on-screen clock”. The modifications were evaluated with a total of 329 players in test (South Shore) and control (Annapolis Valley) communities.

The modifications proved to have only marginal value as money and time management tools. Researchers concluded that the behaviours most closely linked with spending beyond desired limits (e.g., chasing losses, frequency of play, losing track of time) are unlikely to be voluntarily managed by players while in the midst of playing. Rather, they suggested that money and time management would be more effectively handled by giving the player the ability to pre-set their own limits prior to playing.

To that end, the authors recommended that an interactive player tracking system be developed for Nova Scotia’s video lottery network. Using a player’s card, gamblers would be able to manage their own play (e.g. monitor their own activity, set limits or restrict their own access). Because players in this study were more interested in money management than time management, the authors recommended that options be explored for helping players in this regard. In the event that these types of measures cannot be implemented, they suggested that the modifications tested be introduced because they had no harmful effect on players and may have a small positive effect in reducing gambling time and expenditures.

A Canadian study by Ladouceur and Sevigny (2005) found that the ability to stop the reels had a negative effect on gambling patterns in a lab setting among a sample of 48 occasional VLT gamblers. Being able to stop the reels appeared to give players an illusion of control and increased several erroneous thoughts:

- They could control what symbols were displayed and hence had some control over the outcome of the game.
- There was some measure of skill involved.
- Using the feature would increase their chances of winning.

Using the stopping device resulted in these occasional players increasing the number of games played in a session. Authors concluded that more knowledge of machine features that contribute to a sense of control among regular gamblers in real world settings will be instructive.

In considering the environment in which EGMs are located (outside casinos), Ladouceur and colleagues (2005) sampled a range of gamblers in a real-world and a lab setting. Based on results, they offered the following recommendations:

- Eliminate the physical structures that aim to isolate people playing EGM in venues.
- Favour EGM arrangements that enable the visibility and social interactions of gamblers within a venue (except when minors have access to these venues).
- Additional research on the potential interaction of alcohol and gambling is necessary; if increasing the visibility of gambling increases access to alcohol, this context needs to be re-evaluated.

- Consider concentrating EGMs in a limited number of gambling venues, but not in low socioeconomic areas.

In 2000, the Liquor Administration Board of New South Wales (the regulatory body for gambling activities) reviewed technical standards for gaming machines and accepted a number of recommendations designed to minimize harm. Sharpe et al. (2005) evaluated the effectiveness of three modifications designed to limit gamblers' losses during sessions in "live settings":

1. Reducing the maximum bet size
2. Reducing reel spin speed
3. Removing large note acceptors

Close to 800 participants were recruited from seven hotels and four club venues in New South Wales. Fourteen machines were provided: seven were designated as control machines, and seven were modified according to one or more of proposed modifications to cover all possible combinations. Following play, the South Oaks Gambling Screen was administered.

Of the three proposed modifications, only the reduction in maximum bet size had the effect of reducing time and money spent, with greater effect on probable problem gamblers. The proportion of probable problem gamblers who played in faster cycles was found to be no different to the proportion of gamblers not experiencing problems. Although more problem than non-problem gamblers used high denomination bill acceptors, reconfiguring machines to accept only lower denominations notes did not influence their patterns of play.

In an extensive review of the literature on VLTs for the Alberta government, Smith and Wynne (2004) suggested a number of measures to reduce VLT-related problems in the Alberta context. Among them were two harm reduction measures:

1. Removing the point-of-sale of VLT play to a time prior to the start of a VLT session and to a location away from the gambling venue floor; in this scenario, players buy VLT playing time in a less emotionally-laden setting for an amount that suits their budget.
2. Withdrawing technological enhancements such as bill acceptors on machines and gambling floor ATMs that seem to prompt persons with gambling problems to bet more than they can afford.

Dickerson (2003) has questioned whether any modification of electronic gambling machines can be effective. He contends that continuous gambling formats encourage loss of control even among recreational players, and that it is impossible to blunt the EGM features that cause impaired control without reducing the entertainment value of the machines. Dickerson argues that self-control for many players diminishes as a VLT session progresses; therefore, rather than reconfiguring electronic gambling machines to safeguard at-risk players, he advocates "consumer protection" requirements that would place the point-of-sale away from the gaming floor. He suggests use of a "smart card" to purchase machine playing time, allowing or requiring players to make a pre-commitment that fits their time and cash availability away from the lure of the machines.

Continuing a line of research on harm minimizing features for VLTs, the use of a player card that permitted use of five features in a real-world setting (Windsor–Mount Uniacke) was the subject of a report for the Nova Scotia government (Schrans and Schellinck, 2007). Players could elect to use any or none of these features:

- Account summary: tracked expenditure, amounts won/lost over time while playing the machines (e.g. day, week, month, year).
- Live action: tracked expenditure, amounts won/lost and any limits set for the current play session only.
- Money limits: allowed players to set specific spending limits (e.g. pre-set or self selected values) for certain periods (e.g. until closing, day, week, month).
- Play limits: allowed players to exclude themselves from play for a given period (e.g. until close, day, month, year).
- 48-hour stop: allowed players to enact, immediately, a two-day exclusion period (e.g. quickly exclude themselves for a 48-Hour 'cool-down' period).

A total of 1,854 adults played any VLT during the field trial with almost 30,000 day-sessions of play recorded over the six-month period. Regular players accounted for slightly under half (47%) of total VLT players in the test area, but contributed almost 93% of total day-sessions of play and, correspondingly, 94% of total net revenues. The use of the Responsible Gaming features was high particularly with regular players who fit a higher risk profile. Players continued to use the features over the 6-months of the field test and there was early evidence of a declining trend in amounts spent for those sessions in which a RG feature

was used, which was not found for sessions when the player did not use the RG features. On average, players (including higher risk players) who adopted use of the RG features significantly increased session length, reduced expenditures and had no change in their frequency of play. High use and player acceptance may have been due in part to the fact that players did not feel these features were imposed on them. The authors concluded that:

1. Players accepted the card based system for VLTs.
2. The Responsible Gaming Features system provided on-going value to a significant proportion of regular players.
3. Use of the features was associated with increased play value (e.g. longer play sessions, higher cash-outs, and more winning sessions) and decreased amount spent.
4. There was a positive impact detected for players that was consistent with NSGC's objective 'to assist players to make more informed decisions about their gambling.
5. There were no significant negative RG impacts detected, although problem gamblers appeared to respond to and to use the features differently and in some cases used reductions in per session expenditures to play more often.

Among a number of recommendations was that the province "introduce a player tracking system for the multi-channel video lottery program in Nova Scotia with mandatory registration, voluntary access to the various RG features and appropriate safeguards to monitor impact on a continuous basis" (Schrans and Schellinck, 2007, p. viii).

As discussed in the Supply Reduction section, a bundle of supply and harm reduction measures tested in Nova Scotia found the harm reduction measures to be effective in reducing self-reported time and money spent (at least initially) (Corporate Research Associates, 2007). Surveying representative samples of the general NS population (n=403) and VLT players (n=865), the study found the "Disabling of the Stop Button" and "Reduction in Speed of Play" features to be associated with broad reductions in self-reported time and money spent on VLTs, with problem gamblers most affected. Effectiveness in this sense almost certainly means a reduction of revenue for the VLT supplier, in this case the government of Nova Scotia; nevertheless, these measures enjoyed strong and broad support among Nova Scotians (including among regular gamblers).

b. Conclusion and best advice

There is good theoretic rationale for removing the point-of-sale of VLT play to a time prior to the start of a session and a location away from the gambling venue floor, and the effects of this measure should be tested empirically.

A number of harm reduction modifications for EGMs have been tested in lab and "real world" settings. No evidence was found for decreasing speed of reels; some evidence was found for reducing maximum bet size, displaying a running total of cash spent on the machine and removing all devices that give a sense of control over the machine (e.g. stopping device).

Giving players the ability to track their expenditures (current and longer-term), and to limit time and money spent through a player card appears promising. Nova Scotia research shows that these features reduce expenditures and are well accepted by users – and it appears that the voluntary (rather than imposed) use of the features was important in their acceptance and use. It is likely that these measures will reduce the revenue drawn from these machines, however if they have the effect of reducing the economic and social harms associated with VLTs, the Nova Scotia government is on course to finding a good balance between access to gambling opportunities and protection of consumers.

Best advice:

18. Implement and monitor use of a VLT player card that allows players to utilize various responsible gaming features.
19. Test the effectiveness of a player card for casino patrons.
20. Test the effectiveness and implications of removing the point of sale for VLT sessions away from the gambling location.

SECTION 5: CONCLUSION

Gambling problems are best understood through a public health perspective that sees problems arising from a range of factors and prevention solutions being similarly broad in scope. The vast majority of Nova Scotians gamble at least occasionally and a small percentage experience problems (bearing in mind that a small percentage of a provincial population represents a significant number of people). These problems can be short-lived, they can range from mild to severe, and they are most likely to be VLT-related. Although gambling problems affect all segments of the population, adolescents, young adults, males, Aboriginal people and people with less education are more likely to experience gambling problems.

There is a need for more research on the effectiveness of all prevention options. Substance abuse research clearly shows that supply and harm reduction policy measures are among the most effective. There is evidence to argue against high density of VLT outlets in lower socio-economic neighbourhoods. Nova Scotia gambling research is showing that measures to limit the availability of gambling opportunities and to give players the opportunity to track and limit their expenditures have promise in reducing gambling problems. These and other supply and harm reduction policy measures warrant ongoing testing and monitoring in this province because the acceptance and impact of policy measures will likely vary with the jurisdiction and its context. The evidence base for the various demand reduction measures is currently weak. Substance abuse research shows that multi-sectoral community action, school programming that doesn't insist on abstinence, comprehensive school health programming that gives attention to the social environment, structured family programming and brief interventions to be among the more promising demand reduction measures.

While more research on the effectiveness of various measures is necessary, it is also important to recognize that there will be no magic bullet for preventing gambling problems. Gambling problems arise from many factors and a mix of health promotion and supply, demand and harm reduction measures will be needed to address them. A focused, evidence-based approach provides the best value for Nova Scotians. This means investing in research on the harms and costs arising from gambling problems, giving priority to the greatest harms/costs and testing,

implementing and monitoring the impact of policies and programs designed to avoid them. A long-term strategic approach with all stakeholders participating is needed. A strategic approach calls for balancing the interests of stakeholders as fully as possible. But it also means that stakeholders need to fundamentally agree on the aims of the strategy and strive to coordinate and integrate their activities for optimum effect. In the problem gambling prevention field it also means agreeing that reducing harms to a level that is acceptable to Nova Scotians may mean somewhat reduced revenue derived from gambling activity. Giving priority to the health of Nova Scotians is ultimately sound, sustainable social and economic policy.

SUMMARY LIST OF BEST ADVICE STATEMENTS:

1. Conduct or participate in research that clarifies the social and economic costs and benefits of gambling, with particular attention to the impacts on lower socio-economic populations.
2. Conduct or support further research on:
 - the factors that predict gambling problems, using a longitudinal study design
 - the relationship between gambling problems and socio-economic status and other determinants of health.
 - the role of gambling as a leisure option for various populations, particularly adolescents and older adults.
 - environmental factors associated with gambling problems, for instance, the effect of advertising and expanded availability of gambling opportunities, particularly on adolescents.
3. Continue to regularly conduct gambling prevalence surveys of students and general populations.
4. Study the factors contributing to gambling problems in populations found to be at greater risk.
5. Clarify factors associated with patterns of movement in and out of periods of problem gambling.
6. Give priority to policies and programs for adolescents and young adults, particularly males, Aboriginal populations and those with less education.

7. Invite all stakeholders to adopt a public health framework that accommodates supply, demand and harm reduction measures as well as a consumer protection orientation for preventing gambling problems in Nova Scotia.
8. Ensure that supply and harm reduction policies are a part of the discourse among stakeholders (along with demand reduction measures) when considering problem gambling prevention options and priorities.
9. Conduct and monitor research on the links between the supply of gambling opportunities and gambling problems.
10. Continue to monitor the impact of existing provincial supply reduction measures.
11. Test other supply reduction measures, viewing them as essential components of a broader prevention strategy.
12. Through active public education and community action, develop a strong “health literacy” on the link between gambling availability and problems among Nova Scotians.
13. Problem gambling prevention stakeholders need to align with others seeking to promote the overall health of populations in their district.
14. Test the effectiveness of gambling-related social marketing, ensuring that the tested campaigns are well resourced, focused and supported by community-based activity.
15. Test the effectiveness and acceptability of venue- or machine-based warning messages in real-world settings.
16. Gambling-specific school programming should be imbedded into comprehensive school health programs that also give attention to the school environment and services.
17. Test the role of family physicians in providing brief advice and disseminating information on gambling problems.
18. Implement and monitor use of a VLT player card that allows players to utilize various responsible gaming features.
19. Test the effectiveness of a player card for casino patrons.
20. Test the effectiveness and implications of removing the point of sale for VLT sessions away from the gambling location.

SECTION 6: GLOSSARY

Aetiology: the study of causes or origins of a problem or ill health.

Behavioural reinforcement: positive reinforcement strengthens a behaviour by providing a consequence an individual finds rewarding.

Cognitive behavioural intervention: A therapeutic approach that combines the cognitive emphasis on the role of thoughts and attitudes in influencing motivations and response, with the behavioural emphasis on changing performance by giving attention to reinforcement and reward.

Cognitive error: faulty thinking that can arise in association with gambling, for example: sensing that a random event that has not occurred recently is more likely to occur; sensing that a level of skill is required to successfully predict the outcome of chance events; or having an illusion of personal control and skill. Persons with gambling problems exhibit stronger convictions around these beliefs, making them more likely to chase their losses.

Consumer protection-oriented policy: policy that is based on the view that the gambling industry has a primary responsibility to present a product that does not harm participants.

Cross-sectional research: a research design where a large cross-section of the population is assessed at a single time and the differences between individual groups within the population compared. This study is efficient at identifying association but may have trouble deciding cause and effect because data are collected at only one time point.

Demand reduction: prevention strategies which succeed by motivating users to consume less overall and/or less per occasion, but don't necessarily call for abstinence.

Determinants of health: broad factors that have been shown by research to affect the health of populations, often listed as: income and social status; social support networks; education; employment/working conditions; social environments; physical environments; personal health practices and coping skills; healthy child development; biology and genetic endowment; health services; gender; and culture.

Developmental pathways model of prevention: a model that proposes that risk and protective factors be viewed over the long term and in the context of a person's life.

Dissociative state: a transient mental state described as a sense that things are not real, or that one is performing actions in an automatized or disconnected manner.

Harm reduction: prevention strategies that reduce the likelihood of harm to health and safety without necessarily requiring a change in the pattern or level of substance use.

Health literacy: the ability to access, understand, evaluate and communicate information as a way to promote, maintain and improve health in a variety of settings across the life-course.

Gambling: activities involving the wagering of money or something else of value on games of chance.

Participatory action research: systematic inquiry, involving close involvement of those affected by the issue being studied, for the purposes of education, taking action or effecting social change.

Prevention: activity that reduces incidence and prevalence of immediate and long-term harms related to substance use. This aim may be achieved by preventing, delaying or reducing use or hazardous use through supply and demand reduction activities and by reducing the negative consequences of use through harm reduction activities. It may also be achieved by working toward more equitable access to the determinants of health across a population.

Principle of independence of events: When a random event last occurred has no bearing on whether it is more or less likely to occur soon.

Problem gambling: all patterns of gambling behaviour that compromise, disrupt or damage personal, family or vocational pursuits, and that lead to adverse consequences, and may be mild, moderate or severe.

Responsible gambling oriented policy: policy that gives priority to individual choice and the information necessary to inform sound choices.

Self-exclusion: an intervention whereby individuals who believe that they have a problem with gambling enter into an agreement to be banned from entering specified gambling venues or to be removed from those venues. The ban may be permanent or for a limited time.

Supply reduction: prevention strategies that are intended to achieve social, health, and safety benefits by reducing the physical availability of a particular substance.

Socioeconomic status: a measure of an individual or family's relative economic and social ranking, based on a combination of variables, including occupation, education, income, wealth, and place of residence.

Sub-clinical: a stage in the development of a disease before the symptoms are observed.

Unlawful Internet Gambling Enforcement Act (2006): A bill passed by the federal U.S. government which makes it a crime to accept or facilitate funds for unlawful Internet gambling from U.S. citizens.

SECTION 7: REFERENCES

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