A ROADMAP TO MEN'S HEALTH:

CURRENT STATUS, RESEARCH, POLICY & PRACTICE

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Men's Health Initiative of British Columbia

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"The health risks associated with men's gender or masculinity have remained largely unproblematic.... Left unquestioned, men's shorter lifespan is often presumed to be natural and inevitable."[1]

"Having a Y chromosome should not be seen as possessing a self destruct mechanism."[2]

A Roadmap to Men's Health was commissioned by the Men's Health Initiative of BC to raise awareness of Men's Health among healthcare providers, researchers, policymakers and the public at large. The report explains the field of Men's Health, develops a framework for making sense of male health conditions and makes recommendations for improving service delivery and the knowledge base in this important area.

A Roadmap to Men's Health is not a clinical guide to treating health conditions, nor does it cover the full range of male health problems. Instead, it highlights key issues related to a set of high-priority health conditions strongly affecting male health and longevity.

The ultimate aims of this report are:

- to engage men more fully with the healthcare system
- to respond to male health needs more appropriately
- to contribute to the goal of eventually extending men's lifespan to match that of women's

[1] Courtenay W. Constructions of masculinity and their influence on men's well-being: a theory of gender and health. *Soc Sci Med*. 2000;50:1385-1401. P. 1387.

[2] Banks I. Foreword to White A, Cash K. *A Report on the State of Men's Health across 17 European Countries*. Leeds, UK: European Men's Health Forum; 2003:5.

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EXECUTIVE SUMMARY

The importance of Men's Health

The Men's Health perspective is crucial to effective healthcare policy, research and practice. This report provides an overview of Men's Health – why it matters, what we know, gaps in our knowledge/service delivery and what new directions we should be taking.

The gender gap

Men live on average 4 to 6 years less than women, a *life expectancy gap* which been taken for granted rather than explained. Analysis of life expectancy data for B.C. shows that the Big Three sources of reduced lifespan for men compared to women are:

1. *Cardiovascular Disease*, which strikes men in larger numbers and earlier than it does women
2. *Suicide*, which has a much higher rate for men at all ages
3. *Motor Vehicle Accidents*, which involve a much higher rate of fatal accidents for men and a high rate of occurrence at a relatively young age.

These sources of men's excess mortality should be seen as *opportunities* to improve men's health status and longevity. Only by understanding the contributors to men's reduced life expectancy can we develop ameliorative interventions.

A framework for Men's Health

In order to understand the underlying causes of differences in mortality or other health outcomes between men and women, a framework was developed which includes three kinds of factors: *biological* (e.g., differences in hormone levels between men and women); *environmental* (e.g., men being preferentially hired into physically dangerous jobs); and *behavioural* (e.g., men taking risks and avoiding health-protective behaviours) . Of these, behavioural factors seem most important.

'Traditional masculinity' has been negatively portrayed, as the cause of men's poor health behaviours; but this portrayal risks: blaming the victim; undervaluing positive male traits; and alienating men in whom we seek to instil healthier behaviours.

Health initiatives specifically targeting men have been studied. These initiatives have had generally positive results, whether by focusing upon diseases specific to men such as prostate cancer (improving men's knowledge and decision-making options), delivering

healthcare services in settings that are primarily male (e.g., certain sports events) or designing health information to be appropriate to men's needs and preferences.

Applying the framework to health conditions

Specific health conditions may profitably be examined from a Men's Health perspective:

Prostate Cancer The appropriate use of prostate-specific antigen (PSA) screening has been the subject of considerable controversy and it is challenging to decide the most appropriate treatment option for diagnosed prostate cancer. A promising approach is the development and testing of *decision aids,* tools that support physicians and individual men in making such difficult decisions.

Hypogonadism This is a recently recognized condition whose diagnosis and appropriate treatment are still controversial. There is considerable potential for improved education of healthcare providers and provision of screening for this condition. Once testosterone replacement is seen as a clinical intervention with the potential to enhance quality of life in older men, it will find its place in usual care.

Sexual Dysfunction A high proportion of older men suffer from erectile dysfunction, premature ejaculation or lack of appropriate sexual desire. Screening for erectile dysfunction is recommended because this condition may be an indicator of underlying cardiovascular disease. Both individual Canadians and physicians need improved access to comprehensive and unbiased information. Research is needed to identify forms of treatment that will be effective for premature ejaculation or reduced sexual desire.

Cardiovascular Disease Cardiovascular disease shows a much higher prevalence rate in men than in women – it tends to begin at a significantly younger age for men and thus accounts for a larger proportion of potential years of life lost by men versus women. Factors shown to contribute to men's cardiovascular disease are: (i) relatively poor nutrition; (ii) higher rates of excess weight; and (iii) chronic difficulties with anger management.

Osteoporosis Because this health condition occurs with less frequency in men than women, healthcare providers perceive osteoporosis as a "women's health problem" and are less likely to screen for or address indications of osteoporosis in men. Healthcare providers need education in recognizing and responding to osteoporosis in men.

HIV The two highest-risk groups for HIV infection are exclusively or predominantly male: MSM (men who have sex with men) and IDU (intravenous drug users). Not

surprisingly, men show much higher rates of mortality from HIV-associated conditions than do women – but the life expectancy of individuals with HIV has increased dramatically with the introduction of Highly Active Anti-Retroviral Therapy. Increasing the uptake of this effective treatment, especially among IDU, is a major challenge.

Suicide Canadian men show a suicide mortality rate three times that of women. The increased risk for death by suicide in Canadian men is especially pronounced in the age range of 40-50, when men's suicide rises to a peak before gradually falling and then rising once more past the age of 80. Both the strikingly high levels of suicide for men compared to women and the surprising peak in suicide for middle-aged men (a recent social phenomenon) have received minimal research attention and require systematic investigation in order to design preventive and clinical interventions.

Lung Cancer For many decades, lung cancer was primarily a disease of men, essentially because men were far more likely than women to smoke tobacco. However, public health campaigns have been quite effective in reducing men's level of smoking, resulting in a reduction in rates of lung cancer in men – these rates have been falling in men over the past 30 years. It is a success story that gives us hope for improving Men's Health in other areas.

New directions

Health research should: (i) evaluate population-level initiatives to modify cardiovascular risk factors in men; (ii) study male *suicide*, men's pathways to suicide and population-level interventions to reduce its incidence. (ii) investigate male *mortality from motor vehicle accidents*, emphasizing population-level interventions with younger male drivers regarding risk-taking; (iv) compare treatment outcomes for male-specific conditions like prostate cancer and erectile dysfunction.

Health policy should prioritize population-level initiatives which: (i) adopt a male gender-appropriate approach; (ii) integrate forms of communication well suited to men's identities; (iii) deliver interventions in settings that maximize access to men.

Healthcare practice should: (i) train primary care providers to focus on Men's Health issues such as risky drinking, suicidal ideation and poor nutritional habits; (ii) develop decision aids to support men and their physicians in weighing complex decisions such as choice of prostate cancer treatment; (iii) disseminate self-management materials concerning healthier lifestyle, risky drinking and mood/anger issues.

PREFACE: THE MEN'S HEALTH PERSPECTIVE

Men's Health is a new perspective from which we may view healthcare policy, practice and research. Healthcare decision-makers have begun to recognize the importance of using the Men's Health lens, focusing upon health issues specifically relevant to men. This report provides an overview of Men's Health – why it matters, what we know, gaps in our knowledge and service delivery and where we can begin making improvements.

In this report, we develop a framework for making sense of the field of Men's Health, highlighting key issues that must be taken into account. We explore the factors that underlie sex and gender differences in health status, including differences between men and women in health-related attitudes and behaviours. This set of crucial differences between men and women constitutes a framework for understanding sex differences in the incidence or outcomes of various health conditions.

The scope of this report includes both Male-Specific and Male-Risk health conditions.

1. **Male-Specific Conditions**. These are health conditions occurring only in men and therefore obvious exemplars of Men's Health. Historically, these have been most clearly identified with the Men's Health perspective. Male-Specific conditions discussed in this report are Prostate Cancer, Testicular Cancer, Hypogonadism, and Male Sexual Dysfunction.
2. **Male-Risk Conditions**. These are health conditions for which being male represents a significant risk factor, with regard to incidence, outcome or mortality. Male-Risk conditions discussed in this report are Cardiovascular Disease, Lung Cancer, Osteoporosis, HIV, and Suicide.

This report does not cover all health conditions potentially falling into these two categories. Rather, it focuses upon a selection of high-priority conditions in order to identify and emphasize the basic and critical issues of Men's Health. We pay particular attention to health conditions contributing most to the *life expectancy gap* between men and women, asking the question, "Which factors are causing men to die before women?" (In effect, we're dealing with a population-level murder mystery.) It is hoped that the report will also shed light on Men's Health conditions not specifically addressed.

Each health condition is discussed in terms of the following elements.

- **Description**: definition of the health condition; incidence, associated mortality and outcomes of standard healthcare, for men versus women.
- **Prevention:** risk factors for the condition that represent potential targets for prevention activities in the male population; evidence for its preventability in men.
- **Screening:** standard practice in screening men for the condition; evidence concerning the accuracy or utility of screening.

- **Diagnosis:** standard practice in diagnosing the condition in men; evidence concerning the accuracy or outcomes of diagnosis.
- **Treatment:** standard practice in treating the condition in men; evidence concerning the outcomes of treatment.
- **Service Gaps:** ways in which the delivery of healthcare to men for the condition could be significantly enhanced.
- **Knowledge Gaps:** aspects of the health condition and its effective care in men for which we lack sufficient knowledge and upon which research should be focused.

Accompanying this report is a review of epidemiological data relevant to the Men's Health issues under discussion.[3] *Figures in this report are derived from that review, unless otherwise indicated.*

[3] Jones W; Centre for Applied Research in Mental Health and Addiction. Background Epidemiological Review of Selected Conditions. 2009.

INTRODUCTION

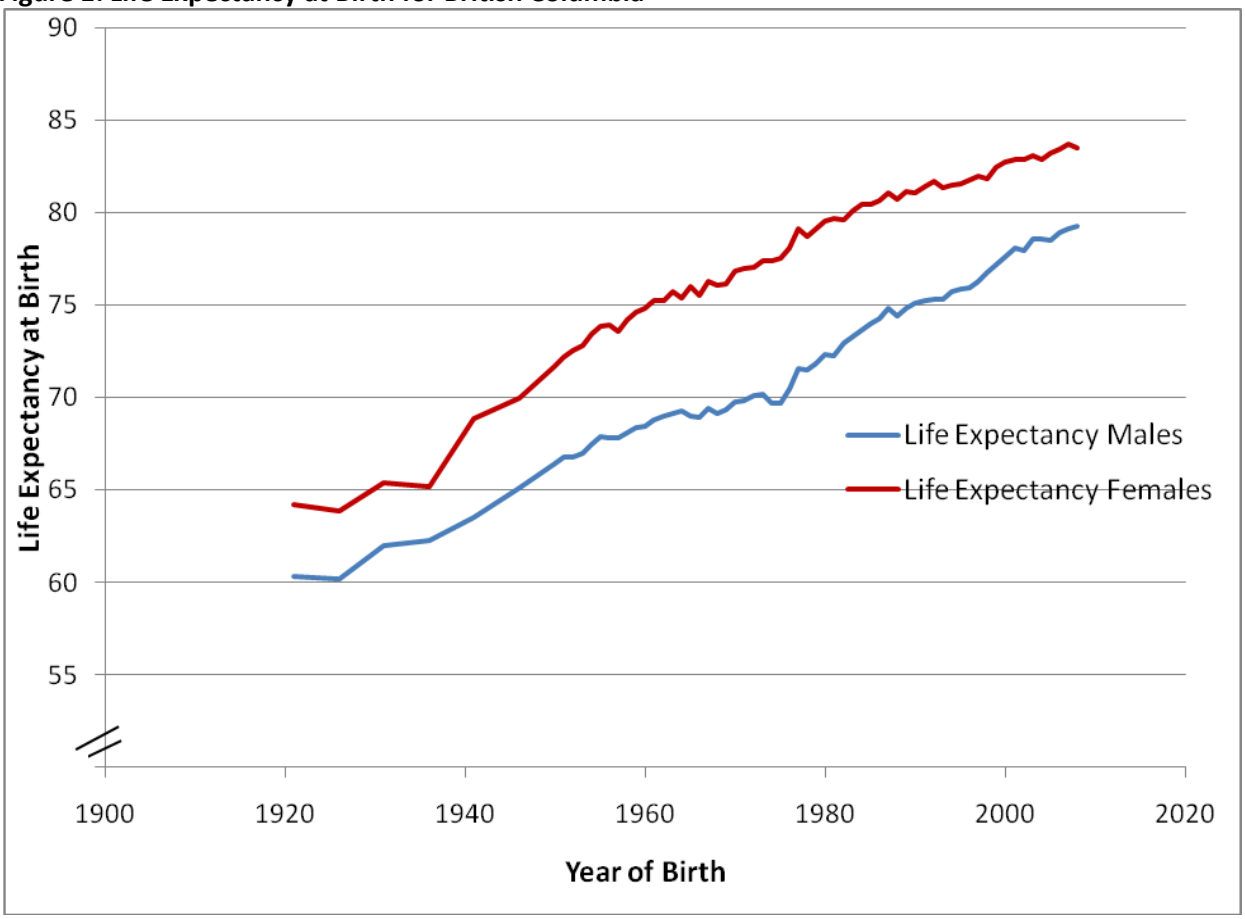
THE IMPORTANCE OF MEN'S HEALTH

Men in prosperous countries like Canada, the UK or the United States live, on average, four to six years less than women.[1] In certain Eastern European countries, the gender gap in life expectancy is larger, as much as 13 years.[2] It has been observed that the ten most common sources of mortality are more common in men.[3] Canadian men have significantly higher incidence of lung cancer, bladder cancer, alcohol dependence, death by suicide, AIDS and a number of other threats to health and survival. In general, once men develop a serious health condition, the prognosis is worse than that for women and they are more likely than women to die from it: "in nearly all countries for which data were available, women live longer 'healthier lives' and once sick live from 0.2 years to 7.3 years longer than men in sickness."[4] Such differential health outcomes affect millions of men every year.[5] As one research team has observed:

> There is a remarkable discrepancy between the health and survival of the sexes: men are physically stronger and have fewer disabilities, but have substantially higher mortality at all ages compared with women: the so-called male-female health-survival paradox.[6]

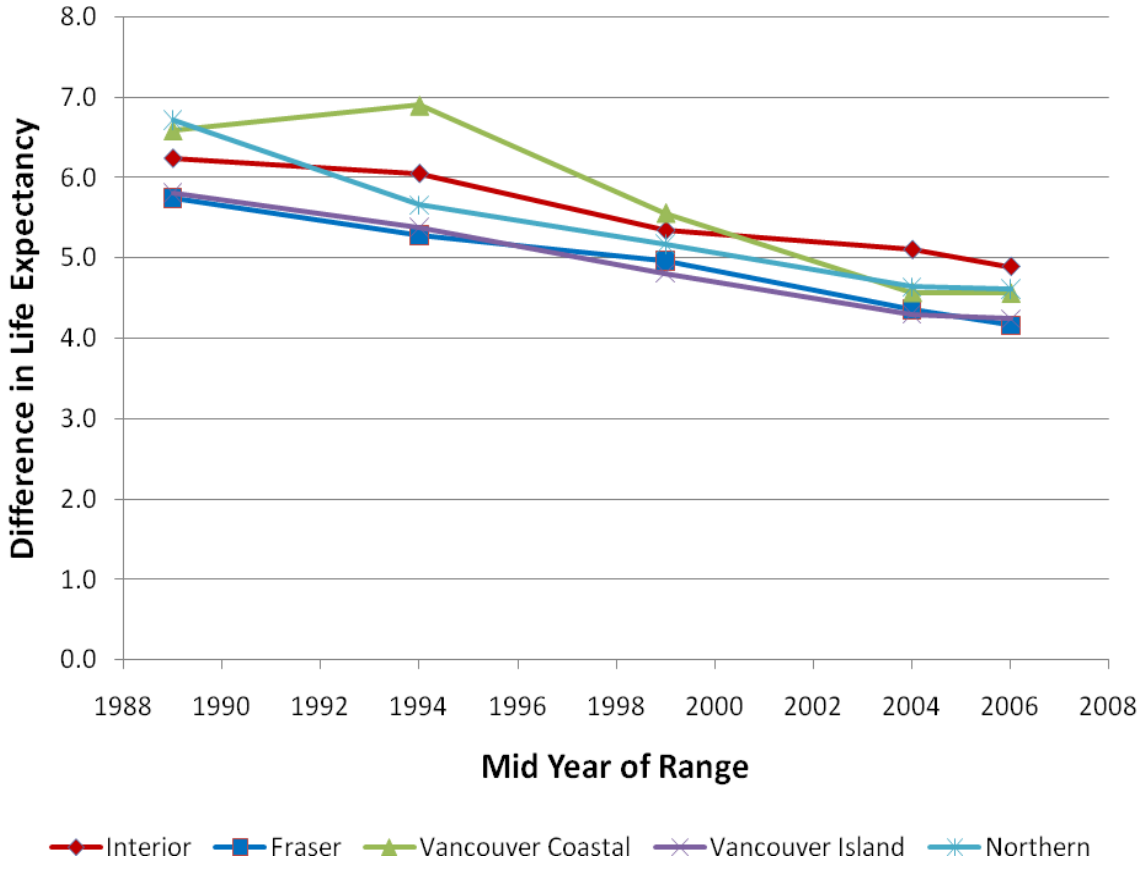
Consider the difference in life expectancy between men and women in British Columbia. Provincial data from 2004-2008 indicate that men had a mean life expectancy of 78.9 years while women had a mean life expectancy of 83.3 years, a difference of 4.4 years.[7] Life expectancy data for British Columbia over an extended time period (beginning about 1920) show a steady increase in life expectancy for both genders, with women consistently living longer than men (Figure 1). The gender difference in life expectancy was less than 5 years between 1920 and 1940, then increased dramatically until 1980, at which time women had an almost 8-year advantage in life expectancy! This gender gap fell just as dramatically between 1980 and the present, returning to a level of just over 4 years. There is no clear explanation for this marked fluctuation in relative life expectancy.

Figure 1: Life Expectancy at Birth for British Columbia



It is also worth examining variation in relative life expectancy for men and women living in different regions of British Columbia. A straightforward way to examine regional variation is to compare the gender gap in life expectancy in areas covered by the various B.C. Health Authorities (Figure 2). It is evident that the gender gap in life expectancy is fairly consistent across the province, showing the same patterns: higher life expectancy for women and a gradual reduction of the gender gap in life expectancy over the past few decades. Note that we cannot predict whether the gender gap in life expectancy will continue to diminish (we simply don't know the factors responsible for changes in the size of this gap) and that even a gender gap of "only" 4.5 years on average represents an enormous difference in years of life lived by men and women of this province.

Figure 2: Life Expectancy Difference (Female - Male) by Health Authority



Given this striking discrepancy in life expectancy, one would expect to find that Men's Health has been a high priority for many years, drawing substantial investment of financial and intellectual resources from policymakers and researchers. But in fact, the domain of Men's Health has been neglected, receiving serious and widespread attention only in the last decade. Through most of the history of healthcare research and practice, findings of inferior health outcomes for men have been met with a kind of resignation, as though gender disparity in health outcomes were simply an unavoidable feature of the world – something to be accepted rather than addressed.[8]

Clearly, identifying the reasons for differential mortality between men and women – the relative contribution of various causal factors – would enable us to develop meaningfully-targeted interventions to reduce the gender gap in life expectancy. However, there has been surprisingly little focused research attempting to discover the nature of sex differences associated with the observed LE gap, their causation and potential remediation.[9] [10] For example, the Commonwealth Foundation conducted a survey of men's and women's health and then later commissioned a search for research literature that utilized their data: nine studies were identified, all of which focused on women's health.[11] A recent analysis of funded health research in the United States and Canada found a substantial skew towards funding research on women's health. In Canada between 2000 and 2005, Men's Health research received less than

half the funding allocated to women's health by the Canadian Institute for Healthcare Research and the Institute for Gender Health: 21% for Men's Health vs. 52% for women's health research.[12]

As these data show, considerable attention has been directed toward the domain of women's health. This focus on women's health was triggered by the realization that using only male subjects in medical research (as had been the norm for many decades) failed to take into account women's unique physical and psychological characteristics and their particular health needs. With the emergence of the "women's lens" on healthcare policy, research and care, it is possible to respond in a more appropriate and effective way to women's healthcare needs.[13] The women's health lens has become an important aspect of planning in many healthcare systems.[14] Results have been impressive, with better-targeted policies, sophisticated research programs and improved clinical services acting together to enhance health outcomes for women. An example from British Columbia is the BC Centre of Excellence for Women's Health, established in the early 1970s to respond to unmet health needs identified by leaders in the women's movement.[15] The Centre has identified and provided comprehensive health services to women for the past 25 years – but there is no equivalent centre for men.

Ironically, the exclusive study of male patients in medical research may have limited our understanding of significant problems with men's use of healthcare services, adoption of health-promoting behaviours and vulnerability to premature mortality. Only by contrast to women do these problems come into sharp focus.

Men's Health has climbed to a higher rank in the awareness of decision-makers and the public through the efforts of nonprofit groups committed to improving the status of Men's Health. The most prominent of these is the Men's Health Forum, founded in the UK in 1994, with activities extending across Europe. MHF states as a central belief that "public policy should aim to tackle health inequalities and barriers to good health in relation to gender as well as other health determinants."[16] Advocacy by groups like this in Europe and Australia has greatly enhanced the profile of Men's Health in healthcare planning. Interestingly, there has been little such activity in Canada – Canadian men may be reluctant to participate in advocacy regarding their health, or lack awareness of Men's Health as a crucial issue. Over the past decade, only one noteworthy Men's Health issue has received substantial media attention: an initiative to secure government funding for prostate-specific antigen (PSA) testing for prostate cancer risk.[17] Perhaps the maturation of women's health as a domain for research and practice will serve as a model for the development of Men's Health.[18] [19]

Men's Health has been a focus of healthcare policy in several countries, particularly the UK and Australia.[20] [21] Although one cannot precisely date the emergence of Men's Health as a critical domain of healthcare, one review highlights a 1992 report by the Chief Medical Officer of the UK:

> This was the first time that there had been any acknowledgment at the governmental level that men's health was problematic.... Prior to this official

> sanction, talk of "men's health" was seen as almost heretical and those few who were vocal faced a very suspicious and unreceptive audience....[22]

The 1992 report made the key observation that “Gender differences in mortality and morbidity undoubtedly exist.... There is increasing evidence that many of the patterns observed stem from differences in health-related behaviour, attitudes and beliefs of men.”[23]

The World Health Organization’s Madrid Statement in 2002 recognized the importance of *gender equity*. In part it says: “to achieve the highest standard of health, health policies have to recognize that women and men, owing to their biological differences and their gender roles, have different needs, obstacles and opportunities.”[24] Gender equity means that women and men are given equal opportunity to achieve their health potential, and involves the recognition that gender is also a determinant of health. It acknowledges the different challenges men and women face in managing their health, their varying healthcare requirements, and barriers to accessing healthcare services. Australia and the United Kingdom responded to the Madrid Statement by establishing gender-based programs to ensure that the planning and delivery of health services could meet the needs of their respective male and female citizens.

Governmental policies in the UK and Australia have recently emphasized the necessity of incorporating the Men’s Health perspective into planning of healthcare services.[25] [26] [27] Perhaps most advanced is the policy implemented by the Australian Department of Health and Aging in their *Men's Health Policy*.[28] According to the Men's Health Policy Information Paper, it is built around five principles: "1. Gender equity; 2. An action plan to address need across the life course; 3. A focus on prevention; 4. A strong and emerging evidence-base; and 5. Needs of specific groups of men most at risk." Nonetheless, this initiative remains at a preliminary stage – the stated goal is "to raise awareness and promote focused discussion about men's health."[29] Another recent government policy of this kind is the Irish National Men's Health Policy, which includes a comprehensive range of recommendations relevant to an enhanced "vision for men's health in Ireland." Recommendations include investing substantially in promotion of Men's Health, making healthcare services more accessible and "male friendly," specifically promoting Men's Health in the workplace, and a wide array of other suggestions cutting across education, social policy, recreation and community development.[30]

In Canada, there has been limited attention given to issues of Men's Health. For example, while Health Canada offers a Webpage ostensibly oriented to Men's Health, healthcare advice provided there is not specifically focused on men but rather is *generic* healthcare information on issues seen as relevant to Men's Health concerns.[31] Missing from this health site are considerations of healthcare issues and approaches specifically relevant to Men's Health and its unique challenges. An ambitious review of Men's Health issues was commissioned by the Québec government five years ago, but had little impact on governmental policy.[32]

With increased attention to Men's Health in these countries, a number of innovative activities have been directed to improving accessibility and appropriateness of healthcare delivery to men.[33] One approach has been the development of Men's Health Clinics that focus on sexual and reproductive aspects of men's health needs. A variation on this has been "well-man clinics ... focused on early detection of disease combined with lifestyle advice."[34] A second approach involves delivery of healthcare through "opportunistic" outreach to men in the context of leisure activities. This form of opportunistic outreach is designed to engage men more effectively, e.g., through health clinics operating in barber shops or screening activities associated with sports events.[35] [36] [37] An example of opportunistic outreach is the Australian Pit Stop program, which disseminates health information and screening to men attending car racing events *(see Box below).*

The Pit Stop program

This Australian outreach health screening program seeks to increase men's knowledge of their own health status and options for preventive care by comparing the process of maintaining your health to maintaining your automobile (based on the idea that men seem to be more solicitous of their vehicles than themselves). It offers men a series of health checks:

- Oil Pressure - Blood pressure
- Chassis Check - Waist:hip ratio
- Fuel Additives - Alcohol
- Exhaust - Smoking
- The Jack - Manual handling
- Shock Absorbers - Stress management
- Spark Plugs - Testicles and prostate
- Fuel Impurities - Diabetes risk

- Reproduced from http://www.riverlandhealth.com.au/Default.aspx?tabid=416

A third approach involves another type of opportunistic outreach, accessing men where they spend much of their time: in the workplace.[38] Finally, a fourth approach has focused upon the dissemination of health information specifically geared to men's needs, such as the telephone-based Men's Line Australia.[39] The aim of this latter approach is to increase uptake of health information by communicating the information in a manner that is suitable to men's own priorities and perceived health needs.

Men's Health is increasingly viewed as a priority in healthcare planning – but much remains to be done. It will be important to increase awareness of Men's Health among the general public, policymakers, researchers and healthcare providers. One strategy to enhance awareness has been the dissemination of reports synthesizing available knowledge on Men's Health issues. These reports are often linked to surveys of knowledge and attitudes of the general population regarding Men's Health.

The Commonwealth Foundation carried out the Men's and Women's Health Survey in 1998.[40] Two years later, this foundation commissioned a report specifically focused on the men's data in their survey, entitled Out of Touch: American Men and the Health Care System.[41] That report identified a striking pattern of health risks for men, including significantly reduced life expectancy, much higher rates of death from heart disease and chronic liver disease, substantially higher rates of suicide and violence-related deaths, and significant underutilization of healthcare services by men in all age groups. The report called for "expanded efforts to address men's special health concerns and risks and their attitudes toward health care."

The European Men's Health Forum (2003) commissioned A Report on the State of Men's Health across 17 European Countries.[42] [43] This report synthesized information concerning men's health status across European countries in terms of mortality and disability related to various disease states, men's perceptions of their own health and life expectancy, and lifestyle issues affecting Men's Health. Some notable findings were:

- men's life expectancy has been steadily improving over the last couple of decades
- nonetheless, "Men's increase in life expectancy still leaves them with a lower life expectancy than that of women 20 years ago"[44]
- "men are more likely to suffer a premature death than women"[45]
- there is insufficient research data to determine the relative contribution of such lifestyle variables as physical activity, weight and diet across the sexes.

The Prostate Cancer Foundation published the Men's Health Survey in 2006.[46] This survey focused primarily on attitudes towards and knowledge about prostate cancer and its treatment. It identified striking gaps in the public's knowledge about this particular Men's Health issue; however, its specific focus on awareness of prostate cancer limits its applicability to the broader issues of Men's Health.

We are left with an impression of Men's Health as worse than women's health in a number of important ways, resulting in striking differences in incidence of serious disorders and greatly reduced life expectancy. The situation calls for increased attention to Men's Health issues across the Canadian health system. *Improving Men's Health* will build upon prior efforts to highlight the issues of Men's Health and give an overview of Men's Health in order to enhance public awareness, healthcare policy, health research and appropriate practices by healthcare providers.

DEFINITION OF MEN'S HEALTH

The first distinction to be made is that between *sex*, the biological substrate of differences between men and women, and *gender*, the expression and modification of these differences in a social and cultural context. A comprehensive definition of these terms, for research purposes, has been developed by the U.S. National Academy of Sciences:

> In the study of human subjects, the term sex should be used as a classification, generally as male or female, according to the reproductive organs and functions that derive from the chromosomal complement … the term gender should be used to refer to a person's self-representation as male or female, or how that person is responded to by social institutions on the basis of the individual's gender presentation.[47]

Note that it is sometimes difficult to draw a distinction between sex and gender (e.g., when discussing genetically-influenced personality traits). The reader may encounter instances in this report where the terms seem misplaced. We apologize in advance.

Early definitions of Men's Health focused on the biological and physiological alterations in health specifically related to the male reproductive tract (e.g., prostate cancer), emphasizing sex; while recent definitions by international bodies in Australia and the United Kingdom are considerably more sophisticated and comprehensive, with more emphasis on gender (see Table 1). These definitions make it explicit that Men's Health is affected by a wide range of factors: mental, physical, emotional, social, and spiritual aspects of their lives; family, community, societal, institutional, and environmental factors; and their stage of the lifespan. At the Men's Health Initiative of British Columbia, we have used the working definition of Men's Health as the *study of conditions or diseases, risk factors and treatments that are specific to males across their lifespan within the context of their physical, mental, emotional, social, and spiritual well-being.*

Table 1: Definitions of Men's Health

Organization	Definition
Australian Men's Health Network (1997)	Conditions or diseases that are unique to men, that are more prevalent in men, that are more serious among men, for which the risk factors are different for men, or for which different interventions are required for men.
Research Centre for Gender and Health (2002)	Men's health is more than the absence of illness; health encompasses an individual's physiological state, psychological well-being and social context.
Men's Health Forum of England (2004)	A male health issue arises from physiological, psychological, social, or environmental factors that have a specific impact on boys or men and/or in which interventions are required to achieve improvements in health and well-being at either the individual or population level.
American Journal of Men's Health (2004)	A holistic and comprehensive approach that addresses the physical, mental, emotional, social, and spiritual life experiences and needs of men throughout their lifespans.

As noted above, we have limited the scope of this report to health conditions that are either specific to men or for which being male represents a significant risk factor. We do not attempt a complete overview of all conditions or factors related to Men's Health, but intend a representative overview that highlights key issues, current understandings, and gaps in knowledge or practice in Men's Health.

THE GENDER GAP IN LIFE EXPECTANCY

It will help our inquiry into Men's Health if we investigate the sources of mortality contributing to the life expectancy gap. How do we make sense of this four-year differential in average life expectancy? Simply knowing that there is a difference between the sexes tells us little about the sources of the discrepancy.

Let us examine sex differences in the leading causes of mortality. Data concerning causes of death in British Columbia is available in a report produced by the British Columbia Ministry of Health Planning.[48] The report presents data concerning the leading causes of death for men and women, showing incidence of death by various causes in 2002. Highlights of the report are presented in Table 2, with data clustered by age group: 15-24, 25-44, 45-64 and 65-84.

This data table gives us some ideas about the sources of increased mortality of men – for example, we see that unintentional injuries appeared to be a significant source of mortality difference between men and women, with men showing much higher mortality due to injuries in two of the age groups. Cardiovascular disease also presents much higher male mortality. By contrast, mortality due to cancer is similar for men and women.

Table 2: Leading Causes of Death for Men and Women, 2002

	Men	Women
15-24		
Unintentional injuries	105	36
Suicide	34	11
Cancer	9	11
Congenital anomalies	4	7
Disorders of the nervous system	5	3
Other causes	52	27
25-44		
Unintentional injuries	231	64
Cancer	98	115
Suicide	110	31
Infections of the nervous system	55	22
Other causes	280	144
45-64		
Cancer	943	934

Cardiovascular diseases	546	145
Unintentional injuries	190	53
Liver diseases	113	58
Infectious diseases	94	48
Other causes	786	42
65-84		
Cancer	2516	2083
Cardiovascular diseases	1934	1399
Cerebrovascular diseases	492	539
Chronic pulmonary disease	413	351
Diabetes mellitus	290	214
Other causes	1856	1667

This information is useful, but we need something more to make sense of the life expectancy gap between men and women: we need a statistic that will take into account both the differential rate of mortality *and* the age at which death occurs. A death occurring in one's 20s steals many more years of life than a death occurring in one's 70s. Fortunately, there is an index that is commonly used in epidemiology to take into account these two aspects of mortality. This is the **PYLL**, Potential Years of Life Lost (also known as YLL, Years of Life Lost). The PYLL index indicates the "*number of years of life 'lost' when a person dies 'prematurely' from any cause, before age 75 – taking the median age in each age group, subtracting from 75, and multiplying by the number of deaths in that age group disaggregated by sex and cause of death."*[49] This is a very useful index, allowing us to understand the longevity difference between the sexes in terms of how much of the total gap (what proportion of the lost years of life) is attributable to various health conditions.[50] By taking into account not only the rate but also the age of death, the PYLL is a powerful statistic that can help us understand the life expectancy gap in a more profound way, pointing us to key challenges and opportunities for creating change.

It must be noted that the PYLL does not fully measure the potential gain in life expectancy if we were to eliminate specific sources of mortality. This is mainly because there are other sources of mortality that would undo some of the gain: e.g., preventing a fatal heart attack would not protect that person from other fatal conditions or accidents ("competing risks"). There is another statistic for measuring the potential gain from reducing a source of mortality, known as Potential Gains in Life Expectancy (PGLE):

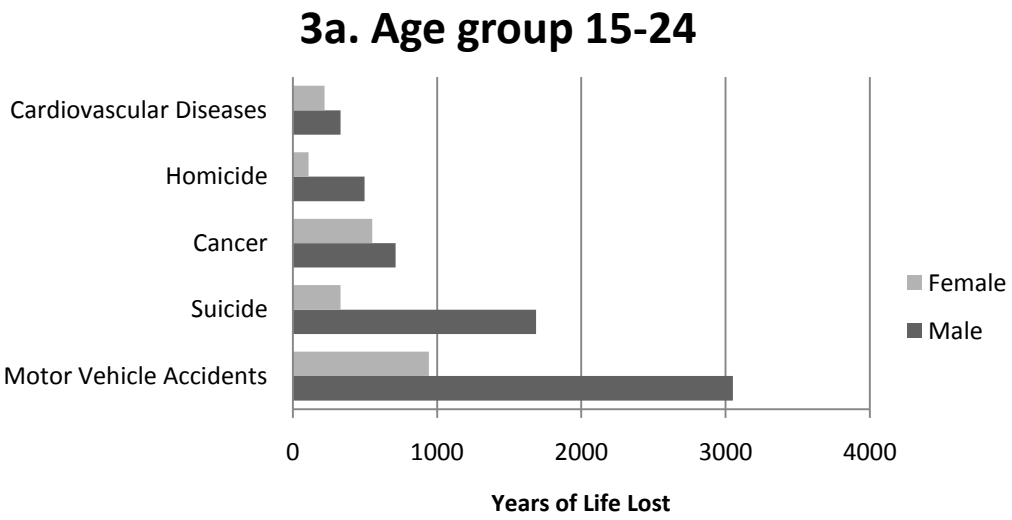
> The PGLE, by the elimination of deaths from a particular cause, is the added years of life expectancy for the population if the deaths from that cause were removed or eliminated as a competing risk of death. This type of measurement is based on multiple-decrement life table techniques that properly take into account competing risks of death and the age structure of the population.[51]

Unfortunately, available epidemiological data has mostly not been analyzed in terms of the PGLE. But keeping in mind the problem of competing risks will make us more cautious in

projecting benefit from interventions to reduce a source of male mortality, remembering that another health condition or accident may be "waiting its turn" to cause death. For example, we might succeed in reducing the likelihood of death from some type of cancer without thereby extending life expectancy (if another condition takes that life around the same age that cancer would have).

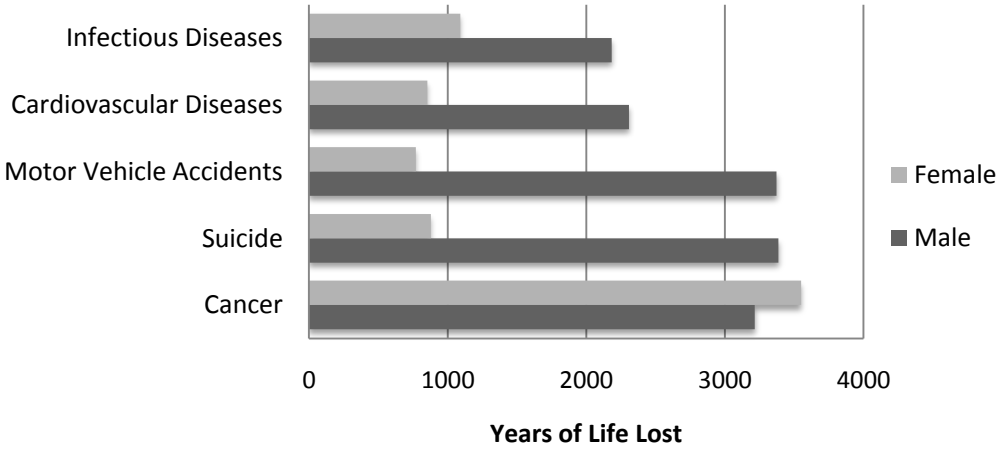
In Figure 3, we see the differences between men and women in B.C., expressed in PYLL, once again organized by age at the time of death. These data are for the year 2006.

Figure 3: Leading Causes of Years of Life Lost, 2006[4]



[4] Based on the British Columbia 2006 Vital Statistics report. Note that these differences are approximate – a cause of death that contributes very little to the PYLL in that age group is not presented in the report's table.

3b. Age group 25-44

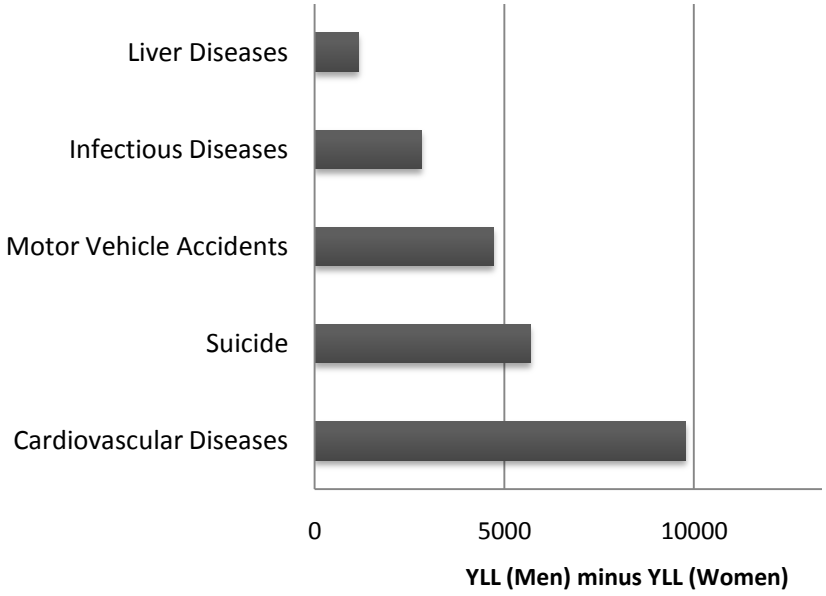


3c. Age group 45-74

Not surprisingly, the pattern of mortality changes considerably across the age groups, with motor vehicle accidents accounting for a much higher proportion of PYLL in the younger age groups, while cancer becomes the leading cause of death in the 45-74 age group. Although not shown here, the pattern among those over 75 looks quite similar to that found in the 45-74 group.

One further step is needed to attain a clear understanding of the differences between men and women in life expectancy – an overall picture of the *differences between men and women in years of life lost*, across the age groups, ranked in terms of the leading contributors to the life expectancy gap. In order to obtain this overall picture, we calculated the difference between potential years of life lost by men and those lost by women: that is, Men's PYLL minus Women's PYLL, across the age groups. In this way, we were able to identify the five sources of mortality contributing most to the life expectancy gap between men and women (Figure 4).

Figure 4: Sources of Excess Years of Life Lost for Men versus Women[5]



This provides a novel picture of the life expectancy gap, yielding a different type of information from that provided by tables of death rates. Here, we see that the first contributor to the gender gap is **Cardiovascular Disease**, which causes substantial mortality in men, at a younger average age than in women. The second greatest contributor to the gender gap is **Suicide**, which affects men more often than women and occurs fairly often in younger age groups. The third greatest contributor to the gender gap is **Motor Vehicle Accidents** – these are more common and more often fatal in men, occurring relatively often in the younger age groups. The fourth greatest contributor to the gender gap is **Infectious Disease**: note that the infectious disease accounting for the most years of life lost for men versus women is **HIV/AIDS**. The fifth

[5] Based on the British Columbia 2006 Vital Statistics report.

greatest contributor to the gender gap is **Liver Disease** – most of the liver disease accounting for years of life lost for men versus women is caused by **Alcohol Dependence**.

This overall picture of the gender gap in life expectancy provides a critically important indication of opportunities for reducing the gap. Each contributor to the gender gap represents an *opportunity*, an area in which interventions to improve knowledge or service delivery might make a meaningful improvement in Men's Health and mortality risk. Along with other conditions related to Men's Health, we will devote some attention to each of these five notable sources of the gender gap in life expectancy: cardiovascular disease, suicide, motor vehicle accidents, HIV/AIDS and alcohol dependence.

But before we can consider interventions for improving Men's Health, we must identify the key issues in understanding Men's Health and mortality. We will develop a framework for approaching Men's Health and then apply this framework to the major health conditions that are specific to men or that are associated with higher incidence or worse outcomes for men, compared to women.

MEN'S HEALTH FRAMEWORK

Verbrugge (1982) provided a logical framework for making sense of data concerning threats to Men's Health. In a review of gender differences in mortality and disease statistics, she identified three overarching categories that might explain mortality differences across sex:[52]

- "Inherited risks of illness": biological factors distinguishing men from women and causing increased male vulnerability to a wide range of diseases.
- "Acquired risks of illness and injury": men may be exposed to a higher degree of physical risk because of their occupational and recreational activities.
- "Illness and prevention orientations": men may be less prepared to identify and take action to address health problems or prevent these problems from occurring.

We review each category, so as to fully articulate this framework for understanding disparities in men's and women's health. We then apply this framework to health conditions specific to men and to health conditions for which being male is a significant risk factor, seeking a better understanding of: factors contributing to differential mortality; gaps in knowledge or knowledge transfer; and gaps in service delivery. Some gaps concern academic research, some concern public policy and some concern clinical practice.

Innate Biological Factors

This category concerns physical characteristics of men, innately determined by their biological sex, that may contribute to serious health conditions and increased mortality. Included here are sex differences in hormonal activity, muscular strength, and genetic determination. According to a 2006 study in the Medical Journal of Australia:

> A biologically determinist approach to the differences between men's and women's health experience focuses on structural, physiological and pathological reasons as to why men are more susceptible to a number of diseases than women. For example, hormonal differences between men and women have been used, at least in part, to explain variations in male susceptibility to disease. Evolutionary pressures toward optimal reproductive outcomes for men have promoted an increase in the prevalence of genes that promote male risk-taking and competitive ability at the expense of decreased investment in repair capacity and disease prevention.[53]

A 2001 Institute of Medicine report on biological sex differences affecting health concluded:

> The incidence and severity of diseases vary between the sexes and may be related to differences in exposures, routes of entry and the processing of a foreign agent, and cellular responses. Although in many cases these sex differences can be traced to the direct or indirect effects of hormones associated with reproduction, differences cannot be solely attributed to hormones.[54]

Here are the main biological factors likely to differentially affect men's mortality:

- Higher levels of estrogen in women, until the end of their childbearing years, have been hypothesized to exert a protective effect upon cardiac function, acting to reduce the incidence of cardiovascular disease for women and leaving men relatively vulnerable to this frequent source of mortality.[55] [56]
- Men's greater degree of muscular strength might have the paradoxical effect of increasing their participation in physically risky occupations, thus contributing to increased mortality.[57]
- It is hypothesized that a characteristic of male brain function is a genetically-determined tendency towards greater risk-taking related to higher levels of sensation-seeking.[58] [59] This inherited personality trait would increase men's vulnerability to injury through high-risk work or leisure activities.

The Institute of Medicine report makes it clear that research on biological bases of sex differences in health is in its early stages – we are a long way from having a firm grasp of the biology of men's health problems and early mortality.

Environmental Exposure Factors

This category involves higher exposure to risks from the environment – whether the physical or socio-cultural environment. This higher exposure might occur in a range of contexts.

First, in their work life, men are more likely to be employed in jobs associated with high risk of accidental injury. Male-predominant occupations include those with the highest rates of serious workplace injury. Men are heavily predominant among soldiers, firefighters and law enforcement personnel, occupational areas with relatively high rates of physical risk and mortality. Notably, the health risks of these occupations have as much to do with indirect effects, such as increased risk of coronary heart disease and suicide, as they do with the direct risks of performing the job.[60] For example, the relationship between being a firefighter and increased risk of heart attack may involve a combination of intense, difficult-to-control stress and the cumulative effects of smoke inhalation. To gain an idea of the magnitude of this differential workplace risk, consider that **97% of workplace deaths in Canada between 1993 and 2005 were male**.[61] Basically, it is men who die at work.

> Jobs held by men are the most dangerous jobs. While males constitute only a little over half (56%) of the workforce, they account for nearly all (94%) fatal injuries on the job (NIOSH, 1993)…. Young men aged 25 to 29 years account for the largest number of occupational injury deaths…. Based on the most conservative estimates, 137 workers die each day from occupational diseases (NIOSH, 1994a), and an estimated 130 of these are male....[62]

Men's higher degree of physical risk exposure extends to their transportation activity – they are at far greater risk of injury or mortality due to motor vehicle accidents (MVAs). As we noted above, motor vehicle accidents are the third greatest contributor to men's years of life lost compared to women. It should be emphasized that men's greater risk in this area is not simply a matter of increased exposure to environmental risk, that is, driving more. In fact, men's mortality from MVAs is not accounted for by total distance driven.[63] It appears that the increased risk of mortality is caused by men's greater propensity for driving at high speeds and in a reckless manner – we'll discuss risky driving under Behavioural Factors.

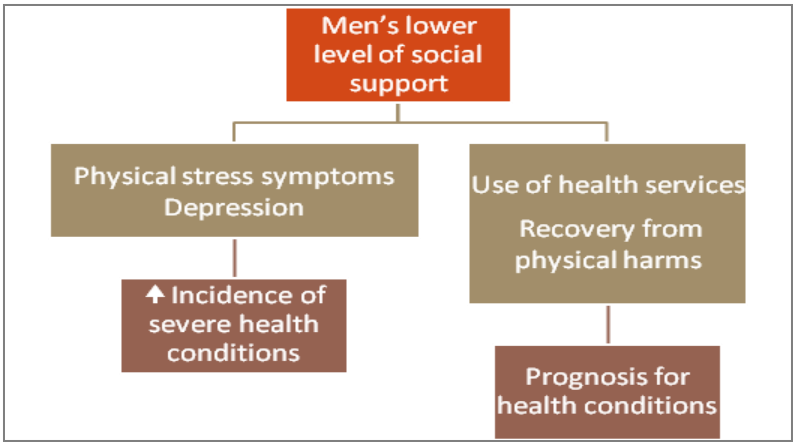
At a more sophisticated level, we might think about men's exposure to health risks in terms of the *social determinants of health* model:

> At every stage of life, health is determined by complex interactions between social and economic factors, the physical environment and individual behavior. These factors are referred to as "determinants of health." They do not exist in isolation from each other. It is the combined influence of the determinants of health that determines health status.[64]

A leading researcher in Men's Health has argued that "adopting the well-known *social determinants of health* perspective would assist in evidence-based development of men's health policies and practice."[65] Social determinants of health may act to increase risks of morbidity and mortality. A direct effect of social determinants might be the impact on brain development of childhood malnutrition associated with extreme poverty. But most of the social determinants we will be considering exert their impact on Men's Health through *indirect* effects.

Examples of indirect effects are:
(a) Men of low socioeconomic status have fewer options for employment and therefore might experience greater pressure to take high-risk jobs. It is important to keep in mind the socioeconomic context of occupational choices made by men. Otherwise, we might be drawn into thinking of men as entirely the source of their own problems: *if only men didn't choose to work in such dangerous occupations, they wouldn't suffer these risks*. For example, an article on men's mortality risk asserts: "Yet, men's higher rates of risk-taking behavior continue to put them at greater risk of injury…. In fact, much of men's excess mortality can be linked to men's greater risk of injury...."[66] These statements clearly imply that men's high rates of mortal injury are due to excessive risk-taking, rather than to, say, dramatically increased exposure to dangerous work. This can amount to a "blame the victim" stance, of limited accuracy and likely to alienate the men who are potential targets of health promotion activities.[67]

(b) Men have been found to have less social support than women – that is, men describe networks of social connections that are smaller than those of women; and individuals who are isolated, without meaningful social connections, are more likely to be male.[68] The importance of this social determinant arises from the body of evidence demonstrating that "individuals whose social ties and support are weak or lacking are at greater risk of death."[69] Researchers have not yet exactly determined the complex connections between lack of social connection and mortality in men.[70] Current data point to the role of social connections in *helping men to deal with stress* (support from other people makes it easier to handle tough situations), *fostering physiological repair and maintenance* (improving overall health status and ability to recover from physical problems) and *encouraging appropriate use of healthcare* (men may rely upon their partners or family members to encourage action in relation to their health).[71] One might also suggest an indirect influence of depression triggered by inadequate social support – depression has been shown to be a strong risk factor for a number of serious disorders such as coronary heart disease. We might picture the indirect influence of these social determinants of health as follows:



The connection between social/psychological factors and health outcomes has been receiving considerable research attention, but we are in early days with regard to understanding this complex relationship with such a significant impact on Men's Health. Researchers will need to:

> begin with a particular disease of interest, ask first which biological processes are involved in the development and progression of that disease, and then empirically analyze those processes to determine which are subject to regulation by the social world and the behavioral and biological processes it modulates.[72]

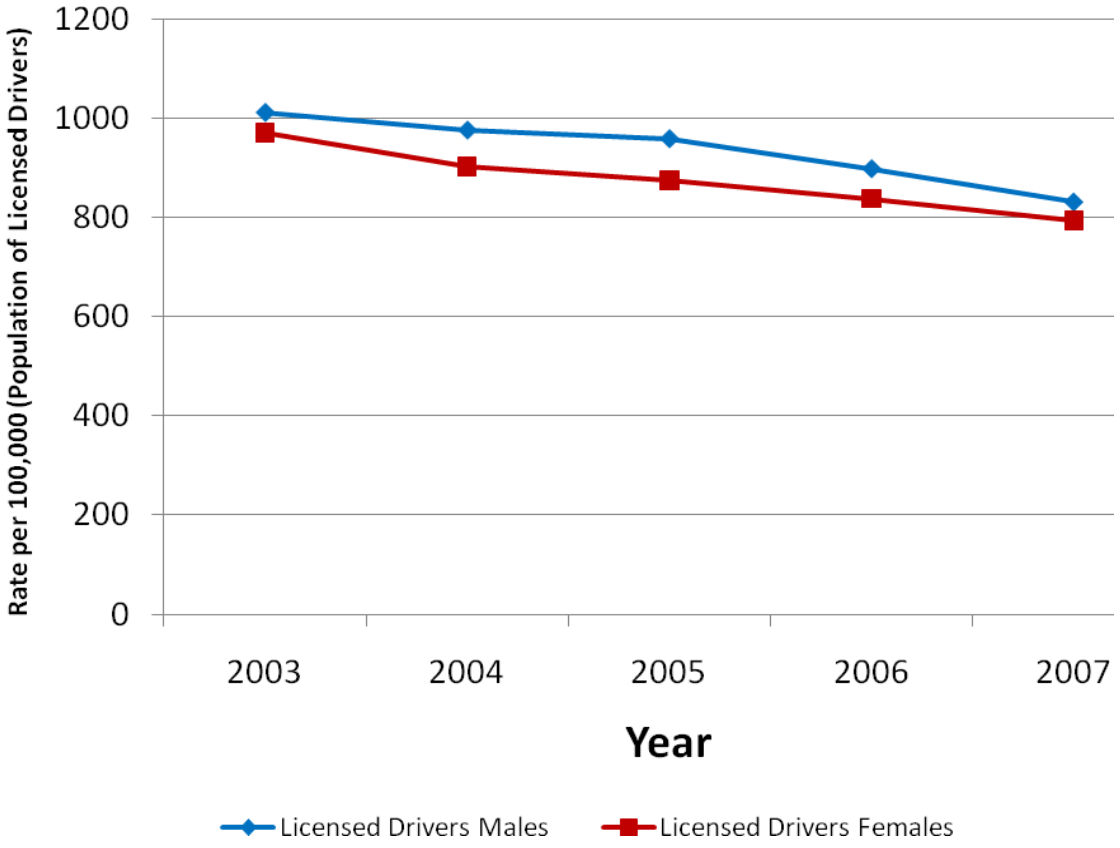
Behavioural Factors

This category concerns the ways in which men behave that raise the risk of serious health problems and mortality.[73] Risky behaviour may take the form of obvious risk-taking (e.g., participating in dangerous sports) or more subtle kinds of behaviour (e.g., ignoring signs of a significant health problem).

Five male behaviour patterns have been identified as major contributors to men's health risks and premature mortality. These patterns are:

Risky operation of motor vehicles. Men are generally more likely to act in physically risky ways when it comes to operating motor vehicles – considerable evidence shows that young men are more prone than young women to drive at unsafe speeds and in a reckless manner.[74] Figure 5 shows the rates of serious injury from motor vehicle accidents over a five-year period in B.C.

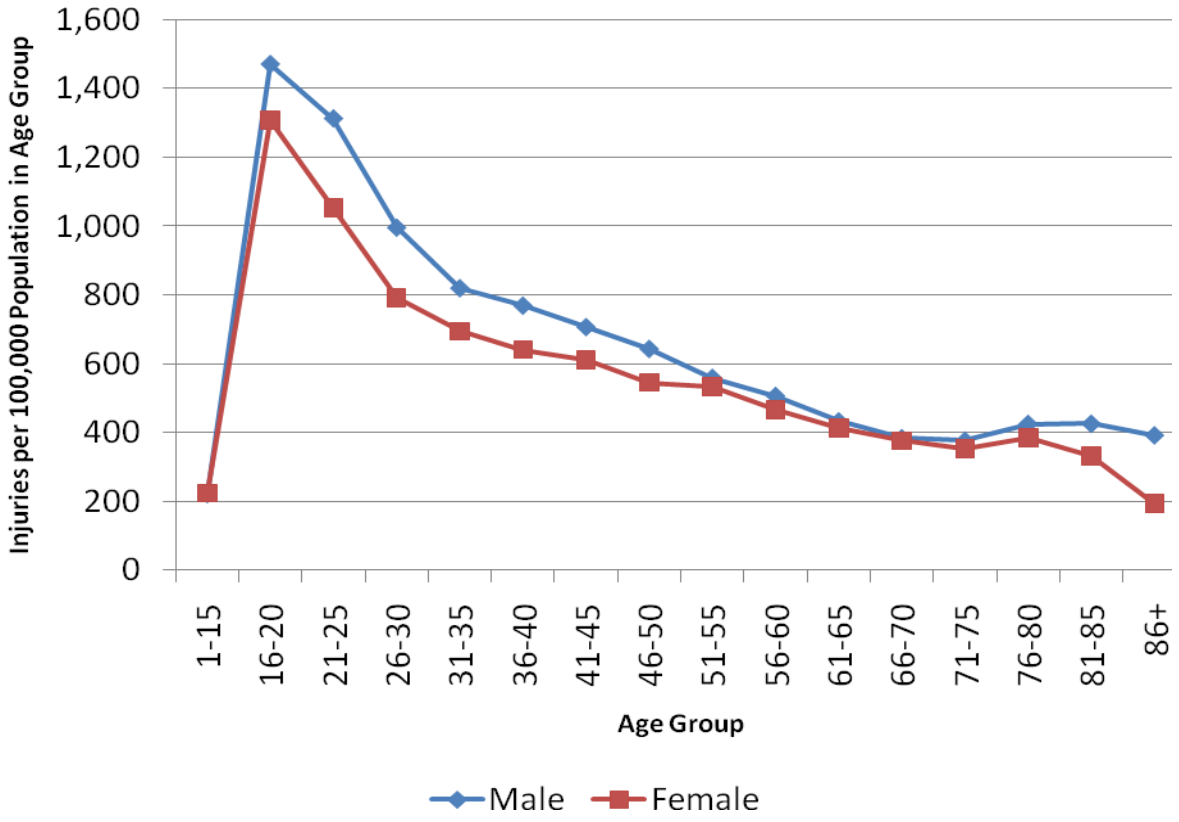
Figure 5: Rates of Injuries from MVAs over Five Years, in B.C.[6]



Although both genders show a declining rate of MVA injuries, men average 12% more injuries than do women, a difference that appears stable. The gender difference in injuries is fairly constant across age (Figure 6), although there is a notable increase in the gender gap for those over 80 – the reason for this is not clear. We might speculate that men are less likely to stop driving if their abilities decline and thus more prone to injury – but research will be needed to clarify this issue.

[6] Adapted from Jones W; Centre for Applied Research in Mental Health and Addiction. Background Epidemiological Review of Selected Conditions. 2009.

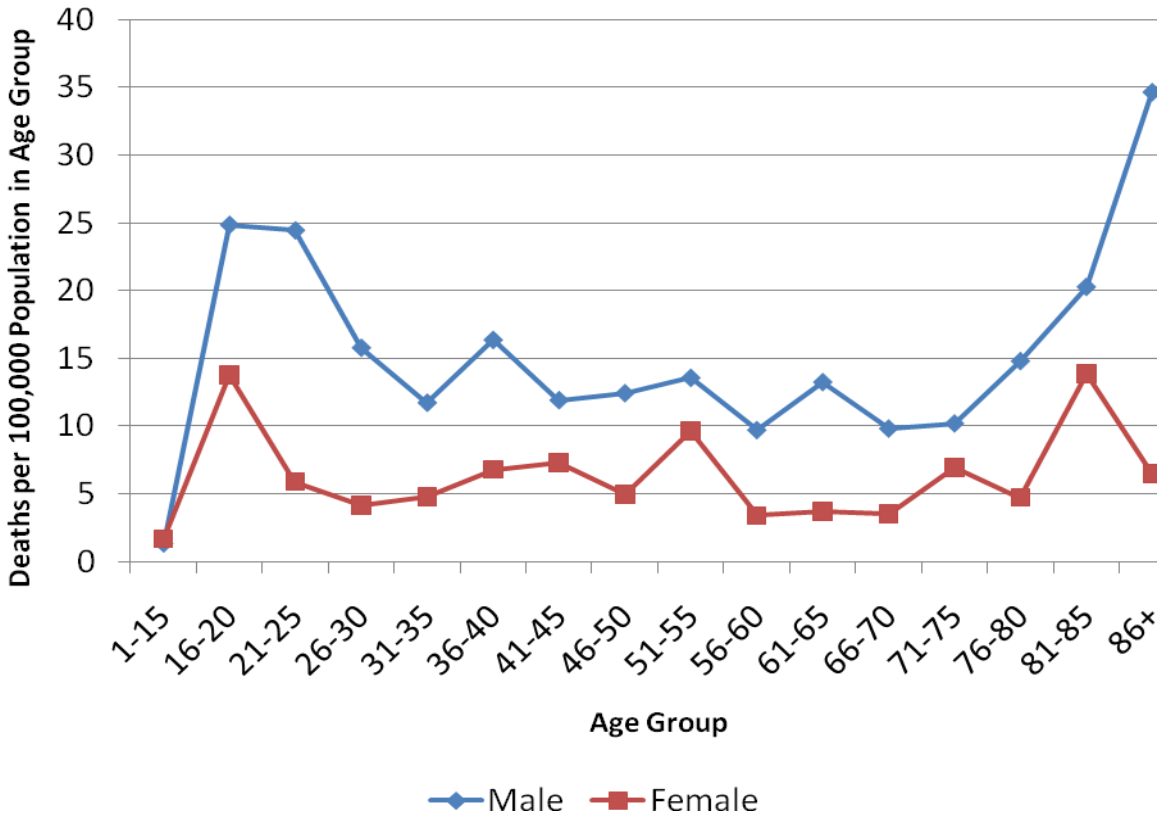
Figure 6: Age-Specific MVA-Related Injury Rates for 2007, in B.C.



Motor vehicle accidents are among the leading cause of mortality for young men – because these deaths happen at such a young age, they account for a large proportion of the total years of life lost by men to premature mortality.[75] As we have shown, mortality from MVAs is the third leading cause of years of life lost by men in comparison to women.

Mortality rates in B.C. due to MVA, by age and gender (for 2007), are shown in Figure 7. The overall pattern of higher male rates is consistent, but the gender difference is accentuated, especially in the 16-25 age group. Young men die from MVAs at a stunningly higher rate than do women, accounting for a huge number of life-years lost. There is also a higher mortality rate for men over 80, but the absolute numbers are small, given the limited population in this age range.

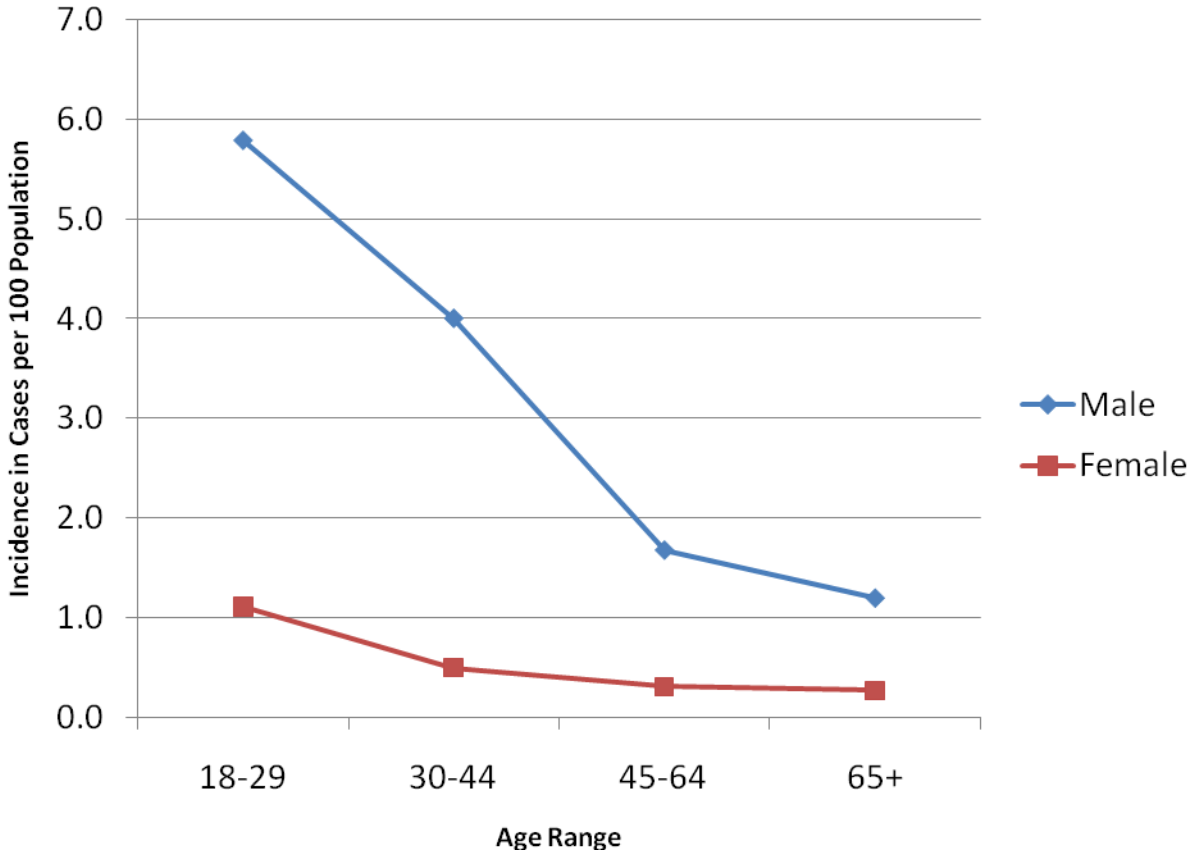
Figure 7: Age-Specific MVA-Related Mortality Rates for 2007, in B.C.



Alcohol overuse. U.S. surveys have shown that the prevalence of alcohol use disorders is much higher in men than women: men are two or three times more likely to have a serious alcohol problem.[76] [77] [78] Alcohol use is responsible for a high proportion of the global burden of health problems. It is a risk factor for a number of serious disorders and sources of mortality, including cancer, diabetes mellitus, heart disease and liver disease, and it is a major factor contributing to rates of mortality from motor vehicle accidents and suicide. As one might expect from their relatively high rate of use, men suffer disproportionately from the health impacts of alcohol: data from 2004 show the rate of global deaths attributable to alcohol use as almost ***six times higher*** for men (6.3%) than for women (1.1%).[79]

Alcohol Dependence (AD) is associated with serious health consequences and increased mortality risk. AD may be defined as use of alcohol "despite significant areas of dysfunction, evidence of physical dependence, and/or related hardship."[80] Figure 8 below shows that AD reaches its greatest level of incidence around age 18, then gradually declines. AD is dramatically higher for men than women in late adolescence/early adulthood – the gender gap declines with age.

Figure 8: Age-Specific Incidence Rates for Alcohol Abuse/Dependence (from Eaton et al., 1989)[7]



Given the strikingly high rates of alcohol abuse/dependence among young men, there is clearly an excellent opportunity for programs to prevent the onset of this health condition by intervening in high school or before. Indeed, it has been demonstrated that a substantial reduction of alcohol abuse/dependence can be achieved in a cost-effective way through school-based programs.[81] It is likely that boys and young men would show particular benefit from preventive intervention – and intervening at this stage offers the best chance for ameliorating the gender gap in this health problem.

Tobacco use. It has been observed over a number of years that men are more likely to smoke tobacco. Given that tobacco use is a risk factor for a number of serious disorders, it is not surprising that men have shown higher levels than women of mortality caused by tobacco use.

> In developed countries as a whole, tobacco is responsible for 24% of all male deaths and 7% of all female deaths: these figures rise to over 40% in men in some

[7] Adapted from Jones W; Centre for Applied Research in Mental Health and Addiction. Background Epidemiological Review of Selected Conditions. 2009.

> countries of central and eastern Europe…. The average loss of life of smokers is 8 years.[82]

This sex difference in tobacco use has been gradually shrinking – in recent years, men have reduced their level of tobacco use while women have tended to increase it. As a result, it is to be expected that the proportion of the gender life expectancy gap attributable to tobacco use will decrease over time.

Unhealthy eating habits. Despite substantial evidence that consuming adequate amounts of fruits and vegetables while reducing levels of dietary sodium helps to prevent a number of disorders and sources of mortality, men are less likely than women to follow recommended dietary practices. In particular, men consume too few fruits and vegetables and too much salt, both in relation to dietary guidelines and in relation to women's dietary practices.[83 84 85]

Underutilization of healthcare services. There is considerable data indicating that men make fewer visits to health practitioners than do women.[86] Men attend primary care less often than do women, thus missing the opportunity for early identification of health problems and recommendation of preventive health practices.[87 88] Men are substantially less likely to seek healthcare for emotional concerns, in particular for depression.[89] At the same time, it is not clear that men underutilize health services when they are dealing with significant physical health concerns: research findings have been contradictory.[90 91] There remains uncertainty in this area and further research is needed to clarify the contexts in which men underuse healthcare. With regard to underutilization of mental health care, promising results have been obtained by a large-scale public campaign in the United States to increase men's awareness of depression and willingness to seek help.[92] An emerging area of research focuses on alternative approaches to delivery of mental health interventions to men, involving coaching or self-help instruction.[93]

Reluctance to adopt healthier lifestyles. Current evidence indicates that men are less willing to change unhealthy behaviour patterns, or at least less likely to make behavioural changes.[94 95]

> Women engage in far more health-promoting behaviours than men and have more healthy lifestyle patterns…. Being a woman may, in fact, be the strongest predictor of preventive and health-promoting behaviour.[96]

Healthcare researchers have sought to understand why men might be prone to unhealthy behaviour patterns. The big question: are there fundamental psychological or social factors that underlie and account for these various unhealthy behaviours? If we could identify a few underlying factors, it might be easier to develop effective interventions to change the unhealthy behaviours and improve men's health outcomes.

The most prominent approach to this issue looks at the ways men seek to be "masculine" in their behaviours so as to meet social expectations. Social concepts of masculinity include norms that indicate how men should act or express their feelings, as well as the kinds of attitudes or beliefs men should possess. Researchers taking this approach describe a dominant form of masculinity, one that could lead to the unhealthy behaviours described above. This dominant type of masculine identity is referred to as "traditional" or "hegemonic" masculinity. The term *hegemonic*, not an everyday word, means *leadership or dominance.* The concept of hegemonic masculinity was initially formulated as follows:

> There is generally a hegemonic form of masculinity, the most honored or desired in a particular context. For Western popular culture, this is extensively documented in research on media representations of masculinity…. The hegemonic form need not be the most common form of masculinity. Many men live in a state of some tension with, or distance from, hegemonic masculinity; others (such as sporting heroes) are taken as exemplars of hegemonic masculinity and are required to live up to it strenuously.[97]

Hegemonic masculinity has been explored by a number of theoreticians and researchers as a way of understanding men's gender roles and gender psychology. It has been elaborated as follows:

> The term "hegemonic masculinity" refers to a particular idealized image of masculinity in relation to which images of femininity and other masculinities are marginalized and subordinated. The hegemonic ideal of masculinity in current Western culture is a man who is independent, risk-taking, aggressive, heterosexual, and rational.[98]

Note that the concept of hegemonic masculinity is complex. The term "hegemonic" is used in several ways: (a) the leadership and dominance values possessed by men with hegemonic masculine identities; (b) the dominance of this particular kind of masculinity over other kinds of masculinity in Western society; (c) the leadership and dominance intrinsically associated with simply being male in this society, whatever values the man endorses.

In order to make the idea of traditional or hegemonic masculinity more concrete and practically useful, a U.S. research group developed the Conformity to Masculine Norms Inventory, a self-report psychological test, to measure an individual's conformity to traditional/hegemonic masculinity. The CMNI is "designed to assess conformity to an array of masculinity norms found in the dominant culture in US society."[99] The masculine norms to which conformity is measured by the CMNI are as follows:

Masculine Norm	Sample Item
Winning	Winning isn't everything, it's the only thing
Emotional Control	I like to talk about my feelings *[reverse scoring]*
Risk-Taking	I enjoy taking risks
Violence	Sometimes violent action is necessary
Dominance	I should be in charge
Playboy	If I could, I would frequently change sexual partners
Self-Reliance	It bothers me when I have to ask for help
Primacy of Work	My work is the most important part of my life
Power over Women	I love it when men are in charge of women
Disdain for Homosexuals	It would be awful if people thought I was gay
Pursuit of Status	I would hate to be important *[reverse scoring]*

Scoring high on each of these norms is considered to show high conformity to the dominant form of masculinity in this society. A number of Men's Health researchers have proposed that strong conformity to these traditional masculine norms will lead to unhealthy behaviours and poor health outcomes. The leading proponent of this view is W.H. Courtenay:

> By successfully using unhealthy beliefs and behaviors to demonstrate idealised forms of masculinity, men are able to assume positions of power – relative to women and less powerful men – in a patriarchal society that rewards this accomplishment. By dismissing their health needs and taking risks, men legitimise themselves as the "stronger" sex. In this way, men's use of unhealthy beliefs and behaviors helps to sustain and reproduce social inequality and the social structures that, in turn, reinforce and reward men's poor health habits.[100]

It has been hypothesized that men with high levels of traditional masculinity will be prone to engage in unhealthy behaviours such as smoking, reckless driving, avoidance of appropriate healthcare, etc.[101] The proposed relationship between traditional masculinity and unhealthy behaviour has been stated as follows:

> the social construction of masculinity acts as an important influence on health and illness, and one that may both prescribe and limit men's lives. Sociologists have

> implied that specific behavior associated with traditional forms of masculinity is likely to be hazardous to men's health. Dominant masculine cultures and values may negatively affect patterns of illness and men's experiences and behavior.[102]

Although it has been fairly well demonstrated that men are less likely than women to engage in a range of healthy behaviours or utilize healthcare appropriately, it has *not* been shown that traditional or hegemonic masculinity, as defined above, affects health behaviour in a substantial way. An initial validation study of the CMNI did not find a relationship between self-reported physician visits and the 11 masculine factors.[103] A more recent study demonstrated that the overall CMNI masculinity score showed small correlations with men's health behaviours: for example, higher masculinity scores were modestly associated with less healthy eating habits and less adherence to health-protective behaviours.[104] Fundamental questions must be answered in order to determine whether this approach has utility in improving men's health outcomes. First, does this approach provide a basis for the design of interventions to promote men's healthy behaviours? If so, should we aim to reduce men's overall levels of conformity to traditional masculinity or focus on particular traits such as excessive risk-taking? Second, how much change in conformity to masculine norms is feasible, given realistic constraints of time and resources for health promotion activities? Third, in light of the modest association between masculine traits and health behaviours, can we expect significant change in health behaviours from feasible changes in masculine traits?

A noteworthy aspect of this account of masculinity is the emphasis upon socially-disapproved attitudes and behaviours. Sexual promiscuity, homophobia, violent behaviour and control of women are not generally considered to be virtues. This approach to masculinity runs the risk of devaluing masculine attributes, defining them exclusively in terms of their negative aspects.

Furthermore, we may find ourselves in the position of *blaming the victim* – that is, viewing men as responsible for their own poor health outcomes and decreased longevity because they refuse to engage in appropriate health behaviours.[105] The women's health movement has elegantly demonstrated the flawed nature of victim-blaming and the same considerations apply to Men's Health.[106]

> Men are often blamed for being poor consumers of health services, and are thus seen to be victims of their own behaviour. We need a different view to that which positions men as “behaving badly.” Various commentators have offered suggestions to counteract victim blaming, including ones related to using a gender-relations approach, a population health approach, a salutogenic approach and/or a social marketing approach ... it is unhelpful to adopt a stance that inherently blames and therefore attempts to “re-educate” the consumer….[107]

Related to this concern over blaming men for their own health problems is the risk of politicizing the field of Men's Health, viewing it as a manifestation of a larger social issue, namely the balance of power between men and women in society.

> When writers try to broaden the biological perspective, often what is presented is a "gender-relations approach" — a consideration of men's socially conditioned oppressive behaviour and specifically "hegemonic masculinity" (the dominance of men over women). The power imbalance between men and women is sometimes used to explain men's health, including why men die at an earlier age than women.[108]

The risks of this approach are:

a) By focusing upon negative or destructive aspects of traditional masculinity, we may alienate the majority of men. Only by engaging men in a process of change and fostering improvement across a range of healthcare behaviours will there ultimately be significant potential for improving Men's Health.
b) Making improvement of Men's Health dependent upon changes in the balance of power between the genders may impose an unnecessary burden. It is by no means clear that Men's Health can only be improved through fundamental social change.
c) By neglecting or underemphasizing the positive attributes of masculinity, we fail to harness these attributes in the service of health improvement. In fact, the virtues and strengths of masculinity (traditional or otherwise) may provide the key to transforming Men's Health.

An alternative approach is one that considers masculine norms as embodying both positive and negative attributes. For example, the masculine norm named in the CMNI scale as *Violence* reflects the propensity to aggressive thoughts and actions. Such a propensity may be expressed in a negative way, through acts of verbal or physical brutality; but may also be expressed in a positive way, through socially-sanctioned aggression in the context of military, law enforcement or competitive sports activities. An individual who strongly rejects the possibility of physical aggression would have considerable difficulty in these prosocial roles. Similarly, high risk-tolerance or -seeking might be a prerequisite for success in a range of occupations associated with high intrinsic risk (logging, fishing, mining, etc.). It is worth keeping in mind that virtually all workplace deaths involve men – clearly, our society *expects* men to carry out risky work and, by implication, to value risk-taking.

Taking this approach, one acknowledges masculine virtues (appropriate aggression and risk-taking, perseverance despite suffering, commitment to hard work, ambition, etc.) while recognizing that certain of these virtues may also be expressed in unhealthy or destructive ways. In fact, one might describe this as *the paradox of masculine strength*: risk acceptance and indifference to physical distress may become a form of weakness if manifest in poor nutrition, unhealthy weight levels and neglected warning signs of worsening health.

A Men's Health approach along these lines has been proposed by Macdonald (2005), under the term *salutogenic* (health promoting):

> the literature on initiatives on men's health, even so-called “health promotion” for men, has another major strand of concern: the social pathologies of men – men's violence, the prevention of abuse, the need to address men's inadequacies in "talking about their emotions,” men's failure to use health services, and so forth. It would seem to be accurate to talk of the “deficit model” of men as underpinning this dimension of men's "health".... [By contrast] Maleness, in a salutogenic perspective, would not be something to be apologized for and "controlled," but honoured and encouraged in positive ways. In the Australian context, before blaming men for too much risk taking, society should celebrate the useful risk taking men get involved in for the benefit of society as a whole. Those of us who depend on volunteer firemen (99 per cent of firefighting volunteers are men) to preserve their lives and homes and health should have no difficulty in beginning from the positive.[109]

Finally, it is worth keeping in mind that conformity to masculine norms such as risk-taking varies widely within male populations. It is tempting to think in terms of stereotypes (e.g., the physically pugnacious and homophobic male), but we must never forget that such a stereotyped image applies only to a minority of men in our society. There is considerable variability within female populations as well: depending on the trait, there may be more variability *within* each gender than between the genders. Also, the way a masculine trait like aggression is *expressed* may differ between men and women due to social norms, but the underlying trait may be comparable.[110]

Health promotion interventions focused on men have recently been reviewed.[111] This review found many reports describing Men's Health interventions but only a few that included systematic evaluation of outcomes. Several kinds of studies examining health promotion aimed at men were identified.

First, those focused upon diseases specific to men. Most of these studies involved promotion of health activities related to prostate cancer, in particular enhanced decision-making and knowledge with regard to screening.

Second, those delivered in settings with a high proportion of men such as sports events or primarily-male workplaces. For example, one study targeted men in a workplace, seeking to improve dietary and health-related lifestyle activities through a once-a-month educational program, over a six-month period.[112]

Third, those designed to be *gender-appropriate* – specifically relevant and acceptable to men. Few studies fell into this category. Examples: an intervention to reduce tobacco use by fathers including a video in which a prominent athlete emphasizes the harmful effects of parental smoking on infants;[113] personalized letters that explain the kinds of health screening

recommended for men of different ages;[114] and pamphlets distributed to men, highlighting the risks of skin cancer, preventive behaviours and men's poor adherence to these behaviours.[115]

The health promotion review concluded that:

- Most interventions showed positive impact on men's healthcare knowledge and behaviour.
- Interventions guided by theoretical frameworks, e.g., decision-making theory, tend to be more effective.
- Large trials are needed to produce a more substantial base of evidence to guide future interventions.

We can add that a particular area needing increased attention is that of health promotion in men through male-appropriate interventions. The small pool of research literature in this area leaves us with little knowledge of the impacts achievable by health promotion designed to accord with men's values and priorities. A recent analysis of efforts to prevent heart disease argued that "the success of a lifestyle change program depends on its curriculum being matched to the targeted individuals' preferences, abilities and environmental constraints."[116] In order to design such matched interventions for men, we will need to enrich our understanding of men's health-related preferences, abilities and constraints.

APPLYING THE MEN`S HEALTH FRAMEWORK TO HEALTH CONDITIONS

PROSTATE CANCER

DESCRIPTION

The prostate is a male sex gland that lies just below the bladder and surrounds the upper part of the urethra (the tube that carries urine from the bladder and semen from the sex glands out through the penis). Male sex hormones, primary among which is testosterone, stimulate the activity of the prostate and trigger the replacement of prostate cells as they wear out. Prostate cancer is the second most common malignancy diagnosed in North American men (after skin cancer): approximately 1 out of 7 men will develop prostate cancer during their lifetime, with most cases diagnosed in men over 65. It is the third leading cause of cancer mortality.[117]

The apparent incidence rate of prostate cancer has been substantially affected by increasing use of the prostate-specific antigen (PSA) test in Canada and other countries.[118] With the widespread introduction of this test, more sensitive to the occurrence of prostate cancer than previously available tests, the incidence of this disease appeared to increase sharply. The pattern has been a rapid increase, followed by a return to a rate of increase more in line with previous trends (Figure 9). In addition, introduction of the PSA test seems to have altered the age-specific incidence patterns of this disease, with cases being detected at an earlier age (Figure 10).

Figure 9: Five-Year Prevalence Estimates for Prostate Cancer in Canada as of January 1, 2005

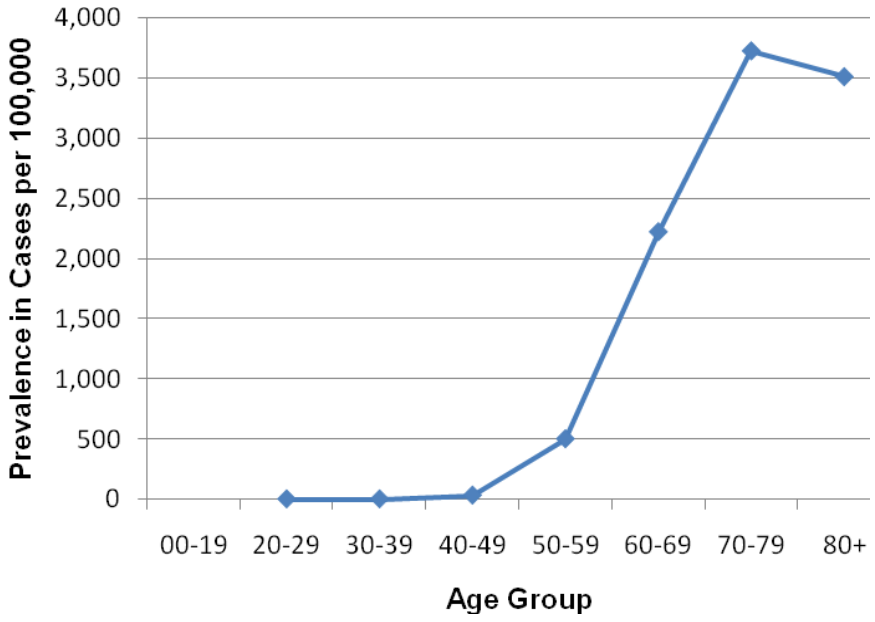
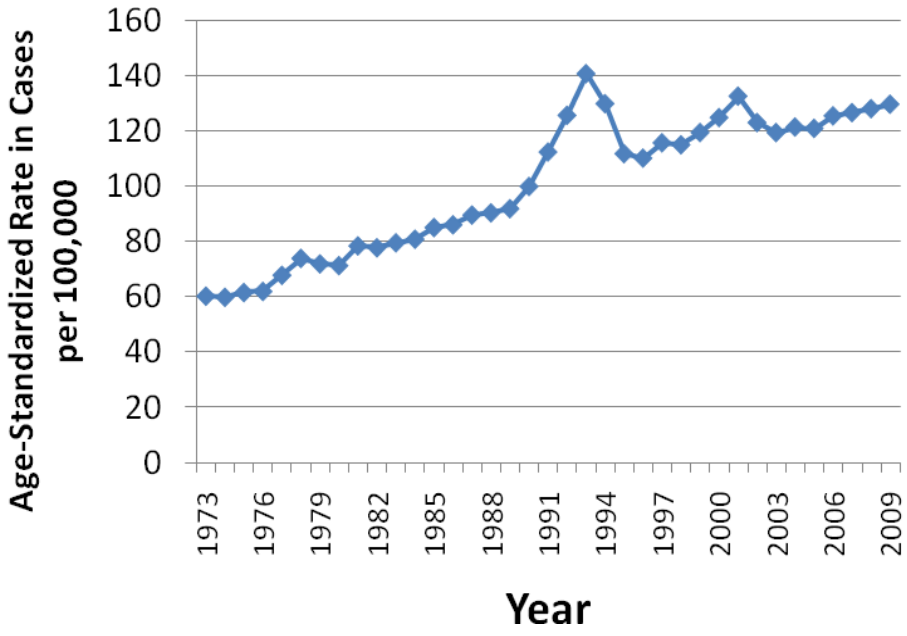


Figure 10: Age-Standardized Prostate Incidence Rates for Canada



Consistent with the view that the rapid increase in incidence reflects a “detection bias” rather than a true change in disease incidence is the fact that there has been no associated change in mortality rates, as one might have expected from rapidly increased incidence of this disease (Figure 11). Although the data suggest a gradual decrease in mortality due to prostate cancer, mortality rates remain fairly similar to their level 30 years ago and it is uncertain whether this constitutes a long-term trend. Death from prostate cancer occurs mainly in the older age groups (Figure 12). The background epidemiological review associated with this report concludes that "Canadian trends in mortality are similar to a number of other countries."[119]

The cause of prostate cancer has not been established – it is believed that a combination of genetic, nutritional and environmental factors is involved. In some men prostate cancer will be slow-growing while in others it will be more aggressive, spreading to various parts of the body. It is the aggressive form of prostate cancer that is life-threatening. Research findings indicate that the prognosis for prostate cancer is good if appropriate treatment is initiated in the early stages of the disease.

Figure 11: Age-Standardized Prostate Mortality Rates for Canada

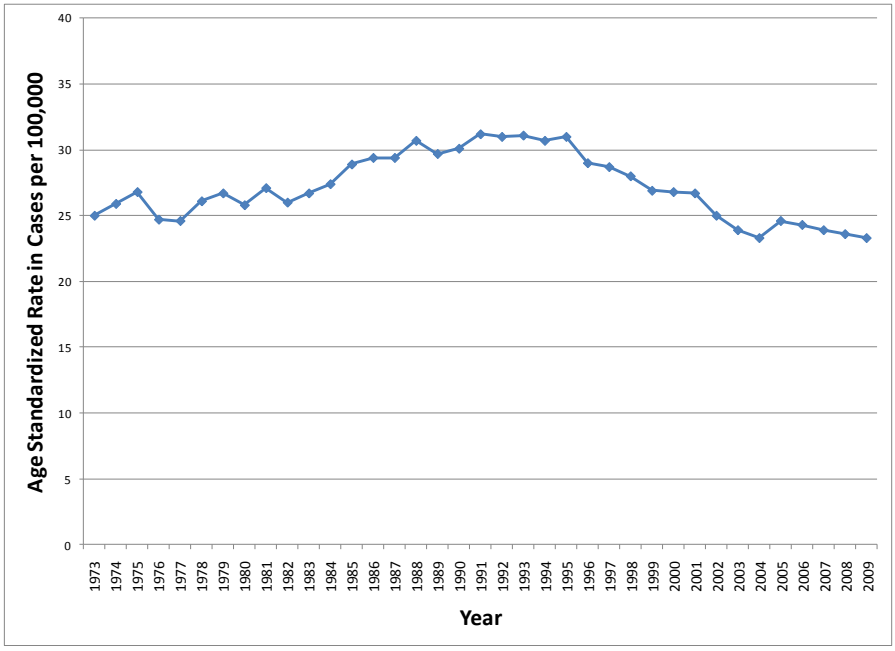
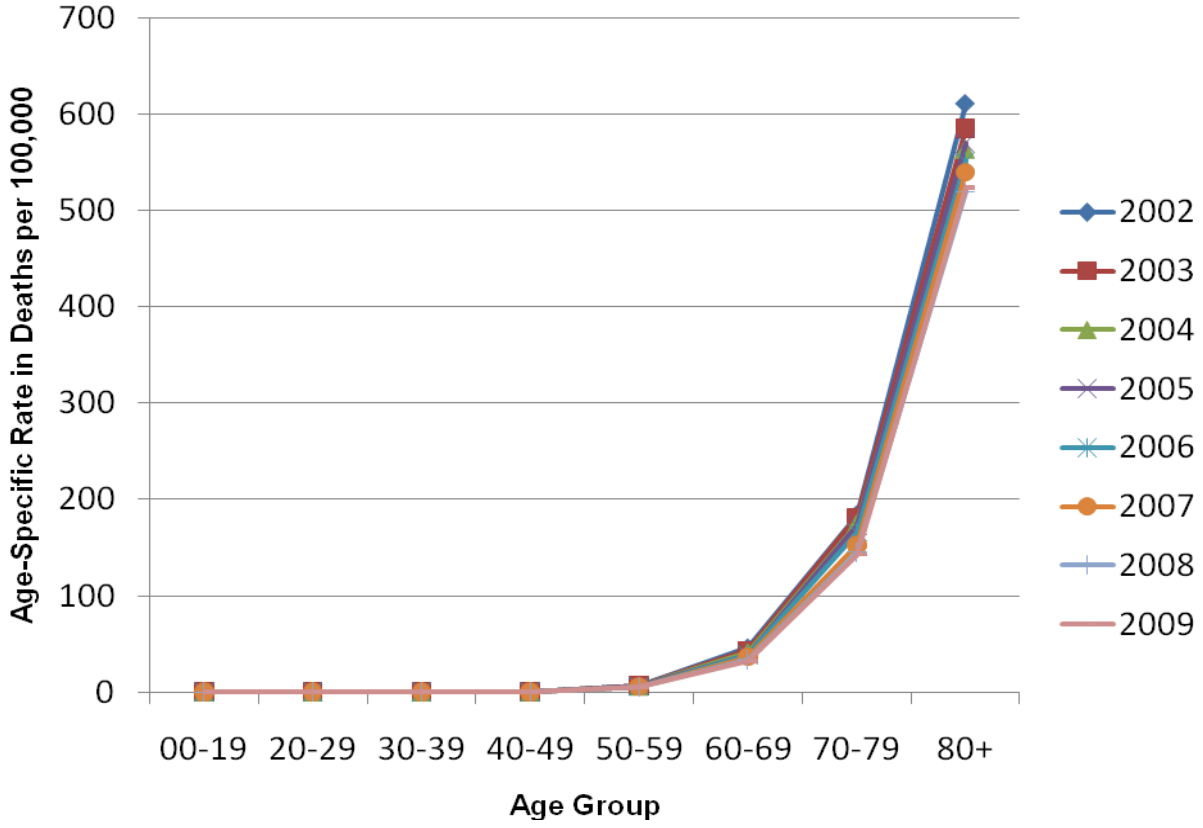


Figure 12: Age-Specific Prostate Mortality Rates for all of Canada over a Nine-Year Span



PREVENTION

A literature review conducted for the Public Health Agency of Canada concluded that: "With the possible exception of animal fat consumption, no known widespread modifiable risk factors have been identified."[120] However, there has yet been no demonstration that modification of animal fat consumption helps to prevent prostate cancer.[121]

> Another line of research involves the use of chemoprevention ("the use of specific agents to suppress or reverse carcinogenesis and to prevent the development of cancer") — e.g., the androgen inhibitor finasteride. However, none of the chemoprevention trials has produced results sufficient to justify widespread use of chemoprevention strategies.[122]

SCREENING

The best way to screen for prostate cancer is to carry out both a digital rectal exam (in which the physician feels the prostate by inserting a gloved and lubricated finger into the rectum) and a prostate-specific antigen (PSA) blood test. Note that the digital rectal exam is not always accurate. For example, the tumour may be too small for detection or a lump may be detected that is not actually cancerous. As the PSA is a protein produced by both normal and cancerous prostate cells, it may be elevated due to a noncancerous cause, such as enlargement or inflammation of the prostate. If results of either the digital rectal exam or PSA testing are abnormal, a biopsy will be conducted.

Since prostate cancer may show no symptoms in its early stages, screening would seem to be an important means for identifying this disease at an early, highly treatable stage. The challenge has been to find an accurate screening method, one that reliably identifies cancers that will be fast-growing, and to demonstrate the benefit of this screening approach in terms of increased longevity or quality of life. As stated in a recent review:

> In Canada the observed lifetime incidence rate of prostate cancer has been about one third of the autopsy prevalence. This observation gives rise to the oft-quoted expression that "more men die with prostate cancer than of it" and to the clinical dilemma of separating newly diagnosed cancers destined to behave aggressively from those destined to have a totally latent or relatively benign course.[123]

A number of research trials have been conducted to determine the benefit obtained by screening for prostate cancer, as well as the age when screening should be started. But the interpretation of research results has not been straightforward. Some research trials show significant benefit from screening programs, while others are much less clear.[124] In particular, two recent and very large trials of PSA screening in relation to prostate cancer outcomes found inconsistent results and their findings have been interpreted differently by experts.[125] [126] As a result of these complex and inconsistent findings, varying recommendations for screening have been issued by different healthcare standards groups.

The American Urological Association recommends that men discuss the pros and cons of PSA screening with their family physician, and that for those men who choose screening, it should be initiated at age 40:

> The American Urological Association Foundation (AUA Foundation) is concerned that recent studies about prostate-specific antigen (PSA) testing may present conflicting information to patients about the value of this critical prostate cancer screening test. The benefits of regular screening and early detection should not be discounted in the overall population. The AUA Foundation believes that the decision to screen is one that a man should make with his doctor following a careful discussion of the benefits and risks of screening. In men who wish to be

> screened, the AUA recommends getting a baseline PSA, along with a physical exam of the prostate known as a digital rectal exam (DRE) at age 40.[127]

The Canadian Task Force on Preventive Health Care also recommends that men discuss PSA screening with their family physician, but focuses this recommendation on men over 50. This group adopts a relatively cautious position with regard to the benefits of PSA screening, stating:

> Insufficient evidence exists over whether the benefits of screening for prostate cancer outweigh the risks involved. There is no conclusive evidence that screening of asymptomatic men reduces mortality from the disease. At the same time, early diagnosis and treatment of cancers, which in many cases may not significantly progress during the patient's lifetime, can cause morbidity (e.g. impotence, urinary incontinence) leading to diminished quality of life.[128]

The Canadian Cancer Society focuses upon the importance of targeting men at higher risk for prostate cancer:

> Research currently shows that the risks of testing for prostate cancer may outweigh the benefits in screening men at average risk of developing prostate cancer. The issue is controversial and confusing for men because there are conflicting messages from health and advocacy groups and because many doctors continue to prescribe it as a screening tool for prostate cancer.... Most research shows that the PSA (Prostate-Specific Antigen) test is mainly effective as a diagnostic test for men who are at above average risk of developing prostate cancer, or demonstrate symptoms of prostate cancer.[129]

Indications of higher risk for prostate cancer include being over 65, having a family history of prostate cancer and having African ancestry. Other factors, such as obesity and physical activity, are being investigated with regard to their potential contribution to increased risk of prostate cancer – but the evidence regarding these factors is not yet clear.

These guidelines agree in recommending that decisions about PSA screening be made by men in consultation with their family physicians. This places a considerable burden on the average Canadian man and his physician – they must decide upon a course of action where leading experts have yet to reach full agreement!

DIAGNOSIS

Biopsy is the most reliable way to establish the diagnosis of prostate cancer. A prostate biopsy removes small amounts of tissue to examine under a microscope to determine whether cancer is present.

Prostate cancer diagnosis must determine not only whether prostate cancer is present but also its severity, or stage. Stage refers to the amount of cancer in the prostate and whether the cancer has spread outside the gland. There are several tests that are useful in determining tumour stage. Not all of these tests are needed in all men. In fact, for men with early cancers of the prostate, the chance of cancer elsewhere in the body is so low that such tests are not warranted.

TREATMENT

Prostate cancer treatment depends upon the type of cancer, the absence or presence of metastasis (spread of the disease), the patient's age, the patient's general health status, life expectancy and any prior prostate treatments the patient may have undergone. The three standard therapies for men with organ-confined prostate cancer are active surveillance, surgery (radical prostatectomy) and radiation therapy. To date, no study has directly compared these three options. This fact makes it difficult to compare outcomes in men treated with either surgery or radiation.

There are pros and cons to each of the treatment options:

Active Surveillance (expectant management, watchful waiting)

Active surveillance (AS) may be recommended if a cancer is not causing any symptoms and is expected to grow very slowly. This approach is particularly suited for men who are elderly or have other serious health problems that may determine their fate before the prostate cancer can have a significant impact. Because prostate cancer often spreads very slowly, many older men who have the disease may never require treatment. Some younger men choose active surveillance because the side effects of other treatments outweigh their benefit. Active surveillance does not mean that a man receives no medical care. Rather, his cancer is regularly and carefully monitored with PSA and clinical evaluation and deferred treatment can be instituted when disease progression is seen, and hopefully while the cancer is still curable. Typically, patients on an active surveillance program undergo regular PSA measurements and periodic prostate biopsies to ensure that the cancer is not becoming more aggressive.

Radical Prostatectomy

Surgical treatment for prostate cancer involves removing the entire prostate and seminal vesicles, a procedure called radical prostatectomy (RP). When the cancer is confined within these tissues, surgery alone can cure localized prostate cancer. The PSA level in the blood should fall to undetectable levels after radical prostatectomy. Surgery is followed by an average hospital stay of 1 to 2 days and an average time away from work of 2 to 6 weeks.

Radiation Therapy

Radiation therapy is a non-surgical alternative for the treatment of prostate cancer that has been shown to be effective for many patients. Radiation may also be used following surgery when prostatectomy does not appear to have completely removed the cancer. Radiation therapy can also be used to help shrink tumours and relieve pain in men with advanced disease.

The onus is upon individual men to acquire knowledge in order to make an informed decision among these three options. This is a difficult decision for any individual, especially one who has just learned this frightening diagnosis and may be experiencing a state of emotional turbulence, anxiety or sadness. We will discuss below the research focused on tools and strategies for helping individual men make this treatment decision.

Several qualitative research studies have investigated the factors influencing men's decisions about which prostate cancer treatment option to pursue.[130] [131] Notably, a study in B.C. explored factors influencing the choice of active surveillance in low-risk cases in a sample of twenty-five patients who had chosen this treatment option.[132] This study found the key source of information regarding this decision was the specialist's portrayal of the issues associated with the decision – the patients did not indicate a need for other sources of information or support. The primary reason for choosing this option was the wish to avoid or at least delay treatment-related suffering from side effects like impotence or incontinence. Encouragingly, these patients indicated that they experienced minimal distress while on active surveillance and carried on their lives as usual.♠ A related study from this research group examined the strategies men use to manage the uncertainty of being on active surveillance – how do they avoid anxiety while living with untreated (though low-risk) cancer?[133] An intriguing aspect of this study's findings was that certain traits linked to traditional masculinity, and elsewhere identified as harmful to Men's Health, contributed positively to men's ability to successfully manage active surveillance:

> Many typical behaviors strongly linked to men's poor health outcomes prevail as potentially beneficial to men's uptake and ongoing commitment to AS. For example, men who had invested in living a normal life denied illness by positioning their prostate cancer as benign and used stoicism and solitary discourses to downplay the inherent uncertainty of choosing not to treat their prostate cancer. Such behaviors have long been criticized…. In the context of AS, the silent, decisive masculine mind – focused on "business as usual" – was central to the men's ability to live a normal life by (a) triaging prostate cancer and AS as not needing "their" immediate or everyday attention; (b) avoiding worry, stress, and resisting wholesale lifestyle changes that might awaken an otherwise dormant cancer; and

♠ It should be noted that a sample of 25 individuals, typical of the smaller samples used in this kind of qualitative research, does not necessarily accurately indicate the rate of distress one might find in the overall population of men on active surveillance for prostate cancer.

> (c) disregarding dominant cultural ideals that advocate the early treatment of all cancers.[134]

As argued above, maintaining a balanced view of traditional masculinity, its harms and benefits, helps us to see how we might build on male virtues to foster their improved health. For example, one might consider engaging men's stoic tolerance for distress to help them manage any suffering associated with smoking cessation, alcohol withdrawal or increased consumption of fruits and vegetables.

A context in which men's coping strengths can be engaged is that of cancer support groups. Such groups have been increasingly made available to men dealing with cancer and its treatment.[135] The use of coping strategies in prostate cancer support groups (PCSGs) has been examined by a B.C. research program, using a qualitative research approach. This research has demonstrated that a view of men as rigidly constrained by traditional masculine attributes does not suffice to understand the behaviour of men in these groups:

> The behaviors observed at PCSGs consistently disrupted long-standing commentaries about men's health practices including stoicism, disinterest in self-health, and the denial of illness and/or dysfunction.... Men also embodied masculine ideals in how they engaged with their health and illness. For example, the science of prostate cancer was taken up in rational and objective ways by men as a means to facilitating masculine talk about unlikely topics, including urinary incontinence and ED [erectile dysfunction].[136]

Furthermore, men in these groups use humour as a powerful method for dealing with disclosure of emotional vulnerabilities in a manner not associated with traditional masculinity.[137] Clearly, men's coping with health problems is more flexible and multifaceted than one might expect from the hegemonic model of traditional masculinity discussed above. We find a reassuring capacity for mutual support and emotional coping in these men, along with the application of conventional masculine virtues like dispassionate rationality. Building on men's coping capacities and flexibilities will be crucial in developing effective interventions for health promotion and support.

SERVICE GAPS

- As the life expectancy of men increases, we are now in a position where prostate cancer is the most common form of cancer in men; but lack of research in this area is reflected in uncertainty over the most effective forms of screening, diagnosis and treatment. This makes it difficult to guide men who are becoming aware that their prostate health may be problematic.[138]

Primary care physicians may be limited by time and ready access to knowledge with regard to supporting patients in deciding whether to undergo PSA screening for prostate cancer. Prostate cancer guidelines emphasize collaboration between the primary care physician and patient in deciding whether and when to initiate PSA screening. In order to carry out this role, the family physician must provide the patient with relevant information concerning the risks and benefits of screening so that the patient may weigh these factors and make an informed decision.[139] Family physicians tend to be positively disposed toward initiation of PSA screening[140] (as indicated by the high frequency with which physicians seek PSA screening for themselves).[141] However, the research literature shows considerable variation between physicians in the frequency and adequacy of their provision of patients with information to support a screening decision.[142] [143] [144] This suggests that many men are not receiving sufficient information to guide their decisions in this area.

A relevant response lies in the development and dissemination of decision aids to patients considering PSA screening. Decision aids are patient education materials, whether presented in the form of handouts, DVDs or other media, that help the patient to understand a particular area in which they must make an important decision, typically in collaboration with their healthcare provider. Decision aids are "designed to help people make specific and deliberate choices among options (including the status quo) by providing (at a minimum) information on the options and outcomes relevant to a person's health status."[145] Equipping healthcare practitioners and/or patients with such aids should enhance the quality of decision-making around prostate screening, ensuring the delivery of comprehensive and accurate information.

Various research groups have evaluated the use of decision aids in relation to prostate screening.[146] [147] [148] [149] Systematic reviews have found the impact of providing prostate screening decision aids to be: patients show enhanced knowledge; patients report more confidence in their decisions; patients who are not seeking screening show less interest in screening; patients who are seeking screening show no change in their interest in screening.[150] [151]

- Primary care physicians may be limited by time and ready access to knowledge with regard to supporting patients in deciding which form of treatment to undergo after being diagnosed with prostate cancer. A recent analysis of the role of a primary care physician in relation to prostate cancer management concluded that the physician should provide patients diagnosed with prostate cancer with information needed to make crucial decisions about treatment options.[152] [153] Once again, the implementation of the recommendation is problematic – patients often receive limited information that is insufficient to guide their decision-making efforts.[154] Decision aids have been applied to supporting patients with regard to treatment options for prostate cancer. A review of studies evaluating this use of decision aids found that patients receiving them are "more likely to prefer watchful waiting as a treatment option" (i.e., less likely to prefer treatment by prostatectomy or radiation therapy).[155]

- Specialists (urologists and radiation oncologists) may be limited by time with regard to supporting patients in deciding which form of treatment to undergo after being diagnosed with prostate cancer. Furthermore, some specialists believe that information will "scare" their patients, and thus may provide only limited information. There is wide variation in the time spent with patients and the amount of in formation provided to these men and their partners.

- Screening for prostate cancer using PSA testing is not covered by public health insurance in Canada, a subject of considerable controversy. Many specialists in the field consider this to be a gap in service provision, while others consider it appropriate given the research evidence regarding benefits and risks of PSA screening.[156] It remains to be determined whether this represents a service gap.

- Uptake of active surveillance by appropriate low-risk patients is limited by lack of patient knowledge and support:

> There are several strategies that should be developed if AS is to become more widely adopted. Increased education and good communication can alleviate anxiety and uncertainty, as can interventions for cognitive re-framing. Inviting patients to become active participants in their management might enhance the patients' sense of control, and the involvement of peer-support groups might be beneficial.[157]

KNOWLEDGE GAPS

- To date there have been no randomized clinical trials to determine the best treatment option for low-risk prostate cancer.[158] It has been challenging to recruit patients to randomized trials: most patients wish to retain control over the treatment or have a specific preference at the time of diagnosis.[159]

- The general public does not have a good understanding of the issues surrounding prevention or screening of prostate cancer. This knowledge gap could be addressed through public information campaigns developed according to principles of effective knowledge translation . For example, a recent study of older men's responses to a television program on prostate cancer found this program to be effective in increasing their awareness of the complex issues raised by prostate cancer screening. The researchers recommended that "health consumers may be better able to negotiate conflicting medical information if the different sides of the argument are plainly noted and a clear distinction is made between opinion and evidence."[160]

TESTICULAR CANCER

DESCRIPTION

This is a form of cancer that begins in the testicles, usually in the "germ cells" (the source of men's sperm). There are two kinds of tumours arising from germ cells: seminoma and non-seminoma. There are different treatments for these kinds of tumour, but treatment in both cases has a high rate of success.[161] The cause of testicular cancer has not been established, although certain factors that increase the risk have been identified, including a family history of testicular cancer, abnormal development of the testicles, and early onset of puberty.[162] [163]

Testicular cancer is a relatively rare disease, among the less frequent forms of cancer, with incidence in Canada of 5.4/100,000.[164] Notably, the incidence of this disease has increased substantially over the last several decades. The increasing incidence of testicular cancer in Canada is shown in Figure 13.

Figure 13: Age-Specific Testicular Cancer Rates for a Canadian Population (from Liu et al., 1999)[8]

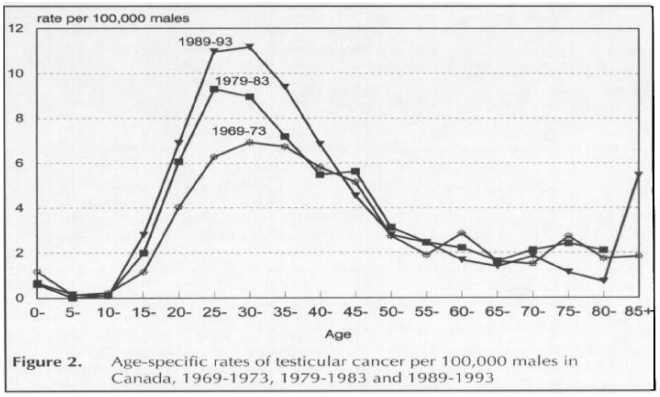


Figure 2. Age-specific rates of testicular cancer per 100,000 males in Canada, 1969-1973, 1979-1983 and 1989-1993

Most of the increase in testicular cancer incidence has occurred in those aged between 20 and 50. Epidemiological data from other countries are consistent, showing a similar pattern of steady increase, focused on this age group.[165] [166] This increase appears to be ongoing, as shown in recent data from the UK – although some researchers suspect that testicular cancer incidence may be leveling off.[167] [168] Disturbingly, we do not know why the substantial increase has occurred:

[8] Liu S, Wen SW, Mao Y, Mery L, Rouleau J. Birth cohort effects underlying the increasing testicular cancer incidence in Canada. *Canadian J Public Health*. 1999;90:176-180.

> The reasons for such a phenomenon are still unclear. Environmental factors (endocrine disruptors) are strongly suspected, and could also have an impact on male fertility and male genital development. However, genetic factors may also play a role. From a public health perspective, further research using cases collected through national and regional population-based registers and case-control studies must be strongly encouraged.[169]

Testicular cancer is associated with a very low mortality rate when standard treatment is delivered: 10-year survival rates are around 95%.[170] [171] This success rate is especially impressive when viewed in the context of the dismal prognosis for this disorder 40 years ago: "prior to 1970, less than 5% of metastatic non-seminomas became long term cures."[172] Metastatic testicular cancer has seen a steadily improving outcome – success rates of 85-90% are now commonly reported.

> The management of male germ cell tumors represents one of the true success stories in modern oncology. An increase in overall survival from 60% to 95% over the past 3 decades has been paralleled by a steadily declining overall morbidity of therapy. These successes have been achieved by combinations of medical, surgical, and radiotherapy advances that have resulted in an ever-expanding series of available treatment options. The integration and more importantly the timing of these treatment options are now recognized as paramount to ensure high success with low morbidity.[173]

The degree of outcome improvement obtained for this condition through the incorporation of practices derived from systematic research may be seen as a model for improved outcomes in other severe disorders.

Testicular cancer is also associated with a very low rate of potential years of life lost, the fewest total PYLL of all cancer-related deaths in Canadian males. This is not surprising in a disorder that combines low incidence with a high survival rate. But one should not overlook the continued impact of this disease on men's lifespans:

> However, when one looks at the average PYLL per death (i.e., if an individual dies from a cancer, how many years of life does this individual lose) testicular cancer has been shown to produce the highest average number of years of life lost per death.[174]

Thus, men who do not receive effective treatment or whose cancer does not respond to standard treatment are likely to die at a relatively young age and thus lose many years of life. This emphasizes the need for high-quality care as well as continued research to identify effective intervention for treatment-resistant forms of this disease.

PREVENTION

It has not been reliably demonstrated that testicular cancer can be prevented through biological, environmental or behavioural means. There is much speculation regarding possible impact on testicular cancer incidence of reducing established risk factors. However, many individuals with testicular cancer have no identified risk factors and some of the risk factors that have been identified are not modifiable (for example, family history of the disease).[175] Certain other risk factors are modifiable to some degree – for example, an undescended testis is treated with surgical repair (orchiopexy) and the timing of this repair affects the risk of subsequent carcinoma.[176] [177]

Another risk factor that may be modifiable is physical exercise. Some evidence suggests that increased exercise is associated with decreased risk of testicular cancer,[178] [179] and this has been taken to suggest that increased physical activity might contribute to prevention of this disease.[180] Systematic research will be required to determine whether this or other interventions are effective in reducing the incidence of testicular cancer.

SCREENING

In order to foster early treatment, it has been recommended that post-pubertal men carry out regular self-examinations or have regular examinations by their family physician, checking for lumps or other changes in the testes that suggest testicular cancer: "Regular testicular examination is recommended for men between the ages of 15 and 40 to detect testicular cancer in its early stages."[181] However, there is a lack of research showing that self-examination or screening of individuals without symptoms improves outcomes. Therefore, routine screening for testicular cancer in asymptomatic individuals is not recommended by prominent practice guidelines groups.[182] As stated by the National Cancer Institute of the U.S.:

> There is no standard or routine screening test used for early detection of testicular cancer. Most often, testicular cancer is first found by men themselves, either by chance or during self-exam. Sometimes the cancer is found by a doctor during a routine physical exam. No studies have been done to find out if testicular self-exams or regular exams by a doctor would decrease the risk of dying from this disease. Routine screening probably would not decrease the risk of dying from testicular cancer, partly because it can usually be cured at any stage. However, finding testicular cancer early may make it easier to treat. Less chemotherapy and surgery may be needed, resulting in fewer side effects.[183]

Further research will be needed to determine whether screening by self-examination or routine medical check-up helps to improve outcomes for testicular cancer. Until then, the decision to screen for testicular cancer is left to individual men and their family physicians.

DIAGNOSIS

Testicular cancer usually presents as a hard lump, generally without pain or other symptoms, although a significant minority of individuals developing testicular cancer experience a mild to moderate degree of pain. The larger the tumour when detected, the more likely that spread has occurred to other organs of the body.[184] Ultrasound examination of the scrotum may be used to confirm the diagnosis.[185] A clinical history will be taken in order to identify risk factors (such as a family history of testicular cancer in first-degree relatives) likely to increase the probability of testicular cancer. Prior to surgery to remove a tumour, a series of other investigations are carried out (e.g., blood tests to identify "tumor markers," substances released into the blood when tumors are present). These and other indicators are used to classify a patient's risk level.

TREATMENT

As noted above, well-established chemotherapy and other strategies are highly effective in curing testicular cancer. Treatment usually involves the removal of the affected testicle, as well as possible chemotherapy, radiation therapy and/or surgical removal of lymph nodes in the abdomen (retroperitoneum). The key challenge is to find a balance between maximizing the clinical efficacy of intervention and minimizing the negative side effects of treatment:

> Treatment should aim to provide a high chance of cure with the least amount of toxicity. A specific issue that arises in patients with early stage disease is the risk of over-treatment. Meanwhile, patients with low risk disease who elect surveillance over adjuvant treatment need to be followed closely over an extended period of time as to not jeopardize their chance of cure.[186]

Many patients with a testicular cancer that appears to be limited to the testis receive no further therapy but are instead monitored closely with blood tests and CT scans. In this case the challenge is finding a balance between early detection of possible disease recurrence and minimizing adverse effects of surveillance, including exposure to radiation from CT scans.[187]

SERVICE GAPS

Testicular cancer has few service gaps compared to other Men's Health conditions. But one identifiable gap arises with patients who present with advanced disease and do not receive timely nor optimal care, especially those who have relapsed after initial therapy. Although these patients typically have cancer spread to other sites in the body, treatment can still achieve a high cure rate if it is delivered optimally by highly experienced clinical teams.[188] Optimal treatment can be delivered in different geographic regions in the province, but requires consultation with and guidance from testis cancer experts, who make care recommendations or arrange for specific interventions. This is often achieved by videoconference. Unfortunately, access to this conference is not universal and community care providers often do not take advantage of it, with the result that many advanced cases of testis cancer do not receive optimal care.

KNOWLEDGE GAPS

- Although there is controversy about the impact on outcomes of screening for testicular cancer through self-examination, men who choose to carry out self-examination should have easy access to education about how to do so in an effective manner. A study of male high school students regarding their knowledge of testicular cancer [TC] or testicular self-examination [TSE] found that:

  > most students had never heard of TC or TSE, had limited knowledge of common symptoms, and had hardly ever practiced TSE. The most frequently reported information source on this topic was the mass media... there is a need for imparting health education with respect to this subject, information that could preferably be included when promoting health in school settings and during enlistment to the military services.[189]

  Improved dissemination of information to men, especially young men, would foster both good decision-making concerning screening for testicular cancer and effective implementation of testicular self-examination.

- A striking gap in our knowledge of testicular cancer is the uncertainty regarding the reasons for the dramatic increase in incidence of this disease over the last few decades. If there is some kind of environmental factor behind this steady increase, it is essential to identify it through careful epidemiologic analysis so that it can be monitored and hopefully controlled.

HYPOGONADISM (LOW TESTOSTERONE)

DESCRIPTION

Hypogonadism is a condition of the aging male, first manifesting in the men's 60s and 70s. It is defined by insufficient production or availability of testosterone, which can then cause a number of other health problems. These include reduced muscular strength, reduced sexual desire, erectile dysfunction and low mood.[190] Hypogonadism is associated with a generally reduced sense of well-being and it has been linked to increased risk of mortality.[191] [192]

Hypogonadism (defined by low testosterone levels) is present in almost 40% of Canadian men over 45.[193] More importantly, the prevalence of *symptomatic* hypogonadism (where troublesome symptoms are present in addition to low testosterone) is almost 20% in men over 70 and 5.6% for the entire male population.[194] This translates into roughly 1.6 million Canadian men suffering from symptomatic hypogonadism.

Only in the last couple of decades has hypogonadism been identified as a discrete clinical condition. Its diagnosis and appropriate treatment are subject to continued controversy. Is it a previously unrecognized disorder requiring considerable investment of healthcare dollars or an attempt to find a "fountain of youth" to counteract normal aging? Based on its pattern of symptomatology and link to increased mortality, we support the former viewpoint (that hypogonadism is a serious health condition worthy of focused intervention) but acknowledge the ongoing controversy.

PREVENTION

Little is known about risk factors and preventive strategies for hypogonadism. Research is underway to build an evidence base upon which systematic preventive efforts can be based.

Preliminary research points to a biological risk factor represented by the *metabolic syndrome*. The metabolic syndrome is defined by a combination of excess weight, hyperlipidemia and high blood pressure, and has been shown to be related to low testosterone.[195] [196] One study found that presence of the metabolic syndrome in middle-aged men predicts onset of hypogonadism 11 years later (almost tripling the risk). This suggests that intervention targeting the metabolic syndrome may reduce the incidence of hypogonadism: "a lifestyle intervention may prevent not only the metabolic syndrome in high-risk men but also hypogonadism."[197] By improving diet and exercise of men in their 40s and 50s, we may be able to prevent the onset of

hypogonadism in their 60s and 70s. Further research will be needed to determine the effectiveness of behavioural prevention of hypogonadism.

SCREENING

There is considerable potential for increasing the rate of screening in primary care:

- It is not standard in current primary care practice. A relatively small proportion of Canadian family physicians are knowledgeable about this condition and its indicators.[198] [199]
- It has high prevalence in the primary care patient population. The prevalence of hypogonadism in men attending family practice offices has been estimated to be 39%.[200] Nearly half of healthy men 50 to 70 years of age have a testosterone level less than the lowest level seen in healthy men 20 to 30 years of age.[201] A prevalence of this magnitude certainly warrants consideration for screening by family physicians. However, the risk-benefit ratio of hypogonadism screening has yet to be determined.

A commonly recommended approach to screening for hypogonadism is the use of a questionnaire (*Androgen Deficiency in the Aging Male*) on which patients can indicate the presence of key symptoms of hypogonadism.[202] A recent enhancement of this tool is the qADAM, which allows a graded response to indicate the degree of symptom severity, and may be a more sensitive screening measure.[203]

DIAGNOSIS AND TREATMENT

Hypogonadism in the aging male is defined by the presence of one or more of the following features:

- Insufficient testosterone production or availability. The generally accepted biochemical definition of hypogonadism is: a repeated morning total testosterone value two standard deviations below normal values for young men as measured by a reliable standardized assay.[204] [205] Diagnostic measurement must take into account that only a portion of the total testosterone in the blood is *metabolically active*, that is, available to be used in physiological processes (rather than stored in a form that cannot readily be utilized). Specific measurement of metabolically active testosterone is recommended.[206] [207]
- Defective sperm production.
- Decreased testicular size.

Also relevant to diagnosis are the characteristic symptoms of late-onset hypogonadism: reduction of bone mineral density, reduction of muscle mass and strength, abdominal obesity, reduced libido, erectile dysfunction (ED), decrease in body hair, skin alterations, reduced haematopoiesis, depressed mood, and impaired cognitive function.[208] [209] The lack of overall well-being associated with hypogonadism is easy to understand in light of these distressing symptoms.

Testosterone replacement in older men with reduced testosterone and troublesome symptoms is becoming more common in clinical practice. There is an expanding body of research literature

tending to support the delivery of testosterone replacement in a significant subset of aging men.[210] The number of Canadian men age 65 years and older is expected to rise dramatically by 2020, and the management of hypogonadism may gain increased importance as “baby boomers” seek to maintain their vigor and health.

A 2006 Clinical Practice Guideline for the evaluation and treatment of hypogonadism recommends testosterone therapy in symptomatic men with clear evidence of low testosterone levels.[211] Testosterone treatment restores normal metabolic and hormonal function. The ultimate goals of testosterone replacement therapy are to maintain or regain a high quality of life, reduce disability and compress major illnesses into a narrow age range. By reaching these goals, testosterone replacement therapy has been described as "adding life to years," fundamentally improving the quality of an individual's remaining lifespan, rather than adding more years of life.[212]

Testosterone therapy is currently available in different forms: injection, topical formulation or pill. Type of treatment prescribed is based on a number of criteria, including patient preference, ease of use, and cost. [213]

Testosterone therapy has been shown to have anabolic (growth-stimulating) effects on muscle, fat, and bone.[214] The potential benefit is that testosterone therapy will increase muscle mass in older men, and increased muscle mass will translate into improved physical performance and reduced frailty.[215] However, it must be noted that previous reviews regarding the ability of testosterone therapy to increase muscle strength in older men have produced conflicting results.[216] [217] In one clinical review, testosterone therapy in older men was shown to increase muscle mass and reduce fat mass, but without increasing muscle strength.[218] By contrast, a recent meta-analysis of testosterone or dihydrotestosterone (DHT) replacement therapy in healthy men aged 65 and older reported a moderate increase in overall muscle strength.[219] Several small cross-sectional and longitudinal studies conducted with older men on testosterone therapy report an increase in lean muscle mass, muscle strength, hemoglobin levels, libido, and erectile function, and a decrease in body fat.[220] [221] [222] [223] [224] While this research has been conducted on older men, there appears to be a similar effect on muscle mass in younger men.[225]

The U.S. Food and Drug Administration (FDA) estimates that 4 to 5 million American men suffer from hypogonadism, but only 5% of these men receive treatment. A recent study conducted by Mulligan et al.[226] found that in a sample of 2,162 male patients attending American primary care centers 836 were hypogonadal, but only 10% of these were receiving treatment for this condition. Clearly, hypogonadism is substantially under-recognized and under-treated.

A significant barrier to the identification or treatment of hypogonadism is the concern that testosterone replacement may increase vulnerability to other health conditions.

> One potential complication of this treatment is the increased risk of prostate and breast cancer. Consequently, the guidelines from the agencies and the institutions,

> the recommendations of the scientific expert committees and the attitude of the clinicians to who, when and how to treat hypogonadal patients, is very conservative, not to say, highly restrictive.[227]

Controversy exists regarding the long-term safety of testosterone therapy, particularly in men younger than 65 years of age. Potential risks associated with testosterone therapy include prostate cancer (occurrence or recurrence), benign prostatic hyperplasia and cardiovascular disease. Middle-aged men may be more at risk of developing these side effects due to the longer duration of testosterone therapy and differing background of co-morbidities that may alter efficacy and safety.[228] The most serious concern has been the possibility that testosterone therapy may initiate prostate cancer – influence carcinogenesis in microscopic precancerous foci or transform clinically insignificant "latent" prostate cancer into clinically significant cancer.

Reassurance has been provided by systematic reviews of the relationship between testosterone replacement and prostate cancer. These reviews have not found a significant relationship between testosterone replacement and prostate cancer: e.g., "Of studies that met inclusion criteria, none demonstrated that testosterone therapy for hypogonadism increased prostate cancer risk or increased Gleason grade of cancer detected in treated vs. untreated men."[229] Nonetheless, further research is required to establish the safety of testosterone replacement for different patient groups:

> for men with mild hypogonadism or andropause, the balance between benefits and risks is not always clear. Unfortunately, studies to date have included too small a number of patients and have been too short in duration to provide meaningful data on the long-term risks versus the benefits of androgen [i.e., testosterone] replacement therapy in these populations.[230]

SERVICE GAPS

- Hypogonadism research has not adequately addressed factors influencing the identification and management of hypogonadism by family physicians. Little is known about how faithfully physicians apply current evidence-based treatment guidelines for hypogonadism.

- There has been some tendency in the media and marketing campaigns to imply that testosterone replacement is a "fountain of youth" for aging men.[231] This rhetoric of rejuvenation has two unfortunate effects – one is to create unrealistic expectations in the public, and the other is to trigger a skeptical response by physicians, who may then be dubious about integrating hypogonadism screening or treatment into their practice. Once testosterone replacement is seen as simply another clinical intervention with the potential to enhance quality of life in older men, and not a panacea or fountain of youth, it will find its place in standard medical care.

KNOWLEDGE GAPS

- Sophisticated research, of appropriate sample size and study duration, will be needed to more definitively establish the safety of testosterone replacement.

- We do not possess enough knowledge about the factors influencing men's adherence to testosterone replacement therapy. Although problems in adherence to treatment for hypogonadism have been observed anecdotally, rates of non-adherence and influencing factors are not well understood.[232] In addition, patient perspectives on the barriers and facilitators to treatment adherence have not been systematically gathered, and little is known about demographic and patient factors (i.e., gender identity and quality of life) associated with treatment adherence.

SEXUAL DYSFUNCTION

DESCRIPTION

There are a number of forms of sexual dysfunction that affect men; we will focus on several of the most common types. The four primary types of sexual dysfunction affecting men are:

Erectile Dysfunction (ED)

This is a persistent or recurrent inability to attain, or to maintain until completion of the sexual activity, an adequate erection.[233] ED is commonly related to reduced arousal. Erectile dysfunction is classified as mild, moderate or complete, occurs in just over half of men over 40 and increases with age: "the prevalence rates of complete ED (no ability to achieve an erection) increased from 5% to 15% for men between the ages of 40 and 70 years."[234] Figure 14 shows changes in the incidence of ED with age.

Premature Ejaculation

This involves persistent or recurrent ejaculation with minimal sexual stimulation before, at the moment of, or shortly after penetration and before the man wishes it.[235] Premature ejaculation was found, in a multinational survey of sexual behaviour, to have a prevalence of 14% in men between 40 and 80 years of age.[236] Other findings suggest a higher prevalence, as much as 30%.[237]

Delayed Ejaculation

This is a condition in which a male is unable to ejaculate, either during intercourse or with manual stimulation in the presence of a partner.[238] A recent proposed definition states: "a man finds it difficult or impossible to ejaculate despite the presence of adequate sexual stimulation, erection and conscious desire to achieve orgasm."[239] The prevalence of delayed ejaculation has not been definitively established, but it becomes a more significant problem with age:

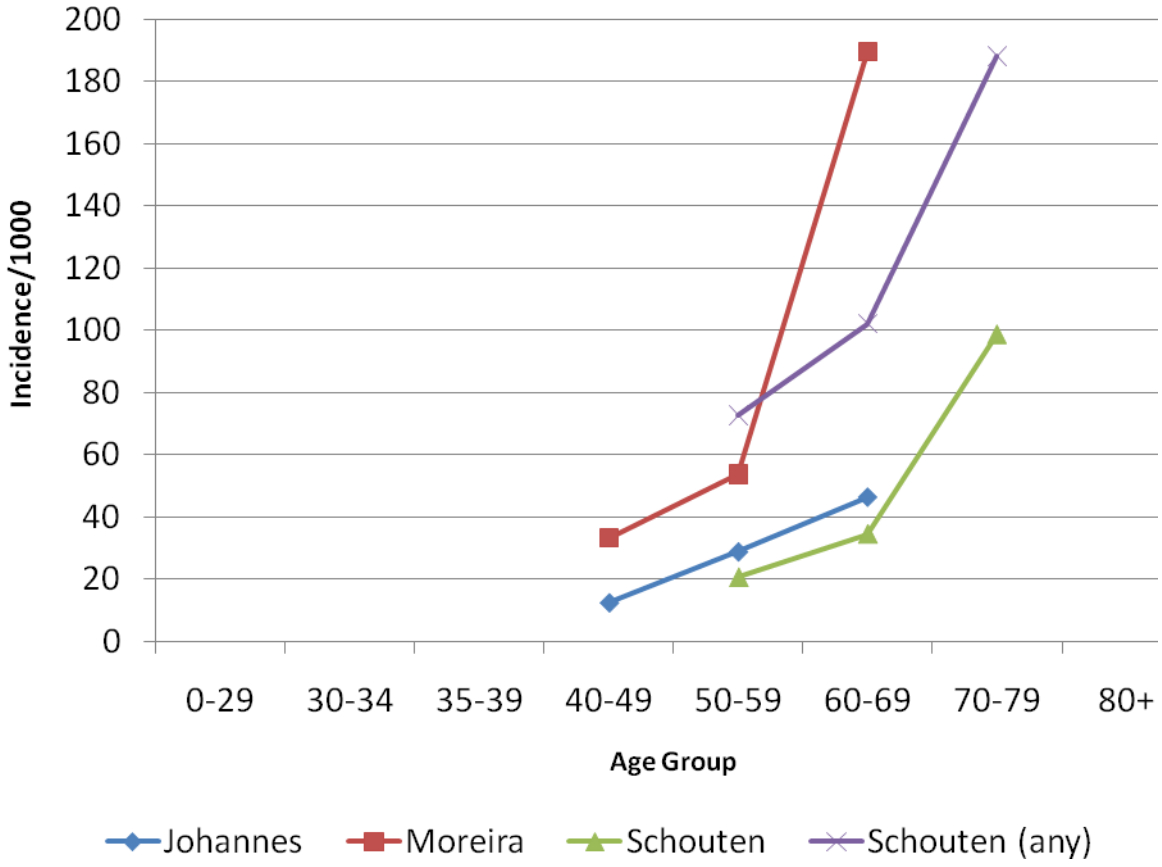
> in a French community-based sample ... 3% of those 50 to 59 years old reported "ejaculatory difficulty" every time, while this prevalence doubled in the subsequent age decades, reaching 12% in men 70 to 79 years old.[240]

Hypoactive Sexual Desire Disorder

This involves persistently or recurrently deficient (or absent) sexual fantasies and desire for sexual activity.[241] The prevalence of hypoactive sexual desire in men has not been well established. However, a recent survey of older adults (57 to 85) found that 28% of men reported lack of interest in sex (vs. 43% of women).[242]

Each of these disorders has a complex mixture of causes, partly psychological and partly physical. Experts once believed that erectile dysfunction was mainly psychological in nature – but now it is believed to be mostly caused by physical factors, involving difficulties with vascular blood flow to the penis, atherosclerosis, nerve damage, difficulties with smooth musculature response, etc. Note that it can be difficult to separate physical and psychological causes. For example, a man may have difficulties with erectile function due to a medical condition, but this triggers anxiety which then worsens the problem – even after the medical condition is resolved, he may continue to experience erectile dysfunction caused by anxiety. ED increases with age and may be related to falling levels of testosterone in older men.

Figure 14: Age-Specific Erectile Dysfunction Incidence Rates from Three Studies[9]



PREVENTION

In general, the evidence indicates that sexual dysfunction is best prevented by maintaining a generally positive level of overall health. This includes getting enough physical exercise, minimizing the use of tobacco, avoiding obesity, maintaining a low level of blood cholesterol and using alcohol moderately. In addition, there is a psychological aspect to sexual health –

[9] Adapted from Jones W; Centre for Applied Research in Mental Health and Addiction. Background Epidemiological Review of Selected Conditions. 2009.

namely, minimizing performance anxiety about sexual behaviour. Mental health problems such as depression are also likely to contribute to erectile dysfunction or hypoactive sexual desire – and ironically, antidepressant medications often cause these two forms of sexual dysfunction as a side effect. It can be difficult to distinguish between the effects of depression and the effects of depression treatment!

There is evidence supporting physical exercise in preventing erectile dysfunction:

> Midlife changes may be too late to reverse the effects of smoking, obesity, and alcohol consumption on erectile dysfunction. In contrast, physical activity may reduce the risk of erectile dysfunction even if initiated in midlife. Early adoption of healthy lifestyles may be the best approach to reducing the burden of erectile dysfunction on the health and well-being of older men.[243]

SCREENING

In recent years, there has been an increased focus on screening for erectile dysfunction in the family physician's office, for two main reasons:

1. It is seen as the "canary in the coal mine," a sensitive indicator of cardiovascular disease. By identifying the presence of erectile dysfunction, one might be detecting an underlying and treatable cardiovascular problem.[244] [245]
2. Physicians have become somewhat more attentive to this disorder since the development of effective medication treatment over the last 15 years. (It is generally true that physicians will be more likely to screen for a problem they are able to treat.)

However, physicians continue to show low rates of screening for sexual dysfunctions, because these health conditions may be perceived as less clinically important than other illnesses associated with substantial physical harm or even death.[246] [247] [248] In particular, family physicians rarely ask about low desire/arousal, especially with male patients, and patients rarely volunteer this information.[249]

DIAGNOSIS

Once the possibility of sexual dysfunction has been raised, diagnosis will be carried out through taking a sexual history. It should be noted that a proper sexual history covering crucial issues needed to make an accurate diagnosis will take as long as one hour. This is a significant obstacle to good diagnostic practice in usual primary care where physicians are hard-pressed to find that much time in a clinical visit – 10- to 15-minute visits are much more typical. For this reason, family physicians may have increased reluctance to identify sexual problems and thus initiate a diagnostic interview.

For example, the diagnosis of erectile dysfunction requires determining whether the dysfunction occurs upon awakening, with one's partner and/or by oneself (i.e., in masturbation). If erectile dysfunction were discovered to occur only during sexual interaction with one's partner, its cause is more likely to be psychological in nature; if it occurs in all of these situations, it is referred to as global erectile dysfunction and there is increased likelihood of a physical cause. The sexual history would also help to identify causes of erectile dysfunction such as hypogonadism or depression. There is no formal structure for the sexual history – a standard questionnaire (the IIEF) is used in research, but rarely in clinical practice.

Premature ejaculation has been poorly diagnosed in the past due to a lack of clear definition and diagnostic criteria. To improve the quality of diagnosis for this disorder, a consensus conference in 2005 articulated the following diagnostic criteria:

> In addition to a shortened latency time, recent research has identified three key factors associated with – and necessary for – a diagnosis of PE: (i) patient reports of reduced control over ejaculation; (ii) patient (and/or partner) reports of reduced satisfaction with sexual intercourse; and (iii) patient (and/or partner) distress over the condition.[250]

TREATMENT

Erectile Dysfunction

The primary treatment for this disorder is medication, namely phosphodiesterase inhibitors (PDE_5 drugs) such as Viagra, which are 70% effective overall.[251] If this medication strategy is not effective, the next intervention to be tried is a vacuum device – patients do not generally like using this, but it still has a significant role in treatment for those not responding to PDE_5, with a high degree of effectiveness.[252] The next intervention is that of penile injection, a treatment often used with individuals suffering from prostate cancer who are not responsive to the other interventions, effective for most of these treatment-resistant cases. Finally, penile implants may be used as a last resort – these are much less common than in the past but still have a role.[253] A recent outcome trial examined the use of behavioural intervention, namely teaching men with erectile dysfunction to adopt a healthier lifestyle (increased physical activity and more nutritious diet): this intervention was associated with significant clinical improvement.[254]

Premature Ejaculation

This is often treated with medication (typically, Selective Serotonin Reuptake Inhibitor medications otherwise used for depression). Medication treatment is highly effective, if the individual continues taking it as prescribed. Alternatively, behavioural treatment may be used, modeled on that developed by Masters and Johnson. Behavioural treatment helps the individual to learn improved behavioural and cognitive control. It is quite effective in the short

term, but requires that the individual receive ongoing treatment to maintain the benefit over time.[255] [256]

Delayed Ejaculation

This is usually treated with medication, but it must be acknowledged that treatment response is poor. We have very limited knowledge about how to effectively treat this condition.[257]

Hypoactive Sexual Desire Disorder

Biological treatment of this condition involves treating any physical factor contributing to the low sexual desire – this may involve withdrawing a medication causing low desire as a side effect, replacing testosterone, supplementing thyroid hormone, etc. Psychological treatment involves addressing psychological problems such as depression or anxiety that may be contributing factors, whether through medication or cognitive behavioural therapy (CBT). Note that CBT for male hypoactive desire disorder (unlike female hypoactive desire disorder) is not a well-established treatment and is under development. Social treatment involves addressing relationship issues contributing to the reduced desire.[258]

SERVICE GAPS

- Physicians may not adequately screen or communicate with patients regarding sexual dysfunctions. A recent Canadian survey of premature ejaculation found that, "Ninety percent of those with a determination of PE in this survey had not discussed alternatives to prolong time to ejaculation with a physician, pointing to gaps in patient/physician communication around sexual health."[259] In B.C., physicians are not adequately reimbursed for the hour required to do a proper sexual history. This represents a significant policy issue in terms of linking adequate care to reimbursement patterns.

- Considering the number of men afflicted with sexual dysfunction and the need for assistance, there is poor access to sexual health services for patients with identified sexual dysfunction. Available sexual health services are often delivered as an add-on to another kind of service, e.g., urology, geriatrics or psychiatry, and may not receive high priority. It would be helpful to have a sexual health clinic linked to a Men's Health Institute.

KNOWLEDGE GAPS

- The public does not have sufficient access to comprehensive and unbiased information on the Web or elsewhere.[260] [261] A significant proportion of the information provided about sexual dysfunction on the Web is questionable and may be linked to marketing of medications or sexual aids.[262] [263] An initiative by the Canadian Male Sexual Health Council is currently underway to provide comprehensive and unbiased information (http://www.cmshc.ca/Education0.php).
- Physicians need access to comprehensive and unbiased information. Currently, most teaching in this area occurs through continuing medical education funded by the

pharmaceutical industry – there has been some controversy about this practice, but there is no funded alternative for knowledge dissemination.[264] Most of the information provided to physicians has been with regard to erectile dysfunction in association with efforts to inform them of medications for treating this disorder.[265] However, physicians receive little information about other forms of sexual dysfunction such as premature ejaculation, perhaps due to the lack of medication effective for those disorders.

- Research is needed to identify new forms of treatment that will be effective for sexual disorders other than erectile dysfunction. Most of the research to date has been in the form of basic science focused on the pathophysiology of ED, but broader research, including psychosocial aspects, is needed for all of the sexual disorders. For example, considerable progress has been made in developing treatment programs for hypoactive sexual desire disorder in women, but there is no comparable treatment available for men.

CARDIOVASCULAR DISEASE

DESCRIPTION

Cardiovascular disease (CVD) is a term used to refer to any disease of the cardiovascular system, whether involving the heart itself or blood vessels in the body. In our previous analysis of the gender difference in longevity, it was evident that, in British Columbia, CVD is the major contributor to the excess years of life lost for men compared to women. Understanding the occurrence of CVD in men will give us crucial information regarding the gender gap in longevity. The major forms of CVD are as follows.

Heart Attack

This is also known as myocardial infarction and involves an acute interruption of blood supply to the heart muscle causing damage to the heart.

Ischemic Heart Disease

This is a chronic condition in which the heart muscle suffers from a deficient supply of blood, usually caused by atherosclerosis, that is, a buildup of fats and other materials along the inner wall of arterial blood vessels.

Congestive Heart Failure

This is a chronic condition in which the heart is unable to maintain adequate blood circulation, resulting in fluid buildup in the body.

Cerebrovascular Disease

This is a condition involving insufficient oxygen supply to the brain, bleeding within the brain or disorders of specific blood vessels within the brain. It can lead to stroke.

Peripheral Vascular Disease

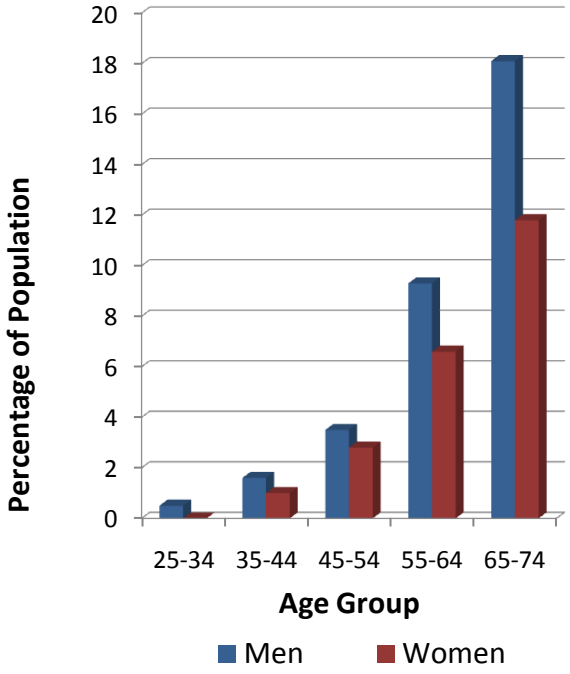
This is a condition in which there is impaired functioning of the blood vessels, arteries and veins located outside the heart and brain – this usually refers to peripheral arterial disease in which the blood supply to internal organs or limbs has become blocked as a result of atherosclerosis or other blood vessel abnormality .

In making sense of the occurrence of CVD in Canadian men, we are fortunate to have access to a recent comprehensive document: the 2009 Tracking Heart Disease and Stroke in Canada report, produced by the Public Health Agency of Canada.[266] This report is a highly informative compendium of data concerning CVD across Canada. We will draw extensively upon this report,

starting with Figure 15 below, which shows the self-reported prevalence of CVD in Canadian men and women between the ages of 25 and 74.

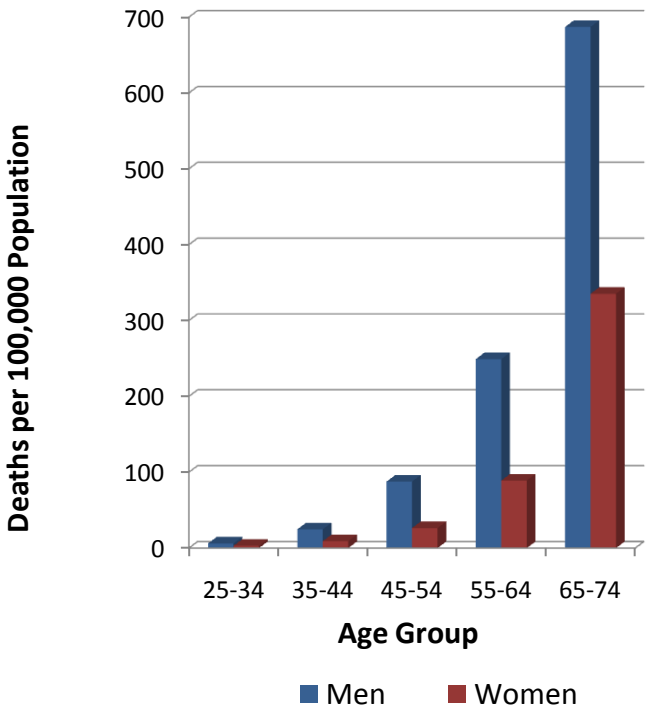
It can be seen in Figure 15 that the prevalence of heart disease rises more quickly in men than it does in women, beginning in the 55-64 age range. This difference in prevalence is even more dramatic in the 65-74 age range (and continues to grow subsequently).

Figure 15: Self-Reported Prevalence of CVD in the Canadian population, 2007



Not surprisingly, this greater prevalence of CVD in men translates into higher rates of CVD-related mortality. Figure 16, also adapted from 2009 Tracking Heart Disease and Stroke in Canada, shows the rates of death caused by CVD between ages 25 and 74, for different age groups. Even more strikingly than in the prevalence graph, we see the greater impact of CVD on men's mortality, beginning in the 55-64 age range. As we learned using the Potential Years of Life Lost index, both the higher death rate and earlier onset for men contribute to CVD's importance as a source of the life expectancy gap.

Figure 16: Rates of Death due to CVD in the Canadian Population Aged 25-74, 2004



PREVENTION

Primary prevention of CVD requires us to first identify modifiable risk factors that may prevent onset of CVD. The major risk factors for CVD, seen from a Men's Health perspective, are: [Ω]

Biological Factors

There are a number of important biological risk factors related to the occurrence of cardiovascular disease that show minimal difference between the sexes and would not account for the differential occurrence of CVD: "the majority of cardiovascular risk factors show no important differences between the genders."[267] Biological risk factors that are comparable across sex include:

- **Elevated levels of blood cholesterol**, in particular an elevated ratio between low density lipoproteins and high density lipoproteins (better known as the LDL/HDL index). A major risk factor for CVD is genetic **hyperlipidemia**, an inherited tendency to have elevated levels of blood cholesterol.

[Ω] Unless otherwise noted, data on cardiovascular risk factor prevalence for Canadian men and women are taken from 2009 Tracking Heart Disease and Stroke in Canada, a report by the Public Health Agency of Canada.

- **Hypertension**. Elevated blood pressure is clearly associated with the occurrence of CVD.
- **Diabetes**. Canadian men show a slightly higher rate of diabetes than women (7.6% versus 6.6%), but this does not appear to be a significant contributor to sex differences in the incidence of CVD.

By contrast, hormonal differences between men and women, in particular higher **levels of estrogen** in women during childbearing years, have been identified as the major source of the observed protection against CVD in premenopausal women compared to the early onset and increased risk of CVD mortality in men of a similar age. It has been hypothesized, and widely accepted, that estrogen confers a *cardioprotective* effect in women (until menopause). It has been observed that cardiovascular disease shows a marked increase in women when they no longer have this estrogen effect, although recent controlled research raises doubt about the cardioprotective hypothesis:

> It has long been hypothesized that oestrogen may be cardioprotective. This hypothesis is supported by diverse and comprehensive mechanistic studies in animals and humans. Consistently, in observational studies, oestrogen use in post-menopausal women significantly reduced cardiovascular disease. Contrastingly, large interventional trials focusing on chronic disease prevention in older post-menopausal women have suggested neutral (oestrogen alone) or adverse (combined estrogen/progestin preparations) cardiovascular effects.[268]

These latter results have given rise to controversy – some researchers view the evidence as calling into question the role of estrogen in accounting for sex differences in CVD. For example:

> Men have a two-fold risk to die from coronary heart disease compared to women, a fact that remains consistent across various ethnic and social groups. It was initially attempted to attribute this phenomenon to a possibly protective effect of estrogens in the female vasculature. However … incidence rates in women do not follow the trend of other estrogen-related diseases, which is to say that they do not seem to display a distinct break-point after menopause…. In addition, the ongoing debate over the effects of hormone replacement therapy (HRT) on cardiovascular events in women … has further weakened the belief that estrogens act as the major determinants of gender specific differences in cardiovascular event rates.[269]

It is evident that considerably more research will be needed to determine the extent to which sex differences in hormone levels can account for the observed differences in cardiovascular incidence and mortality. At any rate, it has been shown that introducing estrogen to men does not generate a cardioprotective effect, so this is not likely to give us the key to reducing the sex difference in cardiovascular disease.

One final biological risk factor that shows significant sex difference is that of body mass: Canadian men are more likely to be overweight than are women (18% versus 15.8%). Although the sex difference in this risk factor is not likely to fully account for the substantial disparity in CVD incidence and mortality, it may be a significant contributor.

Behavioural Factors

Tobacco use is a notable risk factor – historically, men were far more likely to be smokers than were women, but this relative risk has been shifting as men reduce smoking while women increase – see the Lung Cancer section of this report for more information.

Diet. Two aspects of nutritional intake are specifically identified as risk factors for CVD:

(a) failing to eat enough fruits and vegetables is a significant risk factor for CVD. A higher proportion of Canadian men than women report inadequate consumption of vegetables and fruit (63.3% versus 49.4%).

(b) excessive consumption of salt – a higher proportion of Canadian men than women report excessive sodium intake (85% versus 60%).

Psychological distress. Psychological factors such as depression, anxiety and poorly-managed anger have been shown to be notable cardiovascular risk factors.[270] It has been suggested that psychological distress may be a significant risk factor for women but not men,[271] although this finding may be affected by men's reluctance to disclose emotional difficulties.[272] A recent systematic review concluded that men may be more vulnerable than are women to the cardiac effects of chronic anger:

> It is also interesting that the harmful effect of anger and hostility on CHD [coronary heart disease] events in the healthy populations was greater in men than women, suggesting that men are more responsive to anger and hostility factors in relation to CHD. In line with this sex difference, a recent meta-analysis showed that anger and hostility and related constructs were more strongly associated with cardiovascular responses to psychological stressors in men than women, suggesting that the accumulation of greater stress responses in daily life might have pathophysiological significance for CHD in men.[273]

We do not yet know the extent to which poorly managed anger may be a contributor to the sex differences in cardiovascular mortality, but this does seem to be a sex-differentiated risk factor worth careful investigation.

Environmental Factors

It is likely that the environment affects cardiovascular risk through social modeling of eating habits, physical activity levels and tobacco use, that is, via social determinants of health. In line with this social determinant approach to cardiovascular risk, it may be that the wide discrepancy in behavioural risk across Canada reflects differences in socio-cultural environments.

Although we cannot change the lack of estrogen-mediated cardioprotective effect in men (assuming there is such a cardioprotective effect), there is considerable potential for meaningfully reducing cardiovascular risk factors in men:

> Abnormal lipids, smoking, hypertension, diabetes, abdominal obesity, psychosocial factors, consumption of fruits, vegetables, and alcohol, and regular physical activity account for most of the risk of myocardial infarction worldwide in both sexes and at all ages in all regions. This finding suggests that approaches to prevention can be based on similar principles worldwide and have the potential to prevent most premature cases of myocardial infarction.[274]

Given the sex differences in behavioural risk factors, it is clear that any strategy designed to reduce the prevalence and early onset of CVD in men must target risk factors such as poor nutrition. This falls under the rubric of health promotion and typically requires efforts at multiple levels: *social marketing* to improve population health behaviours, *government policy* to support behavioural changes, *primary care* identification and teaching about behavioural risk factors and *specialized "healthy heart" programs* to provide intensive teaching and support to individuals at high risk. A limited number of controlled trials have been carried out to demonstrate that behavioural risk factors in men, particularly poor nutrition and low physical activity, can be successfully modified.[275] [276] [277] [278] At the same time, cardiovascular risk reduction programs have encountered substantial difficulty with sustained adherence to preventive activities such as modified nutritional behaviour – the limited available data suggest that men have a greater tendency to discontinue preventive practices:

> Examination of differences by gender was reported in one study, and this indicated women achieved better dietary adherence. Cross-sectional data indicate women who participate in structured programs self-report better diet and exercise adherence at two weeks and six months post coronary artery bypass graft surgery….[279]

This observation, combined with findings reported thus far on behaviours related to Men's Health, strongly suggests that efforts to prevent cardiovascular disease in men must involve well-focused and gender-appropriate interventions designed in accordance with behaviour change and social marketing principles. If men are less adherent to prevention behaviours, they will require more sophisticated and sustained preventive programs.

Another behavioural risk factor appropriate for preventive efforts is that of chronic or poorly managed anger and hostility. The review of anger and cardiac risk (cited above) recommends "the use of psychological management focusing on anger and hostility in the prevention and treatment of CHD."[280] Given the substantial evidence supporting the efficacy of behavioural interventions for cardiac patients, focused on this kind of psychological management, there may well be considerable potential for reducing men's cardiac risk by improving their management of anger and hostility.[281]

The immense potential for impacting cardiovascular disease and mortality by reducing behavioural risk factors is seen in a public health intervention carried out in Finland over several decades:

> In 1972, Finland had the world's highest mortality rate from CVD. Planners examined policy and environmental factors contributing to CVD and sought appropriate changes, such as increased availability of low-fat dairy products, antismoking legislation, and improved school meals. They used the media, schools, worksites, and spokespersons from sports, education, and agriculture to educate residents. After five years, significant improvements were documented in smoking, cholesterol, and blood pressure. By 1992, CVD mortality rates for men age 35 to 64 had dropped by 57 percent.[282]

Finally, a commonly-used preventive strategy, *chemoprevention*, targets the biological risk factor of elevated blood cholesterol and involves prescription of medications (statins) to reduce cholesterol levels. This has been well established as a preventive strategy for cardiovascular disorders, with equivalent impact for men and women. As summarized in a recent review:

> Multiple, well-designed, double-blind, placebo-controlled studies have documented significant cardiovascular risk reduction in patients in primary and secondary prevention groups by lowering of LDL cholesterol by statins … in 81,859 participants with stable CHD … each 1% reduction in serum cholesterol level has been associated with about 1% reduction in risk of CHD.[283]

SCREENING

Screening protocols for cardiovascular disease are similar for men and women, and are well described as follows:

> All adults over the age of 40 who are not already known to be at higher risk of developing heart disease should be considered for an opportunistic comprehensive CVD risk assessment in primary care. Younger adults with a family history of premature atherosclerotic disease should also have their cardiovascular risk factors measured.[284]

However, there is one screening protocol that is specific to men, namely focusing on the condition of *erectile dysfunction* as an accurate indicator of underlying cardiovascular disorder.[285] Erectile dysfunction and cardiovascular disorder are linked by the common factor of atherosclerosis, which accounts for a substantial proportion of these two conditions. As noted in the Sexual Dysfunction section of this report, erectile dysfunction has taken on new importance in primary care as an indicator of cardiovascular disease, and is far more likely to be identified through screening than in the past. However, it must be emphasized that erectile dysfunction signals the presence of circulatory problems only when an individual already has advanced cardiovascular disease. By contrast, an ideal screening strategy is one that identifies risk factors to be targeted *before* the onset of significant disease.

DIAGNOSIS AND TREATMENT

Diagnostic and treatment protocols are essentially the same for men and women. Whether we are considering ischemic heart disease, congestive heart failure, or any other form of cardiovascular disorder, diagnostic and treatment approaches do not vary by gender. It has been observed that men show worse prognosis with congestive heart failure (that is, a reduced survival time after disease onset),[286] [287] but a recent review did not find different treatment response in men and women with this disorder.[288]

SERVICE GAPS

- Family physicians often cannot properly educate patients regarding cardiovascular risk factors given their very busy practices and limited patient contact time. That reflects the nature of a typical primary care practice. Family physicians might benefit from increased access to patient educational materials that are user friendly and easy to disseminate. In addition, Primary Care Networks have been established that support family physicians in providing good cardiovascular education.

- Early onset of cardiovascular disease in men accounts for much of the life expectancy gap between the sexes. In order to reduce the incidence of cardiovascular disease in men entering their 50s and 60s, we must initiate preventive action with men in their 30s and 40s. Early action to address cardiovascular risk factors (poor nutrition, excess weight, high cholesterol, etc.) should help to reduce the incidence of early-onset cardiovascular disease in men. Preventive action should be implemented across the public health, primary care and specialist care levels.

- Public decision-makers can have an important impact through increased regulation of practices that affect cardiovascular risk. For example, the Canadian government has moved to increase information regarding sodium content in foods. Schools are being encouraged to implement physical education programs. Important policy directions with regard to preventing CVD have been identified and promoted by the Canadian Heart Health Initiative.

KNOWLEDGE GAPS

- Men, especially young men, need increased awareness that inherited hyperlipidemia may be present in otherwise healthy individuals. This knowledge would highlight the importance of knowing your blood cholesterol level so that appropriate preventive action can be taken. Preventive action might include giving up smoking, making dietary changes or initiating cholesterol-lowering medication.

OSTEOPOROSIS

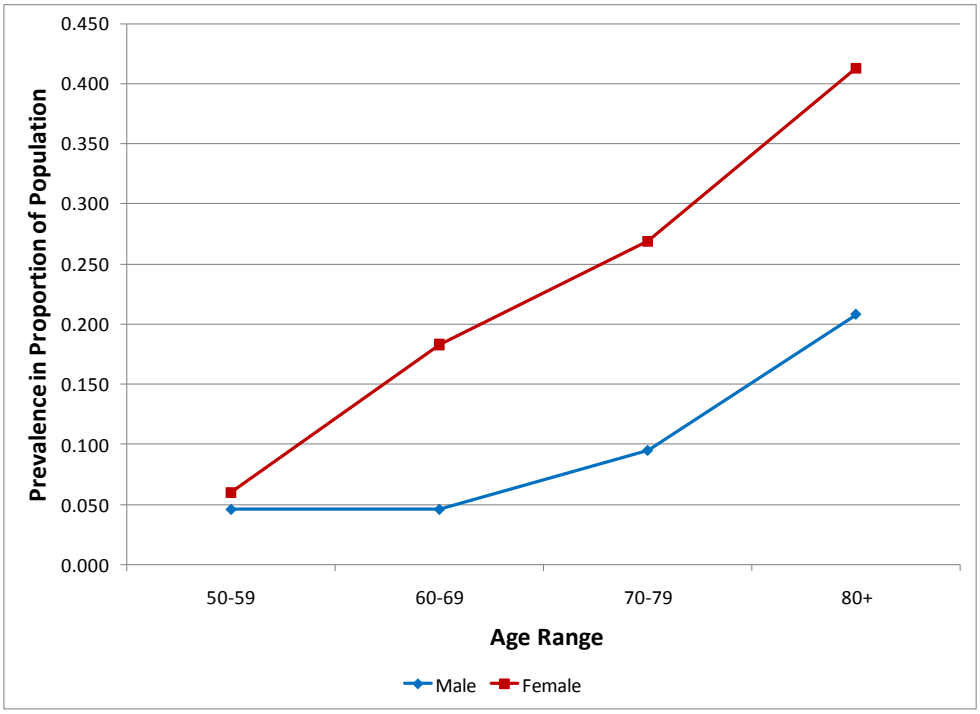
DESCRIPTION

Here is a clear and straightforward definition of osteoporosis:

> Osteoporosis is a progressive, symptomless deterioration of the bone, which leads to an increased risk of fractures, most often in the wrist, spine and hip. Osteoporosis in older women has received a great deal of emphasis, but it is also common in men, and can occur earlier in life.[289]

This disorder is more common in women, occurring twice as often as in men (Figure 17).[290] This has resulted in a widespread perception among the public and healthcare providers that osteoporosis is essentially a female disorder and not a significant concern for males.[291] [292] But despite the lower rate of occurrence, this still represents a very large number of men suffering from this health problem and its serious complications, in particular vulnerability to bone fracture. Men are far less likely to be evaluated for osteoporosis through bone density testing and therefore less likely to receive appropriate and timely treatment. A study of quality of care for osteoporosis found that: "Approximately 51% of women and 95.5% of men in our study population were not evaluated or treated in accordance with guideline or expert recommendations."[293] Ironically, the lower incidence of osteoporosis in men may contribute to their having worse outcomes when the disorder is present: it has been shown that men with osteoporosis have worse prognosis than do women.[294] [295] A recent study found that older men have higher mortality than women after experiencing hip fractures – men are twice as likely to die in the two-year period following a hip fracture.[296] Failure to identify and treat osteoporosis in men is a significant problem.

Figure 17: Age-Specific Rates of Osteoporosis



PREVENTION

Research indicates considerable potential for primary prevention of osteoporosis through modification of behavioural risk factors.[297] [298] These modifiable factors include:

Adequate Intake of Calcium

A large proportion of Canadians consume insufficient amounts of calcium-rich foods and are thus at increased risk for the development of osteoporosis. As we noted in the section on Cardiovascular Disease, men are more likely than women to have poor nutritional habits and thus have greater risk of insufficient calcium consumption.

Adequate Intake of Vitamin D

Many Canadians have limited exposure to sunshine and are therefore at greater risk of inadequate Vitamin D production, a demonstrated risk factor for osteoporosis. They must make up this deficiency through diet – once again, men's poor dietary habits may pose a particular risk.

Sufficient Exercise

This should include at least 30 minutes a day for adults, including strength-building and weight-bearing activities. Based on the epidemiological data that we have discussed, men are not less likely than women to maintain adequate physical activity, and therefore are not likely to be at greater risk in relation to this factor.

SCREENING

As in women, osteoporosis in men should be considered for anyone who breaks a bone after a minor trauma, i.e., a relatively small accident that one would not normally expect to cause this level of injury. It should also be checked in someone with a family history of osteoporosis. Osteoporosis is a condition for which it is especially important to remain alert to these kinds of indications, because it is typically "symptomless," that is, an individual may have no reason to suspect this condition until they experience a broken bone. Given that men are much less likely to request testing or have it suggested by their family physician, they are much more likely to have unsuspected osteoporosis.

In the absence of screening, an opportunity is lost for *secondary prevention*, i.e., reducing the negative impacts of a health condition by intervening at an early stage – in particular, reducing the risk of significant bone fractures. A recent review concluded that:

> most patients with a recent clinical fracture are not evaluated for underlying diseases, osteoporosis, or fall risk. Treatment is only given to a small proportion of women and men with osteoporosis in whom it has been shown that fracture risk could be decreased. In patients who begin treatment, compliance and persistence with therapy are low. All these factors taken together account for many fractures that could have been prevented.[299]

If men are less likely to be screened for osteoporosis, men are also less likely to enjoy the benefits of secondary prevention of fractures.

DIAGNOSIS

The diagnosis of osteoporosis is made in the same way for men and women, through bone density testing. The impact of public health campaigns on women's health is seen in the frequency with which women request and receive bone density testing from their physician. By contrast, a recent study of men with a fracture of the hip or vertebrae found that only 1% receive bone density testing and 16% receive osteoporosis medication.[300] These figures represent remarkably low proportions receiving appropriate management.

There may be a slightly increased difficulty of diagnosing osteoporosis in men because men are more likely to have engaged in physically risky activities (such as contact sports) in younger years and therefore have old fractures that may be difficult to distinguish from recent ones.

TREATMENT

Once osteoporosis has been diagnosed, treatment is the same for men and women. There is no significant sex difference at the level of treatment or likely outcomes – men and women show equivalent improvement once provided with standard treatment for osteoporosis – usually bisphosphonates to increase bone density. However, because of the under-recognition described above, men are much less likely to receive appropriate treatment.

SERVICE GAPS

Osteoporosis assessment and treatment are often provided in the context of women's health facilities in Canada, but men are typically reluctant to attend women's health clinics. For example, an Osteoporosis Clinic is located at the B.C. Women's Hospital in Vancouver: approximately 10% of patients seen at that clinic are male despite the fact that men comprise one-third of osteoporosis cases in the community. A possible response to this issue at a policy level is to establish osteoporosis clinics focused on men, perhaps in the context of Men's Health services; but this may not be feasible within the current structure of healthcare delivery. Alternatively, an increased emphasis upon diagnosis and treatment of male osteoporosis across the healthcare system might be a more realistic approach to improving men's access to osteoporosis care.

KNOWLEDGE GAPS

Family physicians tend to perceive osteoporosis as a women's health issue and therefore are less likely to recommend bone density testing as a screening approach for men. This results in missing many cases of osteoporosis in men who would have benefited from early intervention. Even when men present with unexpected bone fractures from minor trauma and are then seen by orthopedic surgeons, physicians often will not suspect osteoporosis and carry out appropriate diagnostic testing. A program of continuing medical education focused on raising awareness of male osteoporosis among physicians would help to remedy this situation.

The public lacks knowledge of this issue, generally perceiving osteoporosis as a women's illness, in accordance with public health campaigns emphasizing this aspect of the problem. Male patients rarely insist upon bone density testing from their family physician. A public health campaign regarding osteoporosis risk and recognition in men, similar to those previously conducted with regard to women's risk, would likely be effective in raising awareness of this issue among men.

HUMAN IMMUNODEFICIENCY VIRUS (HIV)

DESCRIPTION

HIV is a virus that attacks the body's immune system. It is usually transmitted through sexual contact, particularly through anal intercourse. But it also may be transmitted when bodily fluids, especially blood, are exchanged in other ways – for example sharing of needles by intravenous drug users, blood transfusions or transmission from infected women to their unborn or newborn infants. The risk of infection is greatest where the bodily fluids have a high concentration of the HIV virus, notably blood, semen or breast-milk.

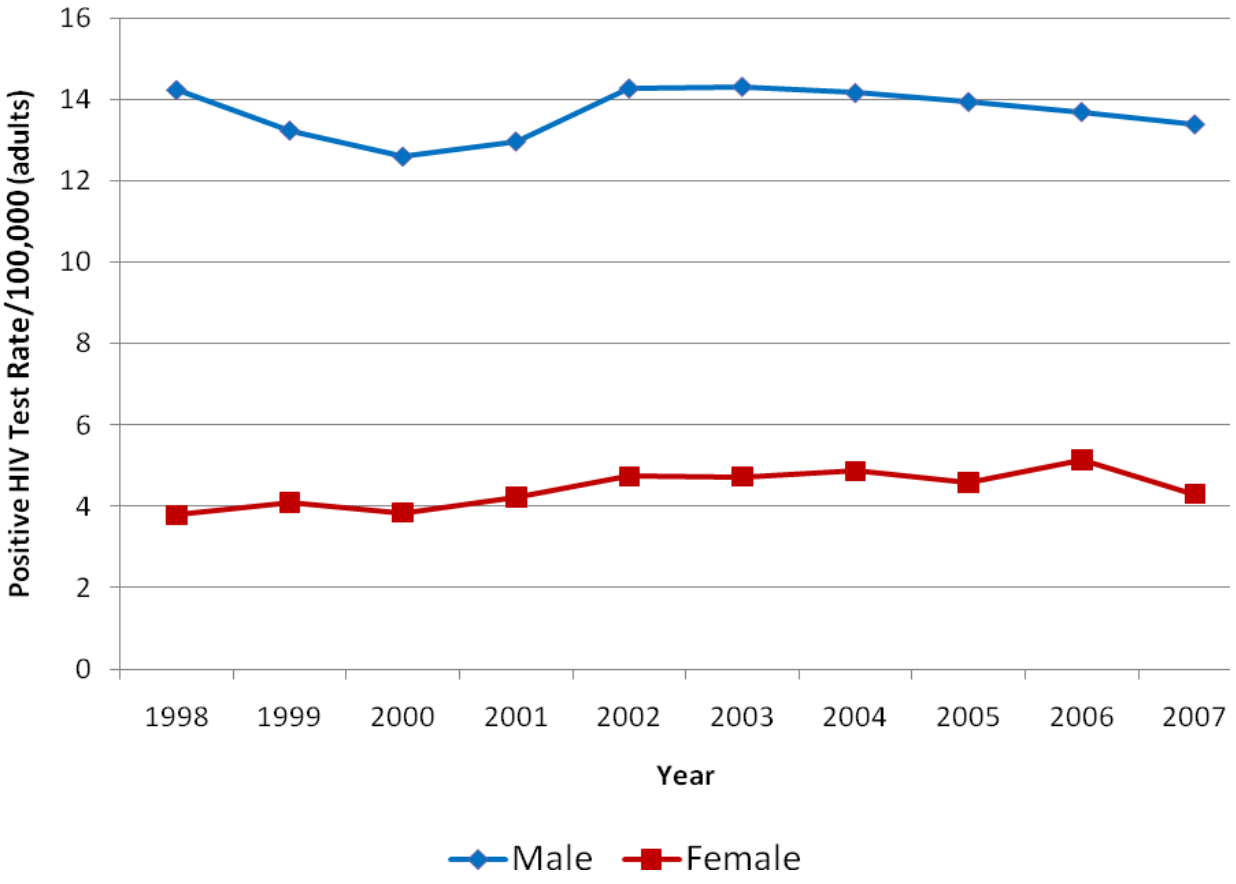
By compromising the body's immune system, HIV infection leaves an individual with a high risk of developing other serious infections or diseases such as cancer. HIV may be progressive if not treated appropriately and may lead to Acquired Immune Deficiency Syndrome (AIDS), in which the immune system is severely compromised, rendering the individual extremely vulnerable to life-threatening conditions.[301] HIV itself is not fatal, but leads to mortality through AIDS or other HIV-associated conditions.

Determining the incidence of HIV is a fairly complex undertaking:

> Since the presence of HIV does not necessarily lead to symptoms requiring medical attention the measured incidence rates are likely underestimates of the actual rate of infection and are subject to influences that impact the rate of willingness to undergo testing. A count of the positive HIV tests (in a year say) measures both the new cases developed in the year and older infections that have not been tested to that point in time. In order to get a true estimate of incidence a large [general population] cohort would need to be followed (and continually tested) over time. Since these studies have not been done incidence rates are generally estimated from the number of positive tests using epidemiological modeling techniques.[302]

Based on the incidence of HIV-positive tests, the rate of HIV infection in men is three times that in women (see Figure 18). Over the time period portrayed in this figure, 1998-2007, there does not appear to be any meaningful trend, upwards or downwards, for either gender.

Figure 18: Incidence of HIV-Positive Tests in Canada by Gender



Considering the incidence of positive HIV test by age, it is evident that the differences between men and women first appear in the 20-29 age group (Figure 19). Over the last several years, there has been a reduction in positive HIV tests in men between the ages of 30 and 39 (Figure 20).

Figure 19: Age-Specific HIV Incidence by Gender for BC (2007)

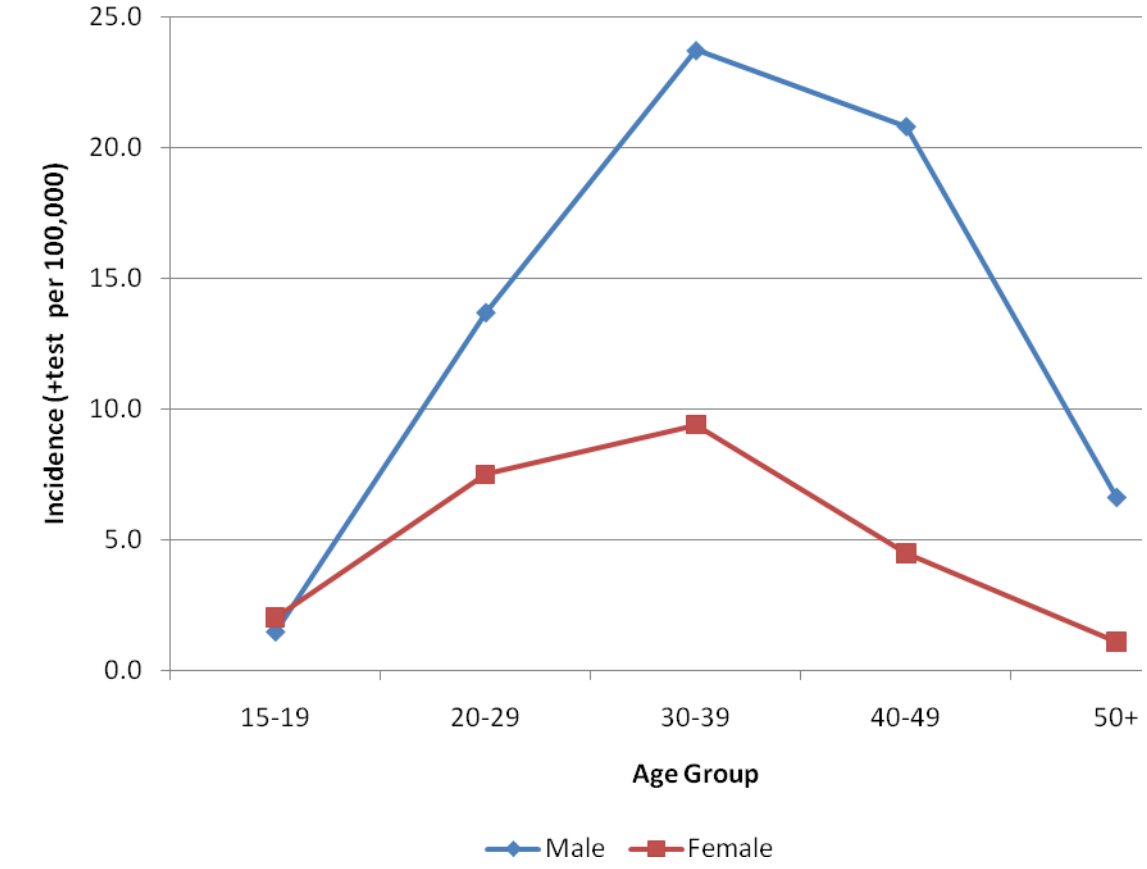
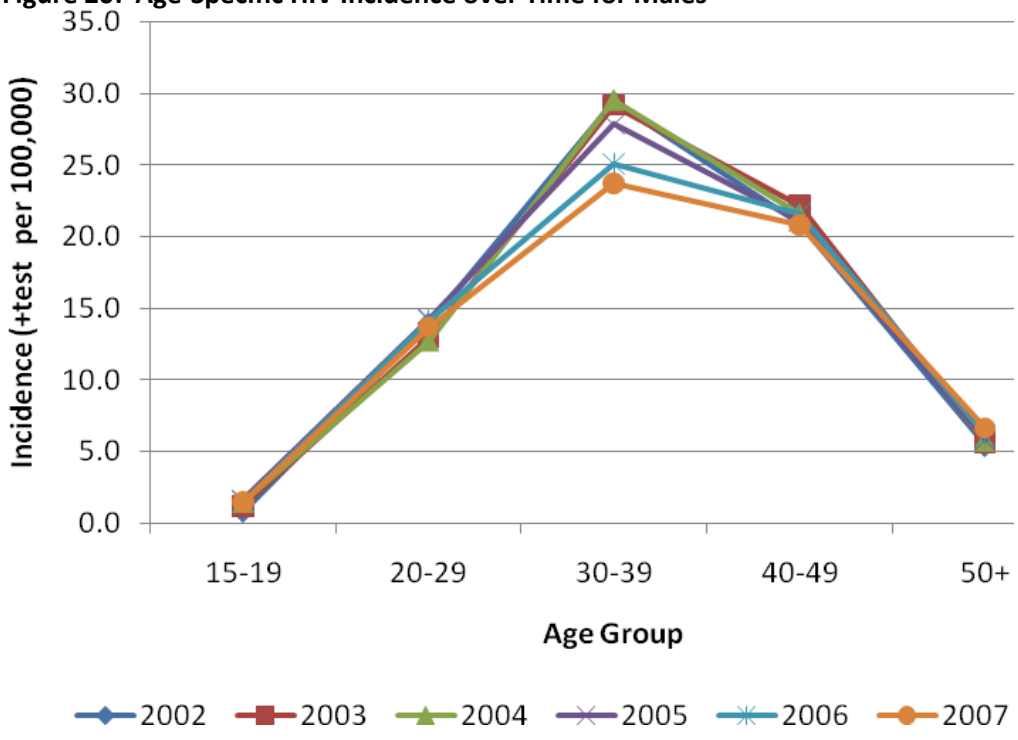
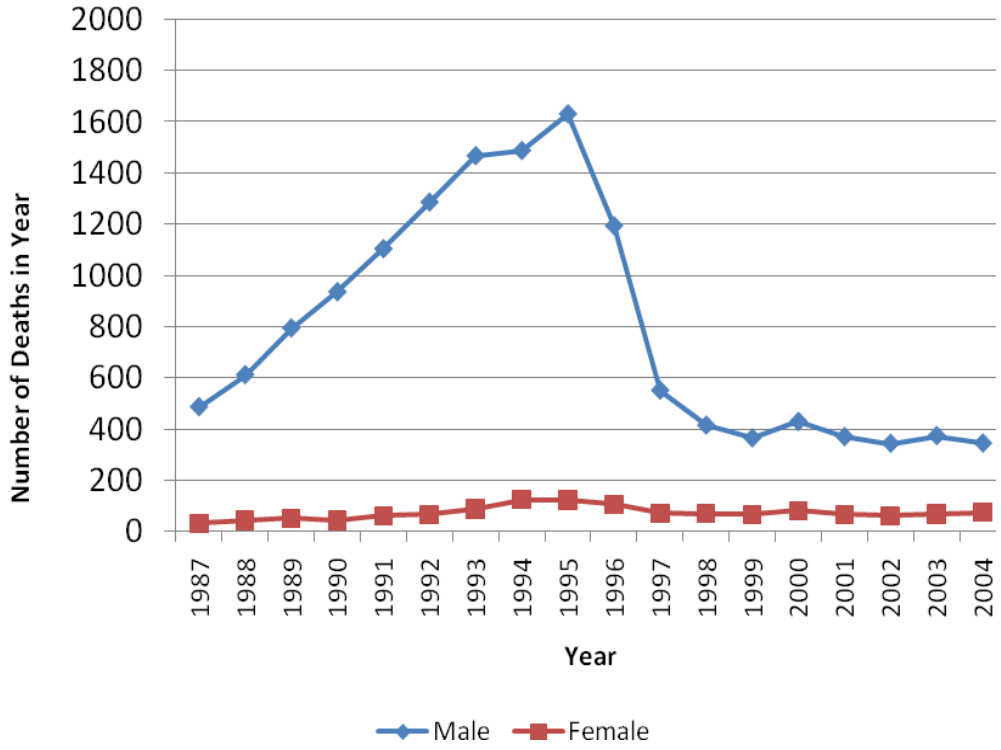


Figure 20: Age-Specific HIV Incidence over Time for Males



Mortality attributable to HIV infection is shown in Figure 21, presenting the number of deaths attributable to this health condition, by year and gender.

Figure 21: Deaths Attributable to HIV Infections in Canada (PHAC, 2007) [303]



Clearly, there is a dramatically higher rate of mortality for men than for women. But just as dramatic is a substantial reduction in HIV-associated mortality. Over the last 15 years, male deaths attributable to HIV have fallen by 50%. This reduced level of mortality reflects advances in the treatment of HIV infection and a far greater capacity to slow or even halt progression to AIDS. In particular, highly active antiretroviral therapy (HAART) has proven effective in improving life expectancy of HIV-infected individuals.[304] [305]

HIV has had a significant impact on mortality in gay or bisexual men (described in the research literature as *MSM*, men who have sex with men), although it has been difficult to quantify the change in life expectancy for the MSM group related to HIV. Life expectancy for this group has been difficult to measure, due to: limited data available (for example, health surveys often avoid asking about sexual orientation); rapid changes in life expectancy related to improved treatment strategies and effective healthcare delivery; and the imposition of political or ideological agendas upon interpretation of research data.

Research carried out in Vancouver in the late 80s and early 90s found "life expectancy at age 20 years for gay and bisexual men is 8 to 20 years less than for all men."[306] Fortunately, this dismaying estimation of reduced life expectancy for the MSM population (largely related to the

incidence of HIV in this population) has since been revised in accordance with changing patterns of healthcare. The Vancouver research group who carried out the research on MSM life expectancy subsequently commented:

> it appears that our research is being used by select groups in the US and Finland to suggest that gay and bisexual men live an unhealthy lifestyle that is destructive to themselves and to others. These homophobic groups appear more interested in restricting the human rights of gays and bisexuals rather than promoting their health and well-being. The aim of our research was never to spread more homophobia, but to demonstrate to an international audience how the life expectancy of gay and bisexual men can be estimated from limited vital statistics data. In contrast, if we were to repeat this analysis today the life expectancy of gay and bisexual men would be greatly improved. Deaths from HIV infection have declined dramatically in this population since 1996.[307]

The other population group at high risk for HIV is that of intravenous drug users. A recent Canadian study examined HAART's impact upon life expectancy in two HIV-positive groups: intravenous drug users (IDU) and those without such drug use (non-IDU).[308] The study found that: (i) most HIV-positive individuals were male (IDU 57%; non-IDU 85%); (ii) IDU showed a life expectancy substantially lower than that of non-IDU; and (iii) HAART delivered significantly improved life expectancy to both groups, but IDU showed less improvement in life expectancy than the non-IDU group. The researchers concluded: "The impact of current antiretroviral therapy appears to be lower among IDU, possibly because of drug-use-related events such as overdoses…. Further efforts are needed to ensure that HIV-positive IDU can enjoy the full benefit of modern HAART."

PREVENTION

Infection with HIV can be prevented through minimizing the exchange of bodily fluids containing high concentrations of this virus. One form of risk prevention has been the introduction of protocols for screening and testing national blood supplies, resulting in a virtual elimination of HIV transmission through blood transfusions in industrialized countries.[309] Most preventive efforts have been behavioural in nature, focused on risky sexual practices and sharing of needles by intravenous drug users. Prevention of risk associated with sexual behaviour has involved educational or public information campaigns promoting the practice of "safe sex": for example, using a condom and choosing sexual partners carefully. Prevention of risk associated with drug use has involved the "harm reduction" strategy of providing a supply of clean needles to intravenous drug users.

A recent review of behavioural interventions designed to reduce the spread of HIV found that overall, these behavioural interventions are quite effective, leading to decreases in risky

behaviours and sexually transmitted HIV infection.[310] Many of these effective prevention trials were carried out with two high-risk groups: heterosexual African-Americans and homosexual men. The reviewers caution that "adherence to safe sex practices for life can be challenging. Relentless efforts for implementation of behavioral interventions to decrease high-risk behavior are necessary to decrease HIV transmission."[311]

A relatively new line of research has shown that male circumcision can lead to a substantial reduction in HIV transmission – but the randomized trials supporting the beneficial effect of circumcision have been conducted in Africa, where heterosexual transmission of HIV contributes most to the epidemic, and the relevance of these results for Canada is unclear.[312]

It has been argued that the most powerful form of HIV prevention is in fact prompt and effective *treatment* of infected individuals with HAART. In this way, further transmission of the virus may be prevented. For example, treatment of HIV-infected mothers accompanied by replacement feeding, with or without Caesarian delivery, has practically eliminated mother-to-child transmission of HIV in Canada and the United States.[313] The case for expanding access to HAART to prevent HIV spread has been made by a team of Vancouver researchers:

> In view of the potential effect of HAART on HIV transmission, what would be the implications of an alternative prevention-centred strategy for the use of HAART? This approach would be based on the notion that new HIV infections are overwhelmingly contributed to by index HIV-infected individuals who are not on HAART. A prevention-centred approach would therefore argue that treating 100% of HIV-infected individuals at once could greatly reduce HIV transmission. While this would be costly in the short term, it could prove highly cost effective. The short-term cost of treatment of all HIV-infected individuals would be more than offset by the number of new infections that it would prevent.[314]

SCREENING

One form of screening by healthcare providers involves remaining vigilant to high-risk behaviours in patients that increase the risk for HIV infection (such as frequent unprotected sex). Individuals who fall into high-risk categories would be appropriate for HIV testing, even if they do not show symptoms indicative of this condition.

The American Academy of Family Physicians recommends HIV testing for the following high-risk groups:

> Men who have had sex with men after 1975;
>
> Men and women who have unprotected sex with multiple partners;
>
> Past or present injection drug users;
>
> Men and women who exchange sex for money or drugs, and their sex partners;
>
> Persons whose past or present sex partners were HIV-positive, or who are or were injection drug users;
>
> Persons who are entering or leaving the prison/correctional system;
>
> Persons being treated for STDs;
>
> Women who have sex with men who also are MSM;
>
> Persons who request an HIV test despite reporting no individual risk factors may also be considered at increased risk, since this group is likely to include individuals who are not willing to disclose high-risk behaviors;
>
> Persons who received a blood transfusion between 1978 and 1985.

- http://www.aafp.org/online/en/home/clinical/clinicalrecs/hiv.html

Another approach to HIV screening is to offer screening to all individuals who present to a healthcare provider, based on the assumption that many individuals will be reluctant to disclose high-risk behaviours and thus many cases will be missed. This has been described as "opt-out" testing – HIV screening is offered to everyone and each person has the choice to opt out of the testing. This approach is recommended by the U.S. Centers for Disease Control and Prevention:

> CDC believes that the adoption of voluntary HIV screening in healthcare settings will help healthcare workers identify persons with previously unrecognized HIV

> infection and link them to clinical and prevention services, and further reduce sexual and perinatal transmission of HIV in the United States.[315]

Note that the opt-out approach to HIV testing is advocated in U.S. guidelines, but is not the norm in Canada, although it has become common in certain healthcare settings in Canada such as emergency rooms.

Although considerable progress has been made in communicating the message that HIV screening is important, much remains to be accomplished. For example, a survey of gay men carried out in Vancouver in 2006 found that only 50% had taken an HIV test within the previous year and 16% had never taken an HIV test.[316]

DIAGNOSIS

HIV is diagnosed through a specific test designed to detect antibodies produced by individuals infected with the virus. Because infected individuals may not produce detectable antibodies until three months after infection, a negative test may need to be repeated again three months later to be certain that infection has not occurred. The progress of HIV can be monitored through measurement of changing levels of the virus or CD4 cells in the bloodstream. CD4 cells are white blood cells that fight infection and are destroyed by HIV – the lower the CD4 count, the weaker is the immune system.

TREATMENT

Standard treatment for HIV is highly active antiretroviral therapy (HAART), a treatment approach that has greatly reduced HIV-associated morbidity and mortality and that continues to improve in terms of tolerability. HAART is effective in stopping viral replication, which usually results in reducing virus in the blood to undetectable levels. This result is highly beneficial for the affected individual's health and reduces the risk of transmission to others. With the advent of this treatment, the life expectancy of HIV-positive individuals increased considerably.

SERVICE GAPS

- It would be beneficial to expand HIV testing so as to identify more of the estimated 30% of HIV-infected individuals who are unaware of their condition. Facilitating greater access to rapid HIV tests in clinical settings would help in this regard.

- Expansion of HAART delivery to a larger proportion of the HIV-affected population is likely to produce significant benefit. For example, those with moderate CD4 counts might now be considered inappropriate for this treatment due to concern over side effects.[317] But early initiation of HAART may yield net benefit in terms of avoiding impacts on other body organs. Recent changes to the eligibility criteria for HAART will allow more HIV-infected individuals to start on treatment at an earlier stage of the illness.

- Even among those who meet the criteria for the initiation of HAART, many do not seek care – any program that increased treatment access for these individuals would deliver substantial benefit to the affected individuals and would reduce transmission rates. Increasing access to treatment is a particular challenge with regard to the intravenous drug user population.

KNOWLEDGE GAPS

- Current initiatives to expand HIV treatment in B.C. are being justified on the basis of potential added clinical improvements for HIV-infected individuals and potential reductions in the number of new infections. Monitoring of these outcomes in the face of HAART expansion is a high priority for HIV research.

- A phenomenon known as "HAART optimism" has been identified in the MSM population: increasing confidence in the availability of effective treatment having the unintended effect of increasing high-risk behaviour, especially unprotected sex.[318] As a result, lack of improvement or even increase in HIV transmission appears to have occurred in certain jurisdictions.[319]

> Unfortunately, availability of HAART paradoxically may increase sexual practices that lead to HIV transmission. Community surveys indicate that, as a result of the availability of HAART, HIV-negative men who have sex with men (MSM) are less concerned about contracting HIV, HIV-infected MSM are less concerned about transmitting HIV, and both groups are more likely to engage in unsafe sex.[320]

  Further research is needed concerning the prevalence of this maladaptive belief, the associated increase in high-risk behaviours, the impact on HIV incidence and the effectiveness of health promotion campaigns to replace HAART optimism with HAART realism.

- We need to learn more about effective means of controlling the HIV epidemic in intravenous drug users. How can government policies and government-funded health services help in preventing the use of injection drugs?

SUICIDE

DESCRIPTION

Suicide in men has been described by a leading suicide researcher as a "silent epidemic."[321] It is "epidemic" because it has a disturbingly high incidence and is a major contributor to men's mortality: between the ages of 15 and 44, suicide is among the top three sources of men's mortality.[322] It is "silent" because there is a low degree of public awareness regarding the magnitude of this problem, surprisingly little research has been done in this area, there are few preventive efforts specifically targeting male suicide, and men are reluctant to seek help for suicidality.

Men have a shockingly high rate of death by suicide, compared to women. Across all countries reporting these data (except China and India), males show a suicide rate that is 3 to 7.5 times that of women.[323] In Canada, the male suicide rate is about 3 times that of women.[324] Figure 22 below charts the age- and gender-specific incidence of suicide in Canada, based on data from 2001-2005. The chart shows two patterns:

- The male suicide rate increases fairly steadily with age until peaking in the late 40s, then falls significantly and rises again in the 80s.
- Male rates are greater than female rates at all ages and substantially greater across most of the lifespan.

The evident male pattern of peak in suicide rate in the 40s and 50s is surprising in light of multinational data showing one of two patterns: a steady increase in suicide rate with age *or* a peak of suicide in younger age groups.[325] [326] However, a change in this suicide pattern may be underway:

> Among U.S. white men, middle age has historically been a time of relatively lower risk of completed suicide, compared with elderly men. Yet by 2005, the suicide rate of white men aged 45-49 years was not only higher than the rate for men aged <40 years but also slightly higher than the rate for men aged 70-74 years…. In the past, suicide-prevention efforts have focused most heavily on the groups considered to be most at risk: teens and young adults of both genders as well as elderly white men, whose rates of suicide have historically been the highest in the U.S. Attention and resources dedicated to these subgroups may have increased the awareness and identification of suicide in these populations, perhaps partly because the very young and very old groups are easier to identify or study in settings such as schools or primary care. Suicide in the middle-adult years has not been studied as extensively.[327]

It is apparent that our knowledge of men's suicide is lagging behind changes in the age-specific incidence of this source of mortality. Until we understand the underlying reasons for this relative increase in men's dying by suicide in middle age, we will not be able to implement preventive action.

While the analysis of suicide rates is highly informative, some epidemiologists have argued that a more useful way to evaluate suicide impact is in terms of potential years of life lost, which reflects both mortality rate and age at which death occurs:

> This measure takes into account an argument that the death of a young person involves more loss than that of an older person. This alternative measure incorporates the notion that one death is not implicitly the same as another death. This notion is particularly important when one seeks to weigh the importance of suicide relative to other causes of death.[328]

Suicide is the second leading source of potential years of life lost by men in comparison to women, reflecting both men's higher rate of suicide and the relatively young age at which many suicide deaths occur. In Canada, suicide accounts for about 10% of all PYLL for men; in BC, it accounts for about 7%.[329] But recall that the PYLL calculation does not measure the potential gain in life expectancy if we were to eliminate that source of mortality. B.C. men would not live 7% longer on average if we prevented all male suicide. This is mainly because there are other sources of mortality that would undo some of the gain – preventing an individual's suicide would not protect that person from other health conditions or accidents ("competing risks").

In addition to suicide rate, we also need to look at suicide *attempts* to understand the gender difference in suicidal behaviour. Although men die by suicide at a higher rate, women have a higher rate of attempting suicide.[330] The ratio between suicide attempts and actual suicides for men and women in Canada is shown in Figure 23. It should be noted that there is a spectrum of self-harm, ranging from acts of physical self-harm not intended to be suicidal, to acts that reflect ambivalence about dying, to acts that reflect a clear and settled intention to die. The broad term *Deliberate Self-Harm* [DSH] is used in the research to capture this range of possible actions. As one might expect from the suicide attempt statistics, women show much higher rates of DSH.[331]

Figure 22: Median Male and Female Age-Specific Suicide Rates Based on Statistics Canada Data (2001-2005)

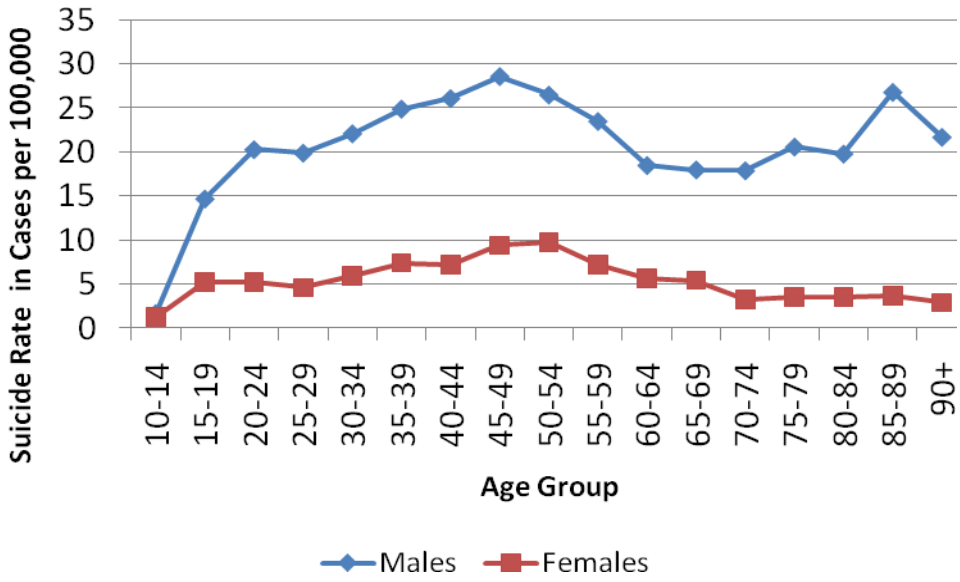
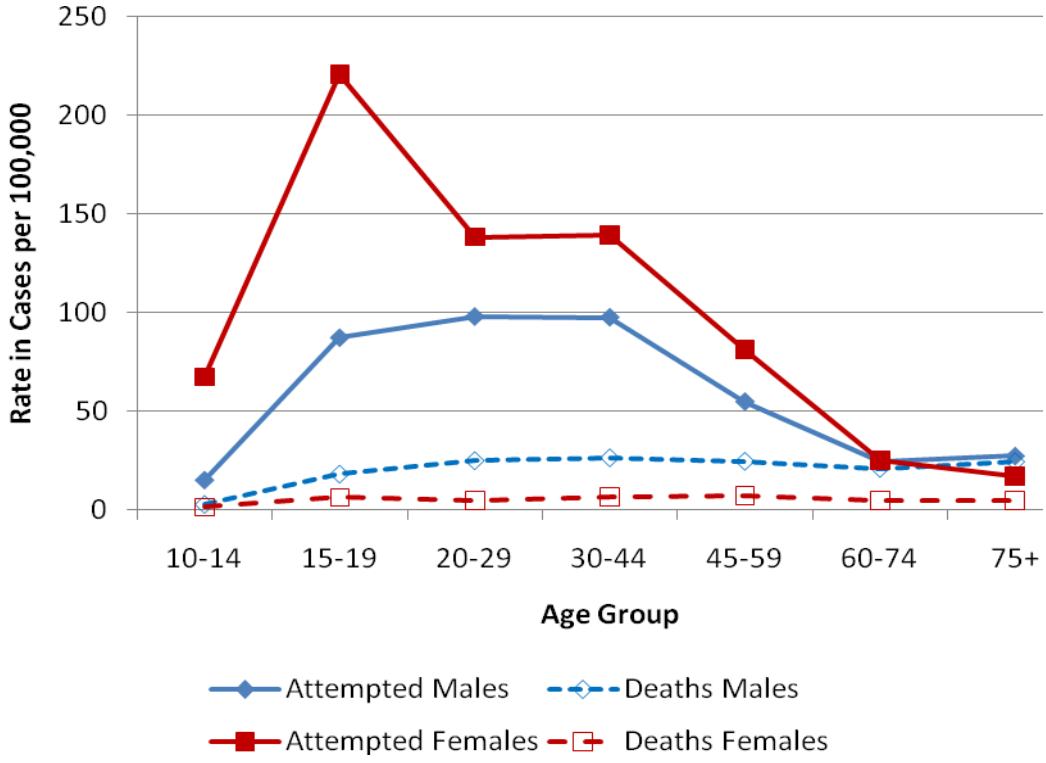


Figure 23: Suicide Death and Suicide Attempt (Hospitalization) Rates for Canada in 1998 (from Langlois & Morrison, 2002)



PREVENTION

We do not fully understand the *reasons* for the gender difference in suicidal behaviour, reasons that might guide our efforts to prevent male suicide. What are the factors contributing to men's higher rate of death by suicide; and, in particular, why do such a high proportion of male suicide attempts end in death?

Environmental Factors

One approach to answering these questions has been to focus upon access to different suicide methods. A well-established finding is that men are more likely to use suicide methods of *high lethality*, methods with increased risk of death. For example, a recent pan-European study found that the (highly lethal) methods of hanging or use of firearms were more likely to be used by men. One of these two methods was used in 62% of male versus 40% of female suicidal actions.[332] This finding suggests that restricting access to firearms might be a way to achieve a relative reduction in male suicide.[333] Unfortunately, there is no practical way to reduce access to hanging, a method that men are far more likely to use than firearms.

Lack of social support, compared to women, has been implicated as an important factor in male suicide.[334] An interview-based study of men who had attempted suicide suggested that social stressors – family breakdown, overwork, employment insecurity – often combined with alcohol or drug abuse, are understudied contributors to male suicide.[335] There is some evidence suggesting that occupational stress contributes more strongly to male than female suicide.[336]

Behavioural Factors

From a behavioural point of view, we could ask *why* men are more likely to choose methods of high lethality. With regard to the use of firearms, it may be that men have more exposure to guns and thus are more prone to this method. But when it comes to hanging, it is not clear why men would find this method more acceptable. We can speculate about other reasons men may have for employing highly lethal means. It may be that men who reach the point of suicidal action are more hopeless than are women; more clearly resolved to die; more likely to be intoxicated and thus more disinhibited; more willing to carry out actions that might leave them injured/disfigured; less concerned with consequences due to a high risk-taking orientation; etc.

> It is well recognized that males tend to use violent means of both suicide and DSH more often than do females. Greater suicidal intent, aggression, knowledge regarding violent means and less concern about bodily disfigurement, are all likely explanations for the excess of violent suicide in males.[337]

But we currently lack strong evidence to support these "likely explanations." It is essential that we identify the range of factors influencing male suicide: triggering behaviours; life stressors; reasons for choosing one suicide method versus another; utilization or avoidance of mental

healthcare prior to becoming suicidal; availability of or willingness to access support from family and friends; etc.

Research is emerging that speaks to these issues:

From the perspective of behavioural risk for suicide in men, a study of suicide attempts in older men and women showed that men were more intent upon dying and moved more quickly and "decisively" from considering suicide to acting upon the suicidal ideation. The study noted that, "Our findings suggest that factors responsible for the increased suicide rate in older men operate largely during the suicidal crisis itself: once a depressed older man develops serious suicidal intent, he tends to realize it with little hesitation."[338] The reasons men move in this unhesitating way to suicidal behaviour remain to be determined. One might speculate about a masculine value of forthright and immediate action, but only systematic study will tell us.

Further emphasizing men's propensity to use more lethal suicidal methods, a retrospective study of suicide deaths by firearm among men and women found that men were far more likely than were women to shoot themselves in the head.[339] The study researchers suggest two explanations: men have a more settled intention to die; and women are more concerned with facial disfigurement, even in the context of suicidal behaviour.

Consistent with our previous discussion of men's relatively low levels of help-seeking for psychological difficulties, a review of help-seeking by individuals who eventually died by suicide showed that men had much lower rates of contact with healthcare. In the year before suicide, an average of 58% of women vs. 35% of men sought care for mental health issues. [340]

Male suicides are more likely to occur in the context of substance use disorders than are female suicides.[341] This is consistent with our earlier observation that men show much higher levels of alcohol abuse – given the pervasive effects associated with abuse of alcohol and other drugs, it is not surprising to find an associated increase in suicide.

The male gender role, traditional or hegemonic masculinity, has also been proposed as an explanation that brings together the various behavioural risk factors.[342] This explanation would view behavioural risks such as low help-seeking, poor social integration and choice of high-lethality methods as expressions of the underlying male gender role. It remains to be seen whether this focus on male gender role will add to the explanatory power of the specific risk factors that have been identified.

One sociologist has taken this focus on male gender role to the point of asserting that suicide itself is a conventionally masculine behaviour:

> in the United States, suicide is most common among older "White" men and is typically considered masculine behavior. Women who kill themselves are viewed as acting like men, and therefore deviant.[343]

The notion that suicide might be widely perceived as "normal" for men is evidently derived from two sources: first, research showing a somewhat higher level of rated acceptability of suicide for men versus women;[344] and second, opinions by those who have historically written about suicide, such as the sociologist Emile Durkheim.[345] This is a shaky foundation for an assertion that seems, on the face of it, highly implausible.

Biological Factors

There has been research attempting to relate suicidal behaviour to certain patterns of brain organization.[346] Indeed, the authors of the study regarding older men's suicides, discussed above, suggest that sex differences in neural organization of decision-making might be the basis for men's more rapid transition from suicidal ideation to act. However, there has yet to be significant evidence showing brain structure to be the basis for gender differences in suicide.

SCREENING

There are no special protocols or instruments recommended for screening men for suicidality in primary care. The typical recommended approach focuses on screening for depression (which is a frequent precursor of suicide) using brief questionnaires – but screening questions and interpretation are the same for men and women.[347] One might expect that men's well-established reluctance to discuss relationship or emotional difficulties would call for more careful screening of men by healthcare providers, but there is not yet significant research evidence supporting the effectiveness of a differential approach to men's depression or suicide risk. In fact, a systematic review indicated that there has not been enough research to indicate whether screening for suicidality in men or women is effective in reducing suicide incidence.[348] The authors of this review draw specific attention to the lack of research on suicide and gender:

> dramatic differences in suicide behaviors among men and women … have drawn little attention. A better understanding of these variations may have direct implications for screening and treatment strategies, and they warrant further research. [349]

DIAGNOSIS

The evaluation of suicidality in men follows the same general protocol as that for women.[350] At the same time, certain risk factors are more predictive of male suicide, dictating greater attention to these factors when evaluating suicidality in men. For example, one study indicated that a history of prior suicide attempts using violent methods might be particularly important in evaluating male suicide risk.[351] Another study tracked individuals with the diagnosis of major depression over two years and found certain variables to be much more predictive of suicidal acts in men than in women: a family history of suicidal behaviour, previous drug use, and early

parental separation.[352] As noted above, substance abuse is more associated with suicidality in men and this should be a key component of male suicidality assessment.

TREATMENT

To date, there has not been research to determine whether intervention for suicidality is comparably effective for men and women and whether suicidal men should be approached with different treatment methodology. A recent review of gender differences in suicide recommended that:

> Research on treatments for suicidal behavior should investigate gender differences in response. Initiatives to develop gender specific approaches may be indicated. Gender differences in suicidal behavior clearly merit more research attention to generate information that can guide clinical practice and prevention strategies in ways that will prove most effective for preventing suicidal behavior in both genders.[353]

SERVICE GAPS

It is generally acknowledged that identification of suicide risk indicators is an area of primary care requiring considerable focus, both in terms of training and support for primary healthcare providers.[354] [355] But recognition of suicide indicators is especially problematic for male patients, given their disinclination to talk about emotional distress, greater propensity for an impulsive behavioural response and higher degree of risk for death by suicide. Therefore, healthcare providers should have access to male-appropriate assessment and intervention protocols; development and validation of such protocols would greatly support healthcare providers in responding effectively to men's suicide risk.[356]

KNOWLEDGE GAPS

There is a pressing need for research on the precipitating and predisposing factors that distinguish male suicide and can account for the substantial gender disparity in death by suicide.[357] Why do men use more lethal methods, why do they move with less hesitation from thinking about suicide to implementing it, why are they more reluctant to seek help in dealing with the stressors that contribute to suicidality, etc.? A richer understanding of the pathways to suicide characteristic of men will give us a stronger basis for designing programs to prevent suicide in the general population or the subpopulation of individuals with identified mental health problems.

A possible approach to better understanding of male suicide might be to apply the method of Behavioural Chain Analysis. This method is commonly used in clinical work with suicidal

individuals, especially those prone to carrying out multiple suicide attempts in the context of personality disorder.

> A "chain" analysis is a very precise behavioral analysis of a single instance of a problem that results in a detailed step-by-step description of the precipitating events and the patient's emotional, cognitive, and overt behaviors that preceded the problem behavior.[358]

Research that carefully examines the chain of predisposing and precipitating events leading to suicide attempts in men and women, perhaps within a qualitative research format (including interviews or focus groups to elicit typical stories of how people became suicidal), would be very informative. This research method would help us to answer crucial questions: What are the behavioural chains leading to suicide in men? How are these chains different from those characteristic of women? How might one interrupt these chains in order to prevent their tragic outcomes?

LUNG CANCER

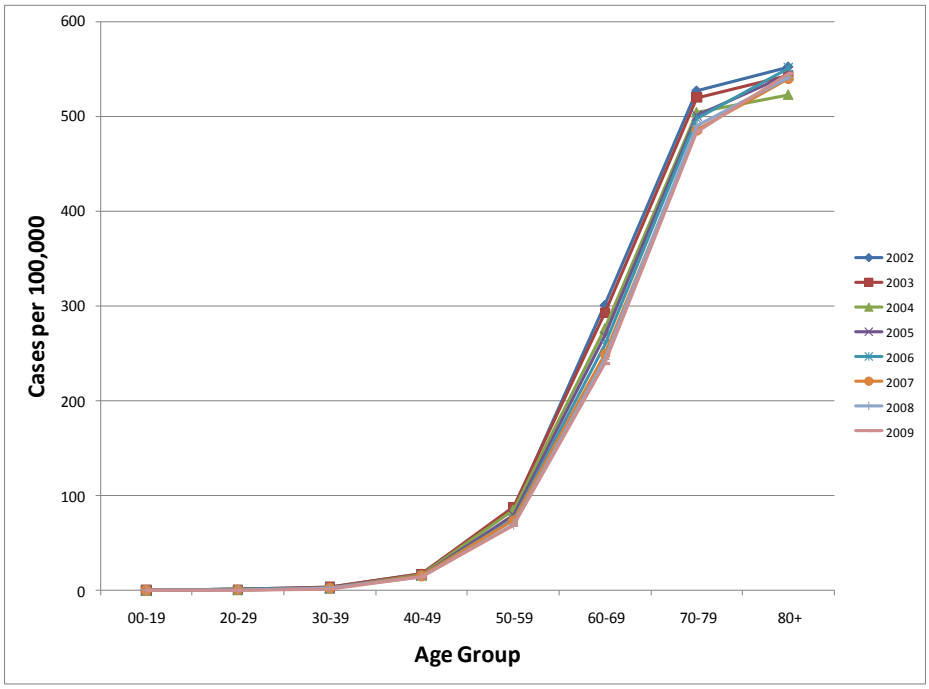
Lung cancer is anomalous in this report: it was once a male-prevalent disorder, but now is equally common in men and women. Yet, it is important to discuss lung cancer because it provides a crucial demonstration of how the healthcare system can intervene to reduce health disparities between men and women. A public health program has been successfully implemented to reduce smoking and consequent lung cancer incidence, particularly in men, by enhancing public awareness and shifting government policy. Much remains to be done to reduce rates of tobacco use, but the significant decrease in male smoking over the last four decades represents a beacon of hope for improving Men's Health and longevity in other areas.

DESCRIPTION

Lung cancer involves abnormal growth of cells in the lungs, which form lumps or tumours, and may spread through the bloodstream to other parts of the body, where tumours may also form. Not all tumours are indicative of cancer – some are benign (noncancerous) and some are malignant (cancerous). There are two major kinds of lung cancer: (i) small cell lung cancer, fast-growing and prone to spread to the rest of the body; and (ii) non-small cell lung cancer, slower growing, less likely to spread and more common.[359]

Lung cancer is associated with a high degree of mortality, having one of the lowest five-year survival rates of any cancer. According to the Canadian Cancer Society (2007 report), lung cancer accounted for about 29% of all the years of life lost to cancer for men and 24% for women.[360] Most new cases of lung cancer occur in the age range of 70-79 (Figure 24), with over half the deaths due to lung cancer occurring in men 70 or older.

Figure 24: Age-Specific Male Lung Cancer Incidence Rates

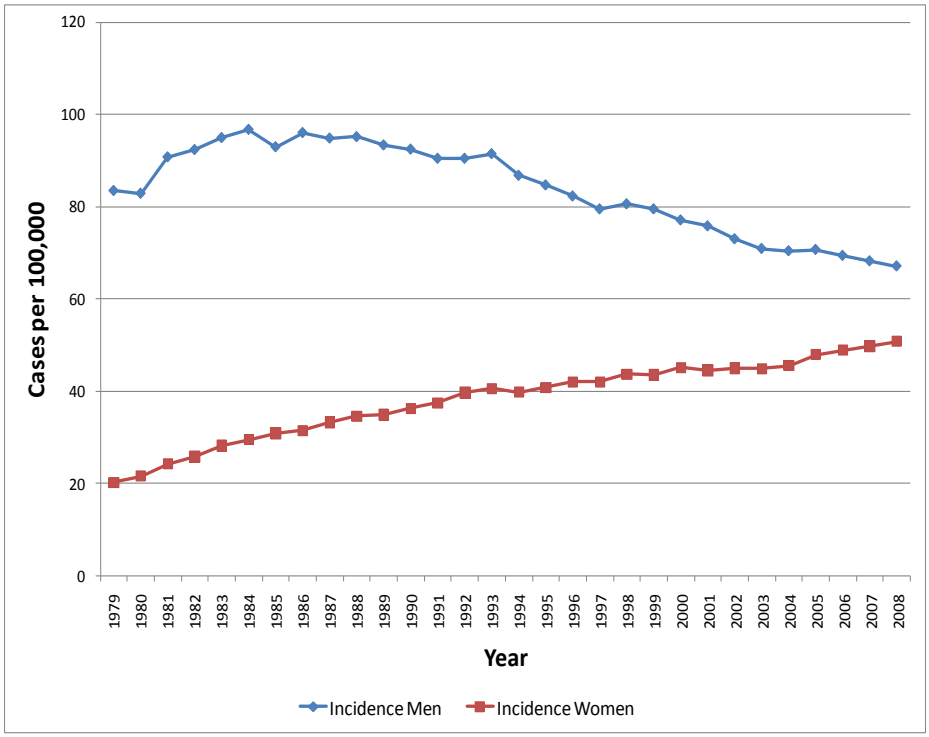


For many years, the incidence of lung cancer was much higher in men than in women. As noted in a review of lung cancer epidemiology:

> Within countries, lung cancer incidence among men invariably outpaces that in women, by well over 100% in most nations. The international rankings of lung cancer incidence for men and women from the same countries tend to differ only slightly, so that the highest rates of lung cancer occur in the same regions of the world for both sexes.[361]

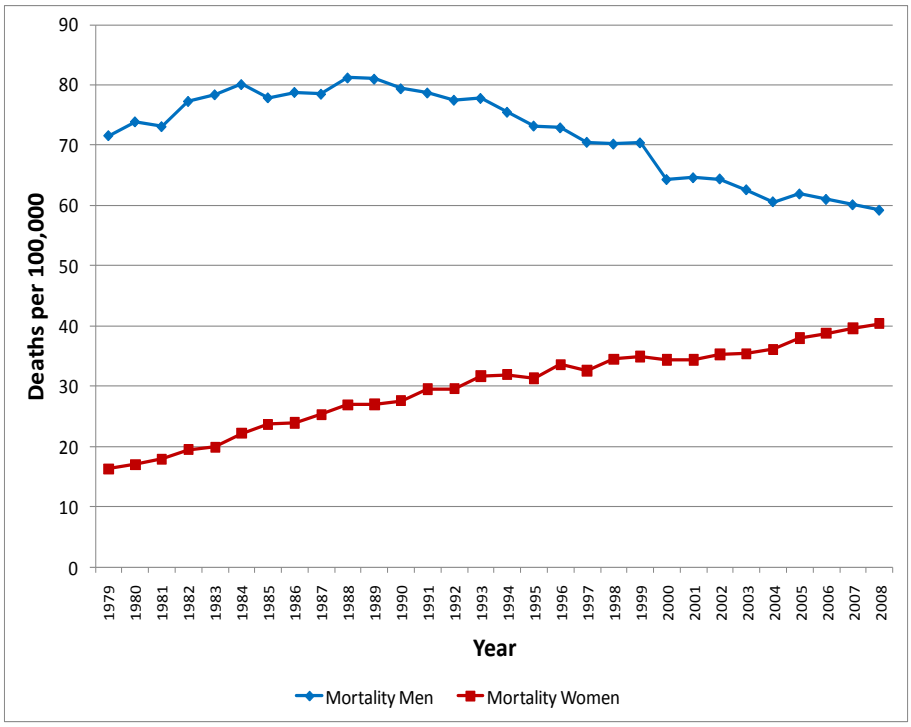
As a result of this striking gender disparity, lung cancer has traditionally been viewed as a primarily male disorder. However, the last 30 years have seen a steady decrease in the incidence of lung cancer in men accompanied by a steady increase in women (Figure 25). It looks as though the rates of lung cancer incidence across the sexes will in the near future become equivalent for men and women. The dramatic decrease in incidence of lung cancer among men (in countries that have systematically committed to prevention of this disorder) is a remarkable achievement – but satisfaction in this accomplishment is offset by dismay at the tragic escalation of lung cancer incidence among women.

Figure 25: Age-Standardized Lung Cancer Incidence Rates for Canada



A similar pattern of convergence is seen for lung cancer mortality, with a decrease among men and an increase among women (Figure 26). We will address this extraordinary change in lung cancer incidence below.

Figure 26: Age-Standardized Lung Cancer Mortality Rates for Canada



PREVENTION

The major risk factor for lung cancer, by a wide margin, is a behavioural one: the use of tobacco in the form of cigarette smoking. There are other risk factors, for example environmental exposure to carcinogenic agents such as radon gas in workplace or home environments, but these represent significant risk factors mainly when combined with smoking. The other factors are relatively minor contributors to lung cancer incidence and mortality, compared to the use of tobacco. As noted by a recent epidemiological review: "Although lung cancer is the most common cause of death from cancer among men and women in the United States today, it remains a rare cause of death in nonsmokers."[362]

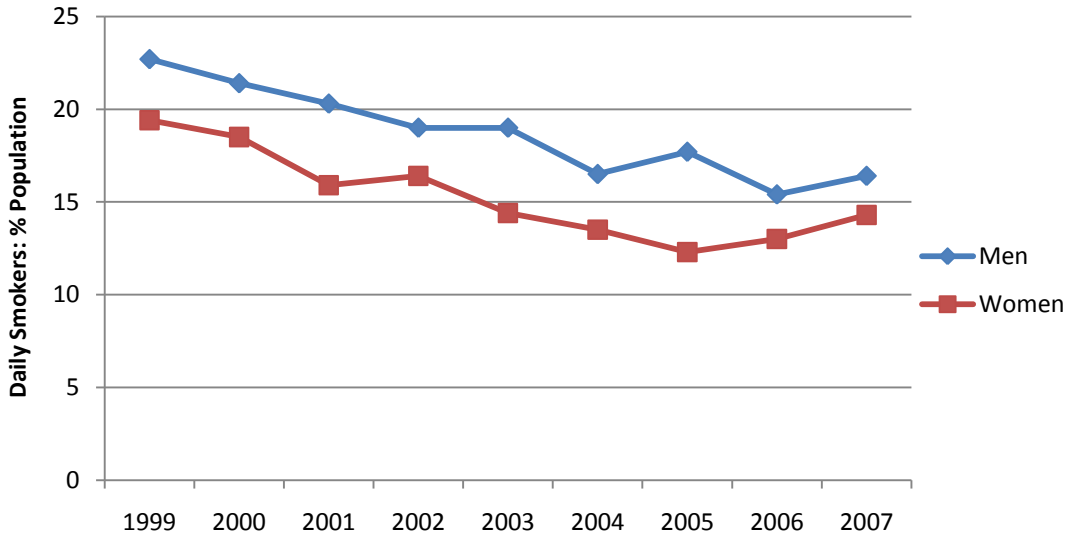
The message is clear: prevention of lung cancer involves either preventing individuals from taking up tobacco smoking or assisting smokers to give up this behaviour. This has indeed been the preventive strategy adopted in the United States, the UK and Canada over the past several decades – and there have been very positive outcomes with regard to substantial reductions in smoking by men.

> Serious tobacco control efforts first began in the United Kingdom and the United States in the 1960s. Their sustained impact has discouraged young people from smoking and helped millions of smokers to quit. As a direct result, lung cancer rates in the United Kingdom and the United States have dropped rapidly. In the United Kingdom, where the

main increase in smoking began before World War II, the incidence of lung cancer among men age 35 to 44 fell from 18 cases per 100,000 people in 1950 to 4 cases per 100,000 in 2000.[363]

Changes in rate of tobacco smoking in the Canadian population are shown in the following figure:

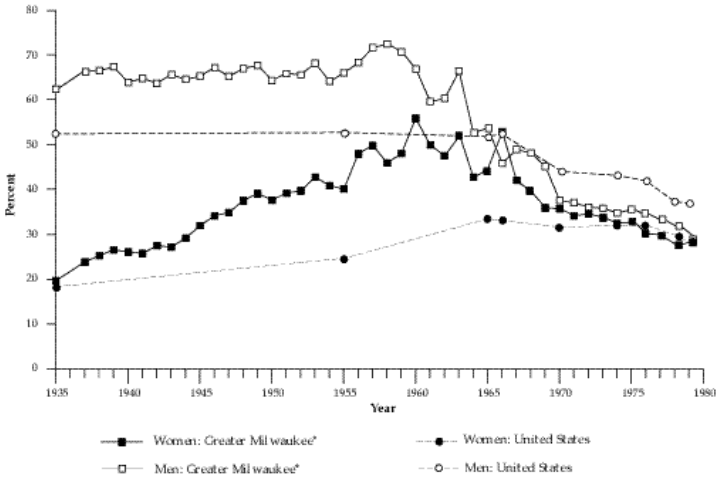
Figure 27: Proportion of Canadians who are Daily Smokers, by Sex and Year [10]



The dramatic decline in male smokers can be seen, as well as a similar decline in women (until 2005, where there is an uptick in female smokers). However, this similar rate of decline between men and women is a recent phenomenon – over a longer time period, women's smoking has greatly increased, while men's smoking has shown a steady gradual decrease. Below is a graph showing U.S. patterns of change in men's and women's smoking between 1935 and 1980.

[10] Adapted from Figure 2-2: Percentage of the population age 15+ years who were daily smokers, by sex and year, Canada, 1999-2007, 2009 Tracking Heart Disease and Stroke in Canada.

Figure 28: U.S. Trends in Smoking by Sex, 1935-1980 [364]



This historical increase in women's rates of smoking may have contributed to women's increased incidence of lung cancer over the last several decades, but the extent of this contribution remains to be determined.

Due to the strong causal connection between tobacco use and lung cancer (as well as other disorders such as Chronic Obstructive Pulmonary Disorder), it is generally recommended that primary care physicians ask about tobacco use on a routine basis in order to identify opportunities for prevention:

> Specifically, every patient should be asked about tobacco use at each office visit, and the information should be recorded in the chart. Those who use tobacco should be advised to quit in a clear, strong, personalized manner, and their willingness to make an attempt to quit should be assessed. Strategies to assist the patient with smoking-cessation include a quit plan, practical counseling, social support, use of approved pharmacotherapy (unless contraindicated), and self-help materials.[365]

Prevention efforts aimed at reducing men's smoking are most likely to be effective when they are designed to be gender appropriate in terms of message content and methods of delivery. For example, a research program in British Columbia is underway to examine the impact of tobacco cessation programs aimed at men who are new fathers, with emphasis on male-appropriate information and program delivery.[366] According to Dr. Joan Bottorff of the UBC Okanagan Institute for Healthy Living and Chronic Disease Prevention:

> The time when a man becomes a new father is an opportunity to intervene. Men want to attain masculine ideals around fatherhood, being providers and protectors. Because they want to be good role models for their children, many want to quit smoking but lack help to do so. One man said "you want to be there

> to watch your child grow up." Often women are placed in the position of trying to influence their partner's smoking to protect the health of their new infant, but this can create tension and conflict in relationships. Tailored programs to support men in reducing and stopping smoking are needed. (Personal communication, June 2009)

SCREENING

Guidelines for the management of lung cancer have not generally recommended the use of screening procedures as research has not shown an adequate risk-benefit ratio.[367] [368] Although researchers have produced findings suggesting that certain screening procedures may indeed be helpful in enhancing the cure rate of lung cancer,[369] the question of screening has remained uncertain and controversial. As described in a recent review:

> While awaiting early results of the ongoing randomized trials of lung cancer screening in the United States (National Lung Screening Trial) and in the Netherlands and Belgium (The Dutch-Belgian Randomized Lung Cancer Screening [NELSON] trial), the field has been dominated by controversies regarding perceived conflicts of interest and study design characteristics in recently completed trials.[370]

A stronger case can be made with regard to screening for tobacco use, as part of a preventive strategy (as discussed above).

DIAGNOSIS AND TREATMENT

Current practice with regard to diagnosis and treatment of lung cancer is comparable across the sexes.

SERVICE GAPS

Given that men continue to have higher levels of tobacco use (and lung cancer incidence) than do women, interventions to reduce smoking are particularly important to Men's Health. Literature in this area indicates that family physicians can play a role in fostering reduced tobacco use by their patients.[371] Yet there is considerable room for improvement in the use of smoking cessation interventions by primary care physicians.[372]

KNOWLEDGE GAPS

In line with the above observation that physicians' uptake of smoking cessation intervention is less than optimal, it will be important to carry out implementation research that identifies barriers to this intervention and innovative methods for overcoming them.[373]

CONCLUSIONS

The Men's Health framework provides a unique perspective on the health of Canadians, and its importance has been increasingly recognized over the last decade. Just as the women's health lens came to gain critical importance in the healthcare system, the Men's Health lens will be crucial to effective healthcare planning, research and clinical practice. This report has aimed to provide an overview of Men's Health – why it matters, what we know, gaps in our knowledge/service delivery, and what new directions we should be taking.

It is well-known that men live on average four to six years less than women – 4.4 years less in British Columbia. But this *life expectancy gap* has been taken for granted rather than carefully studied and addressed. We must understand the sources of this difference in life expectancy. The nature of the gap is illuminated by a statistic known as *Potential Years of Life Lost*, which takes into account the death rate associated with a health condition as well as the average age of death. Analysis of PYLL data for British Columbia shows that the Big Three sources of reduced lifespan for men compared to women are:

1. *Cardiovascular Disease*, which strikes men in larger numbers and earlier than it does women
2. *Suicide*, which has a much higher rate for men at all ages
3. *Motor Vehicle Accidents*, which involve a much higher rate of fatal accidents for men and a high rate of occurrence at a relatively young age.

Each identified source of men's excess mortality should be seen not as an indication of men's inevitable health disadvantage but rather as an *opportunity* to improve men's health status and longevity. Only by understanding the contributors to men's reduced life expectancy can we develop ameliorative interventions.

In order to understand the underlying causes of differences in mortality or other health outcomes between men and women, a framework was developed which includes:

Biological Factors: e.g., differences in hormone levels between men and women

Environmental Exposure Factors: e.g., men being preferentially hired into physically dangerous jobs

Behavioural Factors: e.g., men taking risks at a relatively high level, being reluctant to adopt positive health behaviours and not seeking healthcare services when appropriate.

Men's increased mortality and other worse health outcomes compared to women have sometimes been explained in terms of "traditional masculinity," i.e., values like indifference to physical pain or reluctance to seek help so as not to seem weak, which may cause men to ignore indications of disease or avoid appropriate healthcare. Unfortunately, these explanations run the risk of "blaming the victim" and failing to build on masculine virtues and strengths (such as willingness to take socially-required risks in activities like military service or

firefighting). A balanced view of socially-reinforced masculinity, recognizing both its weaknesses and strengths, is needed to effectively change men's attitudes and behaviours.

Health initiatives specifically targeting men have been studied. Although modest in number, these initiatives have had generally positive results, whether by focusing upon diseases specific to men such as prostate cancer (improving men's knowledge and decision-making options), delivering healthcare services in settings that are primarily male (for example, racing car competitions) or designing health information to be highly appropriate to men's needs and preferences.

Specific health conditions may profitably be examined from a Men's Health perspective:

Prostate Cancer The appropriate use of prostate-specific antigen (PSA) screening has been the subject of considerable controversy and various expert groups take varying positions – this makes it difficult for the individual man, along with his primary care physician, to decide whether to undergo screening. In addition, it is challenging to decide the most appropriate treatment option for diagnosed prostate cancer. A promising approach to these issues is the development and testing of *decision aids,* tools that support physicians and individual men in making such difficult decisions.

Hypogonadism Approximately 1.6 million Canadian men suffer from distressing symptoms linked to hypogonadism, primarily defined by a low level of testosterone. This is a recently recognized condition and its diagnosis and appropriate treatment are still controversial. There is considerable potential for improved education of healthcare providers and provision of screening for this condition. It will be particularly important to overcome the misconception that testosterone replacement is a "fountain of youth" for aging men – this creates unrealistic expectations and tends to trigger skepticism among physicians, who may then be wary of integrating the screening and treatment of hypogonadism into their practice. Once testosterone replacement is seen as simply another clinical intervention with the potential to enhance quality of life in older men, it will find its place in usual care.

Sexual Dysfunction A high proportion of older men suffer from erectile dysfunction, premature ejaculation or lack of appropriate sexual desire. In general, the best way to prevent sexual dysfunction is through maintenance of good general health: adequate exercise and nutrition, avoidance of smoking, moderate use of alcohol, etc. Screening for erectile dysfunction is recommended because this condition may be an indicator of underlying cardiovascular disease. Treatment efforts have primarily been focused on erectile dysfunction due to the availability of medication specifically designed for this condition. Unfortunately, much of the information made available to the public about sexual dysfunction is of questionable value and sometimes linked to marketing of medications or sexual aids. Both individual Canadians and physicians need improved access to comprehensive and unbiased information. In particular, research is needed to identify forms of treatment that will be effective for premature ejaculation or reduced sexual desire.

Cardiovascular Disease Cardiovascular disease shows a much higher prevalence rate in men than in women – it tends to begin at a significantly younger age for men and thus accounts for a larger proportion of potential years of life lost by men versus women. It has been hypothesized that women's later vulnerability to cardiovascular disease may be due to a cardioprotective effect of estrogen, but this explanation has been questioned and further research will be needed to determine the role of estrogen in preventing heart disease. Other factors shown to contribute to men's cardiovascular disease are: (i) relatively poor nutrition among men, including inadequate consumption of fruits and vegetables and excessive consumption of sodium; (ii) higher rates of excess weight among men compared to women; and (iii) men's greater tendency towards chronic difficulties with anger management, a behavioural factor that has been found predictive of cardiovascular disease onset.

Osteoporosis Although this health condition occurs with less frequency in men than women, there has been a surprising tendency towards worse outcomes in men with this disorder. Because healthcare providers perceive osteoporosis as a "women's health problem," they are much less likely to screen for or address indications of osteoporosis in men. Healthcare providers need education in recognizing and responding to osteoporosis in men.

HIV The two highest-risk groups for HIV infection are exclusively or predominantly male: MSM (men who have sex with men) and IDU (intravenous drug users). Not surprisingly, men show much higher rates of mortality from HIV-associated conditions than do women – but the life expectancy of individuals with HIV has increased dramatically with the introduction of Highly Active Anti-Retroviral Therapy. Increasing the uptake of this effective treatment, especially among IDU, is a major challenge. Another challenge is the tendency of a subgroup in the MSM population to *increase* high-risk behaviour because of their confidence that effective treatment is available. Once again, male risk-taking is a significant contributor to negative health outcomes.

Suicide Worldwide, men have higher rates of death by suicide at all ages, versus women. Canadian men show a suicide mortality rate three times that of women. The increased risk for death by suicide in Canadian men is especially pronounced in the age range of 40-50, when men's suicide rises to a peak before gradually falling and then rising once more past the age of 80. Both the strikingly high levels of suicide for men compared to women and the surprising peak in suicide for middle-aged men (a recent social phenomenon) have received minimal research attention and require systematic investigation in order to design preventive and clinical interventions.

Lung Cancer For many decades, lung cancer was primarily a disease of men, essentially because men were far more likely than women to smoke tobacco. However, public health campaigns have been quite effective in reducing men's level of smoking, resulting in a reduction in rates of lung cancer in men – these rates have been falling in men over the past 30 years. It is a success story that gives us hope for improving Men's Health in other areas.

RECOMMENDATIONS

A number of recommendations have been made in this report regarding ways to close gaps in service availability and knowledge. But at a higher level of generality, we can identify certain overarching recommendations that cut across various Men's Health conditions.

RESEARCH

1. **The major sources of the life expectancy gap between men and women should be prioritized for research focus and funding. This would enrich our understanding of these sources of excess mortality and help identify appropriate interventions, especially population healthstrategies. Research should explore biological, environmental and behavioural variables contributing to the life expectancy gap. With regard to the behavioural domain, a critical question to be addressed is: "How can we enhance behaviours protective of Men's Health?" Health-protective behaviours include avoidance of high-risk activities such as alcohol overuse and reckless driving, adoption of healthy lifestyle habits (especially good nutrition and physical exercise) and early detection of health problems.**

2. **The highest priority for this research program would be *cardiovascular disease*, emphasizing the development and evaluation of population-level initiatives to modify cardiovascular risk factors in men. In particular, behavioural changes in dietary practices, physical exercise sustained into middle age, and anger management are promising targets for intervention.**

3. **The next priority would be male *suicide*, emphasizing qualitative/quantitative investigation of the biological, environmental and behavioural pathways to suicide characteristic of men. From identification of characteristic pathways could be derived population-level interventions likely to meaningfully impact the male suicide rate.**

A specific question to address: "Why is the suicide rate in Canada highest for middle-aged men?"

4. **The next priority would be male *mortality from motor vehicle accidents*, emphasizing population-level interventions with younger male drivers regarding risk-taking and coping with impulsive behaviour. It is likely that changing the reckless driving behaviour characteristic of many young men will require mounting a sophisticated challenge to certain aspects of youthful masculine identity (such as high risk-taking and stimulation-seeking) and appealing to masculine virtues such as career ambition, loyalty to friends, and proficiency in physically challenging tasks.**

5. **High research priority should be placed on filling knowledge gaps regarding the comparative risks and benefits of treatments for male-specific health conditions such as prostate cancer and erectile dysfunction.**

PRACTICE

1. **Primary care physicians should be trained and encouraged to provide a greater focus on Men's Health issues such as risky drinking, suicidal ideation and poor nutritional habits.**

2. **Decision Aids should be developed to support men and their family physicians in weighing complex decisions associated with Men's Health. Examples include choosing prostate cancer treatment options, initiating and sustaining dietary changes, initiating and sustaining changes in driving behaviour, monitoring risk factors such as hypertension and waist size, etc.**

3. **Innovative methods of engaging men in health-protective behaviour should be disseminated in primary care. These might include self-**

management materials concerning adopting a healthier lifestyle, controlling risky drinking and dealing with mood issues.

POLICY

1. There should be a priority on implementation of population-level initiatives for each of the three major sources of gender gap in life expectancy. These initiatives would be strengthened by (a) adopting a gender-appropriate/evidence-consistent approach; (b) integrating content and forms of communication that are well suited to men's identities and coping styles; and (c) delivering interventions in physical settings or media channels that maximize access to men.

2. There should be a policy emphasis on the development and dissemination of Decision Aids, as described above.

3. Consideration should be given to the development of male-friendly healthcare services such as specialized Men's Health Clinics.

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