

ACKNOWLEDGEMENTS

The Centre for Men's Health, Institute of Technology Carlow wishes to acknowledge the following who contributed to this report:

- The Irish Cancer Society who commissioned and funded the report.
- Dr Linda Sharp and Dr Harry Comber, National Cancer Registry Ireland, who supervised the report.
- The Tumour Registration Officers and data team at the National Cancer Registry Ireland for collecting and processing the data on which the report is based, with particular thanks to Dr Sandra Deady.
- The HSE for the provision of research funding to complete the report.

FOREWORD

Male Mortality and Cancer Risk

Cancer represents a significant present and future health challenge. This is particularly true of cancer in men. While many advances have been achieved in treatment modalities and survival outcomes, a gender disparity exists in mortality and survival. It is evident in terms of current trends and future predictions that there is a need for a more gender specific and effective targeting of men in terms of tackling the disproportionate impact of cancer mortality on the male population in the Republic of Ireland.

The vision and ambition of the Irish Cancer Society is nothing less than a future without cancer. Our mission is to eliminate cancer. It may be said that this is an unrealistic and unachievable ambition but we are sure that it empowers us to provide the leadership which will see huge leaps forward and significant breakthroughs in the battle against cancer. Firstly we must understand the battle we face and this report applies a gender lens to identify the male specific challenges existing and ahead.

The report provides a most valuable overview of the significant issues influencing male mortality and cancer risk. It helps us make sense of the existing incidence, survival and mortality cancer data. Understanding that projections indicate between 2005 and 2035 the overall number of invasive cancers is to increase by 213% or 7% annually for men compared to 165% or 6% annually for women demonstrates the urgency required in addressing this issue.

The recommendations contained within are broadly in line with previous documents such as A Strategy for Cancer Control in Ireland (2006) and the National Men's Health Policy (2008). It identifies that reducing the risk of cancer must be tackled through programmes which influence the uptake of healthy lifestyle options, to include diet and exercise, on a population wide level. Greater awareness of the signs and symptoms of cancer are required to improve mortality rates through earlier intervention. This includes access to and uptake of screening programmes such as BowelScreen. It also recognises the requirement for a male specific research focus on the causative factors associated with cancers in men and an understanding of how and why men do or do not seek help at the most appropriate juncture. Masculine traits of self-reliance, physical toughness and emotional control, are identified as being in conflict with positive health behaviour such as reliance on others and requesting medical aid. Addressing these traits successfully will go some way towards addressing gender gaps in mortality and survival.

In order to effect change we need to understand what works in relation to behaviour change and healthy lifestyle options in men with a particular emphasis on understanding what works for men living in lower socioeconomic groups. Reducing the risk of cancer is one of the primary goals of the Irish Cancer Society's strategy 2013-2017. This report gives us a valuable tool to understand mortality and cancer risk as it applies to the Irish male and allows us to consider our response through this gender lens.

Finally I would like to take this opportunity to acknowledge the contribution of Nick Clarke and Noel Richardson, Centre for Men's Health, Institute of Technology Carlow and Linda Sharp and Eamonn O'Leary of the National Cancer Registry Ireland.

DONAL BUGGY HEAD OF SERVICES, IRISH CANCER SOCIETY

EXECUTIVE SUMMARY

Introduction

The emergence of men's health at a policy level in the Republic of Ireland in recent years is underpinned by a growing awareness and concern about what the policy describes as the 'burden of ill health' experienced by men. Cancer represents a significant proportion of this burden. Age standardised incidence and mortality are higher among men compared to women while survival is lower. With an ageing population, projections indicate that between 2005 and 2035 the overall number of invasive cancers is to increase by 213% or 7% annually for men compared to 165% or 6% annually for women.

The factors underpinning cancer incidence and mortality are multiple and complex. While genetic risk factors for developing cancer can be attributed to a proportion of cancer incidences across a number of cancer sites, lifestyle factors such as smoking, alcohol use, diet and obesity impact significantly upon cancer incidence and are considerably more important. Other key mitigating factors include the relative uptake of available screening and, in the case of men in particular, patterns of help seeking behaviour and awareness or knowledge of cancer risk factors and symptoms. Cancer incidence is also typically higher in areas where there is greater deprivation and higher population density. It is becoming increasingly evident in terms of current trends and future predictions that there is a need for a more gender specific and effective targeting of men in terms of tackling the apparently disproportionate impact of cancer mortality on the male population in the Republic of Ireland. Furthermore, policymakers and practitioners require a better understanding of the factors underpinning gender based cancer inequalities in order to intervene appropriately to address such inequalities. The purpose of this report is to unravel the statistics in relation to the rates of cancer diagnosis, survival and mortality for men and women in the Republic of Ireland across a number of non-sex specific cancer sites and, in the context of a number of patient characteristics, to offer some key recommendations based on the findings. It is proposed that the findings from this report will inform a gender perspective on policy, service delivery and future research in relation to cancer and men in the Republic of Ireland.

Aims and Objectives

Aim

To investigate key sex and gender differences in relation to incidence, survival and mortality for five non-sex specific cancers (bladder, colorectal, stomach, lung, and melanoma) in the Republic of Ireland from 1994 to 2008 with a view to informing both cancer strategy and men's health policy in the Republic of Ireland.

Objectives

1. To compile detailed incidence, survival and mortality cancer data disaggregated by sex, and to examine these in terms of socioeconomic characteristics (age, marital status, deprivation index) use of tobacco, and clinical characteristics (stage at diagnosis, tumour site location and histological classification).
2. To present cancer rate ratios for males and females for incidence and mortality and to investigate if an association exists with patient characteristics and if such factors impact on survival.
3. To increase our understanding of why males disproportionately die from non-sex specific cancers.
4. For cancer specific deaths, (after adjusting for sociodemographic and clinical factors), males had a significantly increased risk of death from CRC beyond 1 year post diagnosis.
5. To inform and provide an impetus for action towards implementing policy on men's health, cancer diagnosis, prevention and early diagnosis/prevention and early diagnosis.

Methodology

In selecting which cancers to include in the study, a decision was made to focus on non-sex specific cancers which were ranked within the top ten most common cancers, namely; (i) colorectal cancer, (ii) lung cancer, (iii) melanoma of the skin, (iv) stomach cancer and (v) bladder cancer. Data was drawn from the National Cancer Registry Ireland (NCRI) for each cancer site for the period 1994-2008. Age standardised mortality rates for each cancer were drawn from the World Health Organisation Cancer Mortality Database. A range of patient characteristics were examined including socio-demographic variables (age, gender, marital status, smoking status and deprivation index) and clinical variables (stage of disease at diagnosis, treatment, histology and subsite). European age standardised incidence and mortality rates were calculated with corresponding rate ratios for incidence and mortality using Poisson approximation. Survival, using deaths from all causes, was investigated using the Hakulinen method to calculate relative survival, with Cox proportional hazards models used to investigate cancer specific survival. To permit survival analysis, information on deaths was obtained from the CSO and linked to cancer registrations by the NCRI.

Results

Colorectal Cancer

- European age standardised colorectal cancer incidence rates were higher for males than for females at all ages and across all age groups. The rate overall in males was 66.53 per 100,000 compared to 41.4 per 100,000 in females.
- There were significantly more males than females diagnosed with colorectal cancer in all age categories.
- Overall age adjusted relative survival from all causes of death was similar for both sexes at 1 year and 5 years post diagnosis over the period 1994-2008. However males under the age of 65 had significantly lower relative survival at 53% compared to 61% for females.
- For cancer specific deaths (after adjusting for sociodemographic and clinical factors), males had a significantly increased risk of death from CRC beyond 1 year post diagnosis.
- Despite yearly decreases from 1994-2008, the male mortality rate remained significantly higher than the female rate, with males being, on average, 1.8 times more at risk of dying from colorectal cancer than females during the period 2006-2008.

Lung Cancer

- European age standardised incidence rates for lung cancer were higher for males (62.18 per 100,000 in males and 31.67 in females) across all age groups and across all time periods. However, while the rate over time has dropped in males, it has increased in females.
- Males of all ages were 1.64 times more at risk of being diagnosed with lung cancer compared to females of all ages, with this excess increasing to 1.8 times in those aged 65 and over.
- Age standardised relative survival from all causes of death for lung cancer was significantly lower in males than in females with this difference being greatest in males and females aged less than 65 (22% v 31% respectively). Male survival at 5 years post diagnosis was 11% compared to 17% for females.
- For cancer specific deaths, (after adjusting for sociodemographic and clinical factors) there remained a significant difference in survival with male risk of death being 16% higher than female risk.
- The European age standardised lung cancer mortality rate for males was higher than that for females across all age groups. Rates have however shown a decrease yearly in males, while increasing yearly in females, reflecting a demographic change in smoking habits in females.
- The mortality rate has decreased in males to 49.91 deaths per 100,000 during the period 2006-2008, while for females the rate has risen somewhat since 1994 and returned to a rate of 27.64 deaths per 100,000 by 2006-2008.
- While more males than females were diagnosed with lung cancer (rate ratio of 1.64 male to female standardised incidence), the risk of males dying from the disease was even higher (rate ratio of 1.81 male to female standardised deaths).

Bladder Cancer

- While rates of bladder cancer have decreased yearly in both sexes, European age standardised incidence rates remained higher in males compared to females (16.68 per 100,000 in males and 5.60 in females) during the period 2006-2008.
- Across all ages, males were 3 times more at risk of being diagnosed with bladder cancer compared to females, while this increased to 3.4 times in males aged over 65.
- Age adjusted relative survival from all causes of death for bladder cancer was significantly higher among males up to two years post diagnosis. Thereafter, while remaining slightly higher, survival in males was similar to that of females.
- Male survival for those aged 75 and over was significantly better than for females of the same age.
- For cancer specific deaths (after adjusting for sociodemographic and clinical factors), males had significantly lower risk of death from bladder cancer than females. However, over time this reverses, particularly at 3-5 years post diagnosis where male risk is 48% higher compared to females.
- The European age standardised mortality rates for bladder cancer were higher among males of all ages and across all periods of diagnosis between 1994 and 2008. Although the rate decreased in males of all ages over this period from 7.33 deaths per 100,000 during 1994-1996 to 6.2 deaths per 100,000 during 2006-2008, the female rate remained relatively static at 2.44 deaths per 100,000 during 1994-1996 and 2.29 deaths per 100,000 during 2006-2008.
- The European age standardised mortality rate ratio was significantly higher in males of all ages. Like that of incidence, males are almost three times more at risk of being diagnosed with bladder cancer and of dying from bladder cancer than females.

Melanoma Skin Cancer

- European age standardised incidence rates in both males and females have increased over the period 1994-2008. In all age categories, the rates were higher in females than in males.
- Male and female melanoma skin cancer rates appear to be converging. Incidence rates in females stood at 13.75 melanoma skin cancers per year during the period 1994-1996 compared to the male rate of 8.41 per 100,000 during the same period. This figure increased to 17.32 and 15.95 melanomas skin cancers per 100,000 in females and males respectively during the period 2006-2008.
- Age adjusted relative survival from all causes of death was significantly lower in males than in females across all age groups examined and across all periods after diagnosis. Male relative survival was 90% at 1 year post diagnosis compared to 96% for females. For those aged 75 and over, relative survival for males was 88% at 1 year post diagnosis compared to 94% for females. This figure dropped to 76% relative survival in males of all ages alive at 5 years post diagnosis in comparison to 89% in females of all ages.
- For cancer specific deaths (after adjusting for sociodemographic and clinical factors), males had a 34% higher risk of death than females. This was evident across all time varying variables except after 5 years.
- Although overall European age standardised mortality rates for melanoma skin cancer were very low, rates were higher in males than in females for the period 1994-2008, with the difference becoming more pronounced from 2003 onwards. While mortality as a result of melanoma skin cancer was relatively low, it has increased in both sexes over time.
- Males of all ages were 1.6 times more at risk of dying from melanoma skin cancer compared to females during the period 2006-2008.
- While females were more at risk of being diagnosed with melanoma skin cancer, males were more at risk of dying from the disease.

Stomach Cancer

- European age standardised incidence rates were higher for males across all age groups and across all time periods from 1994 to 2008. European age standardised incidence rates were highest among those aged over 65, with male rates being significantly higher than female rates across all age groups.
- The age standardised rate ratio of male to female stomach cancer was significantly higher in males, with males in all age categories being twice as likely to be diagnosed with the disease.
- Age adjusted relative survival from all causes of death for stomach cancer did not differ significantly between males and females. However relative survival remained static in females after 3 years at 21%, whereas it decreased slightly

in males after the same period.

- For cancer specific deaths (after adjusting for sociodemographic and clinical factors), female risk of death was similar to male risk at 1 year, 1-3 years and at 3 to 5 years post diagnosis. At 5 years or more, female risk was significantly lower than male risk.
- European age standardised mortality rates were higher for males than for females (12.25 per 100,000 in males compared to 6.14 in females). This was the case both for males in the 0-64 age category and those aged 65 and over.
- Despite decreases in European age standardised mortality rates for both males and females, the rates remained significantly higher in males. Males were twice as likely to die from stomach cancer as females, across all age categories.

Factors underpinning disparities in cancer risk in men

In recent years, there has been an increased focus on factoring gender into studies in order to explain 'inequalities' in incidence and mortality based upon a number of diseases and causes of death, including cancer. Research on causes of cancer worldwide reported that, of the 7 million deaths from cancer in 2001, 35% were attributable to nine potentially modifiable risk factors, namely; overweight and obesity, low fruit and vegetable intake, physical inactivity, smoking, alcohol use, unsafe sex, urban air pollution, indoor smoke from household use of solid fuels, and contaminated injections in health care settings. Notably, these risk factors caused about twice as many deaths in men as in women, with 41% of worldwide cancer deaths in men being attributable to modifiable risk factors compared to 27% in women:

- Research has estimated that 29-38% of all cancers in men in Europe are attributable to smoking, compared to 2-10% of all cancers in women being attributed to smoking. Although rates of smoking in the Republic of Ireland are converging, the most recent SLÁN data indicates that 31% of the male population smokes compared to 27% of the female population.
- A recent study on the burden of alcohol consumption on incidence of cancer in eight European countries reported that up to 10% of cancers in men and 3% of cancers in women may be attributed to alcohol consumption. In the Republic of Ireland, the most recent SLÁN data indicates that men are approximately twice as likely as women to report drinking over the weekly limit and to binge drink.
- Research shows that high levels of body fat are associated with an increased risk of a number of cancers, including colorectal, oesophageal, gastric cardia, thyroid, renal, malignant melanoma, leukaemia, multiple myeloma and non-Hodgkin's lymphoma. The prevalence of overweight (46.3%) and obesity (20.1%) among men in the Republic of Ireland is currently ranked 8th in the EU25 and is rising at a rate of 1% per annum. It is projected that 33% of men on the island of Ireland will be clinically obese by 2015. Men also tend to deposit fat abdominally, thereby increasing their central obesity. This central or visceral fat is associated with an increased risk of fat related cancers.
- There is a long established link between physical inactivity and ill health. Research at a European level investigating the relationship between physical activity and cancer prevention has estimated that approximately 17% of male colon cancer cases, 21% of male lung cancer cases and 14% of prostate cancer cases could be prevented if the male population engaged in sufficient levels of physical activity. Within an Irish context, the most recent SLÁN data indicates that only 48% of men engage in some form of regular physical exercise, with those reporting as sedentary almost doubling between the age categories of 18-29 and 30-39 years (9.9% and 18.3% respectively). The continuing shift towards sedentary occupations and more sedentary lifestyles generally for men has been paralleled by a fivefold increase in obesity between the beginning and end of the last century.
- A recent study on diet and cancer prevention in 10 European countries concluded that cancer risk was increased through high intake of red and processed meat, dairy products, salt and salty foods. Consumption of fruits, non starchy vegetables, allium vegetables, selenium and foods containing selenium reduce one's risk of cancer. The most recent SLÁN data indicates that men's diets are less healthy than women's diets and that, despite two-thirds of Irish males surveyed being overweight/obese, 55% felt that they did not have to make changes to their diet as it was healthy enough.
- The first report on the State of Men's Health in Europe highlighted that infrequent use of health services among men is associated with men experiencing higher levels of potentially preventable health problems and having reduced treatment options when they do become ill. It has been reported that men are more likely to seek help for cancer symptoms if their help-seeking is sanctioned by family or friends or when symptoms interfere with their employment. In addition, men are more likely to undergo screening when it is recommended by a physician to do so.

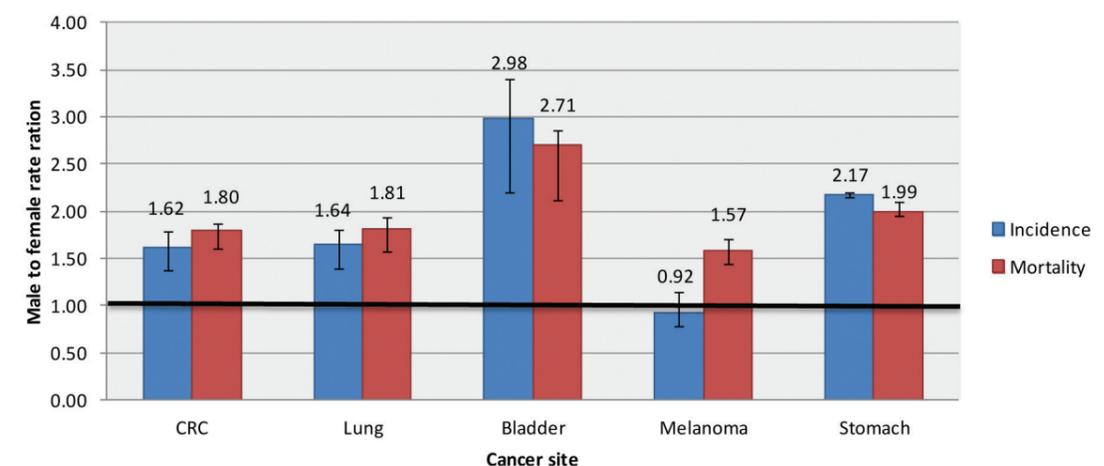
Whilst these risk factors are clearly implicated in the higher incidence of cancers in men, it is more difficult to account for the effect of these factors on the lower survival from cancer that is also seen in men. Survival at one year post diagnosis was very similar in males and females for the majority of cancers in this report; however males were found to be at a significant disadvantage at 5 years post diagnosis. What drives this disparity from 1 year post diagnosis to 5 years post diagnosis is an altogether more difficult question to answer. While sex differences exist in relation to factors such as stage of disease at diagnosis and smoking, survival analysis indicates that even after adjusting for these factors, males are still at greater risk of death from their cancer. Evidence would suggest that women have a biological advantage over men in terms of being more robust in coping with their cancer. Smoking status at diagnosis increases risk of death, however smoking may also be an independent prognostic factor, with evidence suggesting various explanations including higher smoking rates in males and the possibility of poorer responses to treatment, poorer DNA repair capacity and poorer immune competence as a result of smoking. Treatment may also impact on the poorer survival of males. Males may also be at a survival disadvantage as a result of overweight and obesity, lack of physical activity as well as age related co-morbidity.

Risk factors underpinning cancer incidence and survival are also influenced by the broader social determinants of health and, in particular, by the impact of socio-economic status. Why lower socio-economic status seems to infer greater risk of developing and dying from cancer has been attributed, within a US context, to a number of factors, including differences in area based smoking rates, tobacco regulation, advertising, availability of cigarettes, public awareness of the harmful effects of smoking, fatty diets, physical inactivity, reproductive factors, human papillomavirus (HPV) infection, sun exposure and other factors. Conversely, a more rapid adoption of healthier lifestyles and smoking cessation has been reported in populations with higher socioeconomic status. Therefore it appears that the nature of the relationship between a man's socio-economic status (and indeed a woman's) and cancer risk behaviours are complex and are mediated both by the cultural context in which one lives and by the values and attitudes that one develops in relation to health.

Discussion of results and conclusions

It is clear from evidence presented in this report that men in the Republic of Ireland have greater incidence (for all cancers examined except melanoma and ranging from 1.6 to 3 times that of the equivalent female rate for the other four cancers) and mortality (for all cancers examined, ranging from 1.6 to 3 times that of the female mortality rate), with lower survival from colorectal, lung, and melanoma skin cancer (see Figure 1). The excess in these cancers in relation to mortality among males, can, it seems in large part, be explained by [traditionally] higher rates of tobacco use, higher levels of excess alcohol consumption, unhealthy diets, a high prevalence of overweight/ obesity, low levels of physical activity or inactivity and, to some extent, later presentation when chances of survival are lower. Nine of the eleven recommendations from the European Code against Cancer^a apply to men, and are perhaps more important to men considering the evidence presented in this report.

Figure 1: Incidence and mortality rate ratios for selected cancers 2006-2008



^a European Code Against Cancer http://www.ec.europa.eu/health-eu/doc/cancercode_en.pdf

Changing lifestyle behaviours however remains a very challenging task and, as called for in this report, requires more targeted and gender-specific approaches to achieve better outcomes among those sectors of the population most in need (male, lower socio-economic groups). In addition to this, evidence seems to point to the fact that men's awareness of the signs and symptoms of cancer are lacking. This is compounded by men's reluctance to use health care services and their tendency to present for curative reasons rather than preventative reasons. In the context of screening, evidence from colorectal cancer screening in other jurisdictions points to the fact that males are less likely to take up the opportunity to be screened, even when screening is provided free of charge.

Recommendations

The recommendations contained in this report build upon those contained in A Strategy for Cancer Control in Ireland (2006) and the National Men's Health Policy (2009) and are also in keeping with other reports and legislation, namely, the Report of the Strategic Task Force on Alcohol (2004), the provisions of the Public Health (Tobacco) Acts, 2002 and 2004 and the Report of the National Task Force on Obesity (2005). Ostensibly, the key challenge in tackling the very grave statistics on male cancer incidence, survival and mortality, as outlined in this report, is to apply a gender lens to existing programmes and services based on the National Men's Health Policy's principles of best practice in engaging with men. It is also imperative that men are not seen as a homogenous group and that the recommendations in this report account for the very pronounced differences in cancer incidence, mortality and survival between different subgroups of men, particularly those that are associated with socio-economic status. This enables us to move beyond a 'one size fits all' approach and to consider more innovative and creative ways of engaging with different subpopulations of men (e.g. rural or ethnic minority men), in settings more likely to appeal to men (e.g. workplaces or sports settings), and at critical transition points in men's lives (e.g. fatherhood, the onset of ill-health, retirement/unemployment) when men are more likely to be receptive to health behaviour change. There is also much scope for increased collaboration and partnership between statutory and charitable cancer organisations to work together to share knowledge and to mobilise resources in tackling the excess burden of cancer in men. The following recommendations offer a blueprint for a more targeted and gender-specific approach to addressing the key findings from this report:

Tobacco	
Recommendation	Action
1	Reduce smoking rates among men in the Republic of Ireland through targeted campaigns informing men of the risks and range of cancers attributable to tobacco use and through targeted smoking cessation initiatives ⁵³ .
2	Target men of lower socioeconomic status for smoking cessation programmes and initiatives ⁵⁴ .

Alcohol consumption	
Recommendation	Action
3	The recommendations of the Steering Group Report On a National Substance Misuse Strategy ¹¹⁹ should be implemented in full with a particular focus on applying a gender lens across the four key pillars: 'Supply', 'Prevention', 'Treatment & Rehabilitation' and 'Research'.
4	The recommendations from the Strategic Taskforce on Alcohol ¹²⁰ should be implemented in full with a particular focus on applying a gender lens across the ten key strategy areas. There should be a specific focus on raising men's awareness of the risks associated with the development of alcohol related cancers.
5	Increase efforts to reduce alcohol consumption in male sub- populations with high prevalence of alcohol consumption, particularly lower socio-economic groups.

Overweight / obesity and diet	
Recommendation	Action
6	In line with A Strategy for Cancer Control ¹⁰ , the recommendations of the Report of the National Task Force on Obesity ⁷⁷ should be implemented in full, with a particular focus on measures which raise awareness of the links between obesity and cancer risk in men and which provide tailored dietary information and weight loss/weight management programmes to men ¹¹⁸ .
7	Increase the breadth and capacity of primary care teams to deal with obesity and, in particular, to adopt tailored and gender-specific approaches to promote healthy eating in men and to reduce obesity levels in men ¹¹⁸ .

Physical activity	
Recommendation	Action
8	In line with the recommendations of the National Men's Health Policy ¹ , greater emphasis should be placed on the provision of appropriate recreational and leisure facilities for men across the lifespan, particularly for men in their middle and older years, when levels of physical activity tend to decline and cancer risk increases.
9	Adult men should be encouraged to engage in at least 30 minutes a day of moderate activity on 5 days a week in order to reduce their risk of developing cancer in accordance with the National Guidelines on Physical Activity for Ireland ¹¹⁷ .

Cancer Awareness – signs and symptoms	
Recommendation	Action
10	Provide more targeted and gender-specific health awareness initiatives and health information to men (i) in settings where men are more likely to access such information (e.g. workplace); (ii) that are focused at key transitional periods in men's lives (e.g. fatherhood); and (iii) that specifically target lower socioeconomic groups of men. The focus of such initiatives should be on increasing men's awareness of signs and symptoms of cancer (particularly the most common cancers) and to encourage earlier help seeking and participation in organised screening where available.
11	Provide an increased focus on safe and reputable on-line cancer information for men. Consideration should also be given to linking existing reputable sites (e.g. Irish Cancer Society; Men's Health Forum in Ireland) to other sites that are commonly used by men.

Early detection and help seeking	
Recommendation	Action
12	In line with A Strategy for Cancer Control in Ireland ¹⁰ and the National Men's Health Policy ¹ develop specific programmes that promote early detection and prompt help-seeking among men.
13	Provide an increased focus on training for primary care providers that focuses on (i) proactively addressing the barriers men are faced with in relation to early presentation; and (ii) making men feel more comfortable and welcome on initial point of contact with primary care services (where they are most likely to initially seek help if concerned about possible cancer symptoms).

Screening	
Recommendation	Action
14	The uptake of the BowelScreen programme should be monitored in men (particularly lower socio-economic groups of men) and, if necessary, strategies implemented to maximise participation in these groups.
15	BowelScreen campaigns should consider gender-specific approaches that target men specifically, alongside information on the increased probability of reduced incidence and mortality as a result of being screened.

Future Research	
Recommendation	Action
16	Improvements in data collection would enable a greater understanding of the key factors associated with risk of developing cancer. Specifically, improved data collection in areas such as obesity and overweight levels, alcohol consumption patterns, co- morbidities, diet and physical activity levels would provide valuable yearly patterns which could be linked to cancer data currently being collated by the National Cancer Registry. Consider the feasibility of extending the dataset collected by the National Cancer Registry to include data on key lifestyle behaviours which may be available in medical records.
17	As recommended by the European Men's Health Forum in response to the State of Men's Health in Europe Report ²⁷ , National Cancer Plans should make specific recommendations to monitor and report male cancer patterns, specifically in relation to male cancer incidence, survival and mortality.
18	Further research is required in relation to how and why men do or do not seek help at the most appropriate juncture. Literature indicates that a focus on how men justify consulting more freely is warranted, rather than a deficit approach which assumes that all men are reluctant to seek help.
19	With the introduction of the BowelScreen programme, it is necessary that research focuses on the uptake of screening among men and women, particularly in light of men's higher incidence and mortality from CRC, and in relation to evidence that men are less likely to engage. Research should focus on men's motivations and attitudes to screening, with a particular emphasis on the influence of masculinity as a motivator or barrier. Such research will help in understanding how compliance with the programme can be improved.
20	Future research should focus on increasing the evidence base on 'what works' in relation to behaviour change and lifestyle improvement in men.