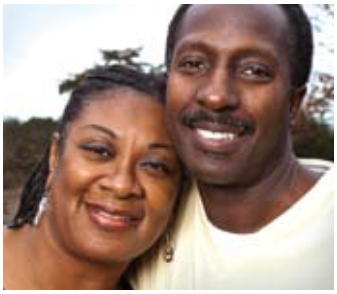
massachusetts'

comprehensive cancer prevention and control plan

2012–2016



Massachusetts Department of Public Health

massachusetts'

comprehensive cancer prevention and control plan

2012–2016

Massachusetts Department of Public Health

dedication

Our Massachusetts Cancer State Plan is dedicated to Janice McGrath, MCCPCP Advisory Committee member and longtime cancer survivor advocate.

1957–2012

This publication was prepared by:

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Massachusetts Comprehensive Cancer
Prevention & Control Program

February 3, 2012

Dear Massachusetts Residents,

Every year over 36,000 Massachusetts residents are diagnosed with cancer and nearly 13,000 die from cancer. Most of us have been touched by cancer whether it is by our own health or that of a friend, neighbor, co-worker or family member. Cancer continues to be the leading cause of death in Massachusetts, and impacts some populations more than others. This tells us there is much work to be done.

This Comprehensive Cancer Prevention and Control Plan for Massachusetts offers an opportunity to work together by increasing our efforts to prevent cancer as well as to insure access to care that extends and improves life for cancer survivors. This plan addresses several key cross cutting issues; health disparities, community engagement and research and evaluation, issues that are critically important to our efforts to make a significant difference.

The Massachusetts Cancer Prevention and Control Program (MCCPCP)'s Advisory Committee members, and other experts throughout the Commonwealth, contributed greatly to the development of this plan. This type of collaboration is what we envision as we move forward to implement the plan. It is only by working together across all communities in the state that we will succeed.

We appreciate the commitment from those who helped to prepare this plan and look forward to your participation in reducing the burden of cancer in our state.

Sincerely,

John Auerbach
Commissioner,
Massachusetts Department of Public Health

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Chair,
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executive summary

Massachusetts has been in the forefront of health care reform, resulting in far better access to health care for most residents as compared to other states. We also have abundant health care facilities and practitioners, and good availability to high-quality cancer screening and treatment. Despite these advantages, there are still certain population groups in the Commonwealth who continue to be at higher risk of being diagnosed with and dying from cancer than others. This disproportionate cancer burden is unacceptable. It will require a focused and unwavering commitment to fully address these disparities over the next five years.

Despite the many medical advances in cancer diagnosis and treatment in Massachusetts, the increases in obesity and sedentary lifestyle, along with unchanged smoking rates, underscore the need for concentrated efforts on primary prevention. The increasing evidence of the direct link between lifestyle (diet, exercise) and cancer is cause for action. This call to action must look to change the environment where people live and work as well as to advocate for policies that support people making healthy choices in every community across the state.

The *2012–2016 Massachusetts Cancer Plan* is a strategic plan to reduce the cancer burden in our state. All aspects of the cancer continuum are addressed, including prevention, early detection and screening, survivorship, treatment, palliation, and end-of-life care, as well as such cross-cutting issues as advocacy and community engagement, eliminating disparities, research, and surveillance. The Plan's strategies are intended to direct collective efforts toward specific and measurable objectives that will reduce the cancer burden.

We must reach out and work collaboratively with the array of communities impacted by cancer, and use their input and expertise to adapt and implement the strategies outlined in this plan.

Specific goals of the Plan are as follows:

Disparities and Health Equity

- Reduce the impact of cancer across the Commonwealth while simultaneously eliminating cancer health disparities and promoting health equity in Massachusetts.

Advocacy and Community Engagement

- Advocate for actions and resources among government, elected officials, and communities as well as providers, insurers, patients, and families to reduce the burden of cancer, particularly where disparities and inequities exist.

Prevention

- Create and sustain environments that support the prevention of cancer.
- Promote behaviors, activities, and policies that reduce the risk of cancer.

Early Detection and Screening

- Ensure screening for those cancers where strong evidence-based guidelines for screening currently exist.
- Increase informed decision making about cancer screening for cancers for which there is emerging evidence of effectiveness.

Only through such a group effort can we achieve the goals and objectives outlined in this plan. Together, we look forward to making this cancer plan every Massachusetts community's cancer plan.

Survivorship, Treatment, Palliation, and End of Life

- Improve the overall experience and quality of life of all Commonwealth residents who are living with, through, and beyond cancer.
- Ensure that all Commonwealth residents have equal and timely access to cancer information, treatment, and clinical trials that are based on nationally recognized best-practice standards.
- Ensure that Massachusetts residents who have been diagnosed with cancer can access appropriate palliative care as needed throughout course of cancer treatment and after treatment ends.
- Ensure that all Commonwealth residents have access to quality end-of-life care.

We live and work in an era of unprecedented cuts in state and federal funding. Because of this, it is critical that state agencies work in partnership with community coalitions, organizations, and leaders. We must reach out and work collaboratively with the array of communities impacted by cancer, and use their input and expertise to adapt and implement the strategies outlined in this plan. Only through such a group effort can we achieve the goals and objectives outlined in this plan. Together, we look forward to making this cancer plan *every* Massachusetts community's cancer plan.

introduction

What is Comprehensive Cancer Control?

The Centers for Disease Control and Prevention (CDC) defines Comprehensive Cancer Control as "a process through which communities and partner organizations pool resources to reduce the burden of cancer. These combined efforts help to reduce cancer risk, find cancers earlier, improve treatments, and increase the number of people who survive cancer."[1] The CDC established the National Cancer Prevention and Control Program in 1998 to help states, tribes, and territories form coalitions to plan and conduct comprehensive cancer control activities. The Massachusetts Department of Public Health (MDPH) has been receiving funding for the Massachusetts Comprehensive Cancer Prevention and Control Program (MCCPCP) from the CDC since 1998.

The Plan's strategies are intended to direct collective efforts toward specific and measurable objectives that will reduce the cancer burden.

What were the accomplishments of the 2006–2011 Massachusetts Cancer Plan?

Prevention

Tobacco

- The Prevention workgroup collaborated with Massachusetts Tobacco Cessation and Prevention Program through various communications channels and mass mailings to inform MassHealth recipients of temporary tobacco cessation coverage. Due to the high utilization rate of this temporary benefit with positive results, tobacco cessation was made a permanent benefit for MassHealth recipients beginning in July 2009.
- The MCCPCP was awarded a five-year cancer prevention policy grant from the CDC, the only state Comprehensive Cancer Control Program funded in New England. One of the priority areas for policy intervention is tobacco. Working with Voices for a Healthy Southcoast coalition, the MCCPCP supported efforts that in March 2011, led to the city of Fall River banning the sale of tobacco products in pharmacies.

Nutrition and Physical Activity

- As part of the cancer prevention policy project, the MCCPCP is also in collaboration with the MDPH Nutrition and Physical Activity program, working with the Voices coalition on *Mass in Motion* Initiative (MiM). MiM is targeting the development of supportive environments to accommodate access to healthy foods and physical activity across the state. The target of the cancer prevention policy project is to promote wellness and to prevent overweight and obesity in the Southcoast region of Massachusetts, particularly focusing on the importance of healthy eating and physical activity.

Early Detection

Colorectal Cancer

- In 2009 and 2010, the MCCPCP developed a media campaign targeting Black, non-Hispanic men in Boston and Hispanic men in Springfield. The MCCPCP conducted a post-campaign survey, limited to the metropolitan Boston area, to assess the campaign's impact on Black, non-Hispanic men, the target audience with the most significant disparate health outcomes. Of those who saw a campaign message, 45% talked to their doctor about colon cancer and 54% scheduled a colonoscopy.
- In 2010, the MCCPCP developed and administered a survey to primary care practices that had already taken steps to improve colorectal cancer (CRC) screening and prevention. The results indicated that the majority of the small- or medium-sized practices surveyed use Electronic Health Records to provide alerts when CRC screening was due or overdue and to track abnormal results.

Prostate Cancer

- In 2009, the Brockton Prostate Cancer Work Group created an educational DVD that shows prostate cancer survivors discussing their experiences with the disease and its effect on their family. The DVD is available in four languages: English, Portuguese, Haitian Creole, and Spanish.
- In January 2011, the MCCPCP conducted a survey among Massachusetts primary care physicians (PCPs) regarding prostate cancer decision-making. Its purpose was to assess the extent to which PCPs discuss the decision to have prostate cancer screening with their patients, learn how the discussion to have the screening is conducted, and learn to what extent patients are involved in the decision-making process. Over 70% of PCPs reported that they discuss with their patients the advantages and disadvantages of prostate cancer screening before ordering the PSA and three-quarters of PCPs reported that they made the decision to have the screening together with their patients.

- The MCCPCP has provided funding to the Massachusetts Prostate Cancer Coalition in the last few years to support the Massachusetts Prostate Cancer Annual Symposium. The Symposium covered a range of issues including the significance of immunological approaches for prostate cancer, information regarding new clinical trials, reviews of prostate cancer screening and treatment modalities, information regarding the meanings and messages of PSA tests, discussions of proton beam therapy and the cyber knife, as well as panels addressing how to increase awareness of men's health and prostate cancer in the Black non-Hispanic community.

Survivorship

- In May 2008, the first Massachusetts Cancer Survivorship Summit was held. Summit participants explored survivorship issues from both a systems and individual perspective. Two hundred and twenty (220) individuals attended the Summit.
- In June 2009, the MCCPCP, in collaboration with its Cancer Survivorship Work Group, conducted a cancer survivorship survey. This survey assessed whether oncologists prepare treatment summaries and survivorship care plans for cancer patients who have finished treatment, and if PCPs have received these treatment summaries and survivorship care plans. Over half of the oncologists surveyed reported that they prepare treatment summaries and 54% percent of PCPs reported that they have received summaries.
- In October 2010, the first New England Regional Comprehensive Cancer Control Survivorship Conference was held. The overall goal of the conference was to foster a regional collaboration among the six New England states on issues related to cancer survivorship. As a result of the conference, five work groups have been created to discuss ways to avoid duplication of efforts and leverage scarce resources.

What is the 2012–2016 Massachusetts Cancer Plan?

The *2012–2016 Massachusetts Cancer Plan* is a strategic plan to reduce the cancer burden in our state. It will update the previous *2006–2011 Massachusetts Cancer Plan*, which was released in January 2006 and was developed through a collaboration of more than 100 academic, government, community, and survivor organizations dedicated to reducing cancer incidence, morbidity, and mortality across the state.

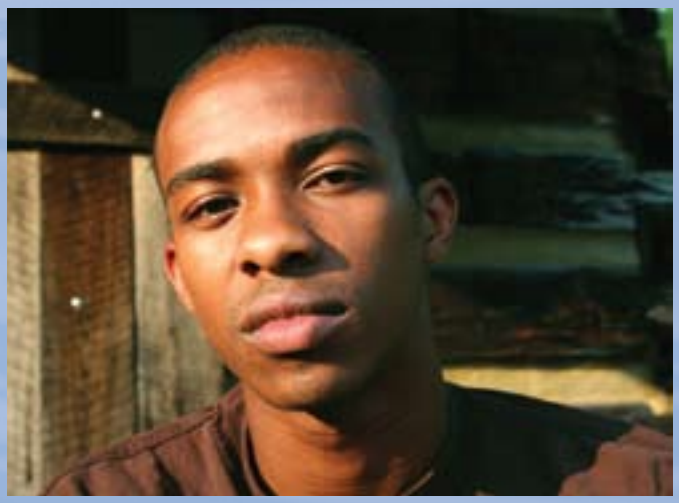
As in the previous plan, the *2012–2016 Massachusetts Cancer Plan* was designed to provide guidance to individuals and organizations, spanning a wide range of health and social disciplines, which can play a role in preventing and controlling cancer. All aspects of the cancer continuum are addressed, including prevention, early detection and screening, survivorship, treatment, palliation, and end-of-life care, as well as such cross-cutting issues as advocacy and community engagement, eliminating disparities, research, and surveillance. The Plan's strategies are intended to direct collective efforts toward specific and measurable objectives that will reduce the cancer burden. Moreover, many of the outcomes will have health benefits extending beyond cancer to other leading causes of death such as heart disease and diabetes. Massachusetts is committed to this approach and believes that this is the best way to successfully reduce both new cases of and deaths from cancer in the Commonwealth.[2]

the burden of cancer in massachusetts

Introduction

The burden of cancer in both the United States and Massachusetts remains high. Every day, nearly 100 Massachusetts residents are diagnosed with cancer and 36 Massachusetts residents die of cancer, representing a quarter of all deaths. In 2008, for the third year in a row, cancer was the leading cause of death in Massachusetts, and lung cancer was the leading cause of cancer deaths among all cancers.[3] The American Cancer Society estimates approximately 1,596,670 new cancer cases will be diagnosed in the US in 2011, and 571,950 people will die of cancer, while 37,470 Massachusetts residents will be diagnosed with cancer and 12,910 will die of cancer this year.[4]

In addition to its morbidity and mortality burden, cancer has high economic costs. The National Institutes of Health (NIH) estimated that the overall costs of cancer in the US to be $263.8 billion in 2010. This includes both direct (medical costs) of $102.8 billion and indirect morbidity costs of $20.9 billion, and the indirect cost of lost productivity due to premature death ($140.1 billion).[5] In Massachusetts, total state Medicaid expenditures for cancer in 2007 were $52 million.[6]



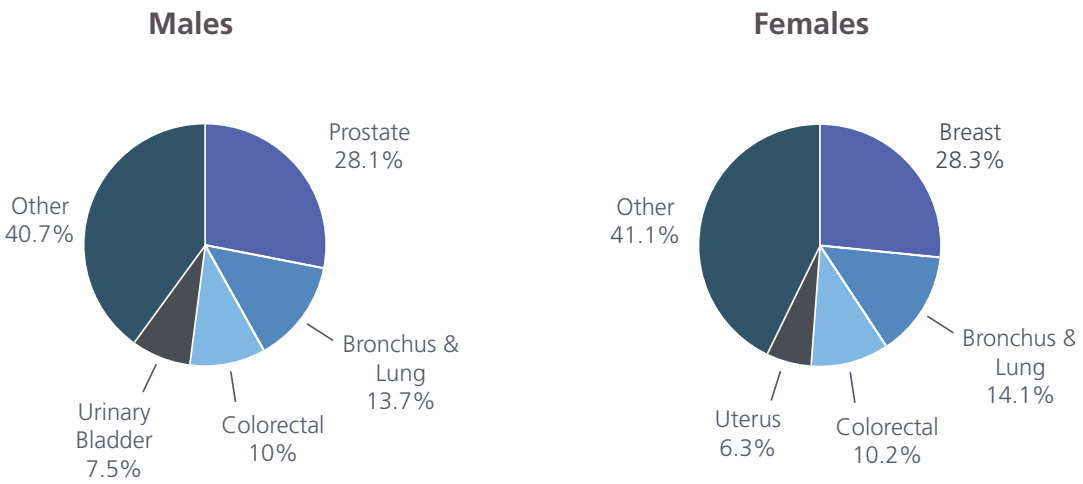
In addition to its morbidity and mortality burden, cancer has high economic costs.

Cancer Incidence (New Cases)

Among Massachusetts females, breast cancer was the most commonly diagnosed cancer from 2003 to 2007, followed by lung, colorectal, and uterine cancers (*Figure 1*). During that period, prostate cancer was the most commonly diagnosed cancer in Massachusetts men, followed by lung, colon, and bladder cancers. From 2003 to 2007, there were 179,324 newly diagnosed cases of cancer in Massachusetts — 90,222 (50.3%) in males and 89,090 (49.7%) in females.[7] The age-adjusted incidence rate for all cancers combined was 598.0 cases/100,000 for males and 458.9 cases/100,000 for females (*Tables 1 and 2*). Massachusetts' cancer incidence rates were higher than national rates (556.5/100,000 in males and 414.8/100,000 in females).

The likelihood of being diagnosed with cancer increases steadily with age for many cancers. The age-specific incidence rate for all sites combined for males rose from 24.1/100,000 in the 0–4 age group to 3,481.6/100,000 in the 80–84 age group, and from 25.0/100,000 for ages 0–4 to 2,188.3/100,000 for ages 80–84 among females.[7] Incidence rates decrease among both males and females after age 84.

Figure 1. Cancer Incidence by Type of Cancer and Sex, Massachusetts, 2003–2007

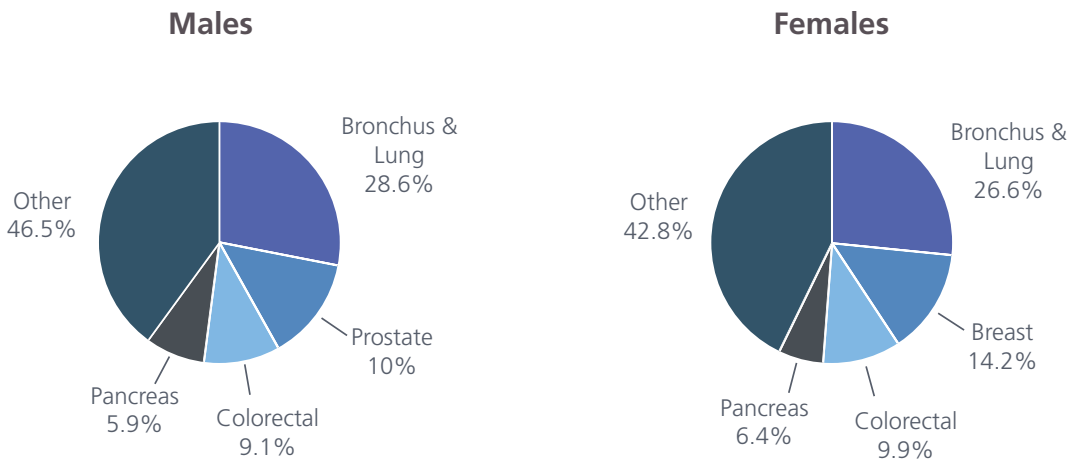


Data Source: Massachusetts Cancer Registry, 2010

Cancer Mortality (Deaths)

Cancer is the leading cause of death in Massachusetts, followed by heart disease, stroke, and chronic lower respiratory disease.[3] It is the leading cause of death for ages 1–14 and 45–84, and second only to heart disease in those aged 85 and older. Lung, prostate, colorectal, and pancreatic cancers are the leading causes of cancer deaths among males, making up more than half (54%) of all cancer deaths in men, while lung, breast, colorectal, and pancreatic cancers are the leading causes of cancer deaths in females, comprising 57% of all cancer deaths of women (*Figure 2*). Between 2003 and 2007 there were 66,332 deaths due to cancer, with 33,207 (50.1%) deaths occurring among males and 33,125 (49.9%) among females. The age-adjusted mortality rate for all cancers combined was 230.1 deaths/100,000 for males and 159.1 deaths/100,000 for females (*Tables 1 and 2*). Massachusetts' cancer mortality rates were comparable to national rates (229.9/100,000 in males and 157.8/100,000 in females).

Figure 2. Cancer Mortality by Type of Cancer and Sex, Massachusetts, 2003–2007



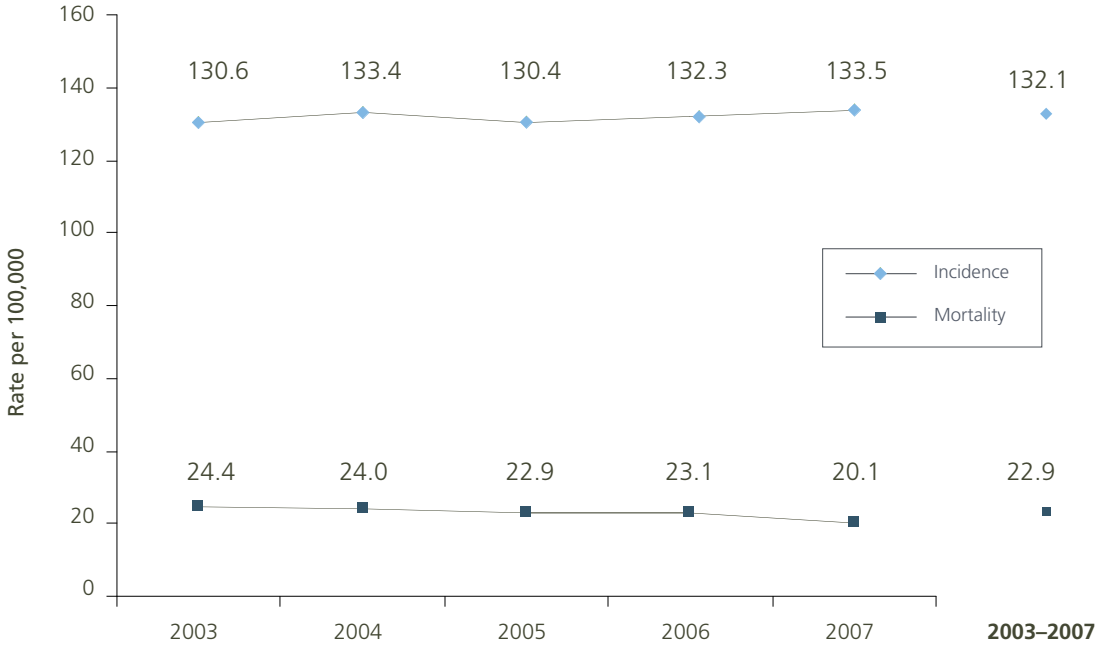
Data Source: Massachusetts Cancer Registry, 2010

Breast Cancer

Breast cancer was the most commonly diagnosed cancer among Massachusetts females between 2003 and 2007, representing approximately 28% of all new cancer cases in this group. The age-adjusted incidence rate was 132.1/100,000, 8% higher than the national rate of 121.8/100,000. The incidence rate of breast cancer in Massachusetts females slightly increased from 130.6/100,000 in 2003 to 133.5/100,000 in 2007 (*Figure 3*). However, this increase was not statistically significant.

Between 2003 and 2007, breast cancer was the second leading cause of death among Massachusetts females, after lung cancer. It accounted for approximately 27% of all cancer deaths in females, with an age-adjusted mortality rate of 22.9/100,000, comparable to the national rate of 24.5/100,000. During this period, breast cancer deaths in Massachusetts decreased significantly, from 24.4/100,000 in 2003 to 20.1/100,000 in 2007 (*Figure 3*).

Figure 3. Breast cancer incidence and mortality rates by year, Massachusetts, 2003–2007



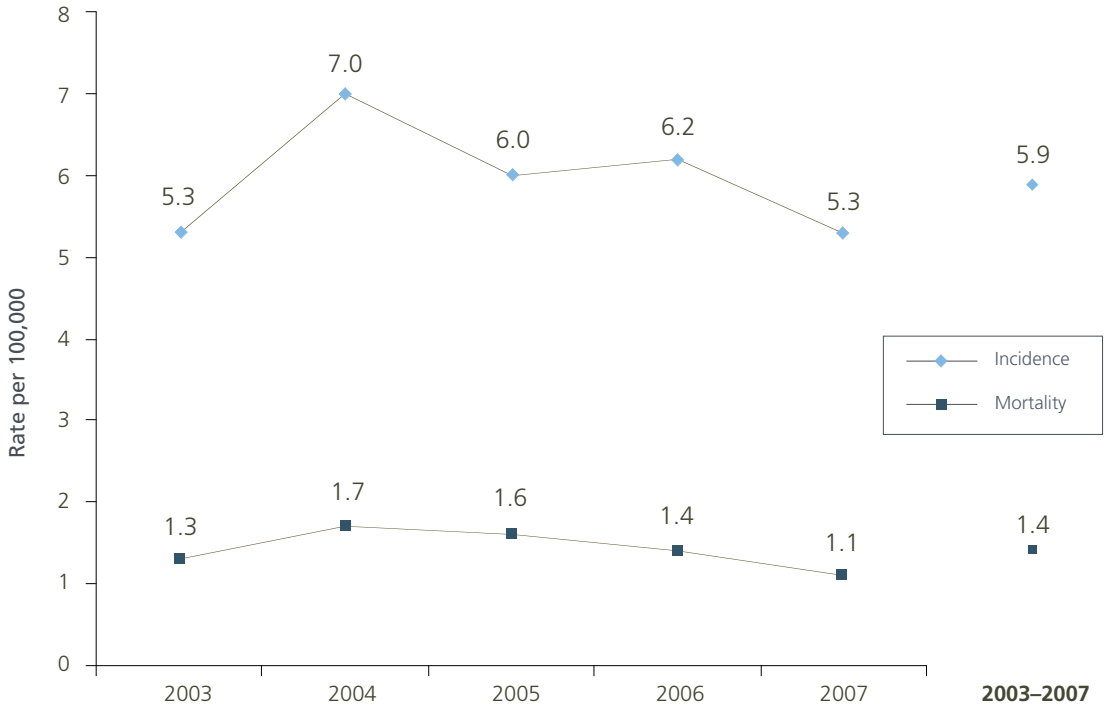
Data Source: Massachusetts Cancer Registry, 2010

Cervical Cancer

Between 2003 and 2007, invasive cervical cancer represented approximately 1.2% of all new cancer cases in females. The age-adjusted incidence rate was 5.9/100,000, 29% lower than the national rate of 8.3/100,000. The incidence rate of cervical cancer in Massachusetts females increased from 5.3/100,000 in 2003 to 7.0/100,000 in 2004 and then remained unchanged through 2007 (*Figure 4*). It should be noted; however, that both cervical cancer incidence and mortality are highly variable because of the relatively small number of cases (about 200 per year) and deaths (about 50 to 55 per year) from the disease.

Cervical cancer accounted for 1% of all cancer deaths in females between 2003 and 2007, with an age-adjusted mortality rate of 1.4/100,000, 44% lower than the national rate of 2.5/100,000. The mortality rate for cervical cancer among Massachusetts women decreased slightly during that time period, from 1.3/100,000 to 1.1/100,000 (*Figure 4*).

Figure 4. Cervical cancer incidence and mortality rates by year, Massachusetts, 2003–2007



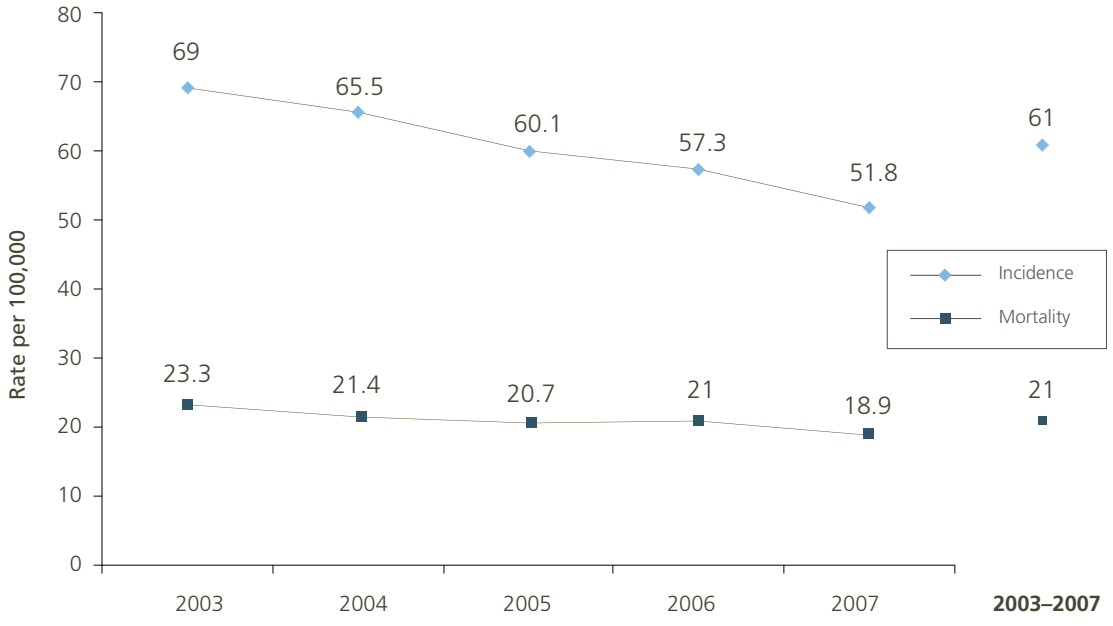
Data Source: Massachusetts Cancer Registry, 2010

Colorectal Cancer

Colorectal cancer was the third most commonly diagnosed type of cancer in both Massachusetts males and females between 2003 and 2007, accounting for 10% of all cases in both males and females. The age-adjusted incidence rate for colorectal cancer in Massachusetts males was 60.7/100,000, comparable to the national rate of 59.0/100,000; the incidence rate among Massachusetts females was 44.1/100,000, comparable to the national rate of 43.6. The age-adjusted incidence rate of colorectal cancer in Massachusetts males significantly decreased between 2003 and 2007, from 69.0/100,000 to 51.8/100,000. The incidence rate of colorectal cancer among Massachusetts females also significantly decreased between 2003 and 2007, from 48.1/100,000 to 40.2/100,000 (*Figures 5 and 6*).

Colorectal cancer was the third leading cause of cancer death in Massachusetts for both males and females between 2003 and 2007, accounting for 9% of all cancer deaths in males and 10% of all cancer deaths in females. During this period, state and national age-adjusted mortality rates of colorectal cancer were comparable for both males (21.0/100,000 for Massachusetts males

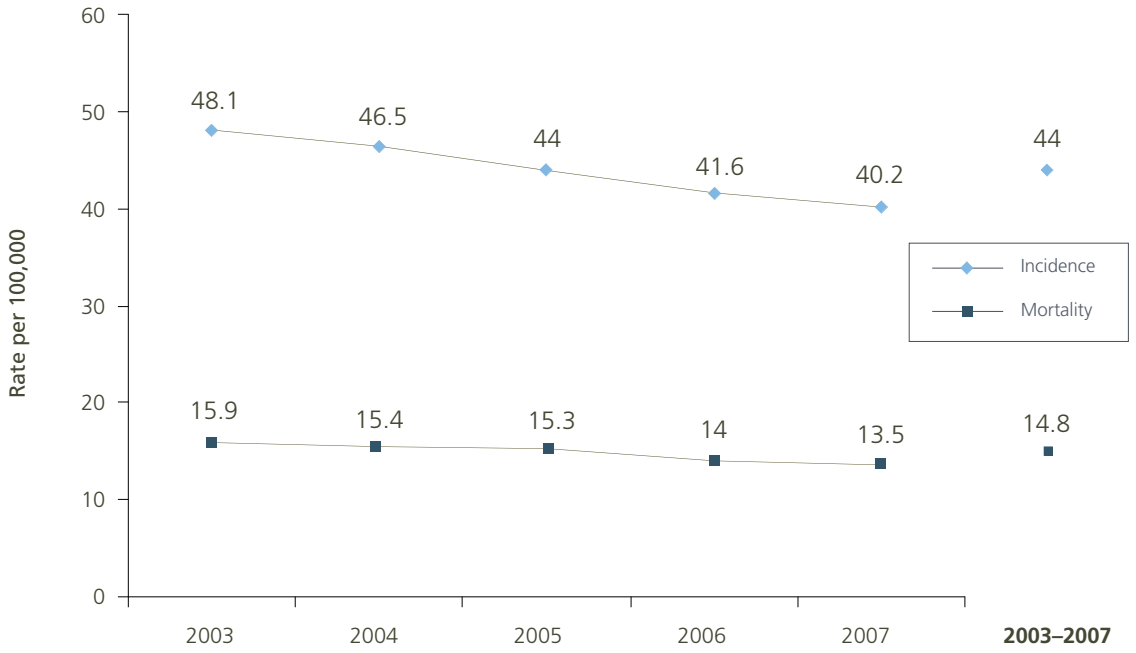
Figure 5. Colorectal cancer incidence and mortality rates by year, Massachusetts males, 2003–2007



Data Source: Massachusetts Cancer Registry, 2010

vs. 21.9 for US males) and females (14.8/100,000 for Massachusetts females vs. 15.4 per 100,000 US females). From 2003 to 2007, colorectal cancer mortality decreased significantly in both Massachusetts males (from 23.3 to 18.9/100,000) and females (from 15.9 to 13.5/100,000) (*Figures 5 and 6*).

Figure 6. Colorectal cancer incidence and mortality rates by year, Massachusetts females, 2003–2007



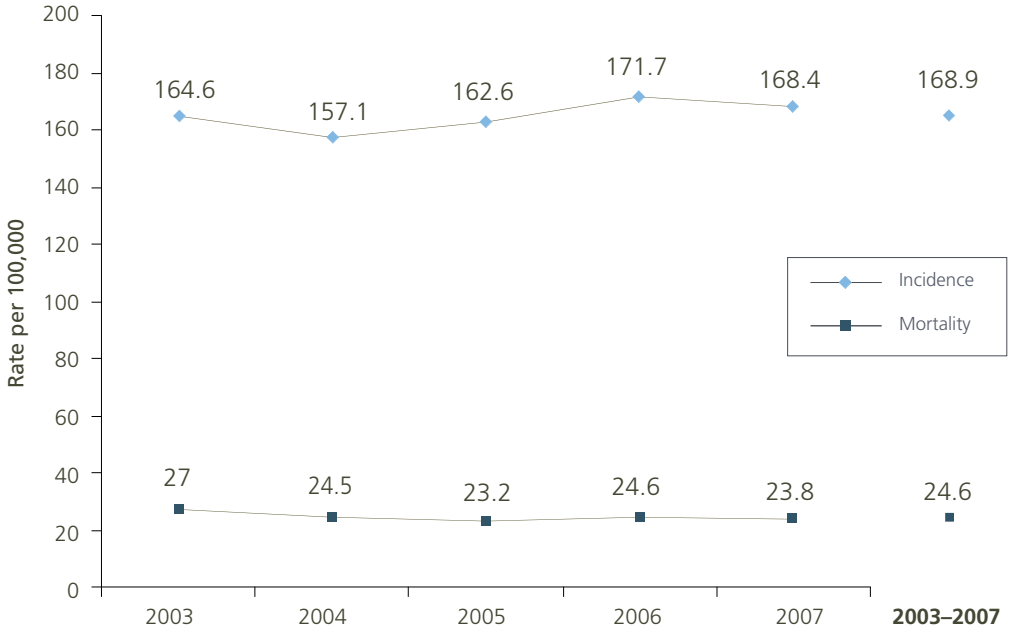
Data Source: Massachusetts Cancer Registry, 2010

Prostate Cancer

Prostate cancer was the most commonly diagnosed type of cancer in Massachusetts males from 2003 to 2007, representing 28% of all new cases of cancer in males. The age-adjusted incidence rate for prostate cancer was 164.9/100,000 from 2003 to 2007, 6% higher than the national rate of 155.5/100,000. The incidence of prostate cancer in Massachusetts rose non-significantly from 164.6/100,000 males in 2003 to 168.4/100,000 males in 2007 (*Figure 7*).

Prostate cancer was the second leading cause of cancer deaths among Massachusetts males between 2003 and 2007, representing 10% of all cancer deaths in this group. The overall mortality rate for Massachusetts was 24.6/100,000, comparable to the national rate of 25.6/100,000. From 2003 to 2007, Massachusetts deaths due to prostate cancer decreased non-significantly from 27.0/100,000 to 23.8/100,000 (*Figure 7*).

Figure 7. Prostate cancer incidence and mortality rates by year, Massachusetts, 2003–2007



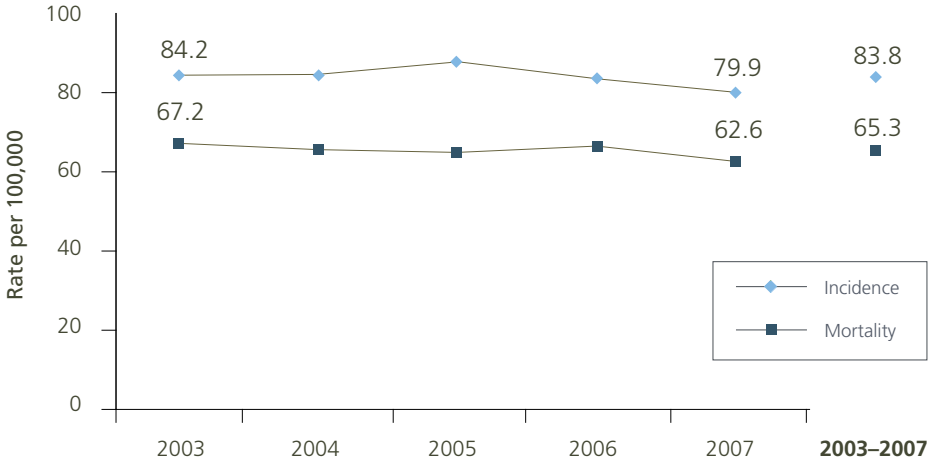
Data Source: Massachusetts Cancer Registry, 2010

Lung Cancer

In Massachusetts, lung cancer was the second most commonly diagnosed type of cancer in both males and females, accounting for 14% of all cancer cases in each sex. The age-adjusted incidence rate for lung cancer was 83.8/100,000 in males, comparable to the US rate of 86.4 per 100,000; among Massachusetts females, the incidence rate was 64.0/100,000, 14% higher than the US rate of 55.5/100,000. The age-adjusted incidence rate of lung cancer incidence declined non-significantly in Massachusetts males during this period, from 84.2 cases per 100,000 males in 2003 to 79.9 cases per 100,000 in 2007. Among Massachusetts females, incidence rose non-significantly from 62.5/100,000 to 63.6/100,000 (*Figures 8 and 9*).

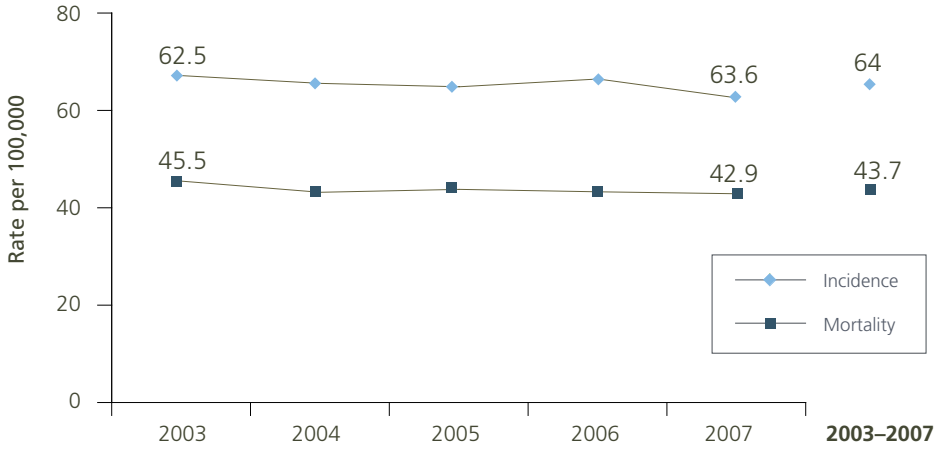
Lung cancer was the leading cause of cancer death for Massachusetts males and females between 2003 and 2007, accounting for approximately 29% of all cancer deaths in males and 27% of cancer deaths among females. During this period, the age-adjusted mortality rate of lung cancer was 65.3/100,000 for males, 7% lower than the national mortality rate of 70.5/100,000, and 43.7/100,000 for females, 7% higher than the national mortality rate of 40.9/100,000. Among Massachusetts males, mortality from lung cancer decreased from 67.2/100,000 in 2003 to 62.6/100,000 in 2007; among females, it decreased from 45.5/100,000 to 42.9/100,000 (*Figures 8 and 9*). Neither of these decreases was statistically significant.

Figure 8. Lung cancer incidence and mortality rates by year, Massachusetts males, 2003–2007



Data Source: Massachusetts Cancer Registry, 2010

Figure 9. Lung cancer incidence and mortality rates by year, Massachusetts females, 2003–2007



Data Source: Massachusetts Cancer Registry, 2010

Disparities

Cancer is the leading cause of death in Black, non-Hispanics, Hispanics, and Asian, non-Hispanics in Massachusetts, and second only to cardiovascular disease among White, non-Hispanics. Among males, both overall cancer incidence and mortality are higher in Black, non-Hispanics than in other racial groups. This pattern holds for prostate cancer, for which Black, non-Hispanic men had significantly higher incidence and mortality rates than for other ethnic groups. Among women, overall cancer incidence is higher among White, non-Hispanic women, but overall mortality is higher among Black, non-Hispanic women. This disparity is also seen for breast cancer.

From 2003 to 2007, Black, non-Hispanic males had the highest incidence rate of all cancer types combined (631.0/100,000) (*Table 1*). This rate was significantly higher than the rates for Asian, non-Hispanics and Hispanics, but not for White, non Hispanics. During the same period White, non-Hispanic females had the highest incidence rate of all cancer types combined (470.6/100,000) among all race/ethnicity groups (*Table 2*). This rate was significantly higher than the rates for the other race/ethnicity groups. Asian, non-Hispanic females had the lowest incidence rate for all sites combined (286.1/100,000).

From 2003 to 2007, lung cancer was the second leading cancer among males in all racial groups, except among Hispanic males, where it was the third leading cancer. Black, non-Hispanic men had significantly higher lung cancer death rates compared with White, non-Hispanic men, while White, non-Hispanic females had significantly higher death rates from lung cancer compared with the other racial/ethnic groups. Among other cancers of interest, cervical cancer incidence and mortality rates are higher in Black, non-Hispanic women than in White, non-Hispanic women. Colorectal cancer incidence and mortality are elevated in White, non-Hispanics and Black, non-Hispanics relative to Asian, non-Hispanics and Hispanics.

Table 1. Age-adjusted incidence and mortality rates* for selected cancer sites by race/ethnicity, Massachusetts males, 2003–2007

Cancer Site	All Races	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
Incidence					
All sites	598.0	599.9	631.0	320.3	447.0
Prostate	164.9	158.7	252.9	68.2	161.2
Lung	83.8	85.7	91.3	50.2	39.1
Colorectal	60.7	61.1	56.0	43.0	44.1
Mortality					
All sites	230.1	233.4	282.3	129.5	121.5
Prostate	24.6	24.4	50.2	9.0	16.0
Lung	65.3	66.7	77.7	41.1	25.4
Colorectal	21.0	21.4	23.8	9.1	10.1

** Rates are age-adjusted to the 2000 US Standard Population and are per 100,000*
Data Source: Massachusetts Cancer Registry, 2010

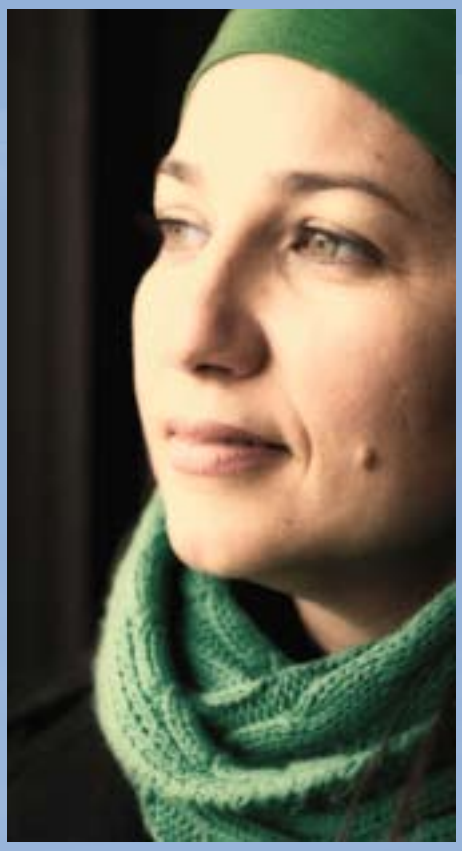
Table 2. Age-adjusted incidence and mortality rates* for selected cancer sites by race/ethnicity, Massachusetts females, 2003–2007

Cancer Site	All Races	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
Incidence					
All sites	458.9	469.4	390.0	296.0	321.6
Breast	132.1	136.3	113.2	75.6	86.1
Lung	64.0	67.0	48.0	30.1	24.0
Colorectal	44.1	44.1	42.9	34.5	35.5
Cervical	5.9	5.6	9.6	6.5	10.0
Mortality					
All sites	159.1	162.6	173.4	84.5	84.8
Breast	43.7	45.7	38.2	18.0	10.6
Lung	22.9	23.4	29.7	7.0	12.3
Colorectal	14.8	14.9	17.7	9.0	9.5
Cervical	1.4	1.3	2.5	†	†

** Rates are age-adjusted to the 2000 US Standard Population and are per 100,000*
† An age-adjusted incidence rate was not calculated when there were fewer than 20 cases or deaths in a race/ethnicity group.
Data Source: Massachusetts Cancer Registry, 2010

emerging issues

Emerging issues include new scientific discoveries, new developments in health care, and other topics of interest. New research is constantly emerging relative to cancer prevention, early detection, treatment, palliation, survivorship, and end-of-life care. Therefore as these data becomes available, organizations such as the National Cancer Institute (NCI) and the United States Preventive Services Task Force (USPTF) update their recommendations and guidelines to reflect this latest evidence in best practices standards. In Massachusetts we have both an NCI-designated comprehensive cancer center, the Dana-Farber/Harvard Cancer Center, and a research center at the David H. Koch Institute for Integrative Cancer Research at MIT. The Dana-Farber/Harvard Cancer Center (DF/HCC) is the largest comprehensive cancer center in the world. It works in collaboration with its seven cancer research institutions, including Beth Israel Deaconess Medical Center, Brigham and Women's Hospital, Children's Hospital Boston, Dana-Farber Cancer Institute, Harvard Medical School, Harvard School of Public Health, and Massachusetts General Hospital to fight against cancer by finding new and innovative ways to combat the disease. The DF/HCC works on several research programs including: prostate, breast, lung and gynecologic cancers, cancer cell biology, cancer risk and disparities, and cancer genetics, to name a few.[8] The David H. Koch Institute for Integrative Cancer Research's mission at MIT is to apply the tools of basic science and technology to determine how cancer is caused, progresses and responds to treatment.[9] Emerging issues in cancer prevention and control in Massachusetts including early detection and screening guidelines, and policy, systems and environmental strategies are discussed below.



New research is constantly emerging relative to cancer prevention, early detection, treatment, palliation, survivorship, and end-of-life care.

Screening Guidelines

Cancer screening recommendations have changed within the past two years for several cancers. Evidence from population-based interventions has shown that previous cancer screening guidelines did not reduce mortality rates. This has led the USPTF to change its guidelines for prostate, breast and cervical cancer screening.

The current USPTF recommendation for prostate cancer states that there is not enough current evidence to balance the benefits and harms of prostate cancer screening for men under the age of 75. The current Massachusetts recommendation for prostate cancer is for men to talk to their health care providers about the benefits and risks of prostate cancer PSA screening before being screened. In October 2011, the USPTF issued a new draft recommendation stating that healthy men should no longer receive a PSA blood test to screen for prostate cancer because the test does not save lives overall and often leads to more tests and treatments that needlessly cause pain, impotence and incontinence. The USPTF is currently reviewing public comments before finalizing their guidelines.

The previous USPTF guidelines for breast cancer screening recommended annual mammograms for women aged 40 and older. Since 2009, the USPTF has recommended breast cancer screening every two years for women 50–74 years of age. However, this new recommendation does not apply to women who are at high risk with a genetic mutation or a history of chest radiation. In addition, this recommendation may lead to young women not being screened early enough to effectively treat breast cancer, since breast cancer tends to be more aggressive among women under 50 years of age than among older women.

USPTF current recommendation for lung cancer reveals that there is insufficient evidence to recommend for or against screening for asymptotic persons for lung cancer. However, findings of the National Lung Cancer Screening trial have shown that screening can reduce death among lung cancer patients through early detection using computed tomography (CT) scan.[10] It is not clear whether current and former smokers should be screened for lung cancer using a CT scan. However, CT scans are not cost effective and may lead to many false alarms. New lung cancer screening guidelines will be issued in early 2012, which will clarify whether the benefits of lung cancer screening outweighs its harms.

Policy Systems and Environmental Strategies

Previous research has shown that there is convincing evidence linking diet and cancer. According to the World Health Organization, dietary factors are estimated to account for nearly 30% of cancers in the US and other developed countries, making diet the second most important preventable cancer risk factor after tobacco.[11] Obesity, overweight and physical inactivity together are associated with an approximately 20 to 30% of several of the most common cancers including, breast, colon, endometrial, kidney and esophagus. In addition, there is more evidence that physical activity decreases the risk of colorectal cancer. High intake of preserved meat and salt-preserved foods has also been known to increase cancer risk. Probable factors protective of cancer include consumption of fruits and vegetables, and physical activity (for breast cancer). Cancer prevention and control efforts are increasingly focused on policies, systems and environmental strategies addressing a wide range of issues including nutrition, physical activity and tobacco. For instance, the NCI is currently working on initiatives including partnerships with institutes across the National Institute of Health (NIH), USDA, CDC, and Robert Woods Johnson Foundation that seek to advance research to understand the environmental, policy, and social forces that may contribute to the growing obesity epidemic, particularly in populations that are at the greatest risk of obesity and its adverse consequences. These obesity prevention efforts will not only help control childhood obesity but will also reduce cancer related morbidity and mortality in the United States.[12]

goals, objectives and strategies

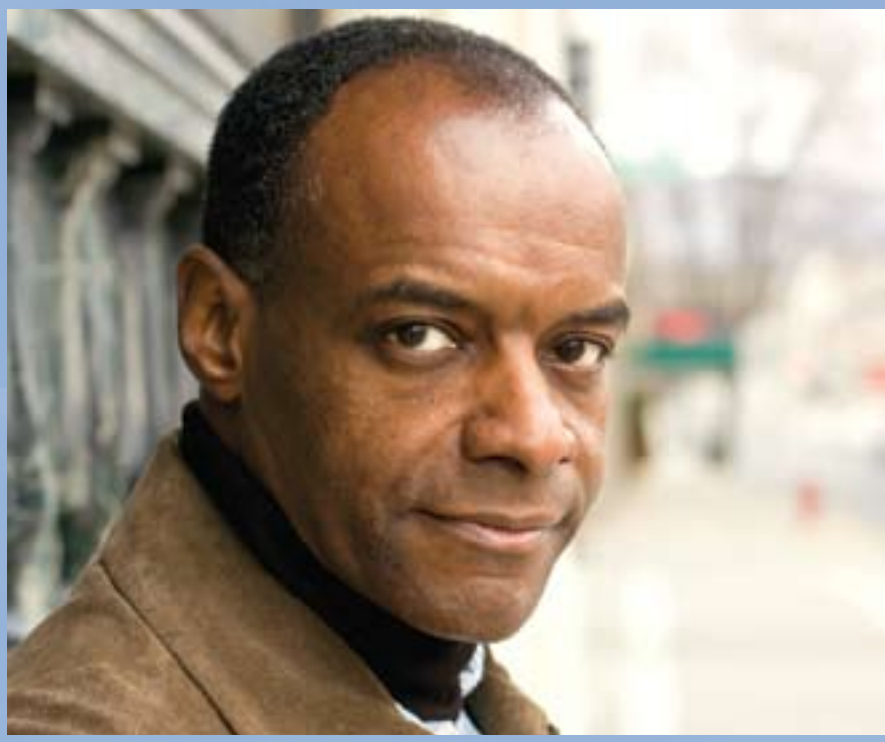
Disparities and Health Equity

Definition

The unequal burden of cancer affects individuals and populations throughout the cancer continuum. ***Health equity*** means that everyone has a fair opportunity to live a long and healthy life and includes the opportunity for everyone to attain their full health potential. Health equity requires addressing social determinants of health—broader social and economic conditions under which people live which determine their health, such as income—and eliminating health disparities.

Inequity refers to differences that are unnecessary and avoidable and are considered unfair and unjust. Addressing social determinants that contribute to health inequity is an issue of social justice. It requires addressing interpersonal, institutional, societal, and internalized forms of racism, sexism, classism, homophobia, as well as other forms of bias and discrimination. It means striving toward a Commonwealth where all individuals and families have a high quality of health services, education, housing, and other resources that protect, promote, and preserve their health, regardless of who they are or where they live.

Health disparities *are differences in the incidence, prevalence, burden and mortality of cancer that exist among population groups based on factors including, but not limited to, age, class, culture, education, ethnicity, geographic location, gender identity or expression, income, language, national origin, physical or mental disability, race, religion, sex, sexual orientation,*



"Each of us, individually, has the power to make a difference in eliminating the unequal burden of cancer…"[13] (The Massachusetts Comprehensive Cancer Advisory Committee, February 2011)

socioeconomic status, wealth or other social conditions. We find that racism has an independent influence on all the social determinants of health and that racism in and of itself has a detrimental impact on health. We affirm that racism and other factors are present in individuals and populations simultaneously and often interact in a synergistic manner.

"Each of us, individually, has the power to make a difference in eliminating the unequal burden of cancer. It will require the strength of all of us, collectively, to achieve this goal."[13] (*The Massachusetts Comprehensive Cancer Advisory Committee, February 2011*)

Background

Research has shown that disparities exist in cancer incidence, mortality, and survival by race/ethnicity and socioeconomic status. A number of factors play a role, including "differences in exposure to underlying risk factors…, access to high-quality screening…, and timely diagnosis and treatment for many cancers."[14] Black, non-Hispanics have poorer survival rates than White, non-Hispanics for every stage at diagnosis, and for almost all cancer sites, and non-White populations are, in general, more likely than White, non-Hispanics to be diagnosed at a later stage of disease. A recent analysis by the American Cancer Society[9] found that more than a third of premature cancer deaths could have been avoided by eliminating educational and racial disparities, with cancer death rates among those with the least education more than twice those of the most highly educated. Another ACS study found that Black, non-Hispanic and Hispanic women with breast cancer were more likely to be diagnosed at a later stage, and were more likely to encounter treatment delays.[15] The NCI has also found higher socioeconomic status to be associated with more favorable survival rates for the most common types of cancer, even after adjusting for treatment.[16] Incidence and mortality rates for cancers related to infectious agents, such as cervical, stomach, and liver cancers, are generally higher in non-White populations than in White non-Hispanics. Evidence on cancer disparities for lesbian, gay, bisexual and transgender persons is limited by a lack of data collection on sexual orientation and gender identity. However, recent publications found gay men in California reporting higher rates of cancer than heterosexual counterparts[17] while lesbian, gay and bisexual people in Massachusetts reported higher risk factors for cancer than their heterosexual counterparts including smoking, obesity and cardiovascular risk.[18]

Research also suggests that a number of these factors act together. For example, the ACS's research on premature cancer deaths suggested that "eliminating socioeconomic disparities in African Americans could potentially avert twice as many premature cancer deaths as eliminating racial disparities, underscoring the dominant role of poverty in cancer disparities."[9] Race itself serves as a "rough proxy for socioeconomic status, culture, and genes,"[19] and while we can measure differences in health outcome, we cannot fully distinguish what factors are involved.

In this section, we have one primary goal and two objectives. The goal targets eliminating cancer health disparities while the objectives outline the key initiatives that need to be implemented in order to achieve this goal.

DISPARITIES AND HEALTH EQUITY GOAL:

Reduce the impact of cancer across the Commonwealth while simultaneously reducing cancer health disparities and promoting health equity.

Objective 1: By 2016, the MCCPCP, in partnership with the MDPH Office of Health Equity, the Massachusetts Health Disparities Council, and other organizations, will identify, develop, implement, and evaluate strategies to document and reduce cancer-related health disparities and promote health equity in Massachusetts.

Strategies

- *Seek resources for a comprehensive assessment of the role social determinants play in cancer-related health disparities in Massachusetts.*
- *Prepare a report using a respectful, community-engaged approach to document current state and local level activities addressing cancer-related disparities and health equity. These include, but are not limited to, cultural, racial, and linguistic competency training, workforce development, reduction of/addressing of financial barriers, and community outreach.*
- *Compare, adapt, and implement evidence-based regional and national strategies that have been shown to reduce cancer-related disparities and promote health equity.*

- *Identify, describe, and enhance public and private data repositories containing cancer-related information. Identify the gaps in cancer related disparities by age, culture, education, ethnicity, geographic location, gender identity or expression, income, language, national origin, physical or mental disability, race, religion, sex, sexual orientation, socioeconomic status, wealth, or other social conditions.*

Objective 2: By 2016, the MCCPCP Disparities/Health Equity Work Group, in collaboration with the MDPH Office of Health Equity, will respectfully engage appropriate partners to develop and sustain local-level and statewide collaboration to reduce cancer-related health disparities and promote health equity.

Strategies:

- *Promote implementation of two or more comprehensive community assessments (similar to the* Community Health Assessment of North Central Massachusetts[20]*) that detail the extent of health disparities in regions across Massachusetts.*
- *Develop a comprehensive dissemination strategy for regional/community assessments, including an Executive Summary that highlights results.*
- *Implement and evaluate three or more Culturally and Linguistically Appropriate (CLAS)-specific recommended activities.*
- *Promote effective training on cultural and linguistic competency, workforce development, and community outreach by working with health care providers, health professionals, educators, payers, and policy makers.*
- *Improve and systematize the monitoring and reporting of cancer-related disparities and make data available, including through the MCCPCP website, www.macompcancer.org.*
- *Identify and address data gaps in order to improve reporting on disparities (e.g., disability status, income, sexual orientation, and socioeconomic status).*
- *Translate and disseminate academic research findings and effective practices in addressing cancer disparities into accessible and user-friendly formats, accessible to diverse communities.*
- *Promote the integration between cancer-related health disparities and health equity with similar work with other disease conditions, health, and wellness.*

Advocacy and Community Engagement

Advocacy and Community Engagement are extremely wide-ranging issues that touch upon every facet of the continuum of care.

In order for comprehensive cancer prevention and control to be effective, we must:

- Create and sustain a cancer policy and legislative agenda that supports projects across the continuum;
- Promote legislation and governmental actions that help decrease the burden of cancer; and
- Disseminate information to the general public to increase awareness of cancer policy issues.

We are all affected by cancer. One out of every two men and one out of every three women will be diagnosed with cancer at some point in his or her life. Thus, we all have a stake in reducing its burden. Whether we are health professionals, cancer survivors, researchers, or legislators, we can all advocate for policies that can support the prevention, early detection, and treatment of cancer; improve access to care; and reduce health disparities.

There is one key goal for this section that speaks to the broad array of partners that need to be engaged. The two objectives specify how to increase support for advocacy and the need to use evidenced based strategies.

ADVOCACY AND COMMUNITY ENGAGEMENT GOAL:

Advocate for actions and resources among government, elected officials, and communities as well as providers, insurers, patients, and families to reduce the burden of cancer, particularly where disparities and inequities exist.

Objective 1: By 2016, develop and strengthen partnerships to leverage scarce resources in order to align efforts and activities to prevent and reduce the burden of cancer.

Strategies:

- *Develop a Policy Work Group to expand support for advocacy issues by broadening and integrating efforts towards cancer prevention and control.*
- *Align the efforts of the Policy Work Group with the MDPH chronic disease integration model, which focuses on policies and system changes that affect all chronic diseases and lifestyle choices, resulting in less duplication of efforts and increased resources, collaboration, communication, and effectiveness.*
- *Identify, engage, and educate non-traditional partners to expand support for advocacy issues, especially those groups focused on underserved populations that promote health equity.*
- *Expand and engage grassroots advocacy efforts through education, regional meetings, conferences, the MCCPCP website, and social media.*

Objective 2: By 2016, increase the number of evidence-based policy and systems changes, including funding, that prevent and decrease the burden of cancer in all areas of the cancer continuum.

Strategies:

- *Inventory policy and system changes to create a baseline to use in tracking progress.*
- *Build support for policy change through recruitment of key decision-makers in government, nonprofits, the private sector, and the general public, including survivors and families representing various geographic, racial/ethnic, and other vulnerable populations.*

- *Ensure that the policy and system changes that are developed improve the health of vulnerable populations.*
- *Recruit municipalities to adopt and implement evidence-based policies and practices.*
- *Identify specific policy and legislative priorities in the annual work plan.*

Prevention

Cancer prevention involves avoiding exposure to cancer causing substances such as nicotine, making lifestyle changes (especially to diet), and detecting and treating cancer early.[21] Much of the focus in Massachusetts has been on reducing tobacco use, since national evidence identifies tobacco exposure as the leading preventable cause of death. In addition, there is increasing evidence of the role that poor diet and lack of exercise play in cancer. According to the American Cancer Society, 30% of cancer deaths could be avoided if people stopped using tobacco, and another one-third of cancer deaths can be attributed to poor nutrition, physical inactivity, overweight or obesity, and other lifestyle factors.[9] Other preventable cancers include those associated with infectious disease exposures, such as liver cancer and cervical cancer, and environmental or occupational exposures.

This section of the plan focuses on key areas that can prevent or lower the risk of cancer, including stopping the use of and exposure to tobacco, maintaining a healthy diet, staying physically active and reducing exposure to infectious agents and environmental and occupational carcinogens. We have two primary goals that address the important role of primary prevention:

PREVENTION GOALS:

1. Create and sustain environments that support the prevention of cancer.
2. Promote behaviors, activities, and policies that reduce the risk of cancer.

Our objectives focus on policy, environmental, and systems changes that will allow for more people to benefit from having healthier choices where they work and live. These changes include reducing exposure to tobacco, improving diet and physical activity, reducing carcinogens in the environment, and reducing exposures to infectious agents that can cause cancer. Such changes can decrease deaths from both cancer and other chronic diseases.

Tobacco

Tobacco is still the greatest avoidable risk factor for cancer, estimated to contribute to 25–30% of new cases of cancer, and responsible for 22% of cancer deaths every year worldwide. Cancers linked to smoking include those of the lung, bladder, cervix, esophagus, kidney, larynx, oral cavity, pancreas, stomach, and throat.

Although rates have declined in Massachusetts over the past ten years, cigarette smoking still remains a problem. In 2010, 14% of adults reported that they were current smokers (vs. 20% in 2000), and another 29% were former smokers. Current smoking was associated with lower educational attainment, lower household income, and younger age. Nearly two-thirds of current smokers indicated that they had tried to quit smoking for one or more days during the previous year, and 40% were planning to try quitting in the next month. Smoking rates are even higher in young people: in 2009, 16% of high school students and 4.2% of middle school students had smoked cigarettes in the past 30 days, while 7.9% of high school students had used smokeless tobacco and 14.9% had smoked cigars.

Objective 1: By 2016, reduce cigarette smoking by adults to 12%. (*Baseline: 14% – Data Source: Behavioral Risk Factor Surveillance System (BRFSS), 2010*)

Objective 2: By 2016, reduce cigarette smoking by adults insured through MassHealth to 24%. (*Baseline: 30% – Data Source: BRFSS, 2009*)

Objective 3: By 2016, reduce cigarette smoking among pregnant women to 6.2%. (*Baseline: 6.8% – Data Source: Massachusetts Births, 2009*)

Strategies supporting Objectives 1, 2, and 3:

- *Increase the proportion of Massachusetts residents whose health insurance covers evidence-based tobacco dependence treatment at recommended levels (e.g., the MassHealth Cessation Benefit), including all FDA-approved cessation medications and behavioral therapies, and eliminate financial barriers to treatment, such as insurance co-payments.*
- *Adopt the US Public Health Service's* Clinical Practice Guideline for Treating Tobacco Use and Dependence: 2008 Update[22] *recommendations for clinicians and health care systems in all primary care, specialty (e.g., OB/GYN), and inpatient settings.*

- *Identify and address cultural and linguistic barriers to accessing cessation information, resources, and services for population groups that experience disparities in tobacco use and cessation.*
- *Advocate for funding for communication/media strategies to promote cessation to both general and specific population groups.*

Objective 4: By 2016, reduce the proportion of high school students (grades 9-12) who are:

- *Current smokers (smoked at least one cigarette in the last 30 days) to 12%. (Baseline: 16% – Data Source: Massachusetts Youth Risk Behavior Survey (MYRBS), 2009)*
- *Daily smokers to 3%. (Baseline: 5.1% – Data Source: YRBS, 2009).*

Objective 5: By 2016, reduce the proportion of high school students who:

- *Report using smokeless tobacco in the last 30 days to 5%.(Baseline: 7.9% – Data Source: YRBS, 2009)*
- *Report smoking cigars in the last 30 days to 8%.(Baseline: 14.9% – Data Source: MYRBS, 2009)*
- *Report having their first cigarette before the age of thirteen to 6%.(Baseline: 9.3% – Data Source: MYRBS, 2009)*

Objective 6: By 2016, decrease the percentage of public middle school students (grades 6–8) who have smoked in the last 30 days to 3%. (*Baseline: 4.2% – Data Source: MYRBS, 2009*)

Strategies supporting Objectives 4, 5, and 6:

- *Increase the unit price of cigarettes and establish tax parity between cigarettes and cigars and smokeless tobacco products, which are currently taxed at lower rates than cigarettes and are thus more affordable to young people.*
- *Work to restrict or minimize the impact of storefront advertising of tobacco products.*
- *Engage young people in statewide and community-based efforts to advance comprehensive tobacco prevention and control policy goals.*

Objective 7: By 2016, increase the percentage of smokers in households where children are present that have a rule against smoking anywhere in the home to 75%. (*Baseline: 65.3% – Data Source: BRFSS, 2010*)

Strategy supporting Objective 7:

- *Promote adoption of smoke-free policies in multi-unit housing that increase the availability of smoke-free housing in MA communities.*

Nutrition and Physical Activity

Poor diet, lack of exercise, and obesity are noted to play an increasing role in the development of cancer, contributing to an estimated 40–55% of new cancer cases. Persons who are overweight or obese are at elevated risk of a number of cancers, including breast, colorectal, endometrial (uterine), esophageal and kidney.

Although Massachusetts has one of the lowest rates of overweight and obese[23] adults in the US, rates have risen sharply over the past ten years, from 53% overweight and 17% obese in 2000 to 60% overweight and 24% obese in 2010. Even more alarming is the high percentage of middle and high school students who are overweight (14–17%) or obese (10–11%), as obese teens are significantly more likely to become obese adults. Moreover, obesity and poor diet are linked to an increased risk of a number of chronic diseases, including heart disease, diabetes, and stroke, with increased obesity putting children and adolescents at increased risk of a host of chronic health problems.

Objective 1: By 2016, reduce the prevalence of obese adults to 22% and of overweight adults to 54% by 2016. (*Baseline: 60% overweight, 24% obese – Data Source: BRFSS, 2010*)

Objective 2: By 2016, decrease the percentage of middle and high school students who are overweight to 13% or obese to 9%. (*Baseline: Middle school – overweight 17%, obese 10%; High school – overweight 14%, obese 11% – Data Source: MYRBS, 2009; Massachusetts Youth Health Survey (MYHS), 2009*)

Objective 3: By 2016, increase the proportion of adults who report regular moderate physical activity (physical activity five or more sessions per week for 30 minutes or more per session, regardless of intensity) to 58%. (*Baseline: 53% – Data Source: BRFSS, 2009*)

Objective 4: By 2016, increase the percentage of middle and high school students who are physically active for 60 minutes at least five days per week to 37%. (*Baseline: Middle school, 33%; High school, 34% – Data Source: MYRBS, 2009; MYHS, 2009*)

Objective 5: By 2016, increase the proportion of adults who consume five or more servings of fruit and vegetables per day to 29%. (*Baseline: 26% – Data Source: BRFSS, 2009*)

Objective 6: By 2016, increase the proportion of high school students who consume five or more servings of fruit and vegetables per day to 20%. (*Baseline: 19% – Data Source: MYRBS, 2009*)

Strategies supporting Objectives 1–6:

- *Increase the number of municipalities that have implemented plans, policies, or standards to make positive changes to their built environment to support healthy community design and opportunities for walking and bicycling.*
- *Increase the number of municipalities that have implemented policies or standards to make positive changes to their food environments aimed at increasing consumption of, and access to, fruits and vegetables and reducing the availability of high-energy-dense foods among adults and children (such as menu labeling, establishing farmers markets, or creating incentives for local convenience stores to offer fresh fruits and vegetables).*
- *Support local community and regional coalition efforts to increase active living spaces for adults and children in communities (such as zoning, road design standards, master plans, school settings and project reviews).*
- *Raise public knowledge of basic definitions of serving size and exercise levels.*

- *Raise public knowledge of the increased risk of cancer attributable to being overweight or obese, and integrate messaging into existing Mass in Motion efforts.*
- *Support implementation of school nutrition standards.*
- *Support policy changes to improve the quality and amount of physical education and activity in schools.*
- *Encourage employers to establish policies that enable employees to incorporate regular physical activity and healthy eating into their lifestyle.*

Environment

According to the American Cancer Society, carcinogens are "substances that can cause changes that can lead to cancer. Substances classified as carcinogens may have different levels of cancer-causing potential. Some may cause cancer after prolonged, high levels of exposure or by short-term exposure to highly toxic materials. And, for any particular person, the risk of developing cancer depends on many factors, including the length and intensity of exposure to the carcinogen and the person's genetic makeup."[24] Leading carcinogens, and the cancers with which they are associated, include radon (lung cancer), arsenic (cancer of the skin, lungs, urinary bladder, and kidney), asbestos (lung cancer and mesothelioma), and polychlorinated biphenyls (PCBs) (cancer of the breast, liver, and biliary tract).

Objective 1: By 2016, increase the number of health care providers who have an accurate understanding of the role the environment plays in cancer risk. (*Baseline and Data Source: to be determined*)

Strategies:

- *Conduct two or more Continuing Medical Education programs within the Commonwealth on environmental health and cancer.*
- *Use newer technology (e.g. social media) to expand the distribution of this information to other providers.*

Objective 2: By 2016, increase the number of consumers who are aware of and knowledgeable about naturally occurring and man-made (e.g., industrial, manufacturing) cancer-causing substances in the environment by conducting outreach and education activities. (*Baseline and Data Source: to be determined*)

Strategies:

- *Using existing data sources identify areas across the state with higher levels of naturally-occurring cancer-causing substances such as radon, arsenic, and uranium.*
    - *Identify "environmental justice" populations (as identified by the Massachusetts Executive Office of Environmental Affairs)*[25] *within the above communities.*
    - *Develop outreach materials for these populations.*
- *Working collaboratively with academic groups and other organizations and their tracking systems, promote awareness of safer alternatives to reduce occupational/community exposure.*

Objective 3: By 2016, increase the number of school officials who are aware of the presence of PCB-containing building materials within their school buildings. (*Baseline and Data Source: to be determined.*)

Strategies:

- *Identify those public schools/buildings in the state most likely to have PCB-containing building materials or lighting fixtures present.*
- *Distribute the Bureau of Environmental Health's guidance document on PCBs to those school officials at greatest risk of having PCBs in the indoor environment.*

Infectious Agents

There are a number of infectious agents (virus and bacteria that can be spread from one person to another) that are associated with an increased risk of various cancers. Hepatitis B (HBV) and Hepatitis C (HCV) are viruses that can cause liver cancer. Human Immunodeficiency Virus (HIV), the virus that causes AIDS, can cause an increased risk of cancers such as Kaposi's sarcoma and lymphomas. Some types of Human Papillomavirus (HPV) can cause cancers of the cervix, anus, vulva, vagina, penis, and head and neck. The *H. Pylori* bacterium is found in the stomach and is associated with an increased risk of stomach cancer and ulcers. There are now vaccines to prevent both HBV and HPV, which can reduce the rates of liver cancer and cervical cancer, respectively. Reduction of HIV infections can help reduce the rate of certain lymphomas and Kaposi's sarcoma, and early diagnosis and treatment of *H. pylori* infections can reduce the likelihood of developing stomach cancer.[26]

Objective 1: By 2016, increase the rate of complete HPV vaccine immunization (three doses) among girls and women 9-26 years old to 80%. (*Baseline: 49.4% – Data Source: National Immunization Survey, 2009*)

Objective 2: By 2016, establish routine vaccination of adolescent and young adult males with three doses of HPV vaccine. (*Baseline and Data Source: None – new recommendation and program*)

Strategies supporting Objectives 1 and 2:

- *Promote the use of HPV vaccine through educational efforts directed at pediatricians and adult-care providers.*
- *Continue to provide HPV vaccine free-of-charge through the Massachusetts Immunization Program to girls 18 years old or younger who qualify for the federal Vaccines for Children Program.*
- *Continue efforts to raise public awareness of the safety and efficacy of HPV vaccine to prevent HPV infection and the cancers with which it is associated.*

Objective 3: By 2016, promote age-appropriate sexuality education, inclusive of ways of preventing sexually transmitted infection, as part of comprehensive health education to a level of 95%. (*Baseline: 50% of high school students received information about condoms, 89% of high school students received information about HIV/AIDS – Data Source: YRBS, 2007*)

Strategies:

- *In collaboration with the Department of Elementary and Secondary Education (DESE), continue to support school efforts to provide age-appropriate comprehensive health education.*
- *Support DESE efforts to increase the percentage of schools in which students' families or community members have helped select and/ or implement HIV, STD, or teen pregnancy prevention policies and programs.*

Objective 4: By 2016, reduce the risk of cancer of the liver by preventing chronic hepatitis due to the hepatitis B virus (HBV).

Strategies:

- *Increase the proportion of newborns getting a birth dose of HBV vaccine by educating birth hospitals about the importance of the birth dose in improving rates of vaccine series completion.*
- *Maintain two-year-old HBV coverage at 95% by assuring the public of the efficacy and safety of hepatitis B vaccine, and promoting its full use.*

Objective 5: By 2016, reduce the risk of cancer of the liver by increasing the proportion of people aware of their positive HCV infection status to 60% and to reduce transmission of HCV. (*Baseline: 49% – National Health and Nutrition Examination Study, 2002-2007*)

Strategies:

- *Promote evidence-based harm reduction through needle exchange programs, increasing the number of municipalities allowing needle exchange programs designed to educate injection drug users about infection prevention, supply sterile needles and syringes, and offer referral to substance use treatment.*
- *Promote safer health care practices to reduce exposure of patients and health care workers to hepatitis viruses by enforcement of requirements for safer equipment and injury reporting, reducing needle stick injuries by at least 40% to 1,875.*
- *Increase substance use treatment for injection drug users by expanding treatment referrals and opportunities.*

Objective 6: By 2016, decrease the prevalence of HIV-related cancers (e.g., lymphoma and Kaposi's sarcoma). (*Baseline and Data Source: to be determined*)

Strategy:

- *Maintain and enhance evidence-based measures and programs to prevent HIV infection.*

Objective 7: By 2016, address prevention of stomach cancer due to infection with *H. pylori*. (*Baseline and Data Source: to be determined*)

Strategies:

- *Increase education and outreach to immigrant communities regarding the risk of stomach cancer and ways of preventing it.*
- *Enhance referral and utilization of primary care services to identify persons at risk of* H. pylori *infection and provide testing and treatment.*

Early Detection and Screening

Regular screening for some cancers can help to detect them early, which may help to reduce their mortality rate. The removal of precancerous growths (such as colon polyps or moles) can also prevent some cancers from becoming invasive and potentially spreading to other parts of the body. Fecal occult blood tests (FOBT; also called a blood stool test), sigmoidoscopy, and colonoscopy are some of the tests and procedures that can detect colorectal cancer in its early stages.[27] Breast cancer can be detected earlier by mammography and clinical breast exams, and cervical cancer can be detected in its earliest stages using the Pap smear. Prostate cancer can be detected using the prostate-specific antigen (PSA) blood test and digital rectal exams (DRE), but their use is increasingly controversial.

This section focuses on two different areas: cancers for which there is significant evidence for screening (breast, cervical, and colorectal) and those for which there is emerging or limited evidence (lung, prostate). Our objectives reflect the United States Preventive Services Task Force (USPSTF) recommendations for overall population-based screening. Given the ongoing concerns related to the risks and benefits of prostate cancer screening, our main emphasis is on informed decision-making with physicians to assess risk. In the case of lung cancer, for which there are emerging ways to screen those

at highest risk for lung cancer (e.g., smokers); our objective is to monitor emerging technology, such as the use of spiral CT scans.

EARLY DETECTION AND SCREENING GOALS:

1. **Ensure that all Massachusetts residents receive appropriate and timely screening for those cancers where strong evidence-based guidelines for screening currently exist.**
2. **Increase awareness of and access to informed decision making for all Massachusetts residents about cancer screening for common cancers for which there is emerging evidence of effectiveness.**

Breast Cancer

The age at which to begin routine mammography screening has become increasingly controversial over the past several years. In 2009, the USPSTF recommended that women aged 50–74 who are at average risk* of breast cancer receive mammograms every two years, with the need for routine screening among women in their 40s to be determined on an individual basis. Evidence to support screening among women aged 75 and older was deemed insufficient.[28] The American Cancer Society continues to support routine annual screening of women beginning at age 40, with no age cut-off.[29] The American College of Obstetrics and Gynecology recently changed its guidelines to match those of the ACS.[30]

The USPSTF recommendation applies to women age 50 or older who are not at increased risk for breast cancer because of a known genetic mutation (such as BRCA1 or BRCA2) or a history of radiation to the chest.[31]

According to the 2010 Behavioral Risk Factor Surveillance System (BRFSS), Massachusetts has the highest rate of mammography screening within the last two years among both women aged 40 and older (83.6%) and 50 and older (87.5%).[32] Rates are lower among women with lower educational attainment and lower household incomes, and among women in their 40s and 80s, and higher among Black, non-Hispanic women. Despite this, however, Black, non-Hispanic women have an elevated rate of breast cancer mortality and late stage at diagnosis.

Objective 1: By 2016, increase the percentage of Massachusetts women ages 50–74 who have had a mammogram in the past two years to 90%. (*Baseline: 83.6% – Data Source: BRFSS, 2010*)

Objective 2: By 2016, decrease the rate of White, non-Hispanic and Black, non-Hispanic women diagnosed with late stage (regional and distant) breast cancer to 35 per 100,000. (*Baseline: White, non-Hispanic women, 43 per 100,000; Black, non-Hispanic Women, 43 per 100,000 – Data Source: MCR 2003-2007*)

Strategies:

- *Convene a Breast Cancer Screening Task Force to develop a statewide strategic plan for increasing screening and follow-up on positive findings statewide. The plan will include targeted evidence-based interventions (such as reducing structural barriers and increasing Patient Navigation) to address gaps in populations or geographic locations including, but not limited to, racial and ethnic disparities.*
- *Implement small media campaigns educating women on the importance of breast cancer screening.*
- *Work with the Women's Health Network in conducting formative research with providers and patients regarding risk factors and informed decision-making.*
- *Implement formative research with health plans and the Massachusetts Health Insurance Connector Authority to better understand co-pay and deductible issues related to breast cancer screening, diagnosis, and treatment.*
- *Survey providers about their knowledge and attitudes towards breast cancer screening guidelines and about barriers and access issues related to breast cancer screening and follow-up.*
- *Based on the results of provider surveys, elicit recommendations for influencing provider compliance with screening guidelines.*
- *Promote and offer training to health care providers and other health professionals regarding informed decision-making.*

Cervical Cancer

The USPSTF strongly recommends screening for cervical cancer in women who have been sexually active and have a cervix. It recommends against routinely screening women older than age 65 for cervical cancer if they have had three consecutive normal Pap smears and no abnormalities in the last ten years and are not otherwise at high risk** for cervical cancer. The Task Force also recommends against routine Pap smear screening in women who have had a total hysterectomy for benign disease.[33] According to the National Cancer Institute, "regular screening of appropriate women for cervical cancer with the Papanicolaou (Pap) test reduces mortality from cervical cancer. Screening is effective when started within three years after beginning vaginal intercourse and becomes much less effective in women ages 65 years and older who have recent negative Pap tests."[34]

As with breast cancer screening, Massachusetts has the highest rate of cervical cancer screening in the nation, with 84.5% of women aged 18 and older reporting having had a Pap smear within the past three years. Rates are lower among women with lower household incomes and lower educational attainment, and are substantially lower among women aged 75 and older. Again, although Black, non-Hispanic women had higher rates of screening than women of other races, they were significantly more likely to be diagnosed at a later stage.

** The American College of Obstetricians and Gynecologists (ACOG) identifies additional risk factors that might justify annual screening, including a history of cervical neoplasia, infection with HPV or other sexually transmitted diseases (STDs), or high-risk sexual behavior, but data are limited to determine the benefits of these strategies.[35]

Objective 1: By 2016, increase the percentage of women 21 years of age and over who have had a Pap test within the past three years to 90%. (*Baseline: 84.5% – Data Source: BRFSS, 2010*)

Objective 2: By 2016, decrease the proportion of Black, non-Hispanic women diagnosed with late stage (regional and distant) cervical cancer to 2 per 100,000. (*Baseline: 5.0 per 100, 000 – Data Source: MCR, 2003-2007*)

Strategies to support Objectives 1 and 2:

- *Work with community partners to develop strategies for education and awareness, especially among those women at highest risk of not getting screened for and/or being diagnosed with cervical cancer at a late stage.*
- *Use MCR data to identify disparate populations of women who are diagnosed with invasive cervical cancer, particularly late-stage.*
- *Explore the possibility of using new data sets to identify women who are at higher risk of cervical cancer.*

Colorectal Cancer

Screening for colorectal cancer can actually prevent colorectal cancer by finding and removing precancerous polyps before they develop into cancer. Screening can also detect colorectal cancer at an earlier stage when it is more treatable. The USPSTF recommends that health care providers screen men and women aged 50–75 for colorectal cancer using fecal occult blood testing, sigmoidoscopy, or colonoscopy.[36]

Overall, 63.2% of Massachusetts adults aged 50 and older reported having had a colonoscopy or sigmoidoscopy within the past five years, and 18.3% had had a blood stool test within the previous two years. Screening rates were lowest in Hispanics, those with less than a high school diploma, a household income of less than $25,000, and aged 80 and older. The colorectal cancer incidence rate among Black non-Hispanic men who were diagnosed in the late stage (regional and distant stages) was 28 per 100,000 compared to 31 per 100,000 among White non-Hispanic men between 2003 and 2007.

Objective 1: By 2016, increase screening rates for colorectal cancer to 80% for Massachusetts men and women age 50–75 years. (*Baseline: 63.2% – Data Source: BRFSS, 2010*)

Objective 2: By 2016, decrease the proportion of White, non-Hispanic and Black, non-Hispanic men diagnosed with late stage (regional and distant) colorectal cancer to 25 per 100,000. (*Baseline: White, non-Hispanic males, 31 per 100,000; Black, non-Hispanic males, 28 per 100,000 – Data Source: MCR, 2003-2007*)

Objective 3: By 2016, decrease the proportion of White, non-Hispanic and Black, non-Hispanic women diagnosed with late stage (regional and distant) colorectal cancer to 20 per 100,000. (*Baseline: White, non-Hispanic females, 23 per 100,000; Black, non-Hispanic females, 22 per 100,000 – Data Source: MCR, 2003-2007*)

Strategies:

- *Implement targeted media campaigns using the most appropriate channels of delivery for each target group, and delivered by a voice/person recognized within the community, to increase awareness and education about colorectal screening.*
- *Reduce structural barriers through outreach programs such as Patient Navigation.*
- *Identify practices with low screening rates and assist them in developing office policies and quality improvement initiatives utilizing strategies outlined in the American Cancer Society's document* How to Increase Colorectal Cancer Screening Rates in Practice: A Primary Care Clinician's Evidence-Based Toolbox and Guide.[37]
- *Promote use of Client Reminders (e.g., mail, telephone) throughout medical practices, community health centers, and health plans utilizing an electronic tracking system.*
- *Support legislation that requires insurers to offer the full menu of recommended screening options for colorectal cancer screening.*
- *Ensure health plans use evidence-based guidelines for screening.*
- *Conduct formative research to better understand what screening options providers are recommending to their patients.*
- *Assess colorectal cancer screening capacity statewide.*
- *Assess endoscopy sites' quality of screening and reporting.*
- *Assess follow-up with primary care providers.*

Prostate Cancer

Like mammography, screening for prostate cancer has become increasingly controversial due to concerns regarding whether the benefits of the screening outweigh the risks. The USPTSF has concluded that there isn't enough current evidence to assess this balance in men younger than age 75, and recommends against screening in men aged 75 and older. They note that prostate cancer treatment can cause problems such as impotence and incontinence, and some men who are diagnosed with prostate cancer have a slow-growing form of the disease that would never have caused them any trouble. Additionally, the PSA test, like other screening tests, may indicate that a man has prostate cancer when he doesn't, leading to pain and discomfort from needed procedures as well as stress and worry and long-term complications.[38]

According to the BRFSS, 60% of Massachusetts men aged 50 and older reported having a PSA test in the past year, and 64.4% had had a DRE. Overall, 71% had discussed the risks of benefits of screening with their health care provider. Discussion rates were comparable to the overall rate for White, non-Hispanic and Black, non-Hispanic men, but were significantly lower for Hispanic (39.8%) and Asian, non-Hispanic (40.2%) men. Screening and discussion rates were lower for less educated men and those with lower household incomes.

Objective 1: By 2016, increase the number of men age 50 years and older who have discussed the risks and benefits of prostate cancer screening with their health care providers to 78%. Men at higher risk, such as those of African descent or with a family history of prostate cancer, should start discussing this issue at age 45. (*Baseline: Overall, 71%; White, non-Hispanics, 73%, Black, non-Hispanics, 72% – Data Source: BRFSS, 2008*)

Strategies:

- *Develop a Prostate Cancer Work Group to monitor emerging science regarding informed decision making and prostate cancer screening.*
- *Promote and offer training to health care providers and other health professionals regarding informed decision-making.*

- *Explore and identify evidence-based strategies for informed decision-making through telephone interviews and other modalities. Design, test, and evaluate a small media campaign to educate Black, non-Hispanic men regarding prostate cancer through community and faith-based partners.*
- *Continue Community Health Worker (CHW) outreach to Black, non-Hispanic men to educate them on their risk factors and the need for informed decision-making with their health care provider.*

Lung Cancer

The National Lung Cancer Screening Trial was halted in November, 2010 when the mortality benefit in the CT arm exceeded the defined end point of 20%. The challenge now is to weigh the population level benefits and risks of lung cancer screening against any individual's potential benefit along with other concerns. Therefore during the next five years it will be critical to review existing and emerging evidence in considering recommendations for screening programs especially at risk populations.

Objective 1: By 2016, decrease lung cancer mortality rates to 59/100,000 for men and 39/100,000 for women. (*Baseline: Males 65.3/100,000, Females 43.7/100,000 – Data Source: MCR, 2003-2007*)

Strategies:

- *Create a Lung Cancer Work Group to monitor emerging lung cancer screening guidelines and to establish recommendations for screening programs. The Lung Cancer Work Group should be actively engaged in reviewing cost-benefit analyses necessary prior to recommending population level screening based on positive findings of the study of high risk individuals.*
- *Actively integrate cessation programs into the protocols for current smokers who are screened for lung cancer.*
- *Design outreach, educational tools, small media and other communication strategies that target those who are at disproportionate risk for lung cancer incidence and mortality (e.g., veterans, Black, non-Hispanic males, people of color, persons of low socioeconomic status, and immigrants and their providers.*

Survivorship, Treatment, Palliation, and End of Life

Survivorship

Thanks to improvements in early detection and treatment, the number of cancer survivors continues to increase, both nationally and in Massachusetts. According to the Institute of Medicine (IOM), the number of cancer survivors in the US has more than tripled in the past 35 years.[39] The American Cancer Society estimates that more than 11 million people in the United States are cancer survivors, and more than two-thirds of persons diagnosed with cancer now survive five or more years after diagnosis.[4] In the 2010 BRFSS, 9% of all Massachusetts adults surveyed, and 25% of those aged 65 and older, reported that they had been diagnosed with cancer at some point in their lives.

This rapidly increasing number of cancer survivors is a critical emerging public health issue. Increased numbers and longer survival times mean that more survivors will be receiving long-term cancer-related care via their primary care providers (PCPs), who may not be familiar with recommended standards of care. The IOM notes that "…the current US health care system is failing to deliver the comprehensive and coordinated follow-up care cancer survivors deserve. Too many survivors are lost in transition once they finish treatment. They move from an orderly system of care to a 'non-system' in which there are few guidelines to assist them through the next stage of their life or help them overcome the medical and psychosocial problems that may arise."

A 2009 study[40] conducted for the MCCPCP found that treatment summaries and survivorship care plans are not used regularly for cancer survivors in Massachusetts. The IOM report especially recommends use of survivorship treatment summaries and care plans to improve quality and continuity of care for survivors as they leave oncology care and are followed by PCPs. Increasing focus is being placed on survivorship plans from an institutional perspective; the American College of Surgeons Commission on Cancer (CoC)'s 2012 Cancer Program Standards will include a new standard requiring the completion and provision of comprehensive care summary and follow-up plans to patients upon the completion of treatment.[41]

SURVIVORSHIP, TREATMENT, PALLIATION, AND END OF LIFE GOAL:
Improve the overall experience and quality of life of all Commonwealth residents who are living with, through, and beyond cancer.

Objective 1: By 2016, ensure that all cancer survivors in the Commonwealth, including disparate populations, have access to appropriate medical, preventive, and dental services.

Strategies:

- *Continue to support the inclusion of Cancer Survivorship Module questions on the BRFSS Survey to gather information on cancer survivors in Massachusetts.*
- *Continue to collaborate with hospitals to disseminate survivorship information and resources to patients and their caregivers and adapting them as needed.*
- *Collaborate with other New England states on common approaches to respond to the results of needs assessments of cancer survivors.*

Objective 2: By 2016, enhance the use of treatment summaries and care plans in cancer survivors.

Strategies:

- *Promote legislation to require health care facilities to provide cancer patients with treatment summaries and care plans.*
- *Continue to provide administrative and logistical support for the six New England states' regional subcommittee working on treatment summaries and care plans.*
- *Collaborate with other cancer control partners in adoption and implementation of CoC standards on treatment summaries and care plans.*
- *Monitor and analyze BRFSS data on cancer survivorship.*

Treatment

Massachusetts is home to one of 40 NCI Comprehensive Cancer Centers, the Dana-Farber/Harvard Cancer Center, as well as 45 cancer programs accredited by the CoC. These facilities must meet best-practice standards related to diagnostic, treatment and other clinical, rehabilitation, support, prevention and early detection services. In 2006, 61% of Massachusetts hospitals were accredited by CoC, ranking seventh in the US.[42]

TREATMENT GOAL:

Ensure that all Commonwealth residents have equal and timely access to cancer information, treatment, and clinical trials that are based on nationally recognized best-practice standards.

Objective 1: By 2016, increase the percentage of cancer patients that receive first course of treatment at National Cancer Institute (NCI) - or Commission on Cancer (CoC)-accredited hospitals in Massachusetts to 74%. (*Baseline: 72% – Data Sources: NCI, CoC, 2008*)

Strategies:

- *Use MCR data to monitor the proportion of cancer patients that are receiving their care at accredited hospitals.*
- *Collaborate with NCI and CoC to inform consumers of the importance of receiving their cancer treatment care at an accredited hospital.*
- *Pursue a collaborative agreement to share the National Comprehensive Cancer Network (NCCN) patient information portal with patients in Massachusetts/New England.*
- *Work with CoC-accredited hospitals to enforce Standard 6.1 (*Support services are provided on site or coordinated with local agencies and facilities.*) in their assessment of support services and resource information needs for cancer patients.*

Objective 2: By 2016, assess the enrollment of patients in clinical trials. Based on this number, increase the percentage of patients that are enrolled in a clinical trial to 4%. (*Baseline: 2% – Data Sources: CoC, 2010*)

Strategies:

- *Collaborate with the NCI and hospitals to increase the proportion of patients enrolled in clinical trials.*
- *Increase awareness of clinical trials among physicians and cancer survivors, especially those in underserved populations, through the MCCPCP website, via social media outlets, and through printed materials distributed to newly diagnosed cancer patients, in collaboration with ACS, CoC Physician Liaisons, and the Massachusetts Medical Society.*
- *Disseminate clinical trials information in multiple languages, based on community needs, through hospitals and treatment centers.*
- *Monitor clinical trials knowledge and participation annually through the BRFSS.*

Palliative Care

According to the Massachusetts Expert Panel on End-of-Life Care, "palliative care refers to medical and other efforts to relieve suffering and improve quality of life for patients with serious advancing illness, including efforts that are provided at the same time as curative or life-prolonging treatments….studies have…demonstrated multiple benefits of palliative care services for patients with serious advancing illness and their families, including reduction in pain and other symptoms, improvements in communication, better emotional and spiritual support, and receipt of care in a setting preferred by the patient."[43]

PALLIATIVE CARE GOAL:

Ensure that Massachusetts residents who have been diagnosed with cancer can access appropriate palliative care through treatment and beyond, including end of life.

Objective 1: By 2016, in collaboration with the American Cancer Society, assess compliance with NCI and CoC standards for palliation. (*Baseline: TBD (No data at this time) - American Cancer Society*)

Strategy:

- *Ensure NCI and CoC facilities inform their patients about palliative care services based on standards/guidelines.*

Objective 2: By 2016, inventory palliative care practices and measures at accredited Massachusetts facilities.

Strategies:

- *Assess the utilization of palliative care among cancer survivors, including among members of disparate populations.*
- *Review results of palliative care and quality-of-life studies on a state and national level.*

End-of-Life Care

The Massachusetts Expert Panel on End-of-Life Care defines hospice services as including "medical, social, emotional, and spiritual support tailored to the patient's needs and wishes."[37] Hospice services are distinct from palliative care in several ways: first, coverage is generally limited to those with an expected life expectancy of six months or less; second, it includes support provided to family members and loved ones, including bereavement care.

The Panel's 2010 report *Patient-Centered Care and Human Mortality: The Urgency of Health System Reforms to Ensure Respect for Patients' Wishes and Accountability for Excellence in Care* addressed the need for reform around the issue of end-of-life care. Research conducted for the report indicated that while two-thirds of Massachusetts residents express a desire to die at home, fewer than a quarter do, while more than 70% die in hospitals or nursing homes. Although the Commonwealth has made a start in creating the Massachusetts on End-of-Life Care, establishing the Expert Panel, and developing this report, work remains to be done.

There is a need for equal access to palliative and hospice care services among all patient populations, especially those with known disparities in accessing end-of-life care. Previous research has shown lower use of hospice care

in Black patients, and a recent study conducted at the Dana-Farber Cancer Institute showed that Black patients with advanced cancer were less likely to have their wishes regarding end-of-life care honored than White patients.[44] Additionally, not all MassHealth insurance plans cover hospice care.

END-OF-LIFE CARE GOAL:

Ensure that all Commonwealth residents have access to quality end-of-life care in a timely manner.

Objective 1: By 2016, increase hospice services average length of stay to 65 days statewide. (*Baseline: 61 days – Data Source: Hospice & Palliative Care Federation of Massachusetts, 2010*)

Strategy:

- *Advocate for credible coverage for hospice benefit from all insurance providers.*

Objective 2: By 2016, increase the percentage of cancer patients who use hospice care in the last 90 days of life to 38%. (*Baseline: 36% – Data Source: Hospice & Palliative Care Federation of Massachusetts. 2010*)

Strategies:

- *Develop a mechanism to provide patients and family members with information on hospice care in a timely manner.*
- *Conduct an inventory of health plans to assess coverage of hospice services.*
- *Assess use of hospice services by basic demographics, including age, geography, race, and insurance status.*
- *In collaboration with partners, increase awareness about the availability of hospice services.*
- *Work with hospice providers on cultural competency.*
- *Work with the CoC to propose a standard for hospice and end-of-life services.*

research and evaluation

The main goal of the research and evaluation section is to highlight the role of cancer data to support the implementation, surveillance, and evaluation efforts of the *2012–2016 Massachusetts Cancer Plan*. This will be accomplished through the use of established cancer surveillance systems, the evaluation of cancer intervention projects, and the timely dissemination of cancer burden data and research findings across the continuum. Timely, high quality, and complete cancer data are essential in reducing the cancer burden. In addition, cancer data can be used to plan and target cancer prevention and control interventions. The Plan is an evolving document that will continue to implement its interventions and activities based on the most current data and research findings as they become available. There are 10 goals and 44 objectives in the Plan and performance measures have been created to monitor and evaluate the Plan based on these objectives. Most interventions will be evidence-based or evidence informed.

National Surveillance Systems

Research and evaluation are essential components of effective, comprehensive cancer control. Cancer surveillance is the ongoing process of systematic and timely collection and analysis of cancer data including incidence, mortality, risk factors, screening, early detection, treatment, and survival.[45] The two main systems for monitoring and tracking cancer incidence and behavior data are cancer registries and the Behavioral Risk Factor Surveillance System (BRFSS).

The CDC's National Program of Cancer Registries (NPCR)[46] supports central cancer registries and the use of registry data in nearly every state (including Massachusetts), the District of Columbia, and some US territories. (Remaining states are funded by the NCI.) These registries collect data on cancer incidence by type of cancer, stage at diagnosis, and treatment received. As required by law, hospitals, physicians' offices, surgical centers, therapeutic radiation facilities, and pathology laboratories report these data to the statewide cancer registry. Some registries also collect survival data. Public health professionals use cancer registry data to assess and address the burden of cancer and to guide and monitor cancer prevention, control,

Timely, high quality, and complete cancer data are essential in reducing the cancer burden.

treatment, and research.[39] Registry data also can be used to determine and address disparities in cancer incidence, mortality, and treatment based on demographic characteristics including race, age, sex, socioeconomic status, and location.

The Behavioral Risk Factor Surveillance System (BRFSS)[47] is a state-based system of health surveys that collects data on emerging public health issues, health conditions, risk factors, and behaviors. It was established in 1984 by the CDC. Currently all 50 states, the District of Columbia, and several US territories collect monthly data using the BRFSS. The BRFSS is the only available source of timely, accurate data on health-related behaviors for most states. More than 350,000 adults nationally and 16,000 adults in Massachusetts are interviewed each year, making the BRFSS the largest telephone health survey in the world. These data are used to identify emerging health problems, establish and track health objectives, and develop and evaluate public health policies and programs. In addition, many states also use BRFSS data to support health-related legislative efforts.[48]

Surveillance in Massachusetts

Massachusetts surveillance data used in the Plan are from four main sources: the Massachusetts Cancer Registry, the Behavioral Risk Factor Surveillance System, the Youth Risk Behavior Surveillance System, and the Massachusetts Youth Health Survey.

The Massachusetts Cancer Registry (MCR)[49] is part of the MDPH and receives funding from the CDC/NPCR. It has been collecting data on all newly diagnosed cases of cancer in the state since 1982. These data provide important information for monitoring the impact of environmental and occupational hazards in Massachusetts. In addition, they are used when designing and evaluating cancer prevention and control programs. The MCR publishes two annual reports, *Cancer Incidence and Mortality in Massachusetts and the City/Town Supplement* series, as well as special publications focused on specific cancer types and populations. The MCR is nationally recognized by the North American Association of Central Cancer Registries for meeting the highest standards of data quality, completeness, accuracy, and timeliness.

The Massachusetts Behavioral Risk Factor Surveillance System (BRFSS)[50] is conducted by the MDPH Health Survey Program (HSP). BRFSS data are useful in identifying the need for health interventions, monitoring the effectiveness of interventions programs, developing health policy and legislation, and measuring progress toward attaining state and national health objectives such as Healthy People 2020. The HSP publishes an annual statewide report, *A Profile of Health Among Massachusetts Adults*, periodic reports on Community Health Network Areas (CHNAs) and specific cities and towns, and topical reports and publications.

Data on Massachusetts youth are collected through two survey instruments, the federal Youth Risk Behavior Survey (YRBS)[51] and the Massachusetts Youth Health Survey (YHS),[52] which are administered in alternating years. The YRBS is administered by the Massachusetts Department of Elementary and Secondary Education (DESE), while the YHS is conducted by the MDPH Health Survey Program in collaboration with DESE. The YRBS surveys students in grades 9–12 and the YHS surveys grades 6–12. These surveys collect data on behaviors and conditions related to the health, safety, and wellbeing of young people across the Massachusetts. These behaviors include tobacco, alcohol, and other drug use; behaviors leading to injuries; dietary behaviors and physical inactivity; and sexual behaviors. In addition, the two surveys collect data on the prevalence of health-related conditions such as obesity, chronic diseases, oral health problems, and mental health concerns.

Program Evaluation

Program evaluation is defined as a systematic collection of information about program activities, characteristics, personnel and outcomes in order to make necessary decisions about the program.[53] It is a critical component of comprehensive cancer control efforts. The MCCPCP will develop a detailed evaluation plan to evaluate the Plan, consistent with the Framework for Program Evaluation in Public Health developed by the CDC[54]. This framework is composed of six steps that provide guidance in the evaluation of public health programs. These steps include: engaging stakeholders, describing the program, focusing the evaluation design, gathering credible evidence, justifying conclusions, and ensuring the use and sharing of lessons learned. The framework is non-prescriptive and was designed to summarize and organize these essential elements of program evaluation. The six steps outlined in the CDC's framework are similar to the five steps recommended by Cancer Control P.L.A.N.E.T.[55]

Evidence-Based Interventions

In order to achieve the goals and objectives outlined in the Plan, each strategy listed under the objectives is evidence-based and references are provided to document the source of the strategy. (If the selected strategy was not based on existing evidence, a description of the rationale for choosing that strategy is also provided. These strategies are generally referred to as *evidence-informed strategies*.) Sources for evidence-based strategies include:

- The US Preventive Services Task Force rigorously evaluates clinical research in order to assess the merits of preventive measures, including screening tests, counseling, immunizations, and preventive medications.[56]
- *The Community Guide to Preventive Services* is a resource for evidence-based task force recommendations and findings about what works to improve public health. It is based on a scientific systematic review process and provides up-to-date syntheses of the science examining various intervention strategies.[57]
- *Research-Tested Intervention Programs* is a searchable database of cancer control interventions and program materials and is designed to provide program planners and public health practitioners with easy and immediate access to research-tested materials.[58]
- *Best Practices for Comprehensive Tobacco Control* is an evidence-based guide to help states plan and establish effective tobacco control programs to prevent and reduce tobacco use.[59]
- The *Cancer Control P.L.A.N.E.T* portal provides access to data and resources that can help planners, program staff, and researchers to design, implement, and evaluate evidence-based cancer control programs.[49]
- *The Cochrane Reviews*, part of the Cochrane Collaboration are systematic reviews of primary research in human health care and health policy, and are internationally recognized as the highest standard in evidence-based health care.[60]

Performance Measures

The MCCPCP Advisory Committee has identified performance measures to monitor the burden of cancer in the Commonwealth and ultimately evaluate the effectiveness of the Plan. Progress toward each measure will be reported regularly to the Advisory Committee, the CDC, and as other interested parties. These performance measures mirror the continuum of care and cross-cutting sections covered in the Plan and are listed in the Appendix.

appendix: performance measures

Health Disparities and Health Equity

Performance Measures	Baseline	2016 Target
By 2016, the MCCPCP, in partnership with the MDPH Office of Health Equity, the Massachusetts Health Disparities Council, and other organizations, will identify, develop, implement, and evaluate strategies to document and reduce cancer-related health disparities and promote health equity in Massachusetts.		
By 2016, the MCCPCP Disparities/Health Equity Work Group, in collaboration with the MDPH Office of Health Equity, will respectfully engage appropriate partners to develop and sustain local-level and statewide collaboration to reduce cancer-related health disparities and promote health equity.		

Advocacy and Community Engagement

Performance Measures	Baseline	2016 Target
By 2016, develop and strengthen partnerships to leverage scarce resources in order to align efforts and activities to prevent and reduce the burden of cancer.		
By 2016, increase the number of evidence-based policy and systems changes, including funding, that prevent and decrease the burden of cancer in all areas of the cancer continuum.		

Prevention

Tobacco

Performance Measures	Baseline[a]	2016 Target[b]
By 2016, reduce cigarette smoking by adults to 12%.	14.0%	12.0%
By 2016, reduce cigarette smoking by adults insured through MassHealth to 24%.	30.0%	24.0%
By 2016, reduce cigarette smoking among pregnant women to 6.2%.	6.8%	6.2%
By 2016, reduce the proportion of high school students who are current smokers (smoked at least one cigarette in the last 30 days) to 16%.	16.0%	12.0%
By 2016, reduce the proportion of high school students who are daily smokers to 3%.	5.1%	3.0%
By 2016, reduce the proportion of high school students who report using smokeless tobacco in the last 30 days to 5%.	65.3%	75.0%
By 2016, reduce the proportion of high school students who report smoking cigars in the last 30 days to 8%.	14.9%	8.0%
By 2016, reduce the proportion of high school students who report having their first cigarette before the age of 13 to 6%.	9.3%	6.0%
By 2016, decrease the percentage of public middle school students, (grades 6–8) who have smoked in the last 30 days to 3%	4.2%	3.0%
By 2016, increase the percentage of smokers in households where children are present that have a rule against smoking anywhere in the home to 75%.	65.3%	75.0%

[a]*Unless noted otherwise, all adult baselines are based on Massachusetts BRFSS data.*
[b]*2016 Targets are based on Healthy People 2020 goals.*
[c]*Massachusetts Births, 2009*
[d]*Unless noted otherwise, all youth baselines are based on Massachusetts YRBS and YHS data.*

Nutrition and Physical Activity

Performance Measures	Baseline	2016 Target
By 2016, reduce the prevalence of overweight adults to 54%.	60.0%	54.0%
By 2016, reduce the prevalence of obese adults to 22%.	24.0%	22.0%
By 2016, decrease the percentage of middle and high school students who are overweight to 13%.		
Middle School	17.0%	13.0%
High School	14.0%	13.0%
By 2016, decrease the percentage of middle and high school students who are obese to 9%.		
Middle School	10.0%	9.0%
High School	11.0%	9.0%
By 2016, increase the proportion of adults who report regular moderate physical activity (physical activity five or more sessions per week for 30 minutes or more per session, regardless of intensity) to 58%.	53.0%	58.0%
By 2016, increase the percentage of middle and high school students who are physically active for 60 minutes at least five days per week to 37%.		
Middle School	33.0%	37.0%
High School	34.0%	37.0%
By 2016, increase the proportion of adults who consume five or more servings of fruit and vegetable per day to 29%.	26.0%	29.0%
By 2016, increase the proportion of high school students who consume five or more servings of fruit and vegetables per day to 20%.	19.0%	20.0%

[e]*Data sources and baseline not yet determined.*

Environmental Objectives

Performance Measures[e]	Baseline	2016 Target
By 2016, increase the number of health care providers who have an accurate understanding of the role of the environment in general plays in cancer risk.		
By 2016, increase the number of consumers who are aware of and knowledgeable about naturally occurring and man-made (e.g., industrial, manufacturing) cancer-causing substances in the environment by conducting outreach and education activities.		
By 2016, increase the number of school officials who are aware of the presence of PCB-containing building materials within their school buildings.		

Infectious Agents Objectives

Performance Measures	Baseline	2016 Target
By 2016, increase the rate of complete HPV vaccine immunization (three doses) among girls and women 9-26 years old to 80%.	49.4%	80%
By 2016, establish routine vaccination of adolescent and young adult males with three doses of HPV vaccine. (No baseline – new recommendation and program.)		
By 2016, promote age-appropriate sexuality education, inclusive of ways of preventing sexually transmitted infection, as part of comprehensive health education to a level of 95%.		
Receipt of information about condoms	50.0%	
Receipt of information about HIV/AIDS	89.0%	95.0%
By 2016, reduce the risk of cancer of the liver by preventing chronic hepatitis due to the hepatitis B virus (HBV).		
By 2016, reduce the risk of cancer of the liver by preventing chronic hepatitis due to the hepatitis C virus (HCV).		
By 2016, decrease the prevalence of HIV-related cancers (e.g., lymphoma and Kaposi's sarcoma).		
By 2016, address prevention of stomach cancer due to infection with H. pylori.		

Early Detection and Screening

Performance Measures	Baseline	2016 Target
By 2016, increase the percentage of Massachusetts women ages 50–74 who have had a mammogram in the past two years to 90%.	83.6%	90.0%
By 2016, decrease the rate of White, non-Hispanic and Black, non-Hispanic women diagnosed with late stage (regional and distant) breast cancer to 35 per 100,000.		
White non-Hispanic	43.0[f]	35/100,000
Black non-Hispanic	43.0	35/100,000
By 2016, increase the percentage of women ages 21 years of age and over who have had a Pap test within the past 3 years to 90%.	84.5%	90.0%
By 2016, decrease the proportion of Black, non-Hispanic women diagnosed with late stage (regional and distant) cervical cancer to 2 per 100,000.	5.0	2/100,000
By 2016, increase screening rates for colorectal cancer to 80% for Massachusetts men and women age 50–75 years.	63.2%	80%
By 2016, decrease the proportion of White, non-Hispanic and Black, non-Hispanic males and women diagnosed with late stage (regional and distant) colorectal cancer to 25 per 100,000 for males and 20 per 100,000 for females.		
White, non-Hispanic males	30.9	25/100,000
Black, non-Hispanic males	27.7	25/100,000
White, non-Hispanic females	23.3	20/100,000
Black, non-Hispanic females	22.4	20/100,000
By 2016, increase the number of men age 50 years and older who have discussed the risk and benefits of prostate cancer screening with their health care providers to 78%. Men at higher risk, such as those of African descent or with a family history of prostate cancer, should start discussing this issue at age 45.	71.0%	78.0%
By 2016, decrease lung cancer mortality rates to 59/100,000 for men and 39/100,000 for women.		
Males	65.3	59/100,000
Females	43.7	39/100,000

[f] *Incidence, mortality and stage at diagnosis baseline data are from the Massachusetts Cancer Registry (MCR), 2003-2007*

Treatment, Palliation, Survivorship, and End of Life

Cancer Survivorship

Performance Measures	Baseline	2016 Target
By 2016, ensure that all cancer survivors in the Commonwealth, including disparate populations, have access to appropriate medical, preventive, and dental services.		
By 2016, enhance the use of treatment summaries and care plans in cancer survivors.		

Treatment

Performance Measures	Baseline	2016 Target
By 2016, increase the percentage of cancer patients that receive first course of treatment at National Cancer Institute (NCI) - or Commission on Cancer (CoC) - accredited hospitals in Massachusetts to 74%.[9]	72.0%	74.0%
By 2016, assess the enrollment of patients in clinical trials. Based on this number, increase the percentage of patients that are enrolled in a clinical trial to 4%.	2.0%	4.0%

Palliative Care

Performance Measures	Baseline	2016 Target
By 2016, in collaboration with the American Cancer Society, assess compliance with NCI and CoC standards for palliation.		
By 2016, inventory palliative care practices and measures at accredited Massachusetts facilities.		

[9]*Baseline from the Commission on Cancer. Massachusetts Cancer Registry will also be used to track progress for the objective and strategies.*

End-of-Life Care

Performance Measures	Baseline	2016 Target
By 2016, increase hospice services average length of stay to 65 days statewide.	61 days	65 days
By 2016, increase the percentage of cancer patients who use hospice care in the last 90 days of life to 38%.	36.0%	38.0%

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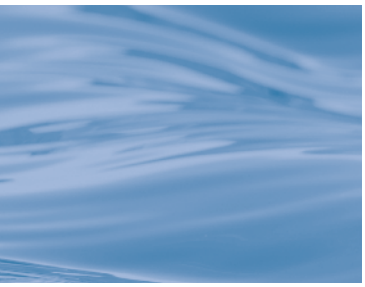
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