

BERMUDA

NATIONAL CANCER CONTROL PLAN

2024-2030



ACTION FOR CANCER PREVENTION AND CONTROL

FOREWORD

BERMUDA CANCER AND HEALTH CENTRE

Cancer is one of the most significant causes of morbidity and mortality in Bermuda accounting for approximately one-third of all deaths each year. It is projected that cancer will be an increasing cause of ill health in Bermuda because of its ageing population and the prevalence of underlying risk factors for cancer. This is a global phenomenon; the International Agency for Research on Cancer estimates that the global burden of cancer will rise by 77% from 2022 to 2050.

National cancer control strategies address the cancer needs of a population with appropriate prevention, early diagnosis, treatment, and care. A National Cancer Control Plan (NCCP) reflects a systematic and holistic approach to ensure the implementation of best practices to reduce the burden of cancer and improve quality of life for patients.

In April 2022, we published the first phase of the Bermuda NCCP: National Cancer Assessment, which outlined the cancer burden for Bermuda. With this second phase, Bermuda's NCCP 2024-2030 we utilise that data to focus on areas of change with defined goals, objectives and actions to reduce the burden of cancer here in Bermuda.

In this publication, we continue to demonstrate our commitment to working collaboratively with key stakeholders to change the landscape of cancer care. This is not a stand-alone piece of work but a representation of the progress to date. The NCCP sits alongside many ongoing areas of work at the national level. Data, information, and the value of this work were referenced before publication within the Bermuda Joint Strategic Needs Assessment of Health published in 2023 by the Ministry of Health.

The publication of the NCCP is an exciting moment for those in cancer care in Bermuda as it represents a transition point from establishing our challenges to enacting change.

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Bermuda Department of Health

Bermuda Health Council

Bermuda Hospitals Board

Bermuda Hospitals Board National Tumour Registry

International Agency for Research on Cancer (IARC) Caribbean Cancer Registry Hub

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OVERVIEW

BERMUDA

WORKING TOGETHER, Bermuda can make great strides over the next several decades in regards to our cancer burden.

WHAT IS CANCER?

Cancer is a group of diseases characterised by the uncontrolled growth and spread of abnormal cells. The cancer cells form tumours that destroy normal tissue. If cancer cells break away from a tumour, they can travel through the bloodstream or the lymph system to other areas of the body, where they might form new tumours (metastases). If this growth is not controlled, cancer might be fatal.



**APPROXIMATELY 2
IN 6 PEOPLE IN BERMUDA**

living, will eventually have cancer. Suggesting that every resident will have a personal connection to cancer in some way.

WHO GETS CANCER?

In Bermuda

75%

of all cancer cases were diagnosed among people

**ages
55-84**

Anyone can get cancer at any age; however middle-aged and older people are more likely to get cancer.

HOW DOES BERMUDA COMPARE



The overall cancer incidence rate in Bermuda is lower compared to the United States but higher than Europe and the Caribbean, Figure 3-6A. The overall cancer mortality rate in Bermuda is lower compared to the United States, Europe, and the Caribbean.

TOP CANCERS FOR BERMUDA

57%

These five cancers accounted for more than half of all cancers registered between 2010 and 2019

- Breast 19%
- Prostate 17%
- Colon 9%
- Lung 8%
- Melanoma of skin 5% (malignant cancers, 2010-2019, excluding non melanoma skin cancer)

Data sources: Bermuda National Tumour Registry and Epidemiology and Surveillance Unit; international incidence and mortality estimates from GLOBOCAN 2020.

INTRODUCTION

Cancer is one of the most significant causes of morbidity and mortality in Bermuda, accounting for approximately one-third of all deaths each year. Cancer is projected to be an increasing cause of ill health in Bermuda due to an ageing population and the prevalence of underlying risk factors for cancer. Deaths due to lung, prostate, colorectal and breast cancers remain among the top ten causes of death each year. However, the risk of these cancers can be reduced. It is estimated that one-third of cancer cases are preventable, and a further one-third can be cured with prompt detection and treatment (1).

National cancer control strategies address the cancer needs of a population with appropriate prevention, early diagnosis, treatment, and care. A National Cancer Control Plan reflects a systematic and holistic approach to ensure the implementation of best practices to reduce the burden of cancer and improve the quality of life for patients. Over 80% of WHO member states have cancer control strategies.

In November 2020, Bermuda Cancer and Health Centre, in conjunction with the Office of the Chief Medical Officer, began a multi-phase process to develop the first National Cancer Control Plan for Bermuda. The Bermuda National Cancer Control Plan was developed following a comprehensive review of local data on the cancer burden, prevalence of risk factors, human resources, the cost of cancer, and equity in access and affordability of cancer services. This review informed the key focus areas and recommended strategies for prioritisation and implementation contained herein. The Bermuda National Cancer Control Plan is designed to guide national efforts, foster collaboration among different stakeholders, including government, non-government organisations (NGOs), healthcare professionals, and providers and provide a roadmap for action to address the burden of cancer in Bermuda.

The Bermuda National Cancer Control Plan defines four key focus areas – prevention; early detection, treatment and integrated cancer care; survivorship and palliative care; and cross-cutting priorities. Each focus area has an overarching goal, specific objectives, and recommended priority strategies informed by national data, evidence, and best practices. The strategies are not exhaustive but reflect the priority approaches identified to achieve the objectives and overarching goals. Performance indicators and targets provide benchmarks for monitoring progress and are aligned with national, regional, and global health targets as appropriate.

The Bermuda National Cancer Control Plan is supported and endorsed by the Ministry of Health. It is aligned with the vision of the Bermuda Health Strategy 2022-2027, 'healthy people in healthy communities,' and the mission of the Strategy to ensure equitable access to essential health services without financial hardship, as well as its core strategic principles. The Bermuda National Cancer Control Plan is designed as a guide for the national effort in preventing and controlling cancer. The intended audience of this document includes healthcare providers, government, NGOs, quangos, insurers, cancer survivors, and all individuals interested in cancer activities.

Funding for this project was provided by the Chronic Disease Innovation Programme managed by the Bermuda Health Council and Bermuda Cancer and Health Centre. Key partners include the Ministry of Health, and the Office of the Chief Medical Officer, Bermuda Health Council (BHeC), and the Bermuda Tumour Registry. Technical support was received from the Caribbean Public Health Agency (CARPHA), the Pan American Health Organization (PAHO), the United States National Cancer Institute (NCI), and the Union for International Cancer Control (UICC).

COUNTRY PROFILE

BERMUDA

2.1 Overview

Bermuda is comprised of seven main islands and over 100 smaller islands situated in the northern Atlantic Ocean. The main land area of approximately 21 square miles is densely populated, with a population of 63,917, as recorded in the 2016 Census (2). The racial make-up of the population is 52% Black, 31% White, 9% Mixed, 4% Asian, and 4% Other (2). Life expectancy at birth is 81.9 years, and is higher for females (85.2 years) compared to males (77.7 years) (3).

Bermuda has both an ageing and declining population. The proportion of the population aged 65 years and older is projected to increase from 17% in 2016 to 25% by 2026. The death rate has overtaken the birth rate, and this trend, combined with emigration, is projected to result in a contracting population (3, 4).

Bermuda has one of the highest per capita incomes in the world. In 2019, gross domestic product (GDP) per capita (current US\$) was \$116,890, ranking Bermuda as the third highest GDP per capita in the world (5). In the 2016 census, 66% of residents 16 years of age and older were employed, 5% were unemployed, and 29% were economically inactive (2).

2.2 Health system and service delivery

Health authorities have the responsibility for the governance of the health sector. The Ministry of Health is comprised of the Department of Health, Health Insurance Department, Office of the Chief Medical Officer, Ageing and Disabilities Services, and two quasi-autonomous non-governmental organisations (QUANGOS) – the Bermuda Hospitals Board (BHB) and the Bermuda Health Council (BHeC). A strategy of health system reform is currently underway with the mission to ensure all residents have equitable access to essential health services without financial hardship (6). The Bermuda Health Strategy 2022-2027 outlines the 5-year health strategy and roadmap for delivery. Regulation of the health system is coordinated by BHeC.

The BHB quango oversees two hospitals and one urgent care facility – the King Edward VII Memorial Hospital (KEMH), the Mid-Atlantic Wellness Institute (MWI), and the Lamb-Foggo Urgent Care Centre. Both public and private providers deliver health services. Public health service delivery is predominantly the responsibility of the Department of Health and includes community health, oral health, health promotion, environmental health, a central government laboratory, and administration. Primary care is predominantly provided by private providers, and secondary care is provided by KEMH and MWI. Overseas health centres are utilised for services not provided on the island.

Most of the population has major medical health insurance coverage. In the 2016 Census, nearly three-quarters (72%) had major medical health coverage, 17% were underinsured (only basic private coverage, Government Health Insurance Plan (HIP or FutureCare), and 8% were uninsured (2).

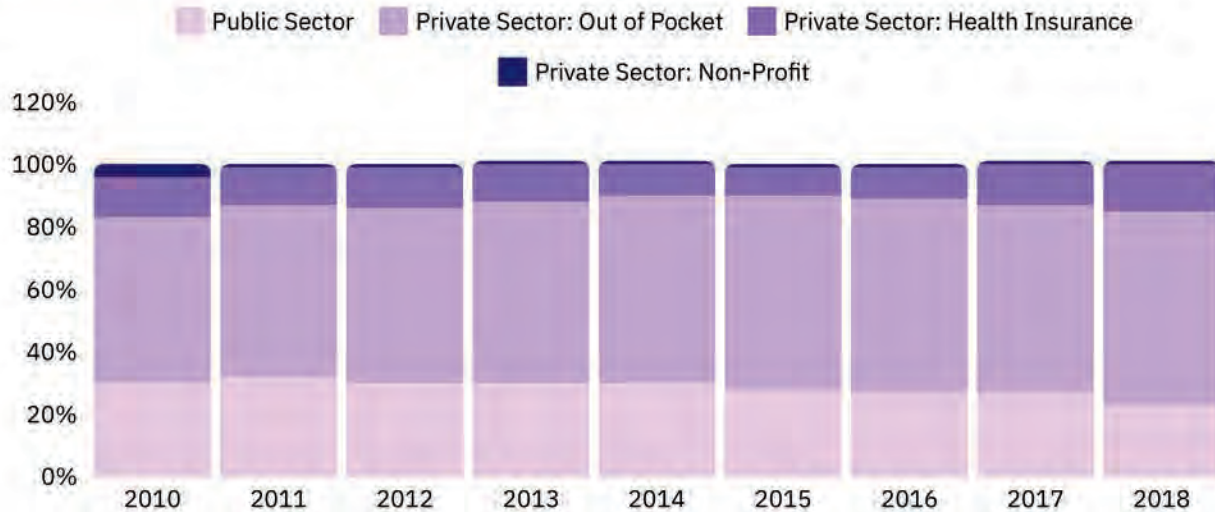
2.3 Health financing and expenditure

Health service delivery in Bermuda is primarily funded by private health insurance plans. Private health insurance accounts for the majority of health financing (62%) followed by public sector funding (23%), out-of-pocket payments (15%) and charitable donations (1%), Figure 2-1 (7). The private health insurance share of total health financing has increased compared to FYE2010, while the public sector share has decreased, Figure 2-1.

COUNTRY PROFILE

BERMUDA

Figure 2-1 Sources of health financing, Bermuda, FYE2010 – FYE2018



Source: Bermuda Health Council, 2019 National Health Accounts Report

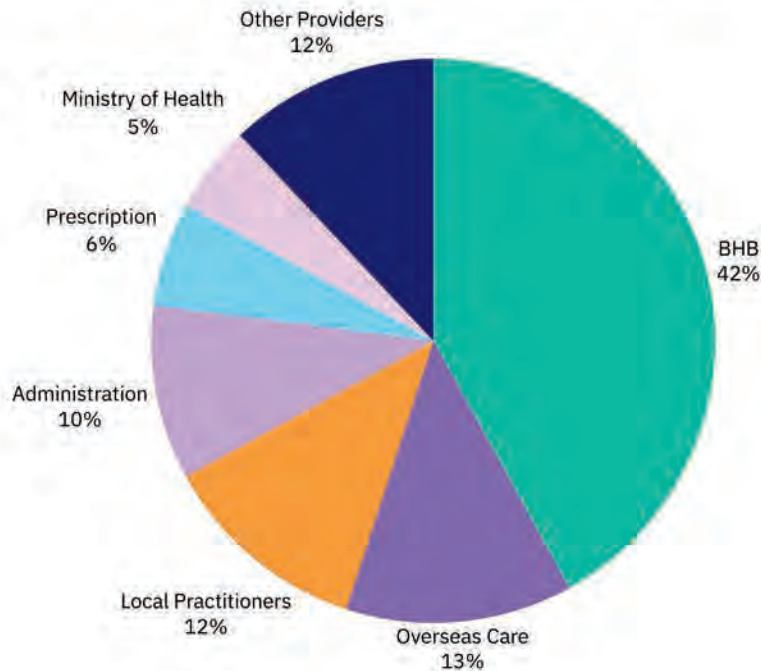
Health expenditure in Bermuda is increasing while there is a declining population to support it. Total expenditure on health increased from \$427 million in FYE2006 to \$737 million in FYE2018. Figure 2-2 illustrates public and private sector expenditure by category for FYE2018. Bermuda Hospitals Board expenditure (KEMH, Mid-Atlantic Wellness Institute and the Lamb Foggo Urgent Care Centre) accounted for the largest proportion of health expenditure (\$308 million), followed by overseas care (\$93 million), local practitioners (\$89 million), health system administration (\$72 million), prescription drugs (\$45 million), and the Ministry of Health and Seniors (\$37 million) (7).

Per capita health expenditure in FYE2018 was \$11,529 (7). This is nearly double the OECD average and superseded only by Switzerland and the US (8, 9).

COUNTRY PROFILE

BERMUDA

Figure 2-2 Public and private sector expenditure by category for FYE2018



Source: Bermuda Health Council, 2019 National Health Accounts Report

2.4 Human resources for health

BHB is comprised of KEMH, Mid-Atlantic Wellness Institute and the Lamb Foggo Urgent Care Centre and, is the second largest employer in Bermuda with approximately 1800 employees (10). The healthcare workforce in Bermuda is on par with the OECD average overall, but variances exist by specialty(8). The small population size, geographic isolation and limited opportunities for higher education training are key challenges for healthcare human resources. The ageing population is predicted to result in a growing need for personnel specialising in oncology, urology, geriatrics, orthopaedic surgery, rehabilitation medicine, and ear, nose and throat (9, 11). Adequate nursing staffing, including nursing personnel with advanced and speciality skills, will also be needed to support the ageing population.

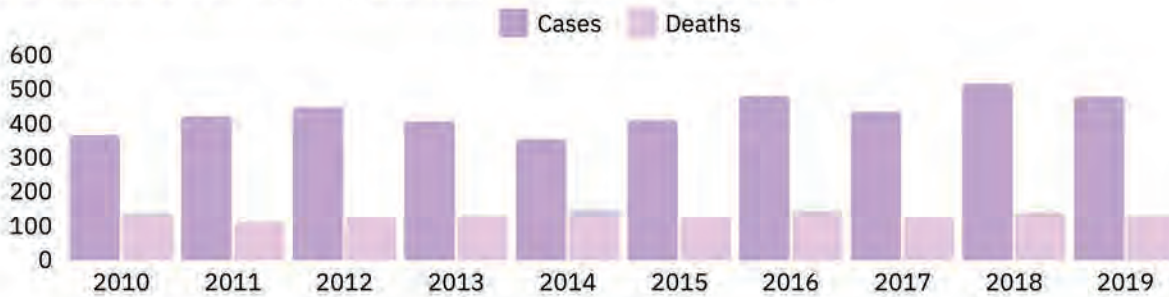
EPIDEMIOLOGY OF CANCER IN BERMUDA

3.1 Incidence and mortality

Cancer is a major cause of morbidity and mortality in Bermuda. It is the second leading cause of death, after heart disease, and accounts for one-third of deaths occurring each year.

Between 2010 and 2019 there were nearly 4,300 cancer cases reported; 2,051 were among males and 2,241 among females. During the same period, there were 1,315 cancer deaths; 716 were among males and 599 among females. The number of cancer cases registered per year has increased from 364 in 2010 to 476 in 2019. Deaths due to cancer have remained relatively consistent over the same period, with an average of 132 deaths per year, Figure 3-1.

Figure 3-1 Number of cancer cases and deaths, Bermuda, 2010-2019

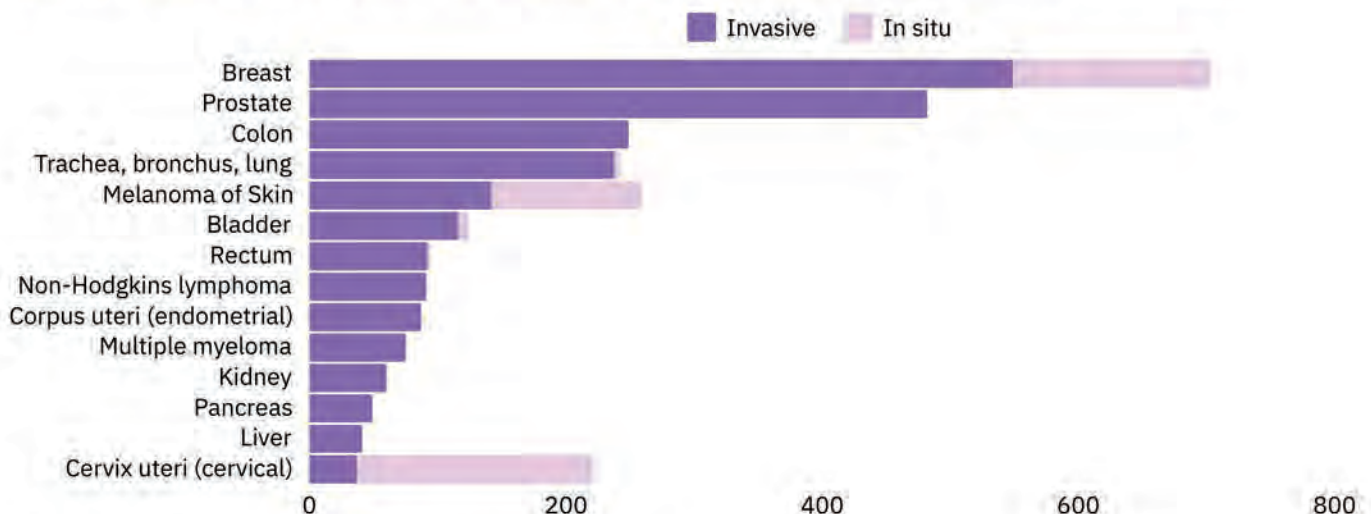


Data source: Cancer cases from Bermuda National Tumour Registry, Bermuda Hospitals Board; cancer deaths data from Epidemiology and Surveillance Unit

Note: Cancer cases include all registrations (including in-situ carcinomas and non-melanoma skin cancer)

Excluding non-melanoma skin cancer, breast cancer is the most diagnosed cancer in Bermuda, followed by cancers of the prostate, colon, lung, and melanoma of skin, Figure 3-2. These five cancers accounted for more than half of all cancers registered between 2010 and 2019.

Figure 3-2 Number of new cancer registrations for common cancer sites, Bermuda, 2010-2019



Data source: Bermuda National Tumour Registry, Bermuda Hospitals Board.

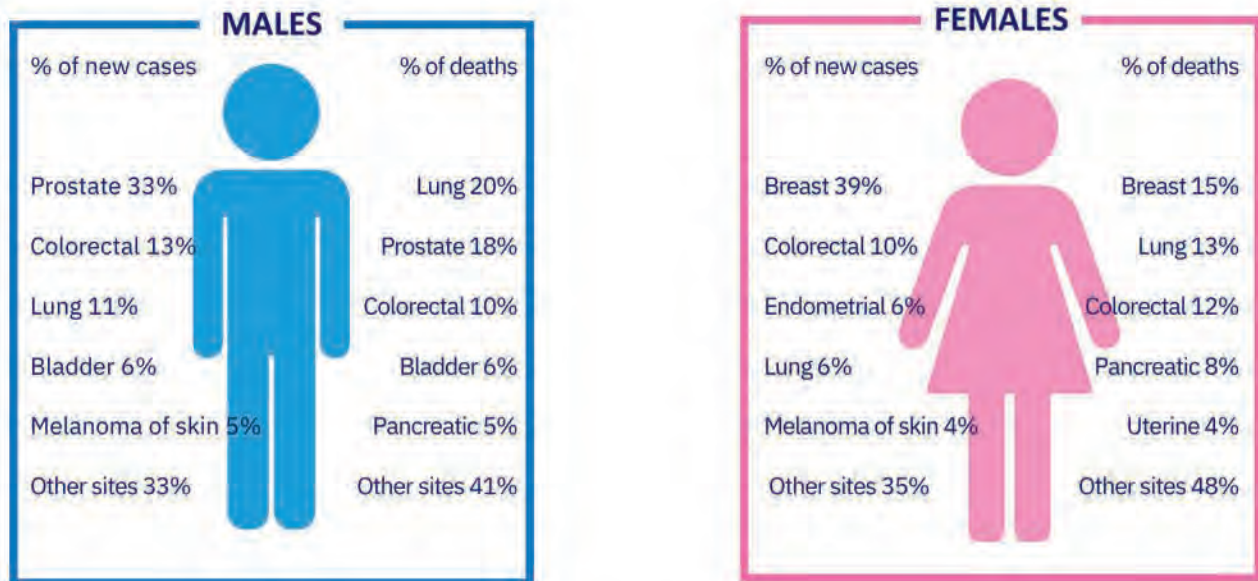
Note: Excluding non-melanoma skin cancer

EPIDEMIOLOGY OF CANCER IN BERMUDA

Among males, prostate cancer is the most diagnosed cancer, while lung cancer is the most common cause of cancer death. The next most common cancers in males are colorectal, lung, bladder, and melanoma of skin. Apart from melanoma of skin, these commonly diagnosed cancers are among the leading causes of cancer deaths, along with pancreatic cancer, Figure 3-3.

Among females, breast cancer is both the most diagnosed cancer and the most common cause of cancer death. The next most common cancers in females are colorectal, endometrial, lung, and melanoma of skin. Lung, colorectal, pancreatic, and uterine cancer are the most common causes of cancer deaths among females after breast cancer, Figure 3-3.

Figure 3-3 Most frequently diagnosed cancer types and causes of cancer deaths in males and females, Bermuda, 2010-2019



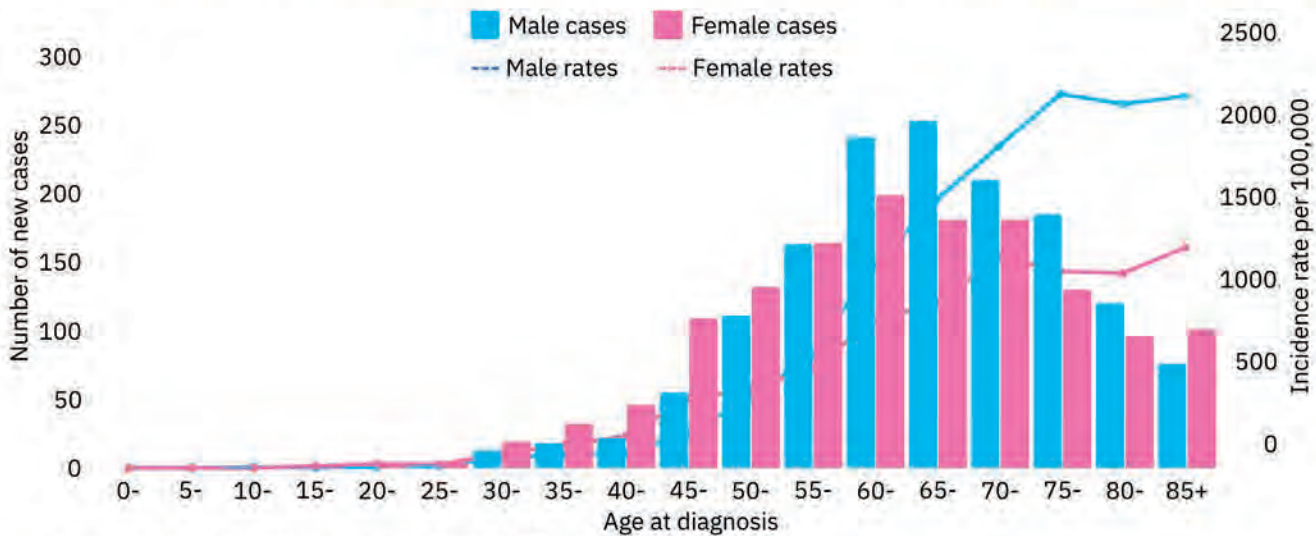
Data source: Cancer cases from Bermuda National Tumour Registry, Bermuda Hospitals Board; cancer deaths data from Epidemiology and Surveillance Unit

Note: Cancer cases exclude in-situ carcinomas, non-melanoma skin cancer.

EPIDEMIOLOGY OF CANCER IN BERMUDA

Cancer predominantly affects adults at older ages. Over three-quarters of all cancer registrations in 2010–19 occurred among adults aged 55 and older, Figure 3-4. Cancer incidence rates for adults under 55 years of age are higher among females, while the cancer incidence rates for adults over 55 years are higher among males, Figure 3-4. These trends may reflect, in part, gender differences in healthcare-seeking behaviours and in the prevalence of risk factors (8).

Figure 3-4 Number of cancer cases and age-specific incidence rates (per 100,000), Bermuda (2010-2019)

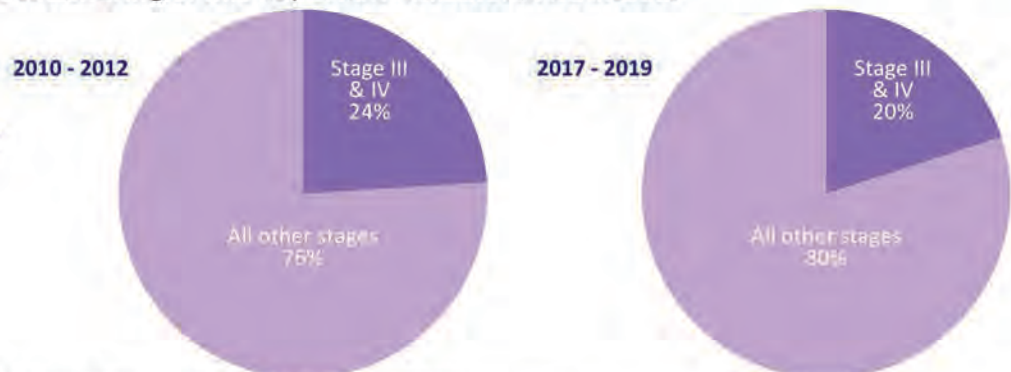


Data source: Bermuda National Tumour Registry, Bermuda Hospitals Board.
Note: Excluding in-situ carcinomas, non-melanoma skin cancer.

3.2 Cancer stage at diagnosis

The stage of cancer at diagnosis is an important determinant of survival. Stage at diagnosis can also inform whether screening efforts are successful in early detection of cancer. Accurate surveillance and routine monitoring are necessary to understand the proportion of cancers that are diagnosed at late stages (Stages III, IV). This information can be used to identify population groups in need of targeted interventions, education and awareness campaigns, and screening programmes to improve early detection. From the available data, 20% of cancer diagnoses in 2017-2019 were diagnosed at late stages. This reflects an improvement compared to 2010-2012 when 24% of cancers were diagnosed at late stages, Figure 3-5. Improvements in data collection and routine recording of stage at diagnosis are needed to provide accurate monitoring of this important indicator in Bermuda.

Figure 3-5 Percentage of late stage (III and IV) cancers by year diagnosis, 2010-2012 vs 2017-2019



Data source: Bermuda National Tumour Registry, Bermuda Hospitals Board.
Notes: Invasive cancer, excluding non-melanoma skin cancer. Cases with unknown stage at diagnosis are registered as Stage I.

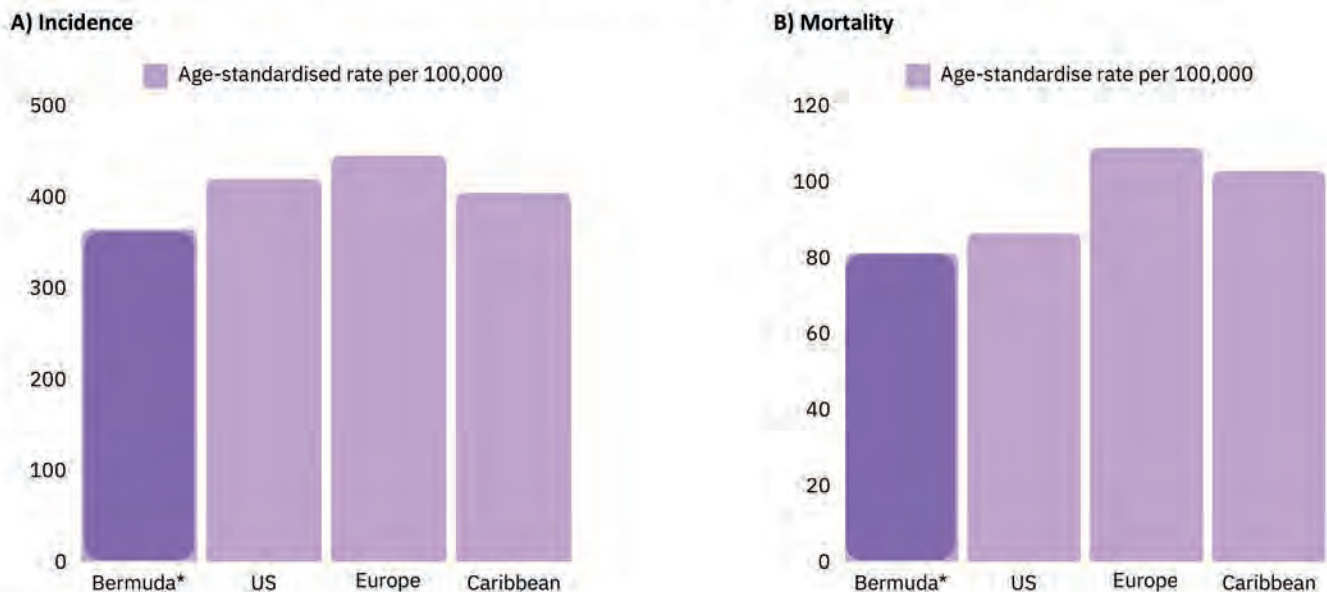
EPIDEMIOLOGY OF CANCER IN BERMUDA

3.3 International comparisons

Age-standardised rates are used to compare cancer rates across different populations. Standardisation allows for comparison without influence of the different age structures in different populations. It should be noted that differences in the availability and quality of cancer surveillance and registration affect the comparability of the data. Cancer incidence rates are elevated in high-income settings compared to lower-income settings, reflecting not only differences in surveillance and data collection but also differences in availability and access to healthcare, cancer screening and diagnosis.

The overall cancer incidence rate in Bermuda is lower compared to the United States but higher than in Europe and the Caribbean, Figure 3-6A. The overall cancer mortality rate in Bermuda is lower compared to the United States, Europe, and the Caribbean, Figure 3-6B. The findings by sex are similar for both incidence and mortality.

Figure 3-6 Comparison of cancer incidence and mortality rates, 2020



*2017-19

Data sources: Bermuda incidence and mortality data from Bermuda National Tumour Registry and Epidemiology and Surveillance Unit; international incidence and mortality estimates from GLOBOCAN 2020.

Notes: Invasive cancer including non-melanoma skin cancer, age standardised to the World (Segi) standard population.

GOALS, OBJECTIVES AND RECOMMENDED STRATEGIES

The goals, objectives and recommended strategies of the Bermuda National Cancer Control Plan aim to address the burden of cancer in Bermuda. The overarching vision of the Bermuda National Cancer Control Plan and the core strategic principles are aligned with the Bermuda Health Strategy.

Vision: Healthy people in healthy communities

Strategic principles:

- Promoting healthy living and preventative care
- Understanding our population's health needs
- Providing access to healthcare coverage
- Strengthening our healthcare workforce
- Harnessing healthcare technology
- Focusing on person-centred care
- Partnership and collaborative working
- Preventing wasteful care and promoting efficiency
- Strengthening surveillance and use of data for decision making

The information in this chapter is organised into four key focus areas:



Annex 1

Details what everyone can do to reduce the burden of cancer in Bermuda including individuals, community and professional organisations, government, employers, healthcare providers, payers, media and schools.

Annex 2

Details the recommended strategies for each objective and the associated timeline and lead agency for implementation.

Annex 3 provides the key performance indicators, defined targets, and timeframes for each objective.

4.1 SUMMARY OF GOALS AND PRIORITIES



PRIMARY PREVENTION

GOAL:

Promote healthy living and prevent cancer

PRIORITIES:

Increase physical activity, no increase in overweight and obesity, decrease tobacco and harmful alcohol use, increase Human papillomavirus (HPV) vaccination and maintain hepatitis B vaccinations to prevent cancers from infectious diseases, and reduce exposure to harmful chemical and environmental elements to reduce the risk of cancer.



EARLY DETECTION, TREATMENT, & INTEGRATED CANCER CARE

GOAL:

Provide optimal screening, diagnosis, and integrated cancer care that is evidence informed, patient-centric, timely, and equitable

PRIORITIES:

Improve the early detection of cancer, optimise the treatment of cancer, and design an integrated service model for cancer care to improve patient experience, outcomes, and operational performance.



PALLIATIVE CARE & SURVIVORSHIP

GOAL:

Optimise the quality of life for every person impacted by cancer

PRIORITIES:

Improve palliative care services and end of life care ensuring access for all patients in need, improve health and wellbeing of cancer survivors, establish a survivorship programme, and increase knowledge of healthcare providers to manage survivorship as a stage of cancer care.



CROSS-CUTTING PRIORITIES

GOAL:

Improve the effectiveness of cancer control

PRIORITIES:

Improve cancer data collection and national surveillance, strengthen the routine reporting of cancer data, ensure a high-quality health workforce based on population health needs and reduce cancer inequities.

CROSS-CUTTING PRIORITIES (POLICY, SURVEILLANCE, HUMAN RESOURCES, HEALTH EQUITY)



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

4.2 Prevention

Promoting healthy living and preventative care is a core strategic principle of the Bermuda Health Strategy. Prevention plays an important role in cancer control because some cancers can be prevented and the risk of many types of cancer can be significantly reduced. Prevention is also the most cost-effective strategy for cancer control.

Prevention strategies such as adopting a healthy lifestyle and maintaining a healthy diet and weight, avoiding tobacco and excessive alcohol consumption, adopting sun safe behaviours, getting vaccinated against viruses that cause cancer, and reducing exposure to harmful chemical and environmental elements can reduce the risk of developing cancer.

The following sections summarise the key prevention priorities and accompanying objectives and recommended strategies to achieve the overarching goal of promoting healthy living and preventing cancer. The key performance indicators, targets and timeframes for each objective are defined in full in Annex 3.

4.2.1 Overweight and obesity, diet, and physical activity

There is a well-established relationship between obesity, diet, and physical activity and breast, colorectal, endometrial, gallbladder and kidney cancers (12). Diets high in fibre and fruits and vegetables, with limited red and processed meat, limited alcohol consumption, physical activity and maintenance of a healthy weight all reduce the risk of cancer (13). Up to 30% of all cancer cases, and 70% of cancers of the gastrointestinal tract are linked to poor dietary habits and are thus preventable (14).

Bermuda has among the highest prevalence of overweight and obesity in the world with 74.6% of adults overweight or obese (8, 15). Nearly nine out of ten adults aged 65 and older are overweight or obese (86%), over half (53%) of young adults age 18-34 years, and 34% of youth (age 9-17 years) are overweight or obese (15, 16).

Regular physical activity can reduce the risk of several commonly occurring cancers including breast, bladder, colon, lung, endometrium, kidney, and stomach cancers (17). The World Health Organization recommends that every week adults do at least 150 minutes of moderate intensity aerobic physical activity or 75 minutes of vigorous physical activity, or an equivalent combination (18). However, nearly one-third (27%) of adults in Bermuda do not meet these recommendations. More women (33.7%) compared to men (20.2%) do not meet the recommendations for physical activity, and a greater proportion of adults at older ages (44.4% among 65 years and older) compared to adults at younger ages (range 18.6% - 30.1% among adults 18-64 years) do not meet the recommendations (15).



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

OVERWEIGHT AND OBESITY, DIET, & PHYSICAL ACTIVITY

Objective 1: No increase in the prevalence of overweight and obesity among adults and youth

74.6% adults
34% youth
Baseline

≤74.6% adults
<34% youth
Target

Objective 2: Decrease the prevalence of physical inactivity among adults and youth

27.1% adults
TBD% youth
Baseline

23% adults
TBD% youth
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 1 & 2:

1. Establish baselines and conduct routine surveillance in youth and adults for overweight and obesity, physical inactivity.
 - Consider implementation of the Global School-Based Health Survey (GSHS) to provide health-related behavioural data among youth, support identification of key priorities, and support routine monitoring and international comparison.
2. Create a healthy food environment:
 - Sugar Tax with revenue used to subsidise fruits, vegetables.
 - Gardening workshops; vertical farming
 - Healthy Schools Programme: Implement school nutrition, physical activity, and water-only policies in schools.
 - Financial incentives to buy fruits, vegetables.
 - Increased availability of healthy alternatives.
 - Nutritional labelling
3. Encourage healthy lifestyles - Education and awareness campaigns for importance of physical activity and wellness across all age groups with emphasis on children and adolescents.
4. Create active environments - public parks, walking trails, active spaces.

4.2.2 Tobacco

Tobacco use is the leading preventable cause of cancer and cancer deaths. Smoking can cause cancer almost anywhere in the body and is the leading cause of lung cancer, linked to 80-90% of lung cancer deaths in the US (19). In the 2014 STEPS survey in Bermuda, current tobacco use was reported by 14% of the adult respondents. Men were more likely to be current smokers (20%) compared to women (7%) and there have not been significant changes in tobacco use overall between 2006 and 2014 (15). The reported rate of daily smoking in Bermuda is lower than the OECD average (8).

A legislative framework aimed at regulating and reducing tobacco use in Bermuda has been in place since 2015. The Bermuda Tobacco Control Act encompasses different measures to protect public health and reduce the harmful effects of tobacco, disincentivise its purchase and use, and protect young people from access and exposure. This includes a ban on tobacco advertising, promotion and sponsorship, price and tax measures to disincentivise purchasing, health warnings on packaging, and 100% smoke-free environments.

TOBACCO

Objective 3: Reduce the prevalence of smoking

13.9%
Baseline

10.4%
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 3:

1. Bermuda Tobacco Control Act
 - Strengthen legislation for e-cigarettes
 - Ban on single and 10-pack sales
2. Plain packaging and/or enhanced size of pictorial health warning on packs.
3. Enhance smoking cessation support and access:
 - Work with insurance providers to improve coverage for smoking cessation.
4. Education and awareness surrounding e-cigarettes, with particular focus on youth.
5. Support a Tobacco-Free Generation.



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

4.2.3 Alcohol

Alcohol use has been linked to cancers of the mouth and throat, voice box, oesophagus, liver, breast, colon and rectum and may increase the risk of other cancers as well (20). In Bermuda, 64% of the adult population reported currently drinking alcohol, an increase from 50% in 2011. More men (76%) than women (51%) reported current alcohol use, and a higher proportion of young people compared to older individuals reported current alcohol use (19). By race, current consumption of alcohol was reported by 82% of whites, 63% of those identifying as mixed & other, and 52% of blacks (15). Binge drinking – drinking five or more alcoholic beverages in a single setting – was reported by 28% of current drinkers. The prevalence of binge drinking was higher among males (37%) compared to females (15%).

ALCOHOL

Objective 4: Reduce the prevalence of harmful drinking

79.2%
Baseline

<28.2%
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 4:

1. Increased education and awareness surrounding alcohol intake
 - Campaigns targeting older (65+) and younger (<30) age groups focusing on harms of excessive drinking.
 - Raise awareness among healthcare professionals regarding the link between alcohol consumption and cancer.
2. Provide accessible treatment options for alcohol use disorder. Work with healthcare providers to provide appropriate referrals.
3. Maintain fiscal policies to disincentivise alcohol consumption.

4.2.4 Sun Safety

Globally, one in every three cancers diagnosed is a skin cancer (21). Invasive melanoma is responsible for 80% of all deaths due to skin cancer, despite accounting for only 2% of skin cancer cases (22). High levels of exposure to ultraviolet (UV) radiation increases the risk of both non-melanoma and melanoma skin cancers (23). The UV index is an international standard of the strength of UV radiation at a particular place and time. The index is reported on a scale from 1 to 11+, with 1-2 representing “low”, and 11+ representing “extreme” (24). In Bermuda, the average UV index is measured as “high” or greater from March to October, eight months of the year (25). Exposure to UV radiation can be reduced with sun protective behaviours including limiting exposure during peak hours, wearing protective clothing, and using appropriate sunscreen. The prevalence of sun protective behaviours in Bermuda is unknown.

Youth education and awareness programmes are being delivered. The SunSmart programme, run by Bermuda Cancer and Health Centre, is a school and summer camp-based programme which aims to increase youth awareness about the importance of practising sun safe behaviours while outdoors.



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

SUN SAFETY

Objective 5: No increase in the incidence of melanoma in young adults

2.8/100,000
Baseline

<2.8/100,000
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 5:

1. Continuing education and awareness to promote sun safety with emphasis on youth (schools, camps). Funding to sustain these programmes.
2. Ensure schools have an outdoor shaded area.
3. Education and awareness for use of skin self-exams to check for unusual growths, moles or changes in colour or texture.

4.2.5 Vaccine-preventable cancers

Virus exposure can be a risk factor for cancer. Hepatitis B is a liver infection caused by the hepatitis B virus. Chronic hepatitis B can lead to chronic inflammation of the liver, cirrhosis, and cancer. It is estimated that 23% of liver cancer deaths in Bermuda are due to hepatitis B infection (26). Vaccination can prevent hepatitis B infection providing protection from hepatitis B-related liver cancer. Routine hepatitis B vaccination among infants was introduced in Bermuda in 1998. Vaccine coverage in infants under 1 year of age in Bermuda has fluctuated between 78 and 99.8% between 2017 and 2021 (27).

Human papillomavirus (HPV) refers to a group of common viruses predominantly transmitted through sexual contact. There are over 100 types of HPV, of which at least 14 can cause cancer. HPV is the primary cause of nearly all cervical cancer cases but is preventable with HPV vaccination and routine screening programmes. Certain HPV types also cause anogenital, mouth and throat cancers, some of which can also be prevented with HPV vaccination (28). The HPV vaccine was approved in Bermuda in 2016 for administration as part of the routine Childhood Immunization Service. All children (boys and girls) aged 11 years are recommended to receive the HPV vaccine and the Department of Health provides the vaccine free of charge. However, only half (52%) of adolescents aged 15 years have been vaccinated for HPV.

VACCINE-PREVENTABLE CANCERS

Objective 6: Maintain Hepatitis B Virus (HBV) vaccination rates, increase HPV vaccination rates

78-99.8% (HBV);
52% (HPV)
Baseline

>95% (HBV);
90% (HPV)
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 6:

1. Improve surveillance of vaccine coverage to inform appropriate response strategies.
2. Vaccine coordinator for follow-up with unvaccinated patients and/or reminder-recall system to increase the use of HPV, HBV vaccines.
3. National HPV vaccination catch-up campaign for adults 18-26 years.
4. Strategies for healthcare providers - provider education about the benefits of vaccination, opt-out process for vaccination.
5. Utilise the Vaccine Hesitancy Strategy to understand barriers to vaccination.
6. Improve access and coordination of HBV, HPV vaccines. Ensure cost is not a barrier for access.
7. Conduct a cost-benefit analysis for use of nonavalent vs quadrivalent HPV vaccine.



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

4.2.6 Environmental and occupational exposure

Exposure to certain substances may have cancer-causing potential. These exposures should be limited to reduce the risk of health effects. There are many substances in the environment and in consumer products which can increase cancer risk. Exposure to second hand smoke, radon, asbestos, UV radiation and wood burning are linked to cancer (29). Exposure to substances in the workplace may also increase cancer risk. This includes agricultural pesticides, toxic wastes and chemicals including asbestos, arsenic, benzene, chromium, vinyl chloride and silica (30). The proportion of cancers in Bermuda due to occupational exposure is unknown. In both Canada and the UK, it has been estimated that 4% of cancer cases are attributable to occupational exposures (31, 32).

All workplaces in Bermuda are monitored for safety and health concerns. The Occupational Safety and Health Regulations 2009 provide guidelines and standards for promoting workplace safety and health in Bermuda. Permits are required for all undertakings that involve hazardous substances including asbestos, pesticides, poisons, and fumigants. All workplaces with radiation-emitting equipment are monitored in accordance with Bermuda Government guidelines. Bermuda Cancer and Health Centre submits quarterly Radiation Safety Reports to the Ministry of Health. These reports follow International Atomic Energy Agency (IAEA) International Basic Safety Standards for Radiation Protection and Safety of Standards and document any incident reports (and the appropriate follow-up procedures), equipment safety, and personnel and area dosimeter exposure readings where applicable.

Bermuda has implemented regulations and legislation to protect the natural environment and the health of the population. The Bermuda Clean Air Regulations include air contaminant emission limits and an extensive list of chemicals that are controlled for import and export.

ENVIRONMENTAL & OCCUPATIONAL EXPOSURE

Objective 7: Reduce the potential cancer risk from chemical exposure and prevent environmental contamination

N/A
Baseline

As low as
reasonably
achievable
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 7:

1. Strengthen the regulation and oversight of chemicals and pesticides through the Pesticides Safety Act 2009:
 - Introduce regulations to establish guidelines for importation, sale, use and disposal of pesticides.
 - Implement training schemes for pesticide applicators.
 - Licensing for commercial and high-risk application of pesticides.
2. Strengthen monitoring and oversight of potential exposures.
3. Amend the Clean Air Act to update air quality standards:
 - Update and introduce new air quality standards that align with UK and EU regulations.
 - Conduct routine monitoring of air quality in high-emission areas.
4. Education and awareness of risks of exposure to cancer-causing substances in the environment, occupations, and consumer products



PRIORITY AREA #2: EARLY DETECTION, TREATMENT, INTEGRATED CANCER CARE

Goal: Provide optimal screening, diagnosis, and integrated cancer care that is evidence informed, patient-centric, timely, and equitable

4.3.1 Early Detection

Early detection of cancer is diagnosis at an early stage when there is high potential for cure. Interventions are available that can result in early detection and effective treatment of approximately one-third of cases (33). There are two strategies for early detection:

- 1. Screening:** Asymptomatic screening of healthy individuals to detect pre-cancerous lesions or early cancer.
- 2. Early diagnosis:** Often involves patient’s awareness of early signs and symptoms, resulting in a consultation with a healthcare provider, and prompt onward referral, diagnosis, and treatment. Also referred to as ‘diagnostic testing’.

Cancer screening is readily available in Bermuda and supported by the Standard Health Benefit with provision free of co-payment. However, there are no population screening programmes and currently no national screening guidelines. Overall, Bermuda has good early detection with only 20% of cancers diagnosed at the late stages. This represents a reduction in late diagnosis in the recent period compared to 2010-2012 when 24% of cancer cases were diagnosed in late stages. However, there are disparities in late diagnosis of cancer in Bermuda with a disproportionate number of late diagnoses occurring in black residents (34). Accurate monitoring and routine reporting of cancer stage at diagnosis is needed to monitor this important indicator.

Targeted screening opportunities currently exist in Bermuda. The annual Men’s Health Screening and the DailyMale outreach programme are both targeted opportunities for prostate cancer screening and general health screening. The Bermuda Cancer Genetic Risk Assessment Programme, launched in 2006, was the first programme for cancer genetics testing in Bermuda. This programme aims to identify, educate and support people who may be at higher risk of developing breast or ovarian cancer (35).

EARLY DETECTION

Objective 8: Improve the early detection of cancer

Mammogram Screening:

| | |
|-----------------|----------------|
| 86% Baseline | ≥86% Target |
|-----------------|----------------|

Late-stage diagnosis:

| | |
|-----------------|----------------|
| 20% Baseline | <20% Target |
|-----------------|----------------|

Rapid diagnosis:

| | |
|-----------------|---------------|
| TBD Baseline | TBD Target |
|-----------------|---------------|

RECOMMENDED STRATEGIES FOR OBJECTIVE 8:

1. Develop national screening guidelines for all major cancers, by 2026.
2. Utilise reminder-recall system for routine screening.
3. Develop and implement a breast cancer rapid diagnostic clinic.
4. Integrate familial genetics to support enhanced screening where appropriate.
5. Improve timely access to diagnostic imaging for suspected cancer cases.
6. Outreach to underserved populations (including men, under-/un-insured) for education, awareness, and screening.
 - Include specific guidance on prostate-specific antigen (PSA) testing for Black men and mammograms for Black women.
 - Messaging around screening access opportunities for mammograms, PSA testing.
 - Include messaging on access to cancer services without financial toxicity.
7. Increase integration of GPs for:
 - Early diagnosis, screening, timely referrals, messaging on co-pays, promotion of self-exams, skin checks.
 - Integration with Cancer Navigator and coordinators for questions re cancer, centralisation, follow-up.
 - Continuing education to stay current with latest advances in cancer prevention, screening, and treatment.



PRIORITY AREA #2: EARLY DETECTION, TREATMENT, INTEGRATED CANCER CARE

Goal: Provide optimal screening, diagnosis, and integrated cancer care that is evidence informed, patient-centric, timely, and equitable

4.3.2 Integrated cancer care

Traditional cancer care is formed by a system of referrals with patients transferred between services with variable coordination and integration of care. However, cancer services should be organised in a way that ensures patients receive the highest standards of care and are equitable and accessible. Integrated cancer care refers to a comprehensive and coordinated approach to provide patient-centric cancer care. Integrated cancer care promotes collaboration among healthcare providers, improves communication, continuity of care, patient outcomes, and satisfaction. Providing more integrated cancer care is a core component of the Bermuda National Cancer Control Plan.

INTEGRATED CANCER CARE

Objective 9: Design an integrated service model for cancer care to improve patient experience, clinical outcomes and operational performance

Waiting times (time from referral to diagnosis):

| | |
|-----------------|---------------|
| TBD Baseline | TBD Target |
|-----------------|---------------|

Waiting times (time from diagnosis to first treatment):

| | |
|-----------------|---------------|
| TBD Baseline | TBD Target |
|-----------------|---------------|

Hospital stay:

| | |
|-----------------------|----------------------|
| 15.8 days Baseline | <15.8 days Target |
|-----------------------|----------------------|

Patient Experience:

| | |
|-----------------|---------------|
| TBD Baseline | TBD Target |
|-----------------|---------------|

RECOMMENDED STRATEGIES FOR OBJECTIVE 9:

1. Produce a review of the current state including service and journey mapping of cancer care pathways for breast, prostate and colorectal cancers, and acute oncology.
 - Define and validate critical areas for improvement.
 - Identify innovative opportunities to improve integration.
 - Prioritise core opportunities for pathway redesign based on strategic aims.
2. Conduct audits of the efficiency and accuracy of:
 - Pathology reporting
 - Radiology
3. Conduct a review of hospital in-patient volumes and length of stay for cancer patients.
4. Service delivery model redesign:
 - Develop and recruit a Cancer Navigator responsible for cancer care and pathway coordination.
 - Incorporate nurse-led care into cancer care pathway.
 - **Breast:** Develop and implement a rapid pathway for recently diagnosed breast cancer with a breast-specific multi-disciplinary team.
 - **Prostate:** Develop a standardised pathway which includes screening guidelines, defined criteria for referrals, and documentation of treatment paths.
 - **All cancer sites:** Use the experience from breast, prostate cancer pathways to design transformation across cancer care.
 - **Acute oncology:** Develop an acute oncology pathway which includes a dedicated acute oncologist, registered nurse and nurse-led clinics, and standardised communication channels which formalise communication requirements between service providers.
 - Maintain collaboration with overseas institutions for patient safety, clinical quality.
5. Develop and implement patient safety measures:
 - Establish internal controls to ensure patients do not fall out of the pathway.
 - Automate follow-up for missed appointments, active surveillance.
6. Establish a multidisciplinary team for cancer care:
 - Screening, diagnosis, chemotherapy, immunotherapy, and radiation within an integrated multidisciplinary team.
 - Multidisciplinary clinical team to support improved coordination of care, patient safety, quality control, revised protocols, and Universal Health Coverage.
7. Establish a Bermuda Cancer Society which brings together general practitioners, surgeons, oncologists, specialists, palliative care and patients as a source of cancer information and topical discussion focused on patient experience in the delivery of cancer care.



PRIORITY AREA #2: EARLY DETECTION, TREATMENT, INTEGRATED CANCER CARE

Goal: Provide optimal screening, diagnosis, and integrated cancer care that is evidence informed, patient-centric, timely, and equitable

4.3.3 Treatment

Treatment strategies focus on providing the best possible care and support to individuals diagnosed with cancer. Implementing efficient and effective evidence-based cancer treatment, delivered in a coordinated and patient-centred manner, can save lives and improve the quality of life for cancer patients. Treatment strategies in this report are linked with providing integrated cancer care (4.3.2)

INTEGRATED CANCER CARE

Objective 10: Optimise the treatment of cancer

TBD
Baseline

TBD
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 10:

1. Reduce delays to treatment:
 - Develop indicators to measure the timeliness of cancer treatment. Establish baseline values and future targets.
 - Improve coordination and communication with the implementation of a Cancer Navigator (as above) and administrative support.
 - Develop a recently diagnosed breast cancer pathway (as above)
 - Increase efficiency and accuracy of radiology and pathology reporting (as above)
2. Improve access to oral chemotherapy for all cancers.
3. Improve awareness and access to gene expression assays for breast cancer patients.
4. Be responsive to evolution of cancer treatment – radiation and systemic therapy have undergone substantial changes in the past decade and will continue to evolve.
5. Maximise integration with supportive care via PALS for appropriate patients undergoing treatment.



PRIORITY AREA #3: PALLIATIVE CARE & SURVIVORSHIP

Goal: Optimise the quality of life for every person impacted by cancer

4.4 Palliative care & survivorship

Cancer survivorship begins at the time of diagnosis and continues after treatment. It includes the individuals who experience cancer as well as family, friends, and caregivers. With early detection, effective therapies and high-quality care, the survival rates of people with cancer have increased over time. Combined with Bermuda's ageing population, there is a critical need to ensure quality of life for cancer patients, survivors, and carers. A cancer survivorship programme addresses the physical, emotional, psychosocial, and spiritual support needed to manage and improve life across the cancer journey. Bermuda does not currently have a formal cancer survivorship programme. Establishing survivorship standards and developing a survivorship care plan are core components to improve the quality of life of individuals impacted by cancer.

Palliative care meets the needs of all patients requiring relief from symptoms, and the needs of patients and their families for psychosocial and supportive care, improving quality of life and supporting the ability to cope effectively (36). Understanding the current state of palliative care in Bermuda and defining the future needs are key priorities for strengthening sustainable palliative care.

INTEGRATED CANCER CARE

Objective 11: Conduct review of palliative care services and end-of-life care; establish survivorship standards

Palliative care providers per 100,000:

| | |
|-----------------|---------------|
| TBD Baseline | TBD Target |
|-----------------|---------------|

Access to palliative care:

| | |
|-----------------|---------------|
| TBD Baseline | TBD Target |
|-----------------|---------------|

RECOMMENDED STRATEGIES FOR OBJECTIVE 11:

1. Produce a review of the current state of palliative care including service and journey mapping.
 - Define and validate critical areas for improvement.
 - Prioritise core opportunities for pathway improvements based on strategic aims.
2. Ensure sufficient staffing of palliative care with consideration of future needs.
3. Maximise integration of treatment with supportive care via PALS for appropriate patients undergoing treatment (as above).
4. Establish survivorship standards:



PRIORITY AREA #4: CROSS-CUTTING PRIORITIES - POLICY, SURVEILLANCE, HUMAN RESOURCES AND HEALTH EQUITY

Goal: Improve the effectiveness of cancer control

4.5 Cross-cutting priorities

Cross-cutting priorities are key areas and themes relevant across the cancer control continuum. These are fundamental areas that need to be addressed to improve cancer prevention, diagnosis, treatment, and care.

4.5.1 Policy

The development and implementation of policies that will support routine monitoring and evaluation of cancer data and trends over time are important for national cancer control and effective decision making. Legislation mandating the reporting of cancer cases is necessary to produce reliable data and accurately monitor cancer trends. The adoption and implementation of National Healthcare Identifiers will support more efficient and effective healthcare delivery. It will also allow for surveillance data disaggregated by sociodemographic variables used to monitor and ensure health equity. Finally, the integration of data from different sources such as hospital, laboratory, Tumour Registry and other health information systems can enable healthcare providers to deliver more efficient, patient-centred care.

INTEGRATED CANCER CARE

Objective 12: Improve data collection, national surveillance, and health information systems

TBD
Baseline

TBD
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 12:

1. Legislation for mandatory timely reporting of cancer cases to Tumour Registry to improve the completeness of surveillance data, including paediatric cancers.
2. Implement National Healthcare Identifier to support more efficient and effective healthcare delivery. This will also allow for statistics disaggregated by key demographic variables including race, income level and insurance status which can be used to monitor and ensure health equity.
3. Utilise clinical software systems (PEARL, ARIA and others) to develop a multi-institutional cancer registry to collect cancer diagnosis and treatment data, pathology reports, patient demographic data and survival outcomes. Use of the data to monitor and improve quality of care. This clinical registry will complement the existing Tumour Registry used to monitor cancer epidemiology.

4.5.2 Surveillance

Cancer surveillance is an essential component of public health. Surveillance plays a critical role in understanding and monitoring cancer cases and survival in the population, trends over time, and identifying inequities in different population groups. High-quality surveillance with routine dissemination is essential to support evidence-informed decision making, improve cancer outcomes, support targeted interventions, reduce health inequities, and ultimately save lives.



PRIORITY AREA #4: CROSS-CUTTING PRIORITIES - POLICY, SURVEILLANCE, HUMAN RESOURCES AND HEALTH EQUITY

Goal: Improve the effectiveness of cancer control

SURVEILLANCE

Objective 13: Strengthen the routine monitoring and reporting of cancer data

TBD
Baseline

TBD
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 13:

1. Develop and utilise standardised template for routine reporting of Tumour Registry data.
2. Refine data collection to appropriately capture stage at diagnosis when stage initially unknown.
3. Align data collection for race with Census categories.
4. Improve data collection for survival to support routine reporting of survival statistics.
5. Routine monitoring and reporting of incidence and mortality of all cancers and, at minimum, the following cancer sites: breast, prostate, lung, colon, bladder, cervix, and melanoma of skin. Monitoring of trends over time and statistically significant increases/decreases. International comparison where possible.
6. Implement data quality and data completeness indicators.
7. Establish routine monitoring of NCCP targets.

4.5.3 Human Resources

Strengthening the healthcare workforce is a core strategic principle of the Bermuda Health Strategy 2022-2027 in order to deliver high quality, coordinated healthcare services (6). The Bermuda National Cancer Control Plan is aligned with the Bermuda Health Strategy to strengthen the cancer healthcare workforce.

Strategic workforce planning will be essential to ensure there is an adequate supply of skilled professionals providing cancer care. This is important in all settings but particularly in Bermuda which has an ageing population, no medical training for oncology, and limited opportunities for professional development on-island.

The proportion of seniors 65 years and older is projected to increase from 16.9% in 2016 to 24.9% by 2026 (3) which will increase the future need for cancer care. The number of new oncology patients in Bermuda has already increased over time but staffing levels have not risen in accordance with this increase. From 2015-2020, within the medical oncology unit at BHB, the number of new patients has increased by 52%, the number of patient reviews has increased by 62%, chemotherapy appointments have increased by 80%, while overseas referrals have decreased by 47% (37). Over the same period, the changes in human resources have been a 15% increase in oncologists, a 25% increase in chemotherapy nurses, and a 20% decrease in administrative support (37). Appropriate planning and staffing will be essential to ensure a high-quality cancer health workforce able to address the population's health needs.



PRIORITY AREA #4: CROSS-CUTTING PRIORITIES - POLICY, SURVEILLANCE, HUMAN RESOURCES AND HEALTH EQUITY

Goal: Improve the effectiveness of cancer control

HUMAN RESOURCES

Objective 14: Ensure high-quality health workforce based on population health needs

Cancer personnel per 100,000 population:

TBD
Baseline

TBD
Target

Healthcare workforce satisfaction:

TBD
Baseline

TBD
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 14:

1. Health workforce plan to be developed based on population health needs.
 - Conduct formal workforce analysis for cancer including projections for future needs.
 - Increase human resources dedicated to acute cancer care: acute oncologist, oncology nurse, administrative assistant.
 - Recruit a Cancer Navigator and Care Coordinator
2. Establish register of students studying health subjects to help share knowledge skills and job openings.
3. Maintain regular report of staffing levels, retention, vacancies, challenges, successes.
4. Measure and report experiences and satisfaction of healthcare workforce.
5. Training for healthcare workers to enhance cancer prevention, screening, and early diagnosis.
6. Improve efficiencies in recruitment and replacement of personnel.

4.5.4 Health equity

Health equity refers to the opportunity for every individual to attain their full health potential without disadvantage because of social position or other socially determined circumstances (38). Health equity is a national priority and a core value for the Bermuda health system (39).

Health disparities are differences in the burden of disease or opportunities to achieve optimal health that are experienced by different groups of people. In Bermuda, lower socioeconomic status is associated with poorer health outcomes, poorer access to healthcare, and poorer health-related behaviours (40). Individuals with lower household income and education report poorer health compared to those with higher incomes and education, and lower income households spend a higher proportion of their income on healthcare compared to higher income households (40).

Cancer health disparities are adverse differences between certain groups of people in cancer measures such as incidence, prevalence, morbidity, mortality, survival, screening, stage at diagnosis, and financial burden, due to social, environmental and economic disadvantages (41). Disparities in cancer risk factors can also contribute to disparities in cancer measures.

Addressing cancer health disparities is critical to ensure equitable access to prevention, screening, diagnosis, treatment, and survivorship for all populations. Policies and programmes currently exist in Bermuda which aim to address cancer health disparities. The Standard Health Benefit includes cancer screening and treatment without co-payments to facilitate access for everyone. Bermuda Cancer and Health Centre aims to allow everyone access to early cancer detection and treatment without financial barriers, providing clinical services including mammography, breast ultrasound, breast biopsies, and radiation therapy without patient co-payments. Additionally, community donations made to Bermuda Cancer and Health Centre support an Equal Access Fund which helps subsidise the costs of clinical services for individuals who are underinsured or without insurance.

The Bermuda National Cancer Control Plan is aligned with the U.N. Sustainable Development Goal and the Ministry of Health healthcare vision, in that it ensures equitable access and continued provision of care while ensuring that people do not suffer financial hardship when utilising these services.



PRIORITY AREA #4: CROSS-CUTTING PRIORITIES - POLICY, SURVEILLANCE, HUMAN RESOURCES AND HEALTH EQUITY

Goal: Improve the effectiveness of cancer control

HEALTH EQUITY

Objective 15: Reduce cancer inequities

Insurance coverage

90%
Baseline

>90%
Target

Households spending unsustainable proportion of income on health insurance:

TBD
Baseline

TBD
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 15:

1. Maintain inclusion of cancer screening and treatment without co-payment as part of the Bermuda Health Plan and Universal Health Coverage.
2. BCHC to continue to provide clinical services without co-payment.
3. BCHC to continue to support an Equal Access Fund to subsidise the cost of clinical services for under- and un-insured individuals.
4. Utilise the cancer pathways to review financial barriers to access and establish areas of inequity.
5. Outreach to underserved populations:
 - Men's health outreach
 - Under- and un-insured individuals

4.5.5 Research

Bermuda does not currently participate in clinical trials for cancer and there is more limited cancer-related research occurring on-island. Data from the Bermuda Tumour Registry contributes to regional cancer statistics and epidemiological databases led by the Caribbean Public Health Agency and the International Agency for Research on Cancer. Local genetic data will inform future research projects.

RESEARCH

Objective 16: Develop a plan for on-island cancer research

N/A
Baseline

N/A
Target

RECOMMENDED STRATEGIES FOR OBJECTIVE 16:

1. Establish cancer research working group tasked with developing a cancer research plan.
2. Identify how to analyse and use the available genetic data to establish the incidence of known gene mutations within the tested population in Bermuda. Address the social and ethical issues pertaining to genetic research.

ANNEX I

WHAT CAN I DO?

Bermuda's National Cancer Control Plan 2024-2030 defines the goals, objectives, and actions to reduce the burden of cancer. However, everyone needs to be involved in this effort. Below are examples of what you can do to help reduce the burden of cancer in Bermuda.

BERMUDA RESIDENTS



- Participate in health surveys
- Eat healthily, be active, avoid tobacco, and limit alcohol
- Avoid overexposure to the sun
- Get cancer-preventive vaccinations including Hepatitis B and HPV
- Support smoke-free environments and avoid second-hand smoke
- Know when to be screened and get screened on schedule
- Volunteer to support cancer-related activities

DEPARTMENT OF HEALTH



- Provide cancer information and resources to the community
- Provide community health activities and awareness pertaining to key risk factors for cancer
- Work with local health providers and organisations to promote screening programmes
- Promote and support healthy food environment and healthy communities
- Provide support for survivorship programmes

EMPLOYERS



- Provide healthy foods and beverages in offices, vending machines, canteens
- Promote physical activity and wellness
- Offer employee benefits that cover smoking cessation, and promote physical activity
- Promote or collaborate with local organisations that support cancer awareness and prevention

PAYERS (HEALTH INSURERS)



- Understand the burden of cancer in Bermuda
- Encourage and support use of national/evidence-based screening guidelines
- Support health promotion
- Provide access to, and support reimbursement of, smoking cessation programmes, appropriate cancer diagnostics, treatment, care and support

HEALTHCARE PROVIDERS



- Ensure patients are screened for cancer in accordance with national guidelines
- Implement a cancer screening (or vaccination) reminder system
- Understand barriers to care
- Refer patients to smoking cessation, nutrition, and physical activity programmes
- Submit all cancer cases to the Tumour Registry in a timely manner

SCHOOL SETTINGS



- Provide healthy foods in vending machines, cafeterias
- Support water-only policies
- Increase physical education requirements
- Support sun-safe behaviours including provision of outdoor shaded area and requirement for hats to be worn outdoors
- Include health promotion and cancer prevention messages in health classes

PROFESSIONAL ORGANISATIONS



- Provide cancer information to constituents
- Support local cancer awareness activities
- Collaborate to provide health promotion activities to constituents

COMMUNITY-BASED ORGANISATIONS



- Provide cancer information to clients
- Promote cancer screening among clients
- Collaborate to provide cancer prevention and screening information to the community
- Mobilise communities to advocate for healthy environments

FAITH-BASED ORGANISATIONS



- Promote and support physical activity and wellness
- Provide healthy foods and beverages at fellowship activities
- Provide cancer prevention information to members

MEDIA



- Play a key role in cancer awareness and education
- Help improve the public's interest and knowledge by consistently covering cancer prevention and control issues

ANNEX II

NCCP ACTION PLAN

The following details the recommended strategies to achieve the objectives for each of the four priority areas:

1. Prevention
2. Early detection, treatment, and integrated cancer care
3. Palliative care and survivorship
4. Cross-cutting priorities

The timeline for implementation of the strategies is divided into three phases:

- Phase 1 = Immediate implementation, 2024
- Phase 2 = Short-term implementation, 2025-2026
- Phase 3 = Longer-term implementation, 2027-2030

The lead agency or institution responsible for implementing or coordinating the implementation of each recommended strategy is identified.

ANNEX II



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|--|-----------|---|
| <p>Objective 1: No increase in the prevalence of overweight and obesity</p> <p>Objective 2: Decrease in the prevalence of physical inactivity</p> | | |
| <p>1. Establish baselines and conduct routine surveillance in youth and adults for overweight and obesity, physical inactivity.</p> <ul style="list-style-type: none"> • Consider implementation of the Global School-Based Health Survey (GSHS) to provide health-related behavioural data among youth, support identification of key priorities, and support routine monitoring and international comparison. | Phase 1-2 | Ministry of Health |
| <p>2. Create a healthy food environment:</p> <ul style="list-style-type: none"> • Sugar Tax with revenue used to subsidise fruits, vegetables. • Gardening workshops; vertical farming • Healthy Schools Programme: Implement school nutrition, physical activity, and water-only policies in schools. • Financial incentives to buy fruits, vegetables. • Increased availability of healthy alternatives. • Nutritional labelling | Phase 1-3 | Ministry of Health |



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|--|-----------|---|
| 3. Encourage healthy lifestyles - Education and awareness campaigns for importance of physical activity and wellness across all age groups with emphasis on children and adolescents. | Phase 1-3 | Ministry of Health |
| 4. Create active environments - public parks, walking trails, active spaces. | Phase 1-3 | Ministry of Health |
| Objective 3: Reduce the prevalence of smoking | | |
| 1. Bermuda Tobacco Control Act <ul style="list-style-type: none"> Strengthen legislation for e-cigarettes Ban on single and 10-pack sales | Phase 1-2 | Ministry of Health |
| 2. Plain packaging and/or enhanced size of pictorial health warning on packs. | Phase 1-2 | Ministry of Health |
| 3. Enhance smoking cessation support and access: <ul style="list-style-type: none"> Work with insurance providers to improve coverage for smoking cessation. | Phase 1 | BHeC |
| 4. Education and awareness surrounding e-cigarettes, with particular focus on youth. | Phase 1 | Ministry of Health |
| 5. Support a Tobacco-Free Generation. | Phase 3 | Ministry of Health |
| Objective 4: Reduce the prevalence of harmful drinking | | |
| 1. Increased education and awareness surrounding alcohol intake <ul style="list-style-type: none"> Campaigns targeting older (65+) and younger (<30) age groups focussing on harms of excessive drinking. Raise awareness among healthcare professionals regarding the link between alcohol consumption and cancer. | Phase 2 | Ministry of Health |



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|---|-----------|---|
| 2. Provide accessible treatment options for alcohol use disorder. Work with healthcare providers to provide appropriate referrals. | Phase 2 | Ministry of Health / BHeC |
| 3. Maintain fiscal policies to disincentivise alcohol consumption. | Phase 1-3 | Ministry of Finance |
| Objective 5: No increase in the incidence of melanoma in young adults | | |
| 1. Continuing education and awareness to promote sun safety with emphasis on youth (schools, camps). Funding to sustain these programmes. | Phase 1-3 | Ministry of Finance |
| 2. Ensure schools have an outdoor shaded area. | Phase 1 | Ministry of Finance |
| 3. Education and awareness for use of skin self-exams to check for unusual growths, moles or changes in colour or texture. | Phase 1-3 | GPs |
| Objective 6: Maintain HBV vaccination rates, increase HPV vaccination rates | | |
| 1. Improve surveillance of vaccine coverage to inform appropriate response strategies. | Phase 1 | Ministry of Health |
| 2. Vaccine coordinator for follow-up with unvaccinated patients and/or reminder-recall system to increase the use of HPV, HBV vaccines. | Phase 1-2 | Ministry of Health |
| 3. National HPV vaccination catch-up campaign for adults 18-26 years. | Phase 1-2 | Ministry of Health |
| 4. Strategies for healthcare providers - provider education about the benefits of vaccination, opt-out process for vaccination. | Phase 1-2 | Paediatricians |



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|---|-----------|---|
| 5. Utilise the Vaccine Hesitancy Strategy to understand barriers to vaccination. | Phase 1 | Ministry of Health |
| 6. Improve access and coordination of HBV, HPV vaccines. Ensure cost is not a barrier for access. | Phase 1-2 | Ministry of Health |
| 7. Conduct a cost-benefit analysis for use of nonavalent vs quadrivalent HPV vaccine. | Phase 2 | BHeC |
| Objective 7: Reduce the potential cancer risk from chemical exposure and prevent environmental contamination | | |
| 1. Strengthen the regulation and oversight of chemicals and pesticides through the Pesticides Safety Act 2009: <ul style="list-style-type: none"> • Introduce regulations to establish guidelines for importation, sale, use and disposal of pesticides. • Implement training schemes for pesticide applicators. • Licensing for commercial and high-risk application of pesticides. | Phase 1-2 | Ministry of Health |
| 2. Strengthen monitoring and oversight of potential exposures. | Phase 1-2 | Ministry of Health (OSH) |
| 3. Amend the Clean Air Act to update air quality standards: <ul style="list-style-type: none"> • Update and introduce new air quality standards that align with UK and EU regulations • Conduct routine monitoring of air quality in high-emission areas | Phase 1-2 | Ministry of Health |
| 4. Education and awareness of risks of exposure to cancer-causing substances in the environment, occupations, and consumer products. | Phase 2 | Ministry of Health (OSH) |



PRIORITY AREA #2: EARLY DETECTION, TREATMENT, INTEGRATED CANCER CARE

Goal: Provide optimal screening, diagnosis, and integrated cancer care that is evidence informed, patient-centric, timely, and equitable

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|---|----------|---|
| Objective 8: Improve the early detection of cancer | | |
| 1. Develop national screening guidelines for all major cancers, by 2026. | Phase 2 | Office of the CMO, BCHC, specialists |
| 2. Utilise reminder-recall system for routine screening. | Phase 2 | Providers |
| 3. Develop and implement a breast cancer rapid diagnostic clinic. | Phase 1 | BCHC, BHB |
| 4. Integrate familial genetics to support enhanced screening where appropriate. | Phase 1 | BCHC |
| 5. Improve timely access to diagnostic imaging for suspected cancer cases. | Phase 1 | Providers |
| 6. Outreach to underserved populations (including men, under-/un-insured) for education, awareness, and screening. <ul style="list-style-type: none"> • Include specific guidance on PSA testing for Black men and mammograms for Black women. • Messaging around screening access opportunities for mammograms, PSA testing. • Include messaging on access to cancer services without financial toxicity. | Phase 1 | Ministry of Health |
| 7. Increase integration of GPs for: <ul style="list-style-type: none"> • Early diagnosis, screening, timely referrals, messaging on co-pays, promotion of self-exams, skin checks. • Integration with Cancer Navigator and coordinators for questions re cancer, centralisation, follow-up. • Continuing education to stay current with latest advances in cancer prevention, screening, and treatment. | Phase 1 | BCHC, BHB, GPs |



PRIORITY AREA #2: EARLY DETECTION, TREATMENT, INTEGRATED CANCER CARE

Goal: Provide optimal screening, diagnosis, and integrated cancer care that is evidence informed, patient-centric, timely, and equitable

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|---|-----------|---|
| <p>Objective 9: Design an integrated service model for cancer care to improve patient experience, clinical outcomes, and operational performance</p> | | |
| <p>1. Produce a review of the current state including service and journey mapping of cancer care pathways for breast, prostate and colorectal cancers, and acute oncology.</p> <ul style="list-style-type: none"> • Define and validate critical areas for improvement. • Identify innovative opportunities to improve integration. • Prioritise core opportunities for pathway redesign based on strategic aims. | Phase 1 | BHB, BCHC |
| <p>2. Conduct audits of the efficiency and accuracy of:</p> <ul style="list-style-type: none"> • Pathology reporting • Radiology | Phase 1 | BHB, BCHC |
| <p>3. Conduct a review of hospital in-patient volumes and length of stay for cancer patients.</p> | Phase 1 | BHB |
| <p>4. Service delivery model redesign:</p> <ul style="list-style-type: none"> • Develop and recruit a Cancer Navigator responsible for cancer care and pathway coordination. • Incorporate nurse-led care into cancer care pathway. • Breast: Develop and implement a rapid pathway for recently diagnosed breast cancer with a breast-specific multi-disciplinary team. • Prostate: Develop a standardised pathway which includes screening guidelines, defined criteria for referrals, and documentation of treatment paths. • All cancer sites: Use the experience from breast, prostate cancer pathways to design transformation across cancer care. • Acute oncology: Develop an acute oncology pathway which includes a dedicated acute oncologist, registered oncology nurse and nurse-led clinics, and standardised communication channels which formalise communication requirements between service providers. • Maintain collaboration with overseas institutions for patient safety, clinical quality. | Phase 1-2 | BHB, BCHC |



PRIORITY AREA #2: EARLY DETECTION, TREATMENT, INTEGRATED CANCER CARE

Goal: Provide optimal screening, diagnosis, and integrated cancer care that is evidence informed, patient-centric, timely, and equitable

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|---|----------|---|
| <p>5. Develop and implement patient safety measures:</p> <ul style="list-style-type: none"> Establish internal controls to ensure patients do not fall out of the pathway. Automate follow-up for missed appointments, active surveillance. | Phase 1 | BHB, BCHC, GPs |
| <p>6. Establish a multidisciplinary team for cancer care:</p> <ul style="list-style-type: none"> Screening, diagnosis, chemotherapy, immunotherapy, and radiation within an integrated multidisciplinary team. Multidisciplinary clinical team to support improved coordination of care, patient safety, quality control, revised protocols, and Universal Health Coverage. | Phase 1 | BHB, BCHC, providers |
| <p>7. Establish a Bermuda Cancer Society which brings together GPs, surgeons, oncologists, specialists, palliative care, and patients as a source of cancer information and topical discussion focused on patient experience in the delivery of cancer care.</p> | Phase 1 | BHB, BCHC, providers |
| Objective 10: Optimise the treatment of cancer | | |
| <p>1. Reduce delays to treatment:</p> <ul style="list-style-type: none"> Develop indicators to measure the timeliness of cancer treatment. Establish baseline values and future targets. Improve coordination and communication with the implementation of a Cancer Navigator (as above) and administrative support. Develop a recently diagnosed breast cancer pathway (as above) Increase efficiency and accuracy of radiology and pathology reporting (as above) | Phase 1 | BHB, BCHC, providers |
| <p>2. Improve access to oral chemotherapy for all cancers.</p> | Phase 1 | BHB, BHeC |
| <p>3. Improve awareness of and access to gene expression assays for breast cancer patients.</p> | Phase 1 | BHB, BCHC |



PRIORITY AREA #2: EARLY DETECTION, TREATMENT, INTEGRATED CANCER CARE

Goal: Provide optimal screening, diagnosis, and integrated cancer care that is evidence informed, patient-centric, timely, and equitable

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|---|-----------|---|
| 4. Be responsive to evolution of cancer treatment – radiation and systemic therapy have undergone substantial changes in the past decade and will continue to evolve. | Phase 1-3 | BHB, BCHC |
| 5. Maximise integration with supportive care via PALS for appropriate patients undergoing treatment. | Phase 1-3 | PALS |



PRIORITY AREA #3: PALLIATIVE CARE & SURVIVORSHIP

Goal: Optimise the quality of life for every person impacted by cancer

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|---|------------|---|
| Objective 11: Conduct review of palliative care services and end-of-life care; establish survivorship standards | | |
| 1. Produce a review of the current state of palliative care including service and journey mapping. <ul style="list-style-type: none"> Define and validate critical areas for improvement. Prioritise core opportunities for pathway improvements based on strategic aims. | Phase 2 | MoH, BHB, PALS, FoH |
| 2. Ensure sufficient staffing of palliative care with consideration of future needs. | Phase 2 | PALS, BHB, BHeC, MoH |
| 3. Maximise integration of treatment with supportive care via PALS for appropriate patients undergoing treatment (as above). | Phases 1-3 | PALS |
| 4. Establish survivorship standards: <ul style="list-style-type: none"> Develop survivorship care plan which includes treatment summary, medical follow-up recommendations, health promotion strategies and relevant health guidance tailored to the patient. | Phase 2 | BHB, BCHC, PALS. |



PRIORITY AREA #4: CROSS-CUTTING PRIORITIES - POLICY, SURVEILLANCE, HUMAN RESOURCES AND HEALTH EQUITY

Goal: Improve the effectiveness of cancer control

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|--|-----------|---|
| Objective 12: Improve data collection, national surveillance, and health information systems | | |
| 1. Legislation for mandatory reporting of cancer cases to Tumour Registry to improve the completeness of surveillance data, including paediatric cancers. | Phase 1-2 | Ministry of Health |
| 2. Implement National Healthcare Identifier to support more efficient and effective healthcare delivery. This will also allow for statistics disaggregated by key demographic variables including race, income level and insurance status which can be used to monitor and ensure health equity. | Phase 2 | Ministry of Health |
| 3. Utilise clinical software systems (PEARL, ARIA and others) to develop a multi-institutional cancer registry to collect cancer diagnosis and treatment data, pathology reports, patient demographic data and survival outcomes. Use of the data to monitor and improve quality of care. This clinical registry will complement the existing Tumour Registry used to monitor cancer epidemiology. | Phase 2 | BHB, BCHC |
| Objective 13: Strengthen the routine monitoring and reporting of cancer data | | |
| 1. Develop and utilise standardised template for routine reporting of Tumour Registry data. | Phase 1 | BCHC, BHB, Tumour Registry |
| 2. Refine data collection to appropriately capture stage at diagnosis when stage initially unknown. | Phase 1 | BCHC, BHB, Tumour Registry |
| 3. Align data collection for race with Census categories. | Phase 1 | BHB, Tumour Registry, BCHC |
| 4. Improve data collection for survival to support routine reporting of survival statistics. | Phase 1 | Tumour Registry, ESU |



PRIORITY AREA #4: CROSS-CUTTING PRIORITIES - POLICY, SURVEILLANCE, HUMAN RESOURCES AND HEALTH EQUITY

Goal: Improve the effectiveness of cancer control

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|--|-----------|---|
| 5. Routine monitoring and reporting of incidence and mortality of all cancers and, at minimum, the following cancer sites: breast, prostate, lung, colon, bladder, cervix, and melanoma of skin. Monitoring of trends over time and statistically significant increases/decreases. International comparison where possible. | Phase 1 | Tumour Registry, ESU |
| 6. Implement data quality and data completeness indicators. | Phase 1 | Tumour Registry |
| 7. Establish routine monitoring of NCCP targets. | Phase 1 | Ministry of Health |
| Objective 14: Ensure high-quality health workforce based on population health needs | | |
| 1. Health workforce plan to be developed based on population health needs. <ul style="list-style-type: none"> • Conduct formal workforce analysis for cancer including projections for future needs. • Increase human resources dedicated to acute cancer care: acute oncologist, oncology nurse, administrative assistant. • Recruit a Cancer Navigator and Care Coordinator | Phase 2 | Ministry of Health |
| 2. Establish register of students studying health subjects to help share knowledge skills and job openings. | Phase 1 | Ministry of Health |
| 3. Maintain regular report of staffing levels, retention, vacancies, challenges, successes. | Phase 1-3 | Ministry of Health |
| 4. Measure and report experiences and satisfaction of healthcare workforce. | Phase 1-3 | Ministry of Health |
| 5. Training for healthcare workers to enhance cancer prevention, screening, and early diagnosis. | Phase 1-3 | BCHC |



PRIORITY AREA #4: CROSS-CUTTING PRIORITIES - POLICY, SURVEILLANCE, HUMAN RESOURCES AND HEALTH EQUITY

Goal: Improve the effectiveness of cancer control

| STRATEGY | TIMELINE | LEAD AGENCY OR INSTITUTIONAL RESPONSIBILITY |
|---|-----------|---|
| 6. Improve efficiencies in recruitment and replacement of personnel. | Phase 1-3 | Ministry of Health, BHB, BCHC, Providers |
| Objective 15: Reduce cancer inequities | | |
| 1. Maintain inclusion of cancer screening and treatment without co-payment as per the ideology of universal health care. | Phase 2 | BHeC |
| 2. BCHC to provide clinical services without co-payment. | Phase 1-3 | BCHC |
| 3. BCHC to support an Equal Access Fund to subsidise the cost of clinical services for under- and un-insured individuals. | Phase 1-3 | BCHC |
| 4. Utilise the cancer pathways to review financial barriers to access and establish areas of inequity. | Phase 2 | BCHC |
| 5. Outreach to underserved populations: <ul style="list-style-type: none"> • Men's health outreach • Under- and un-insured individuals | Phase 1-3 | BHeC, BCHC, BHB, Providers |
| Objective 16: Develop a plan for on-island cancer research | | |
| 1. Establish cancer research working group tasked with developing a cancer research plan. | Phase 2 | BCHC |
| 2. Identify how to analyse and use the available genetic data to establish the incidence of known gene mutations within the tested population in Bermuda. Address the social and ethical issues pertaining to genetic research. | Phase 1-2 | Cancer Research Working Group |

Abbreviations: BCHC, Bermuda Cancer and Health Centre; BHB, Bermuda Hospitals Board; BHeC, Bermuda Health Council; ESU, Epidemiology and Surveillance Unit; OSH, Occupational Safety and Health; FOH, Friends of Hospice; GP, general practitioners

ANNEX III

NCCP Key Performance Indicators

Key performance indicators to monitor progress towards national targets.

ANNEX III



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

| OBJECTIVES AND DEFINED TARGETS | DATA COLLECTION | BASELINE | PERFORMANCE INDICATOR |
|--|--|--------------|--|
| Objective 1: No increase in the prevalence of overweight and obesity Objective 2: Decrease in the prevalence of physical inactivity | | | |
| No increase in the prevalence of adult overweight & obesity by 2026 & 2030 | STEPS survey | 74.6% (2014) | Prevalence of overweight and obesity (defined by BMI), 18+y |
| No increase in the prevalence of youth overweight & obesity by 2026 & 2030 | Premier's Youth Fitness Programme | 34% (2019) | Prevalence of overweight and obesity (defined by BMI), 9-17y |
| 15% decrease in adult prevalence of physical inactivity by 2026 | STEPS survey | 27.1% (2014) | Prevalence of physical inactivity per WHO recommendations, 18+y |
| Establish baseline, and define future target, for youth physical inactivity by 2030 | Global School-based Student Health Survey (or other) | TBD | To be defined in accordance with survey used |
| Objective 3: Reduce the prevalence of smoking | | | |
| Reduce the prevalence of tobacco use by 25% by 2030 (10.4%) | STEPS survey | 13.9% (2014) | Prevalence of smoking (current smoker, daily or some days), 18+y |

ANNEX III



PRIORITY AREA #1: PREVENTION

Goal: Promote healthy living and prevent cancer

| OBJECTIVES AND DEFINED TARGETS | DATA COLLECTION | BASELINE | PERFORMANCE INDICATOR |
|--|---|-------------------------|--|
| Objective 4: Reduce the prevalence of harmful drinking | | | |
| Reduce the prevalence of harmful drinking from baseline by 2026 | STEPS survey | 28.2% (2014) | Prevalence of binge drinking (≥5 drinks in a single occasion) among current drinkers, 18+y |
| Objective 5: No increase in the incidence of melanoma in young adults | | | |
| No increase in melanoma incidence in adults <40 years, 2026 and 2030 | Tumour Registry / SEER Stat | 2.8 / 100,000 (2015-19) | 5-year age-standardised incidence rate, adults <40y |
| Objective 6: Maintain HBV vaccination rates, increase HPV vaccination rates | | | |
| Maintain HBV vaccination rates in children aged 1 year >95%, annually, 2023-2030 | WHO / UNICEF Joint Reporting Form on Immunization | 78-99.8% (2017-21) | HBV vaccination coverage in children 1y |
| Increase HPV final dose vaccination rates in children aged 15 years to 90% by 2030 | WHO / UNICEF Joint Reporting | 52% (2021) | HPV final dose vaccination coverage among all adolescents aged 15y |
| Objective 7: Reduce the potential cancer risk from chemical exposure and prevent environmental contamination | | | |
| Routine monitoring of cancer risk from chemical exposure and environmental contamination to ensure occurrences are as low as reasonably achievable by 2026 | OSH / BHB | N/A | Routine monitoring of: <ul style="list-style-type: none"> • Poisonings or ER visits from chemical exposure • Occupational illnesses • Dangerous occurrences |



PRIORITY AREA #2: EARLY DETECTION, TREATMENT, INTEGRATED CANCER CARE

Goal: Provide optimal screening, diagnosis, and integrated cancer care that is evidence informed, patient-centric, timely, and equitable

| OBJECTIVES AND DEFINED TARGETS | DATA COLLECTION | BASELINE | PERFORMANCE INDICATOR |
|--|---|---------------|--|
| Objective 8: Improve the early detection of cancer | | | |
| Maintain mammogram screening level, 2026 & 2030 | National Health Survey of Adults and Children | 86% (2006) | Proportion of women over 40y who had mammogram in past two years |
| Reduce the percentage of cancer cases diagnosed at late stages, 2026 & 2030 | Tumour Registry | 20% (2017-19) | Percentage of cases diagnosed at Stage III & IV in a 3-year period (C00-97, excluding C44) |
| Establish time to diagnosis baseline, and define future target, for the breast cancer rapid diagnostic clinic by 2024, and for all cancers by 2026 | BCHC | TBD | Number of days from first presenting with symptoms to diagnosis |
| Objective 9: Design an integrated service model for cancer care to improve patient experience, clinical outcomes, and operational performance | | | |
| Objective 10: Optimise the treatment of cancer | | | |
| Establish baseline, and define future target, for time from referral to diagnosis by 2026 | BCHC/PEARL | TBD | Number of days from referral to diagnosis |
| Establish baseline, and define future target, for time from diagnosis to first treatment by 2026 | BCHC/PEARL | TBD | Number of days from diagnosis to first treatment |
| Establish baseline, and define future target, for time from deciding treatment plan to treatment onset by 2026 | PEARL | TBD | Number of days from deciding treatment to treatment onset |



PRIORITY AREA #2: EARLY DETECTION, TREATMENT, INTEGRATED CANCER CARE

Goal: Provide optimal screening, diagnosis, and integrated cancer care that is evidence informed, patient-centric, timely, and equitable

| OBJECTIVES AND DEFINED TARGETS | DATA COLLECTION | BASELINE | PERFORMANCE INDICATOR |
|--|-----------------|-----------|---|
| Reduce the length of in-patient hospital stays for cancer patients | PEARL | 15.8 days | Length of hospital stay (days) for cancer patients admitted as inpatients |
| Establish baseline, and define future target, for patient experience by 2026 | BCHC | TBD | Percentage of patients satisfied with cancer care experience |



PRIORITY AREA #3: PALLIATIVE CARE & SURVIVORSHIP

Goal: Optimise the quality of life for every person impacted by cancer

| OBJECTIVES AND DEFINED TARGETS | DATA COLLECTION | BASELINE | PERFORMANCE INDICATOR |
|---|-------------------|----------|---|
| Objective 11: Conduct review of palliative care services and end-of-life care; establish survivorship standards | | | |
| Establish by 2026 the appropriate range of palliative care providers per 100,000 population | BCHC/BHB/ PALS | TBD | Palliative care providers per 100,000 population |
| Establish baseline for current access to palliative care and define target for future access by 2026 | BCHC/BHB/ PALS | TBD | Percentage of cancer patients in need of palliative care who receive it |



PRIORITY AREA #4: CROSS-CUTTING PRIORITIES - POLICY, SURVEILLANCE, HUMAN RESOURCES AND HEALTH EQUITY

Goal: Improve the effectiveness of cancer control

| OBJECTIVES AND DEFINED TARGETS | DATA COLLECTION | BASELINE | PERFORMANCE INDICATOR |
|---|-------------------------|--|--|
| Objective 12: Improve data collection, national surveillance, and health information systems | | | |
| Enact legislation by 2026 for the mandatory reporting of cancer cases to the Tumour Registry | N/A | N/A | N/A |
| Enact legislation and implement national healthcare identifiers by 2026 | N/A | N/A | N/A |
| Utilise clinical software systems to develop and implement a multi-institutional cancer registry by 2026 to collect clinical data and survival outcomes | PEARL, ARIA, and others | N/A | N/A |
| Objective 13: Strengthen the routine monitoring and reporting of cancer data | | | |
| Routine monitoring and reporting of cancer incidence by 2024 | Tumour Registry/ESU | Incidence* (per 100,000): Total=219 Male=237 Female=210 | Age-standardised incidence rate, 3y average (All cancers combined, by sex; top 5 sites) Age-standardised incidence trends (all cancers combined, by sex; key cancer sites) Early onset cancer incidence trends (<50 years, all cancers combined, by sex) |



PRIORITY AREA #4: CROSS-CUTTING PRIORITIES - POLICY, SURVEILLANCE, HUMAN RESOURCES AND HEALTH EQUITY

Goal: Improve the effectiveness of cancer control

| OBJECTIVES AND DEFINED TARGETS | DATA COLLECTION | BASELINE | PERFORMANCE INDICATOR |
|--|-------------------------------------|---|--|
| Routine monitoring and reporting of cancer mortality by 2024 | Tumour Registry/ESU | Mortality* (per 100,000): Total=81 Male=98 Female=70 | Age-standardised mortality, 3y average (all cancers combined, by sex; top 5 sites) Age-standardised mortality trends (all cancers combined, by sex; key cancer sites) |
| Establish baseline values for 1-year, 5-year survival by 2026 | Multi-institution clinical registry | TBD | 1 year, 5-year survival (all cancers combined, by sex) |
| Establish baseline values for cancer statistics disaggregated by race by 2030 | Tumour Registry/ESU | TBD | Incidence and mortality rates by race, 3y average (all cancers, by sex) |
| Establish baseline values for % of cases death-certificate-only (DCO), morphologically verified (MV) by 2026 | Tumour Registry | TBD | Annual % of cases DCO; MV |
| Objective 14: Ensure high-quality health workforce based on population health needs | | | |
| Establish baseline for cancer personnel per 100,000 population | BHB/BCHC | TBD | Oncologists per 100,000 Cancer surgeons per 100,000 Radiologists per 100,000 Pathologists per 100,000 Cancer nursers per 100,000 |
| Establish baseline, and define future target, for healthcare workforce satisfaction by 2026 | BHB/BCHC | TBD | % of healthcare workforce who report being satisfied with their job |



PRIORITY AREA #4: CROSS-CUTTING PRIORITIES - POLICY, SURVEILLANCE, HUMAN RESOURCES AND HEALTH EQUITY

Goal: Improve the effectiveness of cancer control

| OBJECTIVES AND DEFINED TARGETS | DATA COLLECTION | BASELINE | PERFORMANCE INDICATOR |
|---|-----------------|------------|---|
| Objective 15: Reduce cancer inequities | | | |
| Increase the proportion of the population that can access essential, quality, health services, by 2026 | Census | 90% (2016) | Percentage of the population with health insurance |
| Establish baseline, and define target, for the % of households which spend an unsustainable proportion of income on healthcare, by 2026 | TBD | TBD | Population with household expenditures on health > 10% of total household expenditure or income (SDG 3.8.2) |
| Objective 16: Develop a plan for on-island cancer research | | | |
| Develop a national cancer research plan by 2026 | N/A | N/A | N/A |

*2017-19 Age-standardised rate World (Segi 1960) standard population

Abbreviations: BCHC, Bermuda Cancer and Health Centre; BHB, Bermuda Hospitals Board; FoH, Friends of Hospice; DCO, death certificate only; ESU, Epidemiology & Surveillance Unit; MV, morphologically verified; N/A, not applicable; OSH, Occupational Safety and Health; PEARL, patient electronic and administrative records log; SDG, Sustainable Development Goal; TBD, to be determined; y, year

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