BHUTAN CANCER CONTROL STRATEGY 2019–2025

BHUTAN

cancer control strategy

(2019–2025)

CONTENTS

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MESSAGE FROM HEALTH MINISTER

Determinants of cancers are complex and multifactorial. Major determinants of the cancer burden lie outside the health sector. That is why cancer control needs an intersectoral interaction and public health approach, particularly for cancer prevention.

Comprehensive public health action requires a combination of interventions for the entire population and for individuals. This Strategy provides a unifying framework for cancer prevention and control that will ensure that actions at all levels by all sectors are mutually supportive.

The fatalistic view on cancer that it is incurable should be changed. Health systems have a major role to play to improve the longevity and quality of cancer patients.

Cancer prevention and control is weak in our country. People are often diagnosed at late stages and five-year survival rates both for adults and childhood cancers are low. There is delay in care seeking, diagnosis and treatment.

Cancer treatment requires a multi disciplinarian team made up of well trained specialists as well as effective integrated care at all level of health services. The number of experts is inadequate to provide a comprehensive people-centric care. The primary health care service does not have adequate capacity to provide screening, continuum of care and palliation.

We must work aggressively to improve the cancer control services. The Ministry of Health will take a leading role in ensuring that the performance is measured, and implementation progress is transparently documented.

This is the first Cancer Control Strategy for the country. I am delighted that we now have the opportunity to implement the Strategy to save the untimely loss of hundreds of fellow citizens to cancers.

H.E. Dechen Wangmo
Health Minister
Ministry of Health
Royal Government of Bhutan

SECTION 1

Cancer in Bhutan

1. Introduction
2. Cancer Burden in Bhutan
3. Why National Cancer Control Strategy
4. Opportunities and Challenges

1 INTRODUCTION

Cancer is a leading cause of death worldwide. An estimated 9.6 million deaths occurred from cancers in 2018 and are projected to rise to over 13.1 million by 2030 (GLOBOCAN estimates, 2018). Global patterns of 2018 showed that nearly half of the new cases and more than half of the cancer deaths worldwide are estimated to occur in Asia as the region has nearly 60% of the global population (GLOBOCAN estimates, 2018).

About one-third of cancer related deaths have been attributed to the behavioral and dietary risks: high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use (GLOBOCAN estimates, 2018). It has been shown that between 30–50% of cancers can be prevented by avoiding risk factors and implementing existing evidence-based prevention strategies.

Unlike the developed countries, the cancers in the least developing countries are attributed to infections (25%) followed by industrial/lifestyle changes (20.3%) and others (54.7%) (GLOBOCAN estimates, 2018)

2 CANCER BURDEN IN BHUTAN

Cancer is a growing public health problem in Bhutan. The population-based cancer registry, Jigme Dorji Wangchuck National Referral Hospital (JDWNRH) recorded 2648 cancer cases during the period 2014-2017. Of these 1156 were in males and 1492 were in females.

The top five cancers for the period 2014-2018 were cervical, stomach, head and neck, lung and esophagus cancers (Figure 1). The average annual incidences of these top five cancers in individuals above 14 years of age per 100,000 population (based on population size estimated during the Population and Housing Census 2017 by National Statistical Bureau) during the period 2014-2018 are presented in Figure 1. Most common cancers in women were cervix, stomach, thyroid, breast and leukemia (Figure 2), whereas in men were stomach, head and neck, lungs, esophagus and liver.

A total of 941 (477 in males and 464 in females) individuals including children died from cancers during the period 2014-2018. The top five cancers causing highest mortality were stomach, liver, esophagus, cervix, lungs. The mortality in males and females are as shown in tables 1 and 2.

Table 1: Leading cancer deaths in males

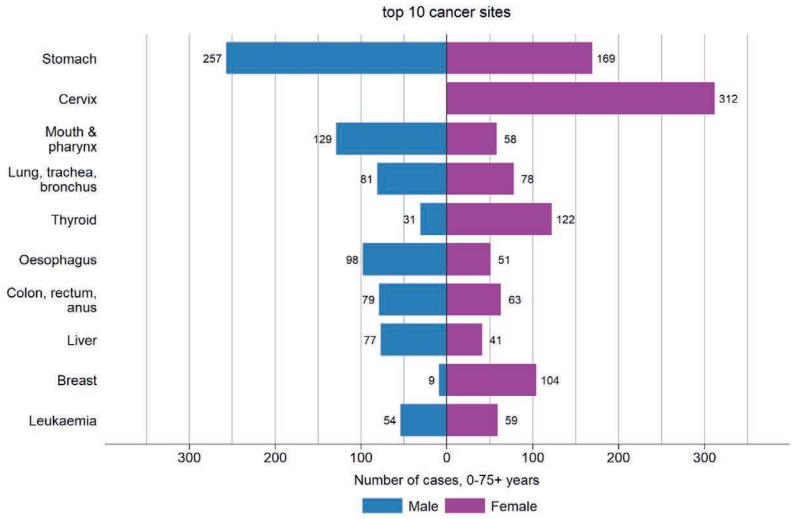
ICD-10	Sites	Age standardized mortality rate
C16	Stomach	8.7
C15	Esophagus	3.8
C22	Liver	3.0
C18-20	CRC (colorectal cancers)	1.9
C34	Lung	1.7

Table 2: Leading cancer deaths in females

ICD-10	Sites	Age standardized mortality rate
C53	Cervix	4.7
C16	Stomach	4.2
C22	Liver	2.1
C56	Ovary	2.0
C15	Esophagus	1.8

Cancer types in Bhutan

Figure 1: Average annual incidence of top 10 cancers per 100,000 population in Bhutan during the period 2014–2018



Source: Cancer Registry (2014–2018)

3 WHY NATIONAL CANCER CONTROL STRATEGY

Box 1: Royal Command on Cancer Control

On 18 September 2017, Health Secretary Dr Ugen Dophu in presence of a team of doctors received a Royal Command related cancer control* which included among others to:

- Build a cancer hospital with necessary facilities along with human resources
- Strengthen the Cancer Society and establish linkage with similar societies across the globe and society can create awareness and give support to the affected people;
- Establish a cancer control programme and cancer foundation

Cancer patient referral outside the country have increased steadily over the years causing enormous expenses and placing severe strains on Bhutan's limited health budget.

To reduce the number of cancer cases and deaths and improve the quality of life of cancer patients, the National Cancer Strategic Framework has been developed to guide the programs and the stakeholders towards more systematic and holistic prevention, early detection, diagnosis, treatment and effective palliative care services.

Determinants of cancers are complex and multifactorial. Major determinants of the cancer burden lie outside the health sector. That is why cancer control needs an intersectoral interaction and public health approach, particularly for cancer prevention.

Comprehensive public health action requires a combination of interventions for the entire population and for individuals. A unifying framework for cancer prevention and control is needed that will ensure mutually supportive actions at all levels by all sectors.

This Strategy is expected to enhance the partnership, collaboration and coordination amongst the stakeholders and enhance synergies. In particular, lifestyle promotion and cross sectoral actions that are related to cancer prevention are already outlined in the prior multisectoral frameworks of NCD prevention and control, health promotion strategy and numerous related documents of the Ministry of Health.

Finally, improving the quality of health services and ensuring good outcome for cancer patients is the core responsibility of the health sector. This Strategy elaborately lays out health sector actions to be implemented till 2025.

* Office order, Secretary, MoH. 19 September 2017

4 OPPORTUNITIES AND CHALLENGES

Although Bhutan did not have written document on cancer prevention and control, the Ministry of Health had integrated cancer-related response and health services. Therefore, the work on cancer control is not beginning from zero. This Strategy will recognize the below listed existing opportunities and challenges and address them in the actions.

Table 3: Opportunities and challenges in cancer control

Opportunities	Challenges
Primary Prevention	
• Multisectoral plans on NCDs and risk factors are already in place • Strong political will and support for NCD control • Manageable population • Existing cervical screening programme • Vaccination for HPV, HBV included in the national immunization schedule • Strong anti-tobacco laws • CSO participation • Support from media agencies	• Lack of dedicated national cancer control program and no fulltime staff and budget for cancer control • Inadequate monitoring and supervision of the existing screening programme • No strategic media campaigns on cancer control • Low health literacy on cancer in general population
Early detection and diagnosis and treatment	
• Ultrasound, endoscopy, PAP smear, mammogram services available in selected facilities with trained experts • Radiotherapy, chemotherapy and surgery available • Increasing number of young doctors and health care workers joining workforce • CT, MRI facilities available at the national referral hospital • Kidu camps and other related camps can be used to improve access to diagnosis • New available therapies can be introduced (immunotherapy, stem cell therapy) • A national cancer hospital under development and planning	• Health workforce development requires long term investment • Poor HR support from management (MoH and RCSC, etc) • Low pool of specialists for super specialization • No national radiotherapist and inadequate sub-specialists in oncology • Late stage presentation of cancers due to multiple delays • Lack of comprehensive national cancer centre • Weak pathology services • Misconception towards cancer therapy and stigmatization • Poor follow up and quality of services are not monitored

Palliative care services and end-of-life care	
• Palliative care unit established in JDWNRH with pilot home-based care in Thimphu • Opportunities to integrate sowarigpa for palliative care (indigenous medicine plus spiritual treatment) • Palliative care can be integrated across all level of health care	• Lack of palliative care services at district-level hospitals, BHUs, and community • Palliative care misperceived as a specialist services that general health workers cannot provide it • Inadequate number of trained palliative care doctors, nurses and health workers • Interrupted supply of pain medication (morphine, codeine, opioids) due to inadequate policy support

SECTION 2

Goals, objectives and action areas

1. **Goals**
2. **Objectives**
3. **Targets for 2025**
4. **Guiding principles**
5. **Strategic objectives**

The NCD Prevention and Control envisages to reduce the premature mortality due to NCDs including cancer by 25% by 2025 (Bhutan, 2015) and by one third by 2030 as a SDG commitment. Within this context, the Parliamentarians' Forum of Bhutan in 2018, adopted a policy vision of 'Happy and Healthy Bhutan by 2030' which outlines NCD agenda as a national priority to enable all Bhutanese to live fuller life with better quality in the true state of Gross National Happiness. (Organization, 2019) The Cancer Control Strategy is aligned to contribute towards the achievement of these national commitments.

1. Goal

The overall goal of the Strategy is to reduce the incidence and mortality of cancer, as well as to improve overall survival and the quality of life of cancer patients and their families.

2. Objectives

The Strategy will contribute to the above goal through the below six objectives:

- Enhance leadership, governance, resources and accountability for cancer prevention and control
- Implement cost-effective cancer prevention and control interventions
- Implement evidence-based screening and early detection programmes
- Strengthen people-centred health care delivery for treatment of cancer at all levels of care
- Establish integrated palliative care services across all health services
- Set up cancer surveillance and information systems and strengthen research

3. Targets for 2025

The Strategy will aim to achieve the following measurable targets by 2025.

Early diagnosis and management

- >50% of people are aware of common warning symptoms for cancer
- >50% of the patients with oral, breast and cervical cancers are diagnosed at stages I and II within one month of the referral date
- >50% of the cancer patients are diagnosed early at stages I and II (oral, breast and cervix)
- >50% patients diagnosed with potentially curable cancers, initiated treatment within 1 month from diagnosis
- 80% of patients commencing radiotherapy within 15 days of being deemed ready to treat

- ≥90% of breast, cervix and oral cancer patients will have completed the prescribed course of treatment within 6 months following the date of diagnosis
- 50% of patients with cancer receive palliative care

Screening for cervix

- 70% women eligible for cervical screening receive cancer screening within three years
- 95% of those screened positive make recall visits for the confirmatory tests

Risk factors

- Relative reduction of current tobacco use to ≤ 30% (in line with the goals of the Multisectoral National Action Plan for the Prevention and Control of NCDs 2015-2020)
- Relative reduction of harmful use of alcohol to 10% (in line with the goals of the Multisectoral National Action Plan for the Prevention and Control of NCDs 2015-2020)
- 100% coverage for childhood Hepatitis B vaccination
- 100% coverage of vaccination against HPV among female children

4. Guiding principles

The National Cancer control strategy will be guided by the following principles:

- A focus on major modifiable risk factors and its determinants
- Focus on early detection and of the health systems to improve quality of care
- Promote point responsibility and ownership by stakeholders through multisectoral approach
- Be guided by the evidence-based prioritization of cost-effective interventions
- Recognize the needs of special groups such as children and adolescents and population groups needing more attention

5. Strategic objectives

Strategic Objective 1: Enhance leadership, governance, resources and accountability for cancer control

A well-conceived and well-managed national cancer control program (NCCP) is necessary to manage a comprehensive cancer control response. NCCP has wide-ranging roles that include primary prevention, therapeutic interventions including palliative care, providing coordination among various sectors and agencies related to cancers control.

Strong leadership and a technically competent NCCP at the Ministry of Health are critical in implementing a comprehensive cancer control response. A dedicated team of full-time staff is necessary to oversee the complex functions of cancer control at national and district levels.

As the scope of the cancer prevention and control response is wide, a technical advisory body (TAB) compromising of various clinical professional groups, and well as other agencies including civil society bodies is crucial to guide the national cancer control.

Key actions:

- Set up national cancer control programme (NCCP) with full-time staff at the Ministry of Health
- Commission a national Technical Advisory Body to guide the NCCP
- Publish report on the state of cancer control at least, biennially

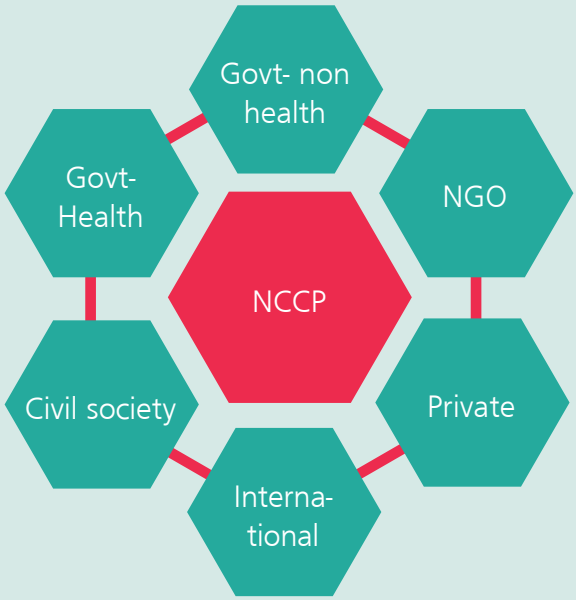
Managing the National Cancer Control Programme

The NCCP is a public health programme designed to reduce the incidence and mortality of cancer and improve quality of life of cancer patients. The NCCP will implement evidence-based strategies for prevention, early detection, treatment, and palliation.

NCCP's five major functions include: (i) cancer prevention, (ii) cancer early detection, (iii) palliative care, (iv) cancer control research and (v) cancer surveillance. It is not possible to manage NCCP without dedicated team of staff to carry out the responsibilities.

NCCP will raise the political awareness for cancer prevention and control and mobilize resources for implementation.

Figure 2: Linkages of NCCP



Broad functions of the TAB

- Guide the implementation of the Strategy
- Advise the NCCP on defining the priorities and evidence-based implementation
- Obtain political commitment from the government
- Guide resource mobilization

Role of NCCP manager

The major functions of the NCCP manager are to:

- integrate multiple activities into a coherent programme
- coordinate implementation through different stakeholders
- develop strategic plans and identify sources of funds
- create clarity and unity of the purpose
- encourage team building, broad participation
- ensuring continuous learning

Strategic objective 2: Implement cost-effective cancer prevention interventions

Approximately 30-50% cancers are caused by preventable risk factors. Tobacco use, alcohol consumption, physical inactivity, increasing use of processed food and meat, reduced fiber content, low vegetable and fruit in the diet, overweight and obesity and occupational and environmental factors increase the risk for cancer. Some of the leading risk factors that the Bhutanese population is exposed to are:

- Two out of five adult males and one in 4 adults females are current drinkers (drank in last 30 days). 87% of adult Bhutanese do not meet the WHO recommendation of a daily consumption of five servings of fruits and/or vegetables.[1]
- More than 120 000 Bhutanese are tobacco users, Nearly 19 000 student adolescents aged 13–17 years either smoke or use smokeless tobacco products.[2]
- The International Agency Research on Cancer (IARC) recognizes betel nut as a risk factor for oral cancer. Approximately 250 000 adult Bhutanese consume *doma*. [3]

Link cancer control to risk factor reduction and healthy lifestyle promotion

Risk factor reduction measures and implementation of the National Health Promotion Strategy, and Prevention and Control of NCDs has a direct linkage to cancer control. Some of the pertinent measures for each risk factor reduction measures are elaborated in the below sections.

Despite strong laws, tobacco control efforts need to be strengthened and sustained: Tobacco is well regulated with strong laws prohibiting production and marketing. Observation of smoke-free public spaces and trading restrictions are generally in place despite implementation hurdles. BNCA, RBP and Thromdes spearhead the enforcement activities for tobacco-free initiatives and control of illicit tobacco trade. Existing challenges include control of smokeless tobacco and the rampant use of betel nut. These should also be further strengthened through legislative and community-based interventions.

A bold social movement is urgently needed to overcome the alcohol epidemic: Alcohol control has been reinvigorated through a national alcohol control committee – led by the Home Minister at the national level and Chairperson of the Gewog Tshogdu (GT) at the geog level. Community participatory approaches are needed to address deeply rooted social practices and norms of alcohol use. Indiscriminate sales beyond trading hours and underage purchasers are common (Gampo Dorji, 2015) (Ministry of Health) which needs to be regulated.

Reduce sedentary lifestyles focusing on urban communities: Coincidental physical activity among Bhutan's traditionally farming society is rapidly diminishing with increasing urbanization. Recent popular initiatives such as the open-air fitness outlets of the MoH (700 units of equipment have been distributed across the nation) in urban spaces should be actively promoted.[4] Bhutan's pristine and natural landscapes surrounding clustered urban settlements

1 Bhutan-WHO STEPS Noncommunicable disease risk factor survey 2019,
2 Report on Bhutan Global School-Based Student Survey 2016 (GSHS 2016). The survey was conducted among school children of age of 13-17 years attending classes 7-11. A nationally representative sample of 50 schools and 7990 students participated in the survey.
3 The Gross National Happiness Survey (GNH) 2010.
4 Observation of the assessment of open air gyms by the LSRDP, MoH

are underutilized for physical activity. Strategic and sustained mass community mobilization is required to motivate communities to undertake health beneficial physical activity.

Make cheap and unhealthy food products difficult to access: Insidious growth of unregulated cheap and unhealthy (salted, fatty and sweetened) products in combination with low awareness of parents and children are posing increasing risk to population health. Conversely, consumption of vegetables and fruits vegetable should be supported with government subsidies and price controls. Bhutan's food-based dietary guideline needs to be promoted through sustained campaigns to promote healthy eating and making healthy food accessible.

Key actions:

- Support risk factor reduction by implementing the national multisectoral NCD action plan, National Health Promotion Plan and emphasize the following prevention activities:
  - tobacco control;
  - healthy diet;
  - physical activities and avoidance of obesity;
  - reducing alcohol use;
  - reducing carcinogenic occupational and environmental exposures;

Infection related cancers

Chronic infections with human papillomavirus (HPV), and Hepatitis B and C viruses cause cervical and liver cancers, respectively. Bhutan has introduced HPV and Hepatitis B vaccine in the routine immunization schedule. High vaccine coverage should be maintained to prevent infections and cancers.

Key actions:

- Continue investment in immunization of HPV and HBV prorgamme to maintain high vaccine coverage.
- Health education, relating to sexual and reproductive factors associated with cancer.

Occupational and environmental carcinogens

Occupational and environmental carcinogen exposures are not documented well in Bhutan. With growig economic activity, worsening air quality, specific exposures such as asbestos, pesticides and herbicides should be carefully reviewed. Risk mitigation measures should be introduced in high-risk occupationanl settings such as factories, farmers, and other identified groups.

Key action:

- Given the paucity of local evidence on environmental/occupational carcinogens, assessment and surveillance systems should be strengthened in occupational and environmental settings.

Strategic objective 3: Implement evidence-based screening and early diagnosis programmes

Screening and early diagnosis of common cancers increases the chances detection of asymptomatic patients and successful treatment as early as possible. Early diagnosis and screening improve cancer outcomes by providing care at the earliest possible stage. Therefore, it is an important public health strategy in all settings

Cancer screening

Screening aims to identify unrecognized cancer or its precursor lesions in an apparently healthy, asymptomatic population by means of tests, examinations, imaging and other procedures in the target population. It involves system of informing and inviting the target population to participate; administering the screening test; follow-up with the test results and referral for further testing among those with abnormal test results; and ensuring timely pathologic diagnosis, staging and access to effective treatment with the routine evaluation to improve process. Those who have a positive screening test require confirmatory diagnostic testing before definitive diagnoses can be established and appropriate treatment planned.

Cancer screening requires well-functioning health systems with a clear referral pathway, nationally adopted evidence-based guidelines and trained health staff. Screening is useful only if it has high coverage, with referral and effective treatment linked to it.

Not all cancers can be controlled by screening. It is important to recognize potential harms and costs of screening such as false positive test results, false negative tests and overdiagnosis. It is important not to fall in the trap of "bad screening" or screening programmes that are not evidence-based.

A range of above prerequisite should be met in the development of an evidence-based cancer screening programme. Cancer screening without adequate evidence and feasibility should not be implemented. A commonly held wrong assumption among health care professionals and public that all cancers are amenable to screening should be corrected.

Box 2: Elimination of cervical cancer in Bhutan

WHO declared in 2018 that global elimination of cervical cancer is feasible. Cervical screening has been an important public health approach in Bhutan. Currently, cytology-based cervical screening is conducted in Bhutan. A study on cervical screening in Thimphu city, authors have documented that although one-time screening coverage reached 60%, there was no active call/recall system. Pap smear is recommended every three years to women aged 20-60 years. Transition from an opportunistic screening to an all reaching population-based screening. (Iacopo Baussano, 2014)

Performance of cervical screening including coverage and follow up among women should be improved. Alternative techniques such as self-collection of vaginal samples in combination with HPV testing which is increasingly being implemented in other countries could be explored to increase screening coverage.

For this Strategy, Bhutan should prioritize cervical screening. Other cancers (e.g, breast, oral, stomach and colorectal) should be assigned to early diagnosis programme.

At present Bhutan should focus on early diagnosis and not on population-based screening, which is resource intensive and current infrastructure including qualified manpower is inadequate to meet the demands of an organized screening programme. Further strategies for screening will need to be critically evaluated and necessary changes will be suggested in future.

Key actions:

- Develop a national technical guideline for cancer screening to support adoption of evidence-based national cancer screening programmes
- Strengthen cervical screening programme by establishing robust population-based screening
- Pilot newer techniques such as self-collection of vaginal samples in combination with HPV testing

Early diagnosis

Early diagnosis is a routine health care activity targeting patients with symptoms and signs suspicious of cancer to detect the disease at a potentially curable stage. Patients diagnosed at early stages have better survival outcome than those diagnosed at late stage. Enhancing early diagnosis improves survival and quality of life. Early diagnosis is less resource intensive than screening.

National cancer control efforts should aim towards reducing the delays that occur as a result of care-seeking factors of patients such as poor cancer awareness, fear of being diagnosed with cancer, and health systems-related diagnostic and treatment delays.

Public awareness campaigns of recognizing 'unusual or persistent symptoms' such as unexplained lump, bleeding, weight loss should be implemented to raise awareness of alert symptoms and improve health seeking. The results of such campaigns should be evaluated on a routine basis.

For most cancers, including oral, stomach, breast and colorectal, given the health systems capability, early diagnosis programmes should be strengthened. Early diagnosis for breast, oral and cervical cancers are already included within the Package of Essential NCDs (PEN) services. Health workers should be encouraged to use the standardized simple protocols for early diagnosis of these cancers. Health facility-based national guidelines for early diagnosis and referral criteria for cancers should be reviewed and improved.

Early diagnosis programmes at the BHUs and district-level hospitals should be effectively linked to regional referral hospitals with better cancer diagnostic and care services. The referral hospitals should have appropriate facilities such as endoscopic services, pap smear facilities and adequately trained health workers to provide clinical workup.

Key actions:

- Develop health literacy promotion activities for recognition of first/alert symptoms of cancers through mass media and community and interpersonal communications
  - Develop protocols for early diagnosis and referrals services by strengthening visual examination, clinical breast examination, faecal immunochemical testing (FIT) based early detection to guide development of a colorectal cancer early detection in high-risk groups.
  - Develop primary healthcare workers pre- and in-service training programmes in identification of signs and referrals of common cancers including oral, cervix, stomach, breast and colorectum as a priority

Table 4: Level of recommendations for the current Strategy

Site of cancer	Prevention	Screening	Early diagnosis
Oral cavity	+++	+	+++
Breast		+	+++
Cervix	+++	+++	+++
Stomach	+++	+	+++
Colorectum	+	+	+++
Liver	++	–	+++
Lung	+++	–	+++
Childhood	–	–	+++

(+++) Highly recommended
(++) Useful but not feasible
(–) Not recommended

Strategic objective 4: Strengthen people-centred health care delivery for treatment of cancer at all levels of care

Cancer and its treatment have emotional, societal, psychological and spiritual consequences for both the patients and the family members. They need person-centred care to deal with the disease. The health services should ensure that people receive continuum of services, including palliative care, through well-coordinated and integrated manner at different levels of health facilities.

Treatment programmes should ensure timely and equitable access to effective therapy for all cancer types at whatever stage they may be diagnosed. Some cancers are curable even when diagnosed at advanced stage such as metastatic testicular cancer (seminoma) and acute lymphatic leukemia in children. Equally, effective treatment exists for certain advanced cancer, where the goals of treatment are to prolong survival considerably and maintain good quality of life. Where cure is possible, completion of treatment should be ensured to improve outcome. Those that are not curable or where survival cannot be prolonged effective palliative care should be provided.

Improving the diagnostic services

Cancer cannot be treated without a proper diagnosis. Diagnosis of cancer needs multidisciplinary teams comprising of clinicians, radiologists, ultrasound technicians, lab technicians, histopathology and cytology technicians and pathologists.

Radiology

High quality diagnostic radiology services are a necessity for timely staging and evaluation for management of cancer patients. Imaging capacity, particularly MRI, CT and PET scanning needs to be consistently available at least in the JDWNRH in Thimphu. In the long-term, a dedicated national imaging centre will be required to provide effective outpatient imaging services.

The current radiology services need to further improved and existing equipment should be modernized and replaced. Proper sub-speciality interventional radiology services will be required to advance the radiology services for cancer diagnosis.

Key actions:

- Upgrade the CT/MRI services at the JDWNRH by prrocuring equipment
- Introduce interventional radiology services to assist therapy

Endoscopy

A high quality national endoscopy service is essential for timely diagnosis and management of the majority of gastrointestinal (GI) malignancies as well as facilitating therapy and managing complications of non-GI cancers. Endoscopic services are available only in few centres and only a handful of doctors are able to provide the services.

Similarly, colonoscopy services are also available only at the national referral hospital. The regional referral hospitals and certain designated centres will require services to meet the increasing demand for colonoscopies.

Significant investment in equipment and staffing is required to expand high quality endoscopic and colonoscopy services in the designated centres.

Key actions:

- Make high quality endoscopy services available in all referral hospitals and set up the services in additional designated hospitals with high volume of gastric and esophageal cancers
- Set up colonoscopy services in all referral hospitals
- Expand colposcopy and treatment centers for cervical precancers
- Provide short team trainings of doctors and technicians in endoscopy and colonoscopy

Histopathology and haematology

Histopathology is critical for diagnosis and guiding treatment of cancer. Haematology services should be fully functional in the referral hospital and few designated centres. It is crucial that histopathology and haematology services at the referral hospitals are adequately resourced both in staffing and equipment. Budget should be made available for diagnostic laboratory equipment for rapid replacement whenever required.

Key actions:

- Equip histopathology and haematology units with upgraded equipment in three regional hospitals.
- Expand tumor marker facilities at least up till RRH

Molecular cancer diagnostics

The current practice of sending tissue and biological samples abroad for molecular testing for cancer diagnosis should be ensured and further streamlined and waiting time for results should be shortened.

Patients who need a particular molecular test should receive the test at appropriate time and on the appropriate tissue.

Key action:

- Develop the referrals SoP for molecular test for cancer patients

Improving treatment services

Cancer can be treated by surgery, chemotherapy and radiation therapy in isolation or in combination of different modalities. It is important that these disciplines work in a coordinated way to ensure optimum outcomes for patients. Services should be configured so that patients receive the highest quality of care.

Surgical oncology: It is important to adopt newer and less invasive procedures, hich provide shorter recovery times and better outcomes for patients. Surgical oncology should be centralized in referral hospitals to maintain the volume of cases.

Medical oncology: Treatment of cancer with medicine (chemotherapy) play a crucial role in combination with other treatment modalities such as surgery and radiotherapy. It is important that use of chemotherapy is kept abreast with the variety of new and effective therapeutics to improve cure rates and long-term remission, better quality of lives and longer survival.

Key actions:

- Review national medicines list for concordance with WHO EMLc 2019 and clarifying medicines registered and procured based on treatment capacity
- Set up multidisciplinary tumour board at JDWNRH

Radiation oncology: Radiotherapy is a primary curative modality in a number of cancers (e.g, cervix, prostrate, head and neck) and increases cancer survival as an adjuvant therapy in others (e.g, breast cancer). Radiotherapy services have recently been made available at the JDWNRH. Demand for radiation oncology will increase for primary treatment and palliative care. It is critical that the high quality of radiotherapy services are provided in line with the international best practices of care.

Key actions: [5]

- Develop radiotherapy practice guideline
- Conduct radiation safety audits
- Set up brachytherapy unit in JDWNRH

Health workforce

Staffing is a key part of the resource for cancer care. Lack of adequately trained and specialized workforce in the past has impeded provision of most optimum cancer care in the country.

Management of cancers requires special training in prevention of cancers, diagnostic technology, curative services, palliation, rehabilitation and patient counselling and empowerment. Comprehensive care calls for a team approach.

The NCCP will pursue with the Ministry of Health to match the recruitment of appropriate levels of specialized staff and other staff needed for cancer management. Both upgrading the skills of existing clinicians, nurses and paramedics and the human resource recruitment and deployment measures should be highly adaptive to the constantly evolving needs of cancer care in the country.

The Ministry of Health has undertaken the first survey of Workload Indicator and Staffing Needs with the collaboration of WHO in 2019. This information should be utilized to inform the evidence-based planning of staffing for providing integrated cancer services.

5 Report of expert mission for radiotherapy unit assessment at JDWNRH, Bhutan. September 2019

Although it is difficult to meet the all the staffing requirements for cancer care within the lifespan of this Strategy, NCCP will strive to meet the basic essential staffing to provide a decent cancer service in the country by 2025.

Table 5: Specialist requirements by 2025

Current scenario	Basic minimum requirement by 2025
GI oncology surgoen – 1 (completed Service obligation); 1 selected to undergo training	2
Gynae-oncosurgeon – 1 (Recently retired); 1 selected to undergo training	2
Head and Neck oncosurgeon – 1	1
Medical oncologist – none	2
Radiation oncologist – none	2
Haematology- oncologist – none	2
Palliative care physician – none	2
Pediatric oncology haematologist/oncologist – none	1
Oncopathologist – none and one selected to undergo fellowship	
Nuclear Medicine physician – none	1 required in view of plan for PET scan and nuclear medicine for cancer centre
Medical physicist – 1 undergoing masters and 1 selected to undergo masters	
Radiologist – 5	3 radiologist with focus on organ specific focus with a priority on GI oncology, Gynae-oncology and head neck oncology.

Table 6: Allied health professionals

Chemotherapy nurses (8)	8
Palliative nurse (3)	10
Radiotherapy Nurses and technician (4)	4
Scrub Nurses (respective surgical oncology field)-1	4
Chemo mixing technician (3)	6
Histo technician	6
Pain specialist *** (1)	2
Data Abstractor (0)	4
Data Assistant (0)	2
Nurse anaesthetist (Pain management)-2	5

Reorganize care delivery to provide people-centric cancer services

Although cancer treatment should be centralized at the national referral hospital/regional hospital levels, there are several cancer services that can be effectively organized in district-level hospitals and in BHUs. Every level of health care has a specific role. Often the role of Basic Health Units and district-level hospitals in cancer control and management can be overlooked as cancer treatment requires clinical specialists. The scope of cancer prevention and control services by level of health facilities is shown in the table below.

Table 7: Cancer prevention and control by level of health services

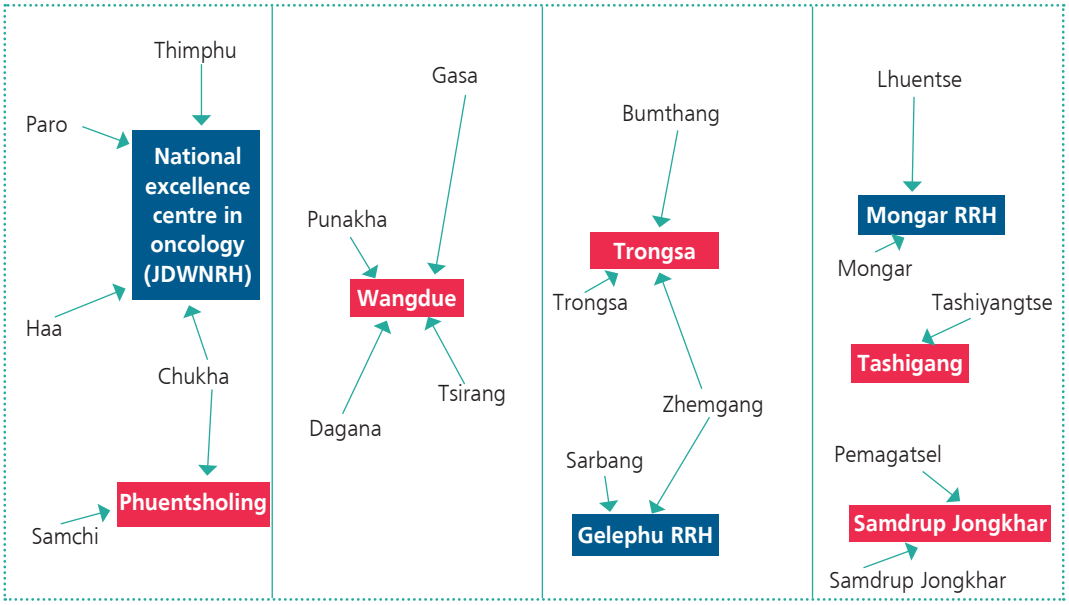
Level of health facilities	Types of services
Tertiary (National referral hospital/regional)	Chemotherapy, radiotherapy and surgical oncology services, specialized palliative care
Regional hospitals	Chemotherapy, basic oncology services and palliative care, follow-up between and after treatment course and timely supportive care (including infections)
District level hospitals	Screening and early diagnosis, primary prevention activities (tobacco cessation and other risk factor reduction), outreach for palliative care
Basic Health Units	Screening and referral, palliative care outreach, primary prevention activities (tobacco cessation and other risk factor reduction),
Community services	Community education and awareness

In the prevailing practices, cancer services are centralized in JDWNRH in Thimphu. The lower level facilities need to be enabled to provide above assigned cancer services to improve access to patients needing care. This will be an important shift towards achieving a people-centred equitable distribution of cancer care.

Key actions:

- *Create national oncology centre of excellence.* A national excellence centre in oncology should be created in the JDWNRH. Under this approach, a multidisciplinary oncology services will be developed to improve the current delivery of services at the national referral hospital. The centre will be the national capacity building and resource for cancer care. The centre in collaboration with the KGUMSB will develop tailor-made training and attachment courses and conduct trainings for the oncology teams. This will be a preparatory step to build comprehensive services when the national cancer hospital is built in future.
- Create oncology units at the Regional Referral Hospital. Mongar and Gelephu hospitals should build a regional hospital team comprising of medical doctors, nurses and pharmacists provide follow up chemotherapy and palliative care. Teams will be trained at the national referral hospital (national excellence oncology centre for a hands-on short duration.
- At the district hospital level, medical officers and nurses will be oriented and trained to provide follow up care for cancer patients.
- At the BHU level, health assistants will provide cervical screening, early detection programmes, referral and basic palliation services. BHUs will interact with cancer patients and family members who need terminal care
- *Set up district oncology hubs.* Five district hubs for cancer care will be developed based on the geographical proximity to regional and national referral hospitals. The hub will support the nearest district or a geographical catchment of the area. These hubs will have the added capacity to deliver chemotherapy and advanced palliative care managed by a district oncology team. The five districts include: Tashigang, Samdrupjongkhar, Trongsa, Wangduephodrang and Phuntsholing.

Figure 3: Five hubs and referral pathway for cancer service delivery



Strategic objective 4: Establish integrated palliative care services across all health services and in communities

Palliative care is an essential part of cancer control, both for adults and children. In 2014, the first ever global resolution on palliative care at the World Health Assembly, countries agreed to improve access to palliative care as a core component of health systems, with an emphasis on primary health care and community/home-based care.

Palliative care services are an urgent need as most cancer patients are diagnosed at stage III or later stages. Presently only a small percentage of patients living in and around Thimphu are receiving palliative care services. Doctors and primary health care workers are not adequately trained on palliative care. Home-based or community-based palliative care is grossly lacking. Supply of morphine is very limited and access to morphine is limited.

Health assistants and nurses could be engaged in the community outreach but has been restrained due to lack of clear policies. Outreach is generally promoted only for maternal health and immunization programmes. This policy needs to shift with the increasing burden of cancer and increasing ageing population, community and home-based programmes is highly desirable to support home-bound terminal cancer patients and others in need of chronic care and left out of care. Additional staff or a new cadre such as community health nurse would be required to meet the current gaps in provision of community-based chronic care.

Key actions:

- Develop palliative care services across all levels of health facilities
- Develop national protocol for palliative care standards for each level of health facilities

- Introduce preservice and in-service training on palliative care for nurses and health assistants and postgraduate residency programmes at the KGUMSB
- Establish network with cancer societies and foundations, and strengthen survivor groups for exchange of experience and strengthen coping mechanism
- Build community outreach programmes for palliative care and support linkage with social support programmes for those socially disadvantaged patients

Strategic objective 5: Set up cancer surveillance and information systems, and strengthen research

Valid and reliable data are the backbone for evidence-based planning and policy for cancer control. Careful monitoring of cancer occurrence and trends is critical. The first population-based cancer registry setup at the JDNWRH in 2014 provides data repository of cases, new diagnosis and have the capability for longitudinal monitoring of cancer patients and survival rates. Current challenges of the registry include maintaining good quality data, lack of staffing to lead cancer registry cell and inadequate support by the hospital and the Ministry of Health should be addressed.

Cancer research in Bhutan rudimentary due to young research culture. Encouragingly, few Bhutanese studies on cancer have been published. In future, more national studies on cancer epidemiology, risk factors, and cancer service delivery should be promoted to build local evidence on cancer.

Another obstacle is the lack of integrated information system across entire health services in a single system. Current health management and information system of the Ministry of Health (HMIS) does not collect most of the performance measures. As with any newer initiative, initially information needs to be gathered through multiple sources and mechanisms for this Strategy and eventually build in the routine system.

Key actions:

- Formalize the population-based cancer registry unit at the JDWNRH: Appoint fulltime team to manage cancer registry. The unit will ensure completeness of data collection, validation and publication of the report.
  - Publish report on national cancer registry every two years
  - Developing hospital-based cancer registration linking to PBCR, aligned with IARC guidance for childhood cancer registration (ICCC-3) and Toronto cancer staging for childhood cancers
- Train cancer registry national and district level focal points
- Conduct research on priority cancers focusing on stomach, cervical and oral cancers
- Conduct research on cancer risk factors including carcinogens in occupational and environmental settings
- Introduce a policy to make cancers a mandatory notifiable disease to improve quality of care and follow up services for patients

- Refine network and information system considering relatively small numbers of children and adolescents with cancer, to ensure appropriate monitoring and evaluation of outcomes and tailoring of strategies to address local causes of treatment failure
- Conduct evaluation of the impact of the national cancer control programme
- Mobilize potential participation of interested/trained staff in online learning and case discussion platforms, as well as regional and international networking, training and mentorship platforms for young investigators to support clinical practice, ongoing training, and research

Box 3: Make the childhood cancer control initiative an integral component of national cancer control

Survival rates of children with cancer are lower as compared to high-income countries; this inequality has to be recognized. Although there are fewer numbers of childhood cancers, they account for a high burden in terms of DALYs.

Since childhood cancers, including the most common diagnosis of acute lymphoblastic leukemia, are highly curable we should aim to ensure that all children with cancers are diagnosed early and receive prompt treatment without any delay or financial hardship.

Special focus is needed to mobilize resources, build capacity, and develop infrastructure to improve childhood cancer control.

The WHO Global Initiative for Childhood Cancer, aims to achieve at least a 60% global survival rate and alleviation of suffering for childhood cancer by 2030. The Strategy recognizes this global call.

Programs for special populations, such as childhood cancer, should be prioritized as a core response of national cancer control plans.

Key actions:

- Improve services for management of childhood cancer at the national and regional referral hospital by training paediatric teams for support of childhood cancer
- Promote policies to support the completion of treatment (avoiding treatment abandonment) for children with cancer
- Establish parent advocacy / family support group for needs of families of children and adolescents with cancer, with support from Childhood Cancer International network
- Integrate childhood cancers into media and awareness campaigns to address local perceptions and needs, including clarifying role of traditional medicine as appropriate

SECTION 3

Performance framework

1. **Measure results and performance of cancer control**

2. **Deliverables**

Measure results and performance of cancer control

Measuring the performance and quality of cancer care services is essential to ensure that objectives of this Strategy are met. The national strategy will be monitored against the key performance indicators (KPI) for cancer control. KPIs will include the wide range of health outcome measures and health service indicators linked to cancer control.

KPIs will be collected, collated and reported by the NCCP. An annual report will be published by the NCCP with the inputs from other stakeholders documenting the implementation of this Strategy, with a particular focus on the implementation of the recommendations and the degree to which KPIs of the Strategy are met.

Several national programmes and technical units within the Ministry have a role. The NCCP along will proactively interact and coordinate with relevant units within and beyond the Ministry to implement the action and measure performance.

The first midterm review implementation of the Strategy will be conducted towards the end of 2022 to ensure that aims and direction continue to be appropriate to deliver optimum outcomes for patients. The final review of the implementation of the Strategy will be conducted in 2025 before the second Cancer Control Strategy is developed.

Table 8: Key performance indicators and data source

Performance indicator	Target	Data source
Improvement of 5-year cancer survival rates	50%	PBCR
Improve 5-year leukemia and childhood cancers survival rates	50%	PBCR
People are aware of common warning symptoms for cancer	80%	
Patients with oral, breast and cervical cancers are diagnosed at stages I and II within one month of the referral date	50%	PBCR
Cancer patients diagnosed early at stages I and II (oral, breast and cervix)	50%	PBCR
Patients diagnosed with potentially curable cancers, initiated treatment within 1 month from diagnosis	50%	
Patients commencing radiotherapy within 15 days of being deemed ready to treat	80%	
Breast, cervix and oral cancer patients will have completed the prescribed course of treatment for first six months following the date of diagnosis	≥90%	
Patients with cancer receive palliative care	50%	

Performance indicator	Target	Data source
Women eligible for cervical screening receive cancer screening within three years	70%	Survey
Screened positive make recall visits for the confirmatory tests	95%	Survey
Relative reduction of current tobacco use (in line with the goals of the Multisectoral National Action Plan for the Prevention and Control of NCDs 2015-2020)	≤ 30%	STEPS
Relative reduction of harmful use of alcohol (in line with the goals of the Multisectoral National Action Plan for the Prevention and Control of NCDs 2015-2020)	≤ 10%	STEPS
Coverage for childhood Hepatitis B vaccination	100%	Immunization programme
Coverage of vaccination against HPV among female children	100%	Immunization programme

Deliverables

The Strategy will focus on the major activities and products as shown in the table below. The NCCP will ensure that implementation is planned to achieve the deliverables latest by the designated year.

Table 9: Summary of key output deliverables by year of completion

First year deliverables: 2020
♦ The National Cancer Control Programme (NCCP) with fulltime staff team at the MoH set up ♦ National technical advisory committee for cancer control for the NCCP commissioned ♦ National oncology centre of excellence created ♦ Population-based cancer registration unit set up at JDWNRH
Second year deliverables: 2021
♦ First biennial report of the state of cancer control in Bhutan published ♦ National technical guideline for cancer screening formulated ♦ Targeted mass media message on common alert signs of cancer launched ♦ Early diagnosis protocols for common cancers developed ♦ In-service and pre-service training programmes for cancer and palliative care set up in KGUMSB ♦ Set up childhood cancer teams in national and regional referral hospital
Third year deliverables: 2022
♦ Endoscopic services set up in five district designated cancer hubs ♦ Doctors provided short term-training for endoscopic services ♦ Medical officers, nurses and health assistants trainings provided at the national oncology centre jointly by JDWNRH and KGUMSB ♦ Community health nurse training programme initiated in KGUMSB ♦ Report of population-based cancer registry published ♦ Mid-term implementation review of the Cancer Control Strategy
Fourth year deliverables:2023
♦ Second biennial report of the state of cancer control in Bhutan published
Fifth year deliverables: 2024
♦ Continue capacity building activities in KGUMSB
Sixth year deliverables:2025
♦ Second biennial report of the state of cancer control in Bhutan published ♦ Report of population-based cancer registry published ♦ Final implementation review of the Cancer Control Strategy
Across the years deliverables: 2020-2025
♦ Long-term training and recruitment of human resource ♦ Research and studies ♦ Replacement of equipment

IMPLEMENTING AGENCIES

The Strategy is primarily focused to enhance the health service responses. The activities listed in this document is therefore led by the Ministry of Health. In particular, the future NCCP will assume the key role to ensure that activities enlisted in this Strategy are funded within the annual planning and budget activities. Agencies will also need to secure additional resource mobilization to implement the activities whenever certain activities are not covered through an annual government plan.

There are several agencies relevant to cancer control particularly in addressing the risk factor including environmental conditions. The actions and expected contribution of these agencies are reflected elsewhere in other documents.

Key partner agencies and the actions for implementing this Strategy are summarized in the table below:

Table 10: Summary of key partners and areas of contribution

Key partners	Areas of contribution
National Cancer Control Programme (MoH)	Overall coordination, policy advocacy, resource mobilization and monitoring implementation of the Strategy
Khesar Gyalpo University of Medical Sciences	Training in cancer control and management for primary health care workers, integration of palliative care services, implementation research for cancer control
Jigmi Dorji Wangchuck National Referral Hospital	Develop national oncology centre of excellence
Regional Referral Hospitals	Develop oncology units
District health services	Set up district oncology hubs, integrate screening and palliative care service
Traditional medicine services	Provide alternative care and therapies
Drug Regulatory Authority of Bhutan	Support regulatory policies to provide anticancer drugs and improve access to morphine
Cancer control foundation and societies	Palliative care services, awareness and advocacy
Cancer survivors	Policy advocacy and care coordination