NATIONAL CANCER CONTROL PROGRAMME

2022-2025

Fight Against Cancer
Quality care for One and All


NATIONAL
CANCER
HOSPITAL

Foreword

Cancer is a major public health issue. Its incidence has increased by 8% in 2020 compared to 2019 according to the National Cancer Registry 2020. It is the leading cause of death worldwide, accounting for nearly 10 million deaths in 2020 and is the third cause of death in Mauritius, representing 12.8% of total deaths.

Government has a three-fold objective to address this challenge: cure cancer patients, prolong their life and ensure them a good quality of life, through early screening, education, prevention and appropriate treatment.

The attainment of this objective requires modern cancer services geared towards providing evidence-based care that is effective, safe, of high quality and patient centered, supported by international standards and clinical guidelines.

Government is committed to upgrade cancer care and treatment in line with international recognized Cancer Centres. In this endeavour, it has invested heavily in a state-of-the-art modern cancer hospital, equipped with the latest technologies. This hospital will be an all-inclusive Care Centre. Since 2020, chemotherapy and palliative care services have already been transferred to the renovated building in the National Cancer Hospital at Solferino. This facility is expected to be fully operational by 2023.

As the incidence and prevalence of cancer are soaring, my Ministry has come forward with a National Cancer Control Programme (NCCP) with a view to coming up with a holistic, well-structured programme for cancer prevention, early diagnosis, treatment, palliative care as well as research. The NCCP has taken into account both internal and external factors including ageing population, climate change, industrialisation, pollution, change in lifestyle, amongst others, in devising the most appropriate strategies. The NCCP purports to address the needs and requirements of all stakeholders who are involved in cancer care at all levels.

Prevention is also a key component of any overall cancer control plan. 40% of cancers can also be avoided by adopting a healthy lifestyle, a balanced diet, regular physical activity, refraining from cigarettes smoking, consuming alcohol in moderation and avoiding exposure to harmful chemicals, amongst others. Further, early diagnosis through screening activities leads to a better overall survival rate and with the advent of modern technology and new targeted therapy, the quality of life of cancer patients can be greatly improved.

The NCCP 2022-2025, elaborated by my Ministry, harnesses Government's vision for the enjoyment of the highest attainable standard of health which is one of the fundamental rights of every human being and paves the way for a holistic, comprehensive cancer care and treatment strategy for the benefit of all cancer patients and society at large.

Dr. the Hon. Kailesh Kumar Singh Jagutpal
Minister of Health and Wellness

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Acronyms and abbreviations

2D	2Dimensional
ASCO	American Society of Clinical Oncologist
BC	Breast Cancer
BCS	Breast Cancer Screening
CHL	Central Health Laboratory
CME	Continuous Medical Education
CRT	Conformal Radiotherapy
CRC	Colorectal Cancer
DNA	Deoxyribonucleic Acid
EML	Essential Medicines List
ENT	Ear, Nose and Throat
EPI	Expanded Programme of Immunisation
GDP	Gross Domestic Product
HBV	Hepatitis B Virus
HDU	High Dependency Unit
HPV	Human Papilloma Virus
HR	Human Resources
IARC	International Agency for Research on Cancer
IAEA	International Atomic Energy Agency
IACR	International Association of Cancer Registries
IMRT	Intensity Modulated Radiotherapy
ICU	Intensive Care Unit
imPACT	Integrated mission of PACT (Programme of Action for Cancer Therapy)
LDR	Low Dose Rate
MBBS	Bachelor in Medicine and Bachelor in Surgery
MDT	Multidisciplinary Team
MIH	Mauritius Institute of Health
MOHW	Ministry of Health and Wellness
MOU	Memorandum of Understanding
NCD	Non-Communicable Diseases
NCH	National Cancer Hospital
NCR	National Cancer Registry
NGOs	Non-Governmental Organisations
QA	Quality Assurance
QEH	Queen Elizabeth Hospital
RAI	Radioactive Iodine
RNA	Ribonucleic Acid
SDGs	Sustainable Development Goals
TRT	Targeted Radionuclide Therapy
UHC	Universal Health Coverage
VH	Victoria Hospital
WHO	World Health Organisation

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The Team of Clinicians

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EXECUTIVE SUMMARY

Worldwide cancer is the second leading cause of death and was responsible for an estimated 10 million deaths in 2020. Globally, about 1 in 6 deaths is due to cancer. According to the WHO in 2020, around 10 million people were diagnosed with cancer, and it is expected that these figures will nearly double by the year 2040.

Mauritius, over the past decades has experienced a gradual rise in the incidence of cancer: breast cancer is the most common malignancy in females, prostate cancer in males and acute leukaemia in the pediatric age group. Cancer, in 2020, was the third cause of death among the Mauritian population, just after cardiovascular diseases and diabetes mellitus.

The economic burden borne by cancer is substantial; it has a direct impact on health care expenditures, loss of productivity, reduced quality of life and premature death. The incidence of cancers is expected to rise with an upsurge in lifestyle-related cancer and an ageing population. It is, therefore, essential for healthcare policy makers and society to produce and organize a plan of action to address cancer care in all its aspects.

However, primary prevention can reduce 30% to 40% of all cancers. This can be achieved through health promotion and sensitization campaign on the risk factors for cancers such as smoking, harmful use of alcohol, unhealthy diet, sedentary lifestyles, obesity, excessive sun exposure, carcinogens at work, air pollution, infections with certain viruses and bacteria among others.

On the other hand, secondary prevention through screening programmes of the targeted population for the common cancers, namely breast, cervical and colorectal goes a long way in reducing morbidity and mortality among cancer patients.

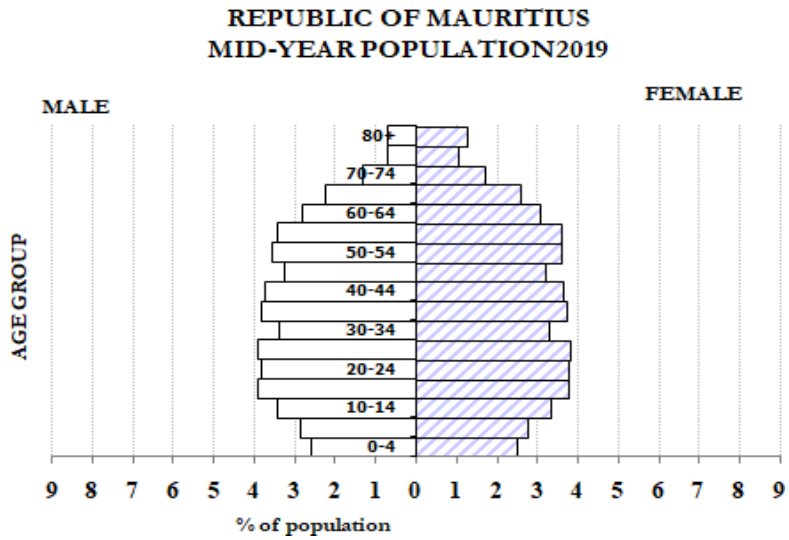
The Ministry of Health and Wellness has been constantly improving on all the services delivered, to cancer patients. The NCCP 2022-2025 has been developed to provide the strategic direction for a comprehensive cancer care and treatment, to patients, through health promotion and sensitization campaigns, screening activities, use of latest technology in treatment, palliative care modern infrastructure, enhanced skills and competencies of health personnel.

This NCCP has prioritized the five common cancers in the Mauritian population, namely breast, cervical, colorectal, prostate and lung cancers, without leaving behind the other cancers.

COUNTRY PROFILE

Mauritius is an island situated in the middle of the Indian Ocean about 900 kilometers to the east of Madagascar and 180 kilometers to the northeast of Reunion Island. It is about 61 kilometers long and 45 kilometers wide with an area of 1,864 kilometres square. The Government of Mauritius provides free health care, at point of delivery, to its population which also covers the islands of Rodrigues and Agalega.

The estimated resident population of the Island of Mauritius in 2019 was 1,221,663 (604,499 males and 617,164 females) compared to 1,222,208 in 2018 indicating a negative growth rate of 0.04%.



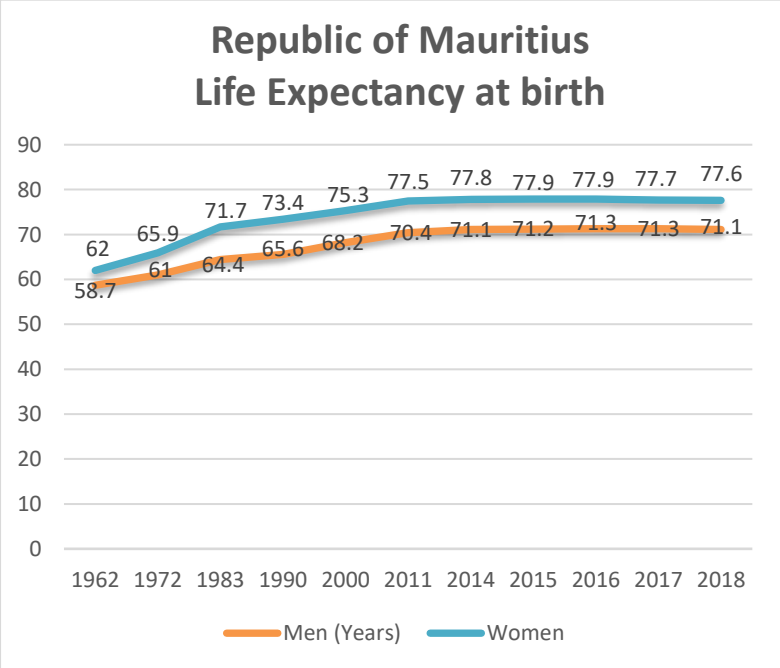


Figure 1: Life Expectancy at birth (Republic of Mauritius)

TABLE I: Key Economic Indicators, Republic of Mauritius, 2019

Indicators	Value: 2019
Gross Domestic Product at current market prices	Rs 503 billion (US $ 14.1 billion)
Economic Growth Rate	3.6 %
Total Exports of Goods and Services (f.o.b.)	Rs 197.1 billion (US $ 5.5 billion)
Total Imports of Goods and Services (f.o.b.)	Rs 269.8 billion (US $ 7.6 billion)
Investment Rate	19.8 %
Rate of Inflation	0.5 %
Unemployment Rate	6.7 %
Tourist Arrivals	1,383,488
Gross Earnings from Tourism	Rs 63 million (US $ 1.8 million)

Source: Statistics Mauritius

TABLE IV: Key Health Indicators, Republic of Mauritius, 2019

Health Indicators	Value
Life Expectancy at Birth (Male)	71.2 years
Life Expectancy at Birth (Female)	77.7 years
Infant Mortality Rate (per 1000 live births)	14.5
Maternal Mortality Ratio (per 100,000 live births)	62
Under-Five Mortality Rate (per 1000 live births)	16.0
Immunization Coverage (Public and Private sectors)	99%[WHO/UNCEF estimates -2019]
Prevalence Rate of HIV infection	1%
Prevalence of Type 2 Diabetes (20-74 years)	20.5%
Burden of Non-Communicable Diseases	80%

TABLE II: Country Context, Human Resources for Health, Mauritius

Year	2003		2008		2013		2019	
Grade	Number	Per 10,000 population	Number	Per 10,000 population	Number	Per 10,000 population	Number	Per 10,000 population
Doctor	**1,173**	**9.6**	**1,450**	**11.6**	**2,046**	**16.2**	**3,290**	**26.0**
Of which specialists	***(470)***		***(559)***		***(718)***		***(980)***	
Employed MOH	765	6.2	852	6.8	1,054	8.4	1,568	12.4
Of which specialists	*(208)*		*(275)*		*(290)*		*(354)*	
Private Sector	408	3.4	598	4.8	992	7.8	1,722	13.6
Dentist	**154**	**1.3**	**235**	**1.9**	**351**	**2.8**	**412**	**3.3**
Employed MOH	54	0.4	61	0.5	58	0.5	66	0.5
Private Sector	100	0.9	174	1.4	293	2.3	346	2.8
Pharmacist	**279**	**2.3**	**348**	**2.8**	**460**	**3.7**	**536**	**4.2**
Employed MOH	20	0.2	20	0.2	23	0.2	36	0.3
Private Sector	259	2.1	328	2.6	437	3.5	500	3.9
Qualified Nurse & Midwife	**2,958**	**24.1**	**3,400**	**27.3**	**3,963**	**31.5**	**4,494**	**35.5**
Employed MOH	2,799	22.8	3,179	25.5	3,202	25.4	3,958	31.3
Private Sector	159	1.3	221	1.8	761	6.1	536	4.2

Source: Health Statistics Reports

Descriptive Epidemiology in Mauritius

Epidemiology of Cancer

Cancer is a major cause of mortality in Mauritius. Death rate due to these non-communicable diseases were 595 per 100,000 population in 2019 as compared to 474 in 2010. Cancer of all sites taken together was in the third position with 1,441 (13.2%) deaths. The most recent summary statistics for cancer in Mauritius are displayed in table below.

Cancer trends as per National Cancer Registry (2001-2020)

A National Cancer Registry has been maintained on a continuous basis since 1990, initially it was a Hospital-Based registry and was shifted to Population-Based Cancer Registry as from 2000 (PBCR) where all cases diagnosed by private pathologists were also included. As from 2001, dedicated computer software - CANREG 4 - customised by the IARC was in use to maintain the database which was migrated to the newer CANREG5 in 2016.

Cancer surveillance is a key component of cancer control and the National Cancer Registry (NCR) provides an accurate picture of the occurrence of cancer in the Republic of Mauritius. The main objective of a cancer registry is to collect and classify information on all types of cancer in order to produce statistics on the occurrence of cancer in a defined population and to provide a frame work for assessing and controlling the impact of cancer on the community.

Sex distribution

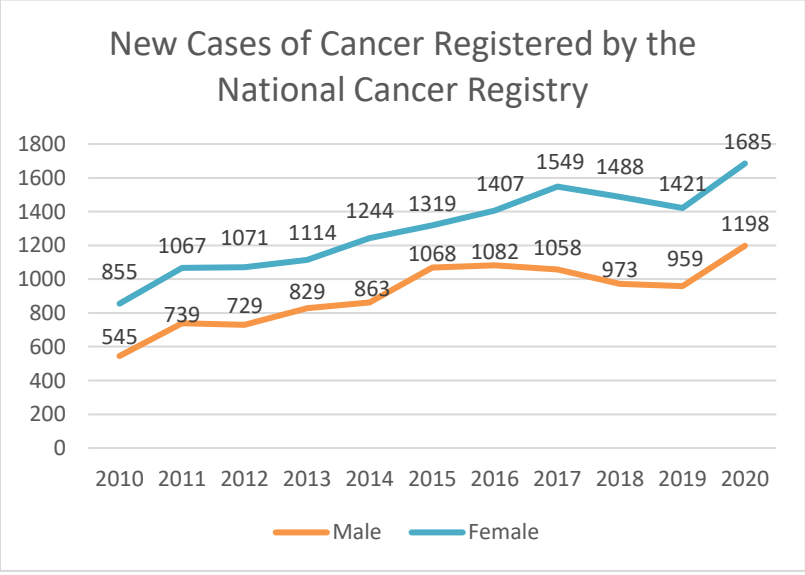


Figure 2: New Cases of Cancer Registered by the National Cancer Registry

Incidence of cancer

According to the National Cancer Registry, compared to year 2019, the incidence of cancer in 2020 has increased by 8% with an increase of 7.8% in females and an increase of 8.3% in male. 2883 new cases were registered. The total number of cancer cases among males are 1198.

Main cancer sites amongst males

Site	Number	Percentage (%)	ASR (World)
Prostate	183	16.5	19.6
Colorectal	154	13.9	16.9
Lung	106	9.5	11.4
Stomach	73	6.6	8.0
Lymphoma	68	6.1	9.0

Table 1: Main cancer sites amongst male

Among females there were 1685 new cancer cases.

Main cancer sites amongst females

Site	Number	Percentage (%)	ASR (World)
Breast	557	34.1	56.1
Uterus	173	10.5	16.5
Colorectal	164	10.0	14.7
Ovary	165	6.4	10.9
Cervix uteri	91	5.6	9.5

Table 2: Main cancer sites amongst female

1. The commonest sites of cancer in males were prostate (n=183, 16.5%), Colon/Rectum (n=164, 13.9%), trachea, bronchus and lung (n=106, 9.5%).

2. In females, breast cancer (n=557, 34.1%) is the most prevalent site of cancer followed by uterus (n=173, 10.5%), colorectal cancer (n=164, 10.0%).

3. 62% of all cancer in Mauritius occur at the age of 60 years and above, among which 45% cases are in males and 55% are in females.

4. 0.55% occurs in children 0 to 14 years.

5. Amongst deaths (all causes) in 2020, 1431 deaths were due to cancer. 676 deaths occurred in males whilst 755 deaths were noted in females.

6. In males, cancer of the prostate (n=104, 15.4%) is the leading cause of cancer deaths, followed by lung (n=102, 15.1%) and colorectal cancer (n=74, 10.9%).

7. In females breast cancer (n=184, 24.4%) is still the main cause of cancer deaths followed by colo-rectal cancer (n=79, 10.5%) and cervical cancer (n=76, 10.1%).

8. The Mortality/Incidence (MI) ratios 0.56 for males and 0.45 for females.

What is a National Cancer Control Programme

A National Cancer Control Programme (NCCP) is defined as a public health programme designed to reduce cancer incidence and mortality and improve quality of life of cancer patients through the systematic and equitable implementation of evidence-based strategies for prevention, early detection, diagnosis, treatment and palliation by making use of the available resources and it is considered to be a key element in cancer control.

The World Health Organisation identifies NCCPs as the most appropriate mechanism for exploiting existing knowledge with the potential to save millions of lives (Ngoma 2006).

National Cancer Control Programmes "create multiple opportunities to change national experience from one of fear, loneliness and despair to one of knowledge, support and hope" (True et al.2005).

As per WHO, cancer control is an integral component of the path towards Universal Health Coverage (UHC) and the key recommendations are as follows:-

- Activate political will, strengthen governance and make a cancer control plan founded on UHC.
- Identify priorities that are feasible, evidence-based and can be financed.
- Focus on WHO "best buys" for NCD Primary prevention.
- Prioritise and invest in early diagnosis.
- Implement effective, feasible cancer management interventions, ensuring high-quality
- Value-based care.
- Palliative and survivorship care should be included in all NCCPs.
- Strengthen information systems to improve planning and accountability.
- Fund priorities in cancer interventions and ensure financial protection.
- Optimise the work force and access to reliable, sustainable medicines and other products.

Aims of NCCP

The aim of the NCCP is to **lower the incidence of cancer, reduce morbidity and mortality** indices for cancer through: -

- Enhanced health promotion and preventive activities
- Improved diagnostic facilities
- Holistic approach to cancer care and using the latest technology

Objectives

General Objectives

- Prevention of cancer through awareness programmes.
- Reduction of the mortality and morbidity indices.
- Provision of screening facilities to the population.
- Improving the quality of life of cancer patients through timely diagnosis, treatment and palliative care.

Specific Objectives

- To determine the incidence and prevalence of cancer.
- To educate the population about cancer, primary and secondary prevention of cancer, the importance of early detection through screening, to recognise signs and symptoms of common cancer.
- To reduce mortality due to cancer by optimizing treatment.
- To improve the treatment outcome of cancer patients through timely diagnosis, treatment and palliation.
- To provide early diagnosis at primary level through educating healthcare professionals through regular seminars, Continuous Medical Education (CME) and workshops. To integrate oncology in the curriculum (syllabus/training) of medical and nursing students.
- To upgrade the existing oncological services with a special emphasis on new technologies in radiotherapy in line with Standard of Procedures (SOPs) and departmental treatment protocols.
- To improve the quality of life of cancer patients with psychosocial and physical rehabilitation (palliative care). To further expand and develop palliative care from Hospital centered to community and domiciliary based.
- To ensure training (both formal and on the job) of all staff involved in cancer care.
- To increase the five-year survival rate in both sexes by aiming at early diagnosis and optimizing treatment.
- To set up a research unit in the field of oncology for better cancer control.
- To improve radiation safety measures in line with the Radiation Safety and Nuclear Security Authority.

Methodology and Strategic Directions

Methodology

The NCCP has made use of both quantitative and qualitative data obtained from observation and analysis of the current situation of cancer care. The quantitative data was obtained from the National Cancer Registry 2020, Mauritius Health statistics 2019, NCD survey 2015 and WHO data.

The recommendations of the IAEA following an imPACT mission in December 2018 have been included in the NCCP 2022-2025 as well as those of other stakeholders obtained through several consultative meetings.

Strategic Directions of the NCCP 2022-2025

This Strategic Plan has prioritized five most common cancers occurring in the Mauritian population namely breast, colorectal, prostate, cervix and lung. Strategies will be developed to significantly reduce the morbidity and mortality due to cancer. The overall aim is to expand access to cancer awareness, prevention, early detection, treatment, palliative care and research. Each general objective will have specific objectives and key strategies which will be translated into activities to guide the implementation of this plan.

These strategic directions are based on a comprehensive approach using the "Six Health System Building Blocks" comprising:

1. Leadership and governance
2. Human Resource Planning
3. Medical products and Vaccines
4. Health information systems
5. Service delivery
6. Financing

This Plan will address gaps in the cancer management and strives to engage all the stakeholders. It is essential to gear and adhere to this plan so that it can be successfully implemented by 2025.

Leadership and Governance

The Government of Mauritius has continued to provide appropriate leadership in the implementation of policies and strategies related to cancer. However, gaps in the cancer policy, regulatory, institutional and organizational frameworks will be addressed through this NCCP 2022-2025.

Human Resource (HR) Planning

Efficient Human Resource planning will enable the hospital to become a comprehensive cancer centre equipped with the appropriate number of qualified staff with the required competencies and skills.

Medical Products and Vaccines

Quality, efficacious, safe and affordable essential cancer medicines and medical supplies at all levels of service delivery, should be made available through an efficient effective procurement and logistics management. The safe administration of cytotoxic drugs will require trained pharmacists, doctors and nurses.

Health Information Systems

A population-based cancer registry is available since 1990. The Registry ensures availability of relevant, accurate, timely, and accessible cancer related data, to support the planning, coordination, monitoring and evaluation of cancer services.

Strengthen a population-based cancer registry to further improve the usage of the cancer related information to support the programming of cancer services.

Service Delivery

The renovated building of the National Cancer Hospital is operational since October 2020. Treatment facilities (chemotherapy) are available at the National Cancer Hospital and the Radiotherapy Unit is at Victoria Hospital, Candos. The facility will be fully operational by 2023.

Financing

Public financial resources have been earmarked for this Plan and additional funds will be allocated as and when new services will be introduced.

Stakeholders involved

There are also many stakeholders who directly or indirectly contribute in cancer awareness programmes and measures to reduce the incidence of cancer. These include the Ministry of Education, Tertiary Education, Science and Technology, Ministry of Finance, Economic Planning and Development, Ministry of Social Integration, Social Security and National Solidarity, Ministry of Agro Industry and Food Security, Ministry of Gender Equality and Family Welfare, Radiation Safety and Nuclear Security Authority, Mauritius Institute of Health, University of Mauritius and Non-Governmental Organisations (NGOs).

In the context of the development of the NCCP, the MOHW organised a multisectoral meeting including the above-mentioned stakeholders and recommendations made were included in this NCCP.

Implementation of the NCCP 2022-2025

The increasing burden of cancer in Mauritius requires efficient planning and coordination to ensure adequate sensitization, health promotion, prevention and control of cancer.

There is a strong need to set up a National Steering Committee to monitor, evaluate and implement actions taken for cancer control. Monitoring tools will have to be designed in collaboration with clinicians to be able to achieve quality and timely interventions.

The implementation framework should have both legal and regulatory frameworks. The NCCP will be implemented through the National Cancer Hospital (NCH). The NCH will work closely with the Director Health Services, Non-Communicable Diseases and take the responsibility to coordinate all activities and ensure implementation of the key strategies of this plan. Other stakeholders will also be involved in its implementation. To ensure the highest level of participation and accountability, the NCCP will be responsible for the management, implementation and analysis of the NCCP 2022-2025.

Role of Civil Societies

The Non-Governmental Organisations (NGOs) operating in the field of cancer, play a crucial role in providing support and care to cancer patients. They are engaged in primary and secondary prevention of cancer, provide psychological support and rehabilitation services. Cancer survivors who are members of the civil societies can advise on all the aspects of cancer, by sharing their experiences with patients needing help from the time they are diagnosed and give psychological support during their treatment as well as rehabilitation. They can help to change the mindsets by being an example themselves. They have no bureaucratic barriers and help to fill the gaps.

The civil societies in Mauritius has helped cancer patients by providing transport facilities to those on treatment, psychological support, breast prosthesis, awareness campaigns, etc. Their presence provides valuable support in the fight against cancer. They can further assist with domiciliary care in the field of palliative care.

Situational Analysis on the role of stakeholders

Stakeholders	Role of Stakeholders	Current Status and future actions
MOHW	• To provide comprehensive cancer care to the general population	• The Ministry of Health and Wellness has recognized the increasing cancer burden among the Mauritian population. • The MOHW is investing on a state-of-the-art Cancer Hospital with the latest technologies and treatment for optimising cancer care. • E-Health is being implemented at the national level.
Population at large	• Have general information about cancer	Cancer remains a stigma due to lack of information. Patients and relatives live in fear and suffer in silence. To address this issue, the following actions have already been initiated and will be reinforced: • Pamphlets on cancer are available in all health services • Regular TV and radio programmes are a tool to promote awareness on cancer

Stakeholders	Role of Stakeholders	Current Status and future actions
	• Prevention • Symptoms and signs • Early Screening, Treatment • De-stigmatization of cancer	• Awareness campaigns will be reinforced through adequate use of technology for information dissemination, behavioural change and community participation • Involvement of the community and participation in cancer prevention and control will be reinforced.
Cancer survivors and patients on active treatment	• To receive quality comprehensive cancer care. • Timely diagnosis • Regular follow-ups and appropriate investigations • Easy access to palliative care • Support groups • Awareness program throughout the island	• Participation in cancer prevention and control • Cancer is suffered in silence, fear, and stigma

Stakeholders	Role of Stakeholders	Current Status and future actions
Involvement of different Ministries	• Information on Healthy lifestyle– Education • Sporting facilities and encourage physical activity (MUGA, Wellness) • Control tobacco use and alcoholism • Promotion of sport, physical activities • Food security and safety • Enforcement of legislation and regulation in line with palliative care • UOM and Polytechnics Mauritius Ltd help in setting training programmes.	• Inter-collaboration with different Ministries to promote a good communication • Lack of interest of physical activities among the population at large • MUGA is community-based fun and fitness movement which aims to achieve its objective by creating sustainable infrastructure, promoting activities through the use of technology • Revision of taxes for tobacco and alcohol in May 2021
NGOs	Advocate for: • Delivery of quality cancer care and services to local citizens • Equitable access to cancer care and services • Participation of communities in cancer awareness programmes • Dissemination of information on cancer	• Collaboration with other stakeholders

Table 3: Situational Analysis on the role of stakeholders

Evaluation of National Cancer Control Programme (2010-2014)

1. To document the progress achieved.
2. To recognize our weaknesses (clinical and infrastructure).
3. To incorporate the experiences learnt in NCCP 2022-2025.

Achievements

- The Ministry of Health and Wellness has shown strong commitment to the cancer cause.
- Increased awareness through sensitization campaigns.
- HPV vaccination forms part of the National Vaccination Programmes (EPI) since 2016.
- Regular cervical cancer screening programme is being conducted.
- Chemotherapy-Introduction of targeted therapy and novel agents in breast cancer, lymphoma, carcinoma lung and Hepatocellular Carcinoma.
- Decentralisation of chemotherapy services to all regional hospitals.
- A dedicated 13 bedded paediatric ward at Victoria Hospital has been set up.
- Increased in number of Radiotherapy Technologist (RTT) personnel.
- The first palliative care OPD started in 2017 at Dr A.G. Jeetoo Hospital.
- Palliative care is being offered as both inpatient and outpatient at Victoria Hospital.
- Additional Clinical and Radiation Oncologists, Medical Oncologists, Medical Physicists and Radiotherapy Technologists have been recruited.

Weaknesses

- A National Steering Committee was not set up to monitor and evaluate the NCCP 2010-2014.
- A structured National Screening Programme has not been set up (cervical, breast and colorectal).
- Quality Assurance Programmes were not adopted.
- Absence of legislation for DNR (Do Not Resuscitate) for palliative care patients.
- Limited research in the field of oncology.

PRINCIPLES OF CANCER PREVENTION AND CONTROL

Interventions at the level of primary prevention is recognised to be the most effective means of reducing the burden related to cancer. A population-based approach, supported by policy and legislative measures are of great importance in encouraging and supporting people to adopt a healthy lifestyle, screening for early detection and treatment of cancer, thereby improving the quality of life of cancer patients.

Primary prevention

Primary prevention measures can prevent up to 40% of all cancer types by reducing risk factors, such as smoking, lack of physical activity, overweight and obesity, alcohol consumption, unhealthy diet, excessive sunbathing, and the exposure to carcinogenic substances in working environment as well as by providing immunisation against certain types of viruses and bacteria.

Secondary prevention

Secondary prevention aims at early detection of cancer through mass screening. Timely detection and treatment of cancer improves overall survival rate.

Tertiary prevention

Tertiary prevention aims at minimizing consequences related to cancer, by reduction of complications, prevention of dysfunction and providing effective rehabilitation and psycho-social support, so as to improve the quality of life of cancer patients.

Cancer awareness

Cancer Awareness Programmes are measures taken to sensitise the public of the signs, symptoms, risk factors of cancer so that it is detected at an early stage.

Such programmes are carried out through mass media, workshops, and health talks at community level.

PREVENTION

Both primary and secondary prevention are internationally identified as key measures towards reduction of cancer burden. A population-based approach, supported by policy and legislative measures, is of great importance in encouraging and supporting people to adopt a healthy lifestyle.

Primary prevention

1. Tobacco
2. Alcohol
3. Obesity, Physical Activity
4. Role of nutrition
5. Environment
6. Infection
7. Sexual education
8. Immunisation

Tobacco

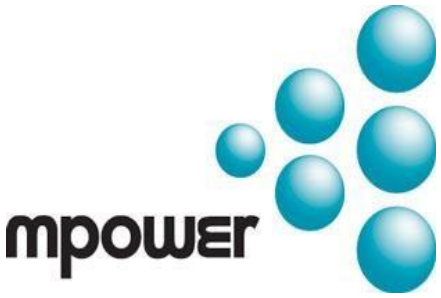
Tobacco smoke has been classified by International Agency for Research on Cancer (IARC) as a Group 1 carcinogen i.e., the chemical is carcinogenic to humans. More than 7000 chemicals have been identified in tobacco smoke and at least 250 of them, are known to be harmful and more than 50 are known to cause cancer.

The Republic of Mauritius is one of the first signatory African country of the Framework Convention on Tobacco Control (FCTC) and is in alignment with legislative clauses figuring in the FCTC. Mauritius ratified FCTC on 17/05/2004.

A National Action Plan on Tobacco Control 2022-2026 is currently being validated.

The 6 MPOWER measures have been listed with specific adaptation to the Mauritian context to monitor tobacco use and prevention policies.

1. Monitor tobacco use and prevention policies.
2. Protect people from tobacco use.
3. Offer help to quit tobacco use.
4. Warn about the dangers of tobacco.
5. Enforce bans on tobacco advertising, promotion and sponsorship.
6. Raise taxes on tobacco.



Recommendations

- To implement the 6 MPOWER.
- To reinforce legislation on tobacco use.
- To be part of all sensitisation campaigns on healthy lifestyle.
- To promote “quit cigarette” campaigns.

Alcohol

Alcohol remains one of the world's top three priority public health areas as per the World Health Organisation. Globally, alcohol is related to 2.5 million deaths per year and 12.5% of these are due to cancer. Worldwide alcohol is responsible for 5.2% of overall cancers in males and 1.7% in females. Alcohol consumption is associated with cancer of the oral cavity, pharynx, larynx, oesophagus, liver, female breast, and colorectal cancer. Its role in other cancers, such as lung cancer and Non-Hodgkin Lymphoma, is inconclusive. There is a dose–response relationship between alcohol and head and neck cancer with 2-to 3-fold increased risk per 50g of alcohol per day, depending on the cancer site. Smoking and alcohol consumption has a synergistic action in head and neck cancer.

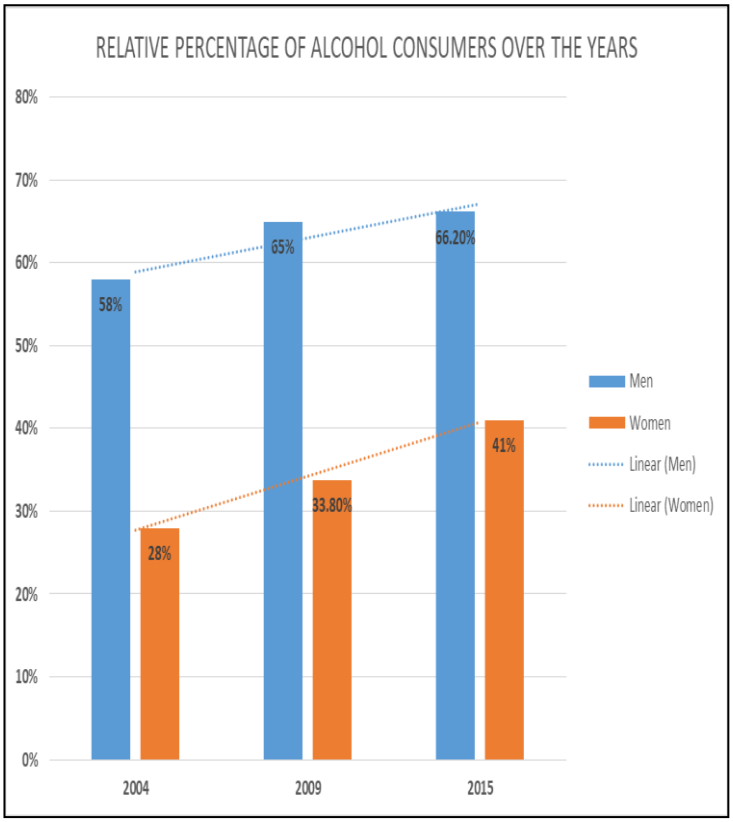


Figure 3. Alcohol consumption profiles based on gender in Mauritius.

A National Action Plan to Reduce the Harmful Use of Alcohol (2020-2024) has been validated in July 2020.

Recommendations

- To ensure the targeted outcome of the National Action Plan to Reduce the Harmful Use of Alcohol (2020-2024) are met within the set time frame.
- To conduct aggressive sensitisation campaigns against alcohol, use all year round.
- To include the harmful use of alcohol consumption in all NCD health promotion and sensitisation campaigns.

Physical Inactivity, Dietary factors, Obesity and Overweight

As per the Non-Communicable Disease Survey 2015, only 23.7% of Mauritian adults aged 25-74 years reported undertaking sufficient physical activity. The age and gender standardized prevalence of obesity was 19.1% (11.1% in men and 25.9% in women). (Associate Professor D. Magliano, Associate Professor J. Shaw, Professor P. Zimmet, 2015).

Overweight and obesity is accountable for approximately 20% of all cancer cases (Kathleen Y. Wolin, 2010). Based on the rising obesity trends prevalent in the Mauritian context, the Government has enacted various national policies (Ministry of Health and Quality of Life, 2009-2010):

The MOHW has taken the following initiatives:-

- Establishment of health tracks “parcours de santé” at a national level.
- Setting up of health clubs to foster a culture of community sport and physical activity in collaboration with other stakeholders.
- Further strengthening of physical activity programmes (yoga, aerobics, zumba and physical exercise) for women, senior citizens and the population at large by the NCD and Health Promotion Unit of the Ministry.

Recommendations

- Physical activity should be included in the curriculum of the primary, secondary and tertiary institutions.
- Sensitisation campaigns on the benefit of physical activity for healthy ageing should be reinforced.
- Sports activities must be encouraged for one and all.
- More health tracks and outdoor gymnasia to be set up by the Ministry of Health and Wellness.

Role of Nutrition

Unhealthy eating habits may lead to overweight and obesity which are accountable for approximately 20% of all cancer cases (Kathleen Y. Wolin, 2010) and they are known precursors for many chronic illnesses such as hypertension, cardiovascular diseases, diabetes mellitus, depression and anxiety among others.

The NCD and Health Promotion Unit of the MOHW carries out regular sensitisation campaigns as well as screening programmes for early detection of overweight and obesity at school, community and site of work.

More than 50% of all cancers are related to diet and individual habits like alcoholism and smoking. For example, high fat diet and obesity are associated with breast cancer. Deep-fried, burnt food and preserved (high salt) foods are associated with increase in gastric cancer incidence. Food low in fibre content and rich in animal fat increases the risk of cancer of stomach and oesophagus. High intake of red meat and low fibre diet are associated with high incidence of gastric cancer in the USA. WHO has classified processed meat as Group 1 (carcinogenic to humans) while red meat classified as Group 2 A (probably carcinogenic to humans) for colorectal cancer.

Carcinogenic food/substances

The correlation of unhealthy diet and cancer needs to be emphasised. The population needs to be educated on:

- adopting a healthy eating habit, by reducing the consumption of fast foods which are deep fried;
- increasing the consumption of fruits and vegetables;
- different carcinogenic substances in food preparation and how to decrease their consumption (see table below);
- protection of consumers through improved food quality and safety with the mandatory introduction of nutritional sign post labelling so as to get an “at-a-glance” information about food being purchased at food venues; and
- labelling informing buyers of the levels of sugars, fat, saturated fat and salt.

Carcinogenic Substances	Association with Cancer and measures to reduce the Carcinogenic effects
Heterocyclic amines (HCA)	Are pyrolysis products synthesizes from food during grilling process Epidemiological studies how associations between intakes of Heterocyclic amines-viewed as potential mutagens-and cancer of the colon, rectum, breast, prostate, pancreas, lung, stomach/oesophagus.
Polycyclic Aromatic Hydrocarbons (PAHs)	Avoiding direct exposure of meat to an open flame or a hot metal surface and avoiding prolonged cooking times (especially at high temperatures) can help reduce HCA and PAH formation. (Knize MG,2005). Continuously turning meat over on a high heat source can substantially reduce HCA formation compared with just leaving the meat on the heat source without flipping it often (KnizeMG,2005). Removing charred portions of meat and refraining from using gravy made from meat drippings can also reduce HCA and PAH exposure.
Aflatoxins	*Aspergillus* molds infest staple crops such as maize, peanuts, rice, and wheat throughout the world. Chronic low-level exposure to aflatoxins, particularly aflatoxin B1, is associated with increased risk of developing liver cancer-hepatocellular carcinoma. To reduce aflatoxin exposure, it is advisable to buy only major commercial brands of nuts and nut butters and by discarding nuts that look mouldy, discoloured, or shrivelled (NCI).
Aldehydes	Heating up vegetable oils leads to the release of high concentration of chemicals called aldehydes, which have been linked to illnesses including cancer, heart disease and dementia. Low-heat cooking or baking (less than 240 degrees celsius) prevent soils or fats from turning carcinogenic. Instead of deep-frying, pan-frying, and sautéing, opt for healthier methods such as baking, boiling, steaming, or broiling.

Table 4: Measures to reduce the effects of carcinogenic substances

Proposed Mauritius Food Standards Authority

The Government is coming up with the setting up of a Mauritius Food Standards Authority (MFSA) to act as a body assessing and proposing food standards for adoption. The MFSA will be responsible for:

a) revising and updating the national food control policy as needed;

b) advising relevant ministry officials on policy, determination of priorities and use of resources for food control;

c) drafting regulations, standards, and codes of practice and promoting their implementation;

d) coordinating the monitoring performance of the food control system including laboratory analysis; and

e) developing consumer education and outreach activities and material and promoting their implementation.

Recommendations

- To further sensitise the population on the direct correlation of unhealthy diet/ carcinogenic substances and cancers.
- To encourage healthy eating habits.
- To reinforce school health programmes on balanced diet.
- To adopt the recommendations made by the Mauritius Food Standards Authority.

Environment and cancer

Environmental pollution which includes air pollution, water pollution and land pollution all have a bearing on the incidence of cancer. The air is polluted mainly by the emission of toxic fumes from the exhaust pipes of vehicles. The Ministry of Environment, Solid Waste and Climate Change. The Road Traffic Control of Emission (Regulations 2022) came into force on Monday 21 February 2022. The smoke meters will allow the detection of the rate of emission from a diesel engine vehicle and the offenders are liable to a fine accordingly. Water and land get polluted by excessive use of plastics, pesticides, insecticides and herbicides.

Though there exists a dearth of research in the context of exposure to environmental pollutants and cancer, the most dreaded carcinogenic substance of major environmental importance remains asbestos “l’amiante”.

Asbestos was included as a dangerous chemical in the Dangerous Chemicals Act, 2004. The U.S. Department of Health and Human Service (HHS), the U.S. Environmental Protection Agency (EPA), and the International Agency for Research on Cancer (IARC) have established the link existing between asbestos and cancer (Registry, September 2001). Asbestos causes mesothelioma,

a relatively rare cancer of the thin membranes that line the chest and abdomen, as well as cancer of the lung, larynx and ovary.

The Ministry of Environment, Solid Waste and Climate Change addresses issues specific to environmental pollution namely Air Quality, Water Quality, Noise Pollution and Ozone Depleting Substances and Persistent Organic Pollutants. The Ministry also controls Ambient Air Quality regulated under the Environment Protection (Standards for Air) Regulations 1998.

Ambient air quality

In Mauritius, air pollution control is regulated under the Environment Protection (Standards for Air) Regulations 1998. The Ministry of Environment and Sustainable Development has got two ambient air quality monitoring stations:

1. The National Environmental Laboratory at Medco, Cassis.
2. A mobile station circumstantially displaced to sites where high pollution levels are suspected.

Automatic analysers and equipment at the stations measure the concentrations of major pollutants such as Sulphur dioxide, oxides of nitrogen, carbon monoxide, ozone, particulate lead and respiratory suspended particles (PM10).

Climate Change and its impact on Cancer

Climate Change will have adverse impacts on human health. According to various studies, Climate Change such as rising temperatures, wildfires and poor air quality could lead to an increased risk of cancer, especially lung, skin and gastrointestinal cancers.

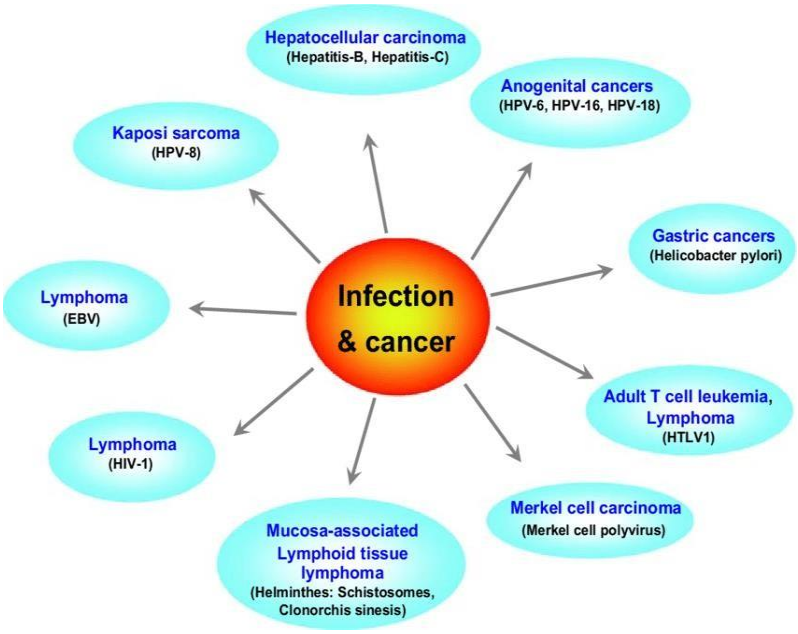
Recommendations

- A surveillance programme for daily monitoring of pesticide residue levels on a representative sample of fresh fruits and vegetables sold on the local markets to be set up in collaboration with the Ministry of Agro Industry and Food Security.
- The population at large must be educated on the dangers of excessive use of pesticides, insecticides, and herbicides amongst others.
- Routine checks of government buildings that have used asbestos materials to be carried out. Asbestos is a danger to health when its fibres are released in the air.

Infection and cancer

There are many sexually transmitted infections (STDs) that predisposes to certain types of cancer namely, Human Papilloma Virus (HPV) can cause cervical cancer, anus and penis; Chronic Hepatitis Band Hepatitis C infections cause liver cancer; HIV infection can cause several types of cancer including Kaposi Sarcoma.

Besides, STDs other infections are also known to cause cancer e.g. Helicobacter Pylori causes cancer of the stomach.



Infections and Infestations causing cancer

Sexual health education

Comprehensive sexual education is a curriculum-based process of teaching and learning about the cognitive, emotional, physical and social aspects of sexuality.

In Mauritius sexual education has already been incorporated in the curriculum that are currently used in Standards V and VI since 2011. At the primary level, the learning competencies for sexual education is taught under subject "Health Education". Sexual education is integrated at the secondary level in subjects like Health & Physical Education, Integrated Science and Biology.

Some sexually transmitted infections increase the risk for developing certain cancers.

- HHV is the primary cause of a number of cancers including those of the cervix, anus and penis.
- Chronic Hepatitis B and Hepatitis C infections cause liver cancers.
- HIV patients are susceptible to several cancers including Kaposi Sarcoma.

Immunisation

The Republic of Mauritius has a well-established programme of immunization for boys and girls as follows: -

Immunisation for boys and girls

Boys		Girls	
Vaccine	**Recommended age**	**Vaccine**	**Recommended age**
BCG	**0-3 months**	BCG	**0-3 months**
Rotavirus Vaccine1	**6 weeks**	Rotavirus Vaccine1	**6 weeks**
PCV1	**6 weeks**	PCV1	**6 weeks**
Hexavalent 1 +OPV1	**6 weeks**	Hexavalent 1 +OPV1	**6 weeks**
Rotavirus Vaccine2	**10 weeks**	Rotavirus Vaccine 2	**10 weeks**
Hexavalent 2 + OPV2	**10 weeks**	Hexavalent 2 +OPV2	**10 weeks**
PCV2	**14 weeks**	PCV2	**14 weeks**
Hexavalent 3 +OPV3	**14 weeks**	Hexavalent 3 +OPV3	**14 weeks**
MMR	**9 months**	MMR	**9 months**
PCV3	**10 months**	PCV3	**10 months**
Booster MMR	**17 months**	Booster MMR	**17 months**
Booster Hexavalent + OPV4	**18 months**	Booster Hexavalent + OPV4	**18 months**
DTaP –IPV	**(school entry) 5 years**	DTaP –IPV	**(school entry) 5 years**
Tdap	**11–12 years**	HPV vaccine 1 (**girls only**)	9 years
		HPV vaccine 2 (after 6 months) (**girl only**)	9 years
		Tdap	11–12 years
		Others	

Table 5: Immunisation for boys and girls

Note:

- BCG: Bacille Calmette Guerin–against Tuberculosis Hexavalent: Diphtheria, Pertussis, Tetanus, Haemophilus Influenzae Type B, Polio (Inactivated), Hepatitis B
- MMR: Measles, Mumps, Rubella
- HPV: Human Papilloma Virus
- PCV: Pneumococcal Conjugate Vaccine
- OPV: Oral Polio Vaccine DTaP–IPV: Diphtheria, Tetanus, a cellular pertussis, Inactivated Polio
- Tdap: Tetanus, diphtheria and pertussis

Hepatitis B Vaccination

Hepatocellular cancers are mostly attributable to hepatitis B virus which can be prevented by vaccination. Hepatitis B vaccination is already included in the EPI.

According to the National Expanded Programme of Immunisation, the Hexavalent Vaccine which provides immunity against six important preventable childhood diseases including Hepatitis B is given as a single injection.

HPV vaccination in the Republic of Mauritius

A National HPV Vaccination Programme has been introduced in 2016 in both public and private schools targeting 9-year-old girls (5-school-grade) with a two-dose (0 and 6 months) bivalent HPV vaccine.

The vaccine is directed against the two strands of HPV most associated with cervical cancer (16 and 18) and has been included in the Expanded Programme of Immunisation (EPI) in line with WHO recommendations. The vaccine is available for Grade 5 school girls and are administered in two doses with at least six months' interval between the doses. As at date, 88,096 students have been vaccinated. Young boys aged 10-14 years will also be considered for HPV vaccination.

Recommendations

- To reinforce sexual education in schools.
- To conduct sensitisation programmes on prevention, early detection and treatment of Sexually Transmitted Diseases (STDs).
- To promote immunization against HPV and Hepatitis B vaccine.
- To include young boys in the HPV vaccination programme.
- To consider a one-time catch-up HPV vaccination of 14-18-year-old girls and document adverse events following HPV vaccination carefully to address vaccine safety.
- To conduct a high-quality survey to evaluate and confirm reported levels of Hepatitis B vaccine coverage.

Secondary Prevention

Secondary prevention aims at an early diagnosis of cancer through screening activities. In the Mauritian context, screening the general public for detectable preclinical cancer will reduce the overall cancer morbidity and mortality. The multi-ethnic composition of the Mauritian population remains an important component while screening as ethno-cultural sensibilities have to be addressed cautiously.

The screening activities conducted by MOHW are mainly directed towards breast and cervical cancers and are offered in dedicated clinics at Primary Health Care Centres and mobile clinics (Caravanes de Santé).

Breast Cancer Screening

Breast cancer is the most common cancer among women in Mauritius. Breast cancer screening is offered to women attending Primary Health Care Centres and the "Caravanes de Santé" across the island. Clinical breast examination is carried out by primary health care doctors. Breast self-examination is strongly recommended and pamphlets are widely distributed both at community level and at site of work. Mammography services are proposed to high-risk cases.

Mammography

Mammography has been recognised as the only effective population-based strategy for early detection of breast cancer and mitigates the risk for breast cancer–specific morbidity and mortality. WHO recommends a screening interval of two years as from age 50-69. In United States, the rate of breast cancer mortality has decreased by more than 30% with the advent of mammography screening.

Cancer Screening Pathways

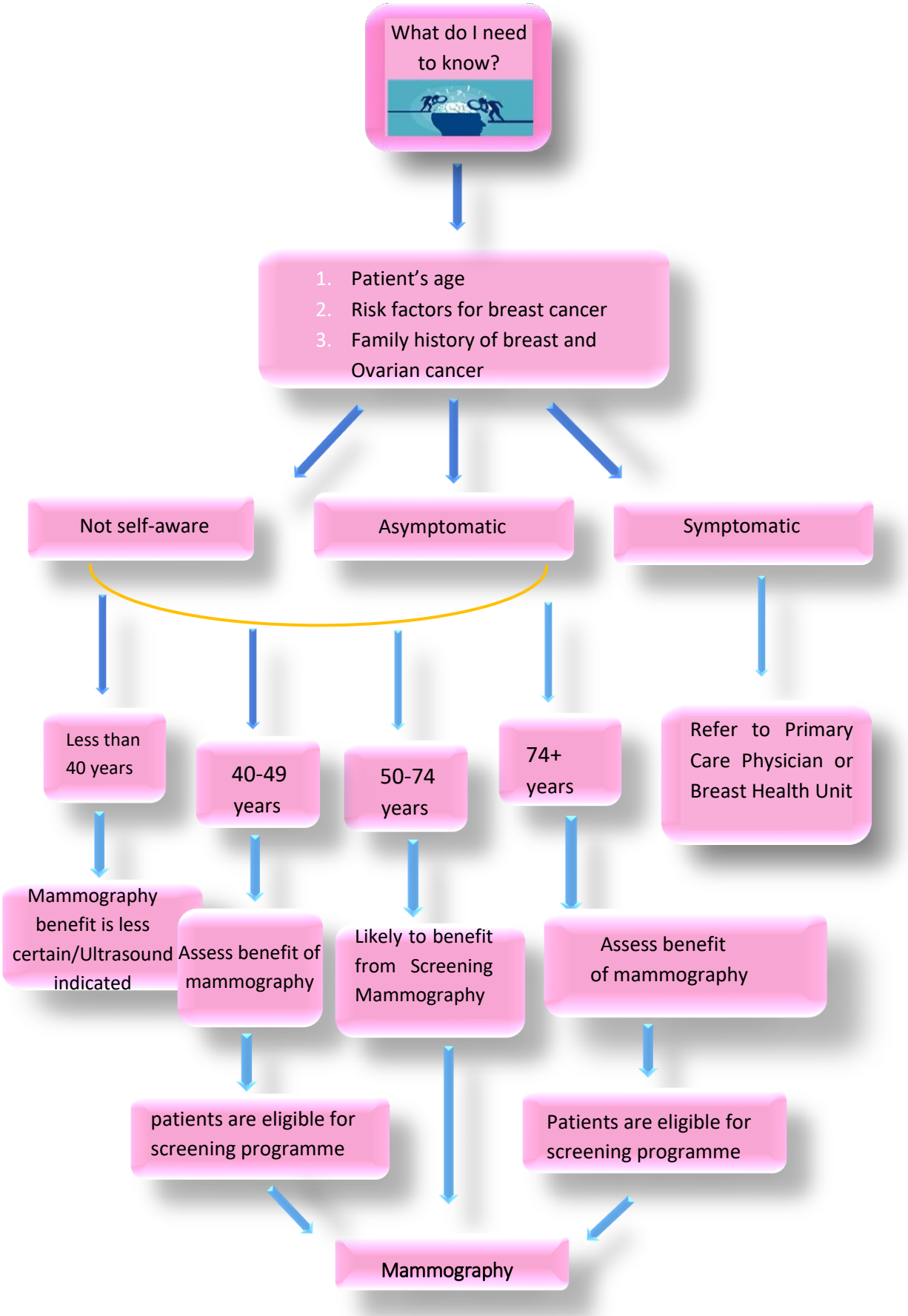


Figure 4: Cancer Screening Pathways - Mammography

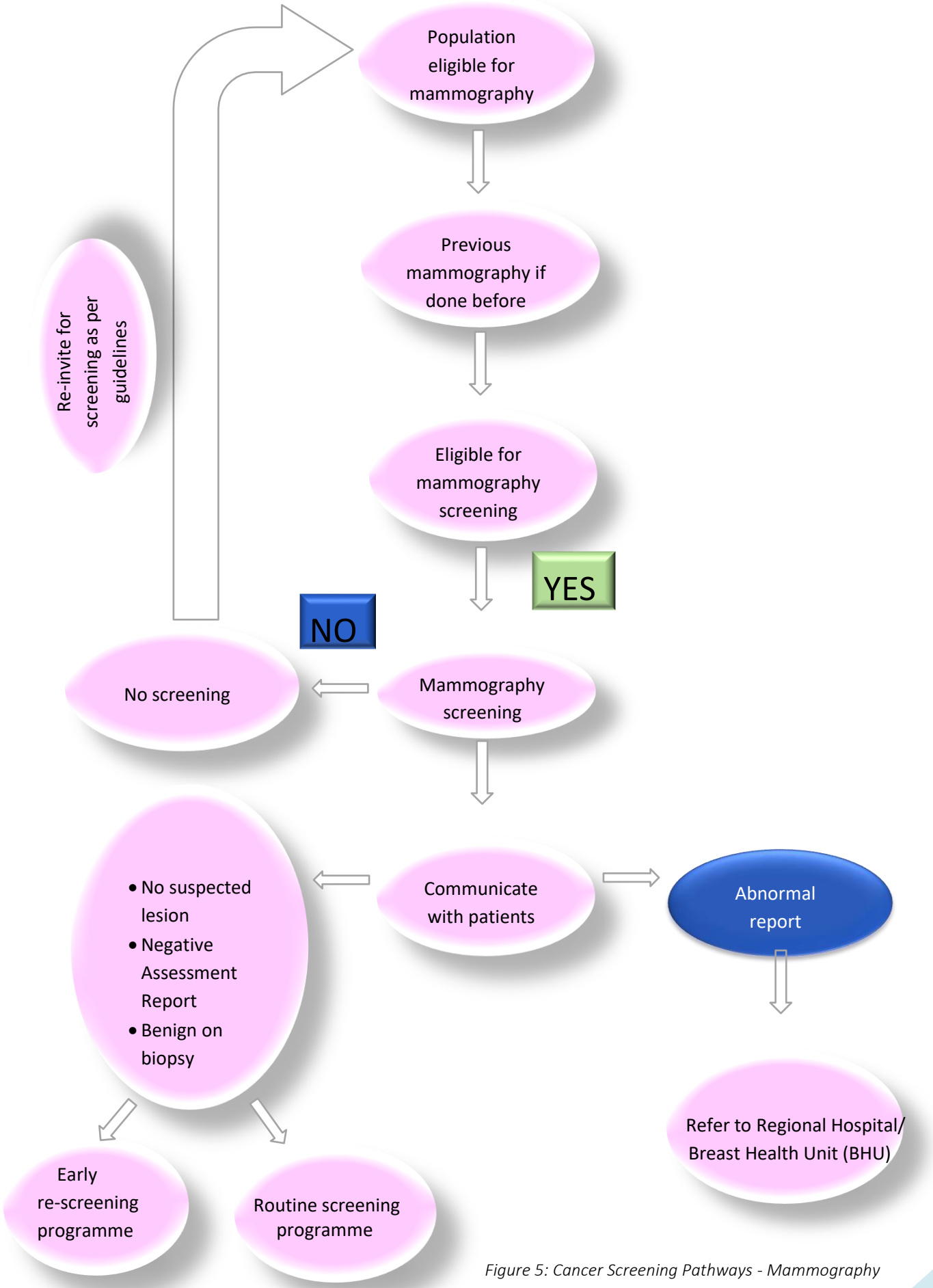


Figure 5: Cancer Screening Pathways - Mammography

Cervical Cancer Screening

National Cervical Cancer Screening Programme

- Cervical cancer is preventable.
- Mass screening by Pap-Test/ Liquid-based Cytology are an established effective method of cervical cancer prevention and is the most successful screening programme.

Aims

- To reduce death from cervical cancer by screening.
- To provide appropriate ablative excisional treatment for precancerous lesions.
- Near 60% coverage of target population of sexually active women between the ages of 25 to 65 years for a Pap-Test/ Liquid-based Cytology/Co-testing HPV every 5 years till 2025.

Method

- Liquid Based Cytology (LBC)/Bethesda Protocol.
- Technical Team of LBC who are trained cytoscreeners (already in place to be scaled up as required).
- Dedicated colposcopy unit for management/treatment of pre-cancer on an outpatient basis.
- Centralised information system for data capture, quality assurance, and call/recall/ follow-up and maintaining of database of target population.

HPV/Pap Co-Testing

It is a procedure in which a human papillomavirus (HPV) test and a Pap test are done at the same time to check for cervical cancer. The HPV test identifies DNA or RNA of certain high-risk types of HPV in samples of cells taken from the cervix. The Pap test detects cervical cancer cells and abnormal cell changes that may predispose to cervical cancer. The HPV test and the Pap test can be simultaneously carried out on the same cell sample. HPV/Pap co-test is recommended for women aged 25 to 65 years every 5 years. Co-testing has a higher sensitivity for detection of abnormal cells in comparison to only a Pap test.

Cervical Cancer Screening Pathway

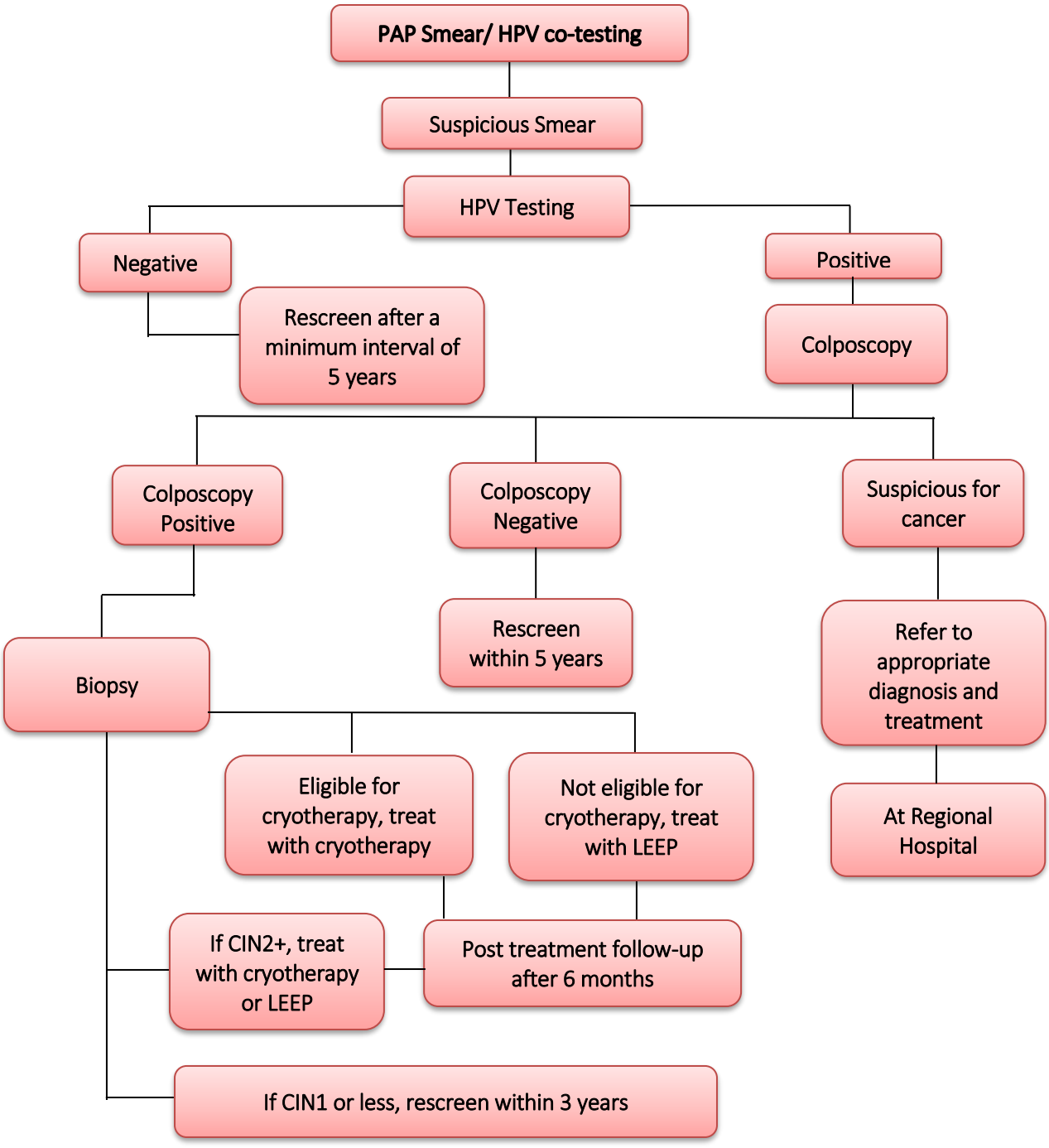


Figure 6: Cervical Cancer Screening Pathway

Recommendations

- Co-testing should be introduced in the Cervical Cancer Screening Programme by 2023.
- The National Cervical Cancer Screening Programme to be restructured.

Colorectal Cancer Screening

The incidence for Colorectal cancer has been increasing progressively over the last 30 years and is a major health issue. Most of the developed countries have taken measures to control and reduce mortality from Colorectal Cancer. A Pilot Study has been carried out by the Ministry of Health and Wellness in 2018. The conclusion of this Pilot Study indicate

(i) The risk for Colorectal Cancer is 60-70 years with a male predominance;

(ii) Obesity and Overweight (59%) are the prominent risk factors; and

(iii) FIT test is the first line screening and is highly specific as well as affordable.

It is proposed to screen over a period of five years around 10,000 adults aged between 60 and 70 years for the presence of occult blood in stools using the Faecal Immunochemical Test (FIT). Participants having a positive occult blood need to undergo colonoscopy for confirmation of the presence of cancer or adenomatous polyps and appropriate treatment will be dispensed.

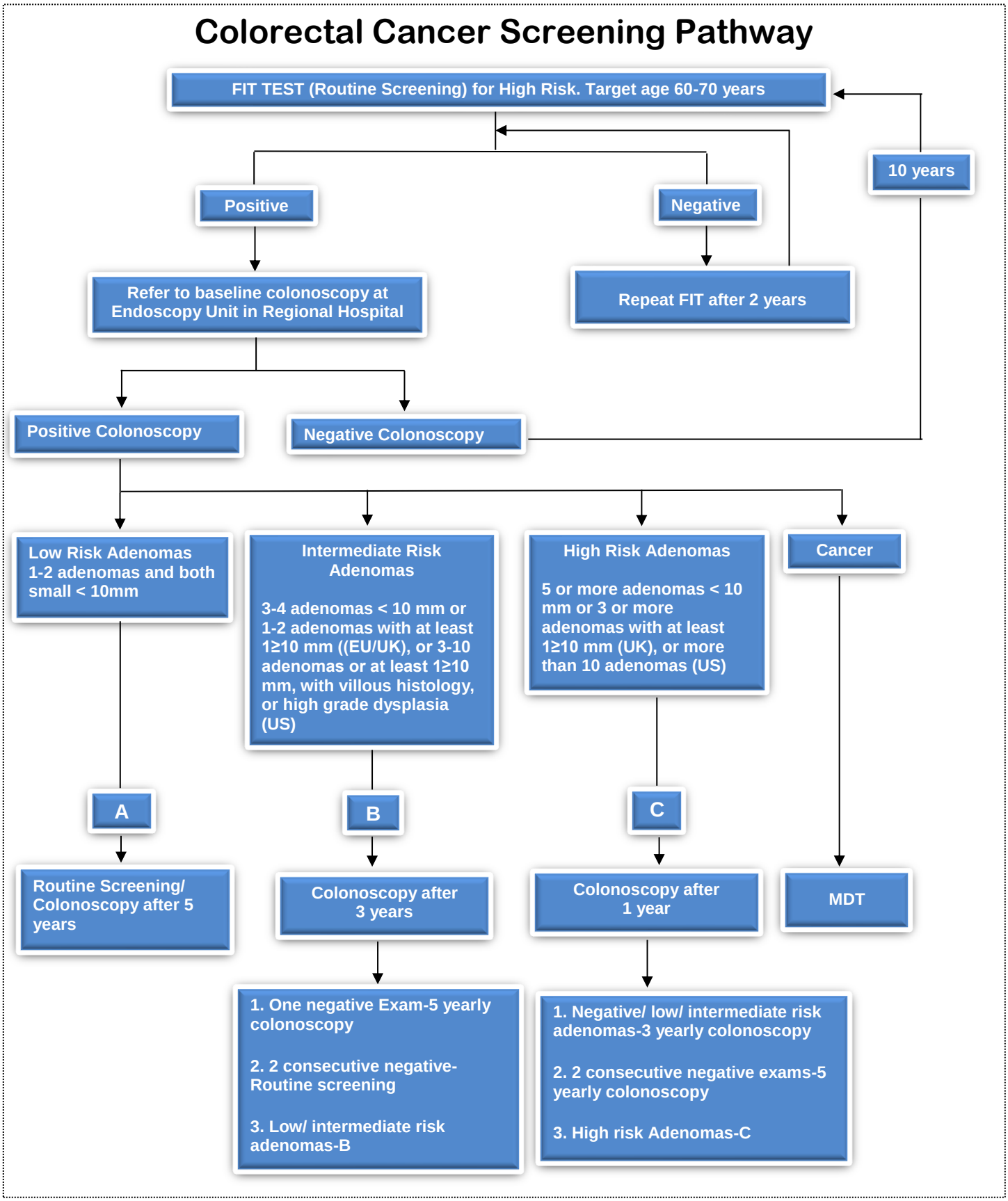


Figure 7: Colorectal Cancer Screening Pathway

Recommendations

Prevention of cancer (primary and secondary): -

- Appointment of a National Coordinator for Cancer Screening Programmes (breast, colorectal and cervical).
- To establish a well-structured National Screening Programme for breast cancer in Mauritius by 2025 for a specific age group (50-65 years) and for high-risk group.
- To set up a Breast Health Unit in each regional hospital. A pilot project will first be undertaken at Dr. A.G. Jeetoo Hospital.
- To restructure the existing Cervical Cancer Screening Programme.
- Co-testing should be introduced in the Cervical Cancer Screening Programme by 2025.
- To introduce an efficient colorectal screening programme targeting the age group 55 to 65 years.
- Set up a central database for the National Cancer Screening Programme.

Treatment delivery (Surgery, Radiotherapy and Chemotherapy)

The Department of Radiotherapy at Victoria hospital was inaugurated by in 1969. Cancer patients have access to Radiotherapy, Chemotherapy, Targeted therapy and Endocrine treatment. Novel agents and Immunotherapy have been recently added to the drug formulary.

One of the main modalities of treatment in cancer care remains surgery. All malignant cases are diagnosed and managed by surgeons (general surgeon, neurosurgeon, breast surgeons, ENT surgeons, gynaecologists, orthopaedic surgeons, maxillofacial surgeons) and physicians who are posted across all the five regional hospitals and then referred to the Department of Radiotherapy at Victoria Hospital and National Cancer Hospital for neoadjuvant, concurrent, adjuvant and palliative treatment.

The present Radiotherapy services at Victoria Hospital are:-

1. Linear Accelerator (Mevatron)
2. Cobalt-60 machines (Theratron and Equinox)
3. One 2 D simulator with Cone beam CT(Mevasim)
4. One LDR Brachytherapy (Curietron)

The renovated block of the National Cancer Hospital has been operational since October 2020 whereby the chemotherapy services have been shifted to the new centre.

Inpatient admissions for both curative and palliative care started since February 2021 (1 male ward 29 bedded and 1 female ward 38 bedded). There is a 13 bedded paediatric oncology ward which is under the care of both the paediatrician and the oncologist at Victoria Hospital.

Patient care

Cancer treatment is becoming more integrated with other disciplines and typically includes any or all of the following in any combination.

- Surgery
- Chemotherapy
- Radiotherapy
- Paediatric oncology
- Nuclear Medicine
- Diagnostic services (radiology and pathology)
- Allied Medicine: physiotherapy, oncology social work, counselling and psychological support, dietetics, palliative supportive care, emergency care etc.

Diagnosis

Radiology Unit

The Radiology Unit plays a key role in the multi-disciplinary approach in cancer care and treatment. They provide inputs in diagnosis, response to treatment and detect recurrence of cancers amongst others.

Imaging plays an important role in the management of cancer patients and in screening of asymptomatic individuals for early detection of cancer.

The steady and rapid advances in imaging technology in the last few decades have changed cancer management. X-Ray, Ultrasonography, CT-Scan, MRI as well as, to a limited extent, interventional radiology are available for all cancer patients.

Interventional Radiology

Interventional Radiology (IR) is a subspecialty of radiology which deals with diagnosis and treatment, using minimally invasive procedures done under image guidance like ultrasound, Computer Tomography (CT Scan) or Magnetic Resonance Imaging (MRI)., chemical ablation, radio frequency ablation, trans arterial chemo embolization, portal vein embolization can also be used as a treatment strategy by interventional technologists. There is a need to recruit experienced interventional radiologists.

Laboratory Services involved in cancer care

Cancer-related laboratory services are provided by the Central Health Laboratory (CHL) situated at Victoria Hospital. Basic laboratory investigations are being carried out at the renovated building of the National Cancer Hospital.

In the near future, at the National Cancer Hospital, the services are expected to further expand to cater for all oncology cases and to introduce more sophisticated tests.

Histopathology and Cytology

The CHL has a well-developed histopathology and cytology department with trained laboratory technicians and pathologists.
Training of pathologists and introduction of the Immunohistochemistry Unit for confirmation of the type of malignancies need to be catered for.

Biochemistry

The Biochemistry Department of the CHL carries out assays of a selected list of tumour markers. Additional investigations will be soon introduced in the National Cancer Hospital.

Haematology

Haematology services of CHL play a central role in the investigation of leukemias, bleeding disorders and other haematological malignancies.
Classification of leukemias by Flow Cytometry will be introduced shortly at the National Cancer Hospital.

Microbiology

The Microbiology and Virology Department identifies many types of viral, bacterial and other microbial infections through serological and other immunological investigations. These types of infections require reliable laboratory-based diagnosis for appropriate management.

Transfusion support in cancer management

Transfusion support is an essential component in cancer care and treatment, as many cancer patients particularly in haematological malignancies require transfusion of whole blood or blood components at regular intervals. The National Blood Transfusion Services (NBTS) provide this support by making available a whole range of blood products to cancer patients. The NBTS collects blood from voluntary non-remunerated blood donors.

Intensification of therapeutic regimens, improved patient survival, and advances in cytokine and cellular therapies have led to increasingly complex requirements for transfusion and stem cell support in cancer treatment.

Improving transfusion support to cancer patients

1. To strengthen apheresis programme and capacity building to provide blood components in a timely manner through:
   a. developing strategies for increasing apheresis donor pool;
   b. reinforcing capacity to perform apheresis through purchase of additional equipment.

2. To support transplantation programme by collecting and banking stem cells and training of staff in stem cell collection.

Nuclear medicine

Nuclear Medicine uses radioactive substances for the diagnosis and treatment of certain types of cancer.

The only Nuclear Medicine facility was set up in May 2001 at Jawaharlal Nehru Hospital in collaboration with International Atomic Energy Agency (IAEA). Nuclear Medicine also assesses the extent of cancer disease and evaluates treatment response. All Physicians, Physicists, Radio pharmacists and Technologists have received training in nuclear medicine, sponsored by the IAEA in reputed cancer centres abroad.

Patients suffering from breast and prostate cancer are routinely referred for follow up of bone metastasis by means of scintigraphy. Early diagnosis of bone metastasis ensures timely treatment thereby improving quality of life of these patients.

A PET-CT (Positron Emission Tomography- Computed Tomography) and SPECT-CT (Single Photon Emission Computed Tomography) are hybrid imaging modalities which gives physiological as well as detailed morphological information of tumors, lesions and other diseases. In Oncology, the indications of PET CT Scan are mostly for diagnosis of malignancy, staging, tumour characterization, response assessment, re-staging and surveillance. A PET CT Scan will be procured and installed at the National Cancer Hospital.

Recommendations

- To recruit experienced interventional radiologists.
- To further expand the services of the National Cancer Hospital to cater for all oncology cases in the future.
- To introduce more sophisticated tests and additional investigations.
- Training of pathologists and introduction of the Immunohistochemistry Unit for confirmation of the type of malignancies in patients.
- To further classify leukemias by Flow Cytometry.
- To support transplantation programme by collecting and banking stem.
- Procurement and installation of a PET CT Scan at the National Cancer Hospital.
- To strengthen apheresis programme, capacity building and to provide blood components in a timely manner through:
  (i) developing strategies for increasing apheresis donor pool
  (ii) reinforcing capacity to perform apheresis through purchase of additional equipment.

TREATMENT MODALITIES

Surgery

In Mauritius, cancer patients requiring surgery are performed by general surgeons, neurosurgeons, ENT surgeons, maxillofacial surgeons, gynaecologists and orthopaedic surgeons.

According to the EUROCARE-IV study, the absence of guidelines for surgical procedures relating to cancer patients lowers the 5-year survival by approximately 15%.

Therefore, there is a need to set up guidelines for surgical procedures and train surgeons and gynaecologists in oncology to achieve better outcomes.

A super specialized department of surgical oncology must be created so as to adopt a multidisciplinary team approach in the management of cancer cases.

Radiotherapy

Radiation therapy is available only at Victoria Hospital. Radiation therapy accounts for approximately 60% of the treatment modality for cancer patients and is potentially curative in cervical cancer, prostate, anal canal and early lung cancer amongst others.

It improves cancer survival when used as an adjuvant treatment in cancer such as breast cancer, brain tumour and colorectal carcinoma. Radiotherapy also plays a very important role in palliation of pain, haemorrhage, superior venacava obstruction, spinal cord compression, and raised intra cranial pressure and thus improves the quality of life of cancer patients.

Conventional Radiotherapy is still being used to treat patients in the department. 3D Conformal Radiotherapy, Intensity Modulated Radiotherapy, Stereotactic Radiotherapy is now the international standard of care. Two new Linear Accelerators with multi-leaf collimators will soon be procured and installed at the National Cancer Hospital. Training will be provided to Radiation Oncologists, Medical Physicists and Radiotherapy Technologists by IAEA under the Project TC/MAR/6015. Patients will then benefit from modern sophisticated techniques.

Goals of NCCP in Radiotherapy

Existing Radiotherapy facilities	Short term 2022	Midterm goal 2023-2024	Long-term goal 2025	Cost
Teletherapy: 2D Radiation therapy (2 Cobalt 60 machines)	Not Applicable	Maintenance and change of Cobalt 60 source.		Funds already earmarked.
1 linear accelerator Installed in 1993.	To maintain the linear accelerator till the acquisition of new teletherapy machines	To transit to 3D radiotherapy by 2023. Acquisition of 2 linear accelerators with multi leaf collimators by 2023.	Image guided radiation therapy as the mainstay in radiation treatment delivery. To be well-versed by 2025 in the treatment delivery by 3D Conformal Radiotherapy, IMRT and Stereotactic Radiotherapy.	
Existing bunker to house a new LINAC at VH		Acquisition of a cyber-knife (radio surgery for both malignant and non-malignant cases)	Acquisition of 6 MV LINAC with all facilities	

Goals of NCCP in Radiotherapy

Existing Radiotherapy facilities	Short term (immediate actions required) 2022	Midterm goal 2023-2024	Long-term goal 2025	Cost
Brachytherapy: Low Dose Rate Curietron machine (caesium137)	Maintenance of the existing brachytherapy machine	Acquisition of an HDR brachytherapy (Iridium)	3D Brachytherapy by using interstitial implants and expanding the brachytherapy unit where malignancies other than carcinoma cervix and endometrium can be treated; e.g. early cases of cancer tongue	
			Intraoperative Radiotherapy (IORT) in breast and glioma sarcoma cases	
X-ray Simulator at Victoria Hospital	Maintain existing X-Ray simulator	Acquisition of 3DCT simulator at NCH	Maintenance of both simulators	(inclusive in contractual offers)

Table 6: Goals of NCCP in Radiotherapy

QUALITY ASSURANCE IN RADIOTHERAPY

Dosimetry and Quality Assurance

Dosimetry and Quality Assurance is performed on Co-60 Machines by trained hospital medical physicists on a weekly, monthly and yearly basis. Every semester, Photon dosimetry is carried out as per TRS398 using Farmer Chamber, Roos Chamber and electrometer. Dose measurement using Linac check Detector is also carried out.

Radiation Protection/Radiation Safety

Radiotherapy has benefited beyond doubt many patients over the years, few accidents have occurred worldwide during its administration leading to disastrous consequences. More importantly, many incidents with lesser clinical impact can occur daily, putting at risk the safety of patients.

Radiation safety is an essential component of radiation care. It has been proved that whenever safe procedures have been ensured during the delivery of radiotherapy, not only lesser incidents/near misses have occurred, but also better treatment quality has been observed.

To ensure radiation safety in a Radiotherapy Unit, the following measures should be reinforced:

1. Effective trained and active regulatory authority.
2. Adequate infrastructure and facility.
3. Adequate number of trained staff.
4. Appropriate treatment equipment for the disease specific sites.
5. Support equipment for QA and optimization.
6. Commitment to safety (safety systems and culture)
7. Appointment of Radiation Protection Officer

Recommendation

- It is highly advisable to appoint a Radiation Protection Officer to ensure the safe practices and procedures in relation to Radiotherapy.

Chemotherapy

Chemotherapy is one of the main modalities of treatment in cancer care. Other pharmacological treatment used in cancer care is hormonal, biological or a combination of all of them. In the public health sector, treatment is available free of charge. The hospital drug list formulary is constantly reviewed and updated for novel therapy. Patients benefit from immunotherapy for various cancers.

Pharmacy services

There is a well-structured Pharmacy services at the level of the MOHW for procurement and managing the supply chain of drugs, from the central store, to all the health points for dispensing to users.

The hospital drug formulary consists of 65 drugs used for cancer patients. However, for any patient requiring a non-listed drug, a therapeutic board is held at the hospital level, for its approval.

Recommendations

1. The range of drugs used for Chemotherapy and Immunotherapy must be extended to include all drugs approved by WHO.
2. Novel therapy needs to be added in our existing drug formulary.
3. A continuous supply of chemotherapeutic agents should be ensured.
4. The Pharmacy Board should be regularly held at a 3-months interval.

PALLIATIVE CARE

Introduction

Palliative Care is an approach which improves the quality of life of patients and families facing the problem of life-threatening illnesses through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psycho-social and spiritual (WHO 2002).

About five million people in the world die of cancer each year without having benefitted from palliative care. In 2020, 1431 cancer-related deaths occurred in Mauritius and most of them benefitted from palliative care.

Road Map to Palliative Care in Mauritius

The roadmap to Palliative Care in Mauritius was drawn by a team of Oncologists with the help of WHO. Palliative care services for cancer patients were started in 2017 at Victoria Hospital with one out- patient clinic and two in-patient wards; one female and one male. The out-patient clinics are conducted by a multidisciplinary team comprising the following:-

- Patient and family
- Oncologist
- Palliative Care Physician
- Nurses (male and female)
- Nutritionist
- Psychologist
- Medical Social Worker
- Health Care Assistant

The same team also provides this service in four regional hospitals namely: Victoria Hospital, Dr A.G. Jeetoo, Sir Seewoosagur Ramgoolam National Hospital and Jawaharlal Nehru Hospital. In 2017, funding for a "Training for Trainers" course in Palliative Care was sponsored under the WHO Biennium work plan. This course was jointly provided by the University of Cape Town, St Luke's Hospice, and the Hospice and Palliative Care Association of South Africa. One Oncologist, four (4) nurses from Mauritius, one (1) nurse from Rodrigues and one (1) medical social worker were sent for the training.

Drugs for Palliative Care Patient

The list of drugs for palliative care in cancer patients includes sustained and immediate release morphine, fentanyl patches, tramadol and others listed in the International Association for Hospice and Palliative Care list of essential medicines.

The way forward

Palliative Care now forms an integral part of the services offered to cancer patients through the, National Cancer Hospital and its outstation units.

However, the Palliative Care Services for cancer patients will need to be expanded over the coming four years. The services will further be developed at the following levels:

i. Hospital inpatient
ii. Community
iii. Domiciliary

However, without the provision of adequate training to all Palliative Care Team members, the expansion of the services will remain restricted.

Hospital based palliative care for cancer patient

Hospital based palliative care will mainly refer to specialist palliative care. It will consist of the following: -

- Inpatient palliative care facilities
- Outpatient palliative care.

Short term goals 2022	Mid-term goals 2023-2024	Long term goals 2025
To strengthen the existing inpatient and outpatient palliative care services through further training of the health care personnel.	To open an Outpatient palliative care unit at Flacq Hospital.	To cover at least 60% of patients requiring palliative care.
To start capacity building through training of additional members of the palliative care team to expand the services.	Inpatient palliative care unit in other regional hospitals (5 dedicated beds).	
To integrate palliative care in existing health training programmes–medical, nursing, social work etc.	To recruit Palliative Care Physician sand palliative care Nurse.	

Table 7: Short, mid-term and long-term goals of hospital-based palliative care for cancer patients

Community based Palliative care for cancer patients

Community based palliative care will refer to outpatient care delivered at the level of Area Health Care Centres.

Short term goals 2022	Mid-term goals 2023-2024	Long term goals 2025
To ensure that standards for cancer palliative care including pain relief are progressively adopted nationwide by all levels ofc are.	To have Mobile Palliative Care teams set up in the five health regions of Mauritius.	For each Area Health Care Centre to have a dedicated Palliative Care Team that will also take up the responsibility of domiciliary palliative care services.
	To provide training to Community Physicians and nurses in palliative care.	
	To ensure that opioids can be prescribed at community level within a legal frame work.	

Table 8: Short, mid-term and long-term goals of community-based palliative care for cancer patients

Domiciliary based palliative care for cancer patient

Domiciliary based palliative care will refer to a palliative care service provided by professionals and caregivers in the patients' home. Physical, psychosocial and spiritual care are provided in the comfort of the patients' home. It will target patients who are too frail to access care at community or hospital level. It will also target patients who wish to die at home.

Short term goals 2022	Mid-term goals 2023-2024	Long term goals 2025
To ensure that standards for Cancer palliative care including pain relief are progressively adopted nationwide by all levels of care.	To ensure adequate training of Health care professionals to deliver Palliative care in the patients' home.	To have a fully functional and Well established domiciliary Palliative care service for cancer patients.
	To develop an established protocol for care of palliative cancer patients in their homes. This will include referrals, frequency of visits, care upon death etc.	

Table 9: Short, mid-term and long-term goals of domiciliary-based palliative care for cancer patients

Patient Support

Cancer rehabilitation is to assist patients to their optimal level of well-being. Cancer help line needs to be available on a 24/7 basis at the NCH. Counselling services by Clinical Psychologist to deal with emotional issues and provide psychological support to cancer patients. Bereavement counselling will be addressed in due time.

Recommendations

- To expand Palliative Care Services for cancer patients from Hospital to Community and Domiciliary level.
- To provide adequate training to all Palliative Care Team members.
- To introduce Bereavement Counselling.

PAEDIATRIC ONCOLOGY

In Mauritius, paediatric malignancies account for around 0.55% of all new cancer cases registered in 2020. The incidence of childhood malignancies, across the world is much less compared to adult malignancies. The survival rates (5 years survival) are significantly higher in high-income countries reaching an average of 84% and are steadily improving due to research and modern technologies. However, the incidence of childhood cancer is on the rise as per the International Association of Cancer Registries (IARC).

The paediatric cancer patients are taken care jointly by the Paediatrician and Oncologist. There is a dedicated 13 bedded paediatric oncology ward at Victoria Hospital.

Recommendations

- To train /recruit paediatric Oncologists.
- To introduce High dose chemotherapy and bone marrow transplant unit.
- To twin with a centre of excellence in paediatric oncology.

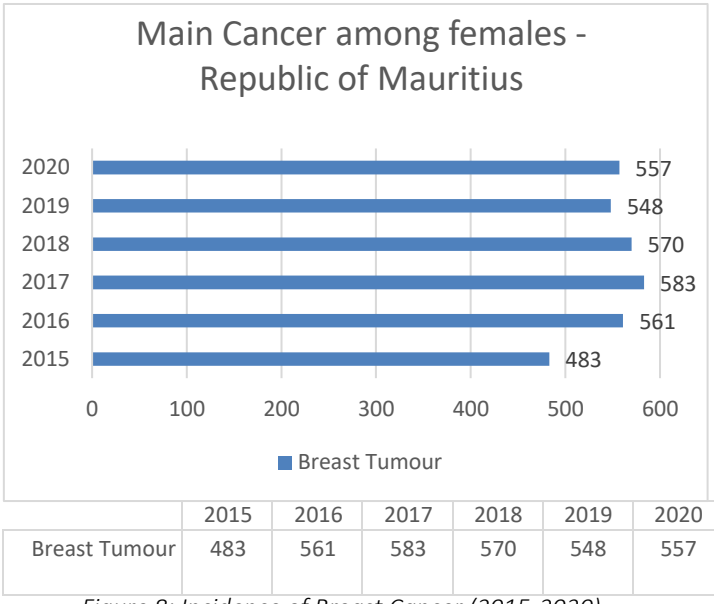
Breast Cancer

Breast cancer is the most common cancer in the female population and accounts for about 20% of the total number of cancer cases registered in Mauritius. It was the main cause of death amongst women in 2020 (n=184, 24.4%).

Incidence of Breast Cancer (2015-2020)–Island of Mauritius

Year	No. of patients with Breast cancer
2015	483
2016	561
2017	583
2018	570
2019	548
2020	557

Table 10: Incidence of Breast Cancer (2015-2020) Republic of Mauritius



	2015	2016	2017	2018	2019	2020
Breast Tumour	483	561	583	570	548	557

Figure 8: Incidence of Breast Cancer (2015-2020) Republic of Mauritius

Deaths due to Female Breast Cancer–Island of Mauritius

Year	Total
2015	177
2016	176
2017	189
2018	170
2019	202
2020	184

Table 11: Deaths due to Female Breast Cancer (2015-2020) Republic of Mauritius

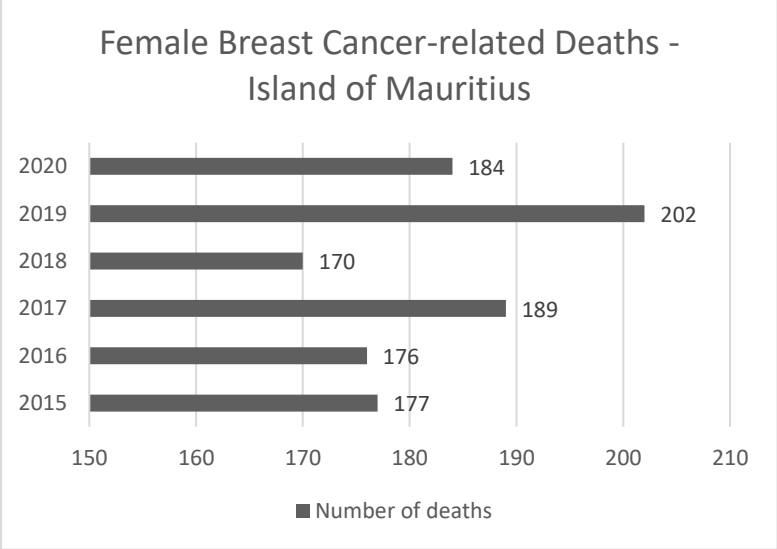


Figure 9: Death due to Female Breast Cancer (2015-2020) Republic of Mauritius

Breast cancer is most common in the age group 50-69 years. A hospital-based study in Mauritius showed that more than half of cases present with pT2 (2-5cm) breast lesion. A large majority of patients still present with locally advanced/ Metastatic Breast Cancer, as compared to that of developed countries. Patients with early stage (0, I, at the most stage II) disease have a better overall survival. Primary and secondary prevention are of utmost importance for better control and survival.

A well-established, efficient and well-structured screening programme for breast cancer will considerably decrease the morbidity and mortality. Early and appropriate treatment, will lead to an improvement in the overall survival of breast cancer patients.

Breast Cancer Screening

There is an urgent need to set up an organized mammography screening programme for breast cancer for women aged 50 to 69 years. The implementation will require trained radiologists and technicians in mammography services.

This screening programme will target at least 50% of women aged 50-69 by 2025 and high risk cases.

Main Objective

To expand access to breast cancer prevention, early detection, timely treatment and care to reduce mortality significantly by 40% by 2025.

Specific Objectives

- To ensure that a healthy lifestyle is adopted by the general population which can significantly reduce the incidence of breast cancer.
- To establish a National Screening Programme in Mauritius for a specified age group (50-69 years) and for high-risk groups.
- To increase awareness of breast cancer in the general population by 60% by 2025.
- To introduce genetic counselling and genetic testing targeting the high-risk group initially.

Key Strategies

- To establish Breast Health Units (BHU) in each regional Hospital.
- To increase coverage of mammography services by 50% in Mauritius.
- To educate the health professionals of all cadres about signs, symptoms, clinical examination and importance of early diagnosis and improve referral system (fast track the referral system for women with stage 0 or abnormal results needing further management).
- To implement a National Screening Programme on breast cancer.
- To introduce genetic testing and counselling.

Breast Health Unit

- A multi-disciplinary Breast Health Unit needs to be set up. This unit will provide a personalized service to patients with breast lumps.
- "One stop shop" breast clinic where clinical examination, investigations (ultrasound, contrast enhanced high resolution MRI) and biopsies will be performed on a fast-track basis. It is to be noted that around 50 cases of hereditary BCs (10% of breast cancer are hereditary) are diagnosed in Mauritius every year. Hence the importance of contrast enhanced high resolution MRI.
- Genetic counselling and genetic testing (BRCA1/ BRCA2) will be offered.
- Breast conserving surgery/modified radical mastectomy and breast reconstruction for suitable/eligible patients will be made available.
- Psychological support and lymphedema care among others will be provided.
- "High risk" breast cancer screening and counselling will be carried out.

Composition of the Breast Health Unit

- Radiologist
- Surgeon
- Anaesthetist
- Pathologist
- Visiting oncologist
- Visiting Psychologist
- Female Nurses
- Female Health Care Assistant
- Attendant

The facilities provided should include:-

- Breast Cancer screening (Mammography and Ultrasound) and counselling.
- Ultrasound guided trucut biopsy and fine needle aspiration cytology.
- Early referral for surgery breast conserving surgery/modified radical mastectomy, breast reconstruction and sentinel lymph node biopsy.

Advantages

- Patients will be treated according to international guidelines/standards in a timely manner.
- Patients will be able to benefit from breast conserving surgery instead of routinely performed mastectomy.
- Accurate preoperative diagnosis reduces the need for unnecessary surgical procedures/ biopsies.
- Prompt discharge from hospital leading to cost-effective use of available resources (Evidence based management).

Recommendations

- Setting up of Breast Health Units (BHU) in each regional Hospital. A Pilot Project in Dr. A.G. Jeetoo Hospital to be set up.
- Scaling up of screening mammography services by 50% in Mauritius.
- Educating the health professionals of all cadres.
- Implementing a National Screening Programme (Mammography).
- Introducing genetic testing and counselling.
- To train the concerned personnel.

Prostate cancer

Carcinoma prostate is the most common cancer in males accounting for 16.5% of newly diagnosed cancer cases in 2020. Prostate cancer is the leading cause of cancer related deaths. The average age of diagnosis of prostate cancer is in the age group 70-80 years.

Screening for carcinoma prostate is not recommended as per international bodies. However, with the increasing number of prostate cancer cases, awareness about the early-warning signs and symptoms should be emphasised.

Incidence of Prostate Cancer (2015-2020)–Island of Mauritius

Site tumour	Year	Incidence
Prostate	2015	139
	2016	144
	2017	203
	2018	191
	2019	176
	2020	183

Table 12: Incidence of Prostate Cancer (2015-2020) Republic of Mauritius

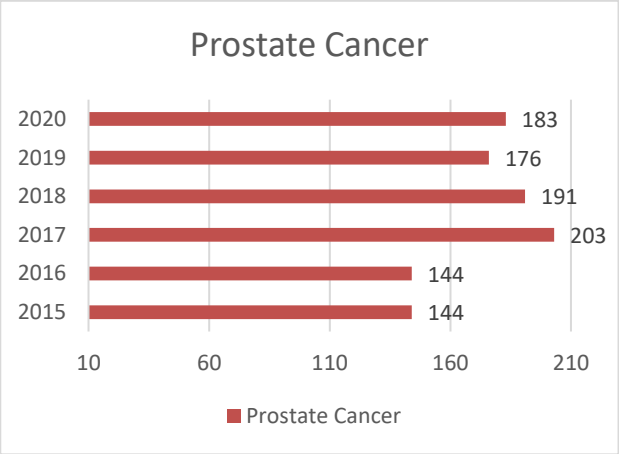


Figure 10: Incidence of Prostate Cancer (2015-2020) Republic of Mauritius

Number of deaths due to Prostrate Cancer

Year	Number of death due to prostate cancer
2015	65
2016	59
2017	73
2018	95
2019	100
2020	104

Table 13: Deaths due to Prostate Cancer (2015-2020) Republic of Mauritius

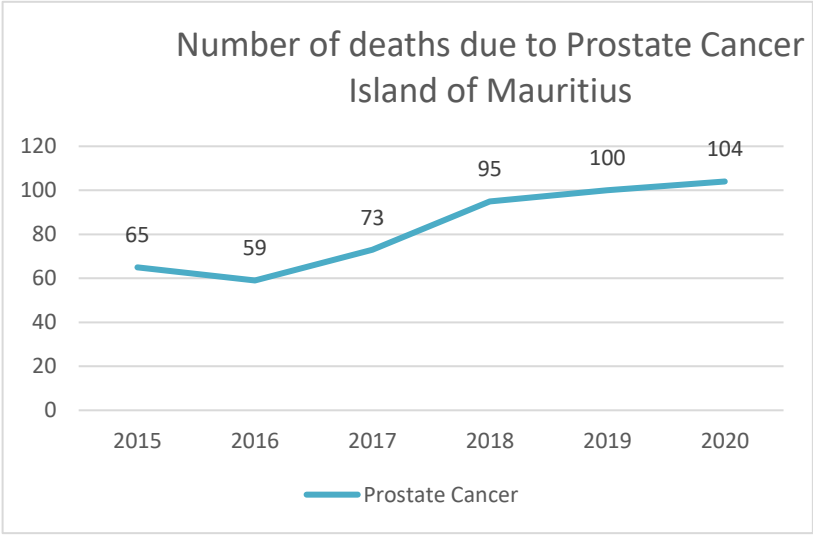


Figure 11: Deaths due to Prostate Cancer (2015-2020) Republic of Mauritius

Main objective

- To create awareness about prostate cancer amongst the general population.

Specific objectives

- To sensitise the public about the signs and symptoms of cancer prostate.
- To fast track our referral system from primary healthcare to Regional Hospitals.
- To optimize the treatment for early prostate cancer: the 2 main modalities of treatment being surgery (Radical prostatectomy) and Radical Radiotherapy (conformal radiotherapy).
- To improve the treatment of metastatic prostate cancer.
- To standardize and harmonise the treatment of carcinoma prostate according to stage.
- To establish Standards of Procedures and Protocols specific to Mauritius.
- Standards of Procedures and Protocols to be adopted by 50% by medical and paramedical cadres by 2025.

Key strategies

- Sensitise the general population about prostate cancer.
- Improve the treatment outcome for prostate cancer by 2025.

Key strategies	Short term 2022	Mid term 2023-2024	Long term 2025
Sensitise the general population about prostate cancer.	To target at least 20% of male population.	To target at least 30 % of male population.	To target at least 50% of male population.
Improve the treatment outcome for prostate cancer by 2025.	To introduce medical castration in the public sector (GnRH*, LHRH* analogues) To standardize Chemotherapy and Radiotherapy protocols	To standardise surgical interventions, Conformal Radiotherapy and Brachytherapy	Introduction of Robotic Surgery

* - GnRH - Gonadotropin-releasing hormone
* - LHRH - Luteinizing hormone-releasing hormone

Table 14: Key Strategies – Prostate Cancer

Recommendations

- To create awareness campaigns on Prostatic Cancer.
- To train surgeons/ Radiation Oncologists on new and up-to-date techniques (Robotic Surgery/ 3-D Conformal Radiotherapy).

Colorectal Carcinoma (CRC)

In Mauritius colorectal carcinoma is the second most common cancer among males (13.9% cases in 2020) and third in females (10.0% cases in 2020). The incidence and prevalence of (CRC) has constantly increased over the last decade.

Incidence of Colorectal Cancer in the Republic of Mauritius (2014-2020)

Colorectal Cancer (male, female)	Annual number of new cases						
	2014	2015	2016	2017	2018	2019	2020
Male	130	152	154	109	124	154	154
Female	115	172	140	99	104	138	164

Table 15: Incidence of Colorectal Cancer (2014-2020) Republic of Mauritius

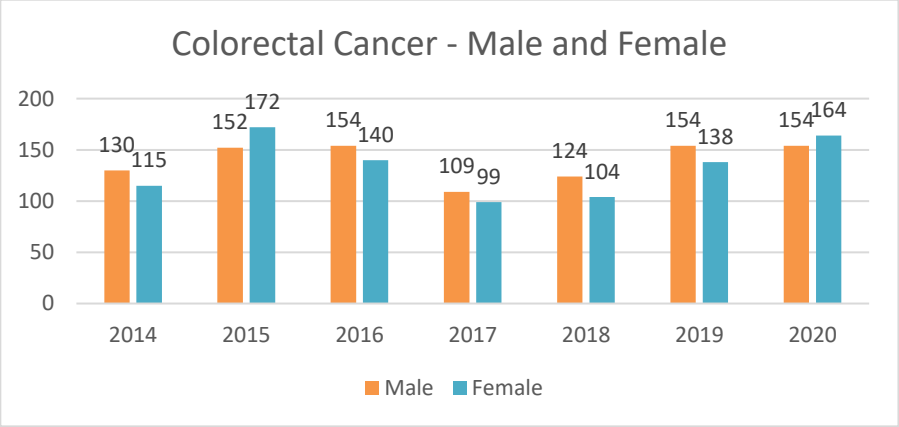


Figure 12: Incidence of Colorectal Cancer (2014-2020) Republic of Mauritius

The rising trend can be attributed to a sedentary lifestyle in Mauritius, change in food habits, decreased intake of food rich in fibres, increased consumption of meat and processed foods, increased incidence of obesity and increasing ageing population.

It is currently the third cause of cancer related mortality among males (n=74, 10.9%). In females, it is the second cause of deaths (n=79, 10.5%). Patients still present with an advanced stage (stage III and IV disease).

Endoscopy Unit

An Endoscopy Unit has been set up in each Regional Hospital. Diagnostic and therapeutic endoscopic services (gastroscopy, colonoscopy, esophagoscopy, and proctoscopy) are offered. Endoscopy services need to be integrated in the surveillance and screening programmes to facilitate prevention and early detection of cancer in the National Cancer Hospital.

Main Objectives

- To reduce the incidence of Colorectal Cancer and associated morbidity as well as mortality.

Specific Objectives

- To increase the public awareness on a healthy lifestyle.
- To improve and fast track the referral system to Regional Hospitals.
- To establish National Colorectal Cancer Screening facilities in all the endoscopy units for a specific age group (aged 60-69 years) and for high-risk population.
- To adopt Standards of Procedures and Protocols by concerned medical and paramedical cadres by 2025.

Key strategies

- To promote a healthy lifestyle among the Mauritian population through mass media, pamphlets and school education.
- To increase public awareness about colorectal cancer and its risk factors through mass media, pamphlets and school education.
- To introduce an efficient Colorectal Cancer Screening Programme by 2025.
- To set up a Multidisciplinary team (Surgeons, Radiologists, Pathologists and Oncologists) approach for all CRC patients.
- To adopt Standards of Procedures and Protocols by concerned medical and paramedical cadres by 2025.

Key strategies	Short term 2022	Mid term 2023-2024	Long term 2025
To promote a healthy lifestyle amongst the Mauritian population	To target 25% of the general population	To target 50% of the general population	To target 75% of the general population
To increase public awareness on the risk factors of colorectal cancer	To target 25% of the general population	To target 50% of the general population	To target 75% of the general population
To introduce an efficient National Colorectal Cancer Screening Programme	To conduct a Feasibility Study on Colorectal Screening Programme	To target high risk population	To target 25% of the population
To integrate screening services in all the Endoscopy Units	To integrate screening services in 1 Regional Endoscopy Unit and NCH	To integrate screening services in 2 additional Regional Endoscopy Units	To integrate screening services in all 5 Regional Endoscopy Units, NCH and QEH in Rodrigues
Multidisciplinary Team (MDT) approach to all CRC patients	To set MDT in 1 Regional Hospital and NCH	To set MDT in 2 additional Regional Hospitals	To set MDT in all 5 Regional Hospitals, NCH and QEH in Rodrigues
Standards of Procedures (SOP) and Protocols to be adopted by all medical and paramedical cadres.	SOP to be adopted by at least 10% of all medical and paramedical cadres	SOP to be adopted by at least 20% of all medical and paramedical cadres	SOP to be adopted by at least 30% of all medical and paramedical cadres
Standardise the treatment protocols	To standardize Chemotherapy and Radiotherapy protocols	To revise and update all protocols yearly	To standardize surgical interventions and to set up a Surgical Oncology Unit at NCH

Table 16: Key Strategies for Colorectal Cancer

Recommendations

- To educate the public about a healthy lifestyle.
- To increase public awareness about signs and symptoms as well as importance of early diagnosis of colorectal cancer.
- To introduce a National Colorectal Cancer Screening Programme.
- To establish Standards of Procedures and protocols.
- To set up a Surgical Oncology Unit at the National Cancer Hospital
- To train the concerned personnel.

Carcinoma Lung

Carcinoma lung is the third most common cancer among males and 106 (9.5%) new cases were registered in 2020. 42 new cases were registered in females (2.6%) in 2020 ranking it ninth in females.

Cancer lung, Republic of Mauritius (2015-2020)

Site of tumour: Lung	Annual number of cases					
	2015	2016	2017	2018	2019	2020
Male	100	108	89	65	123	106
Female	38	46	56	54	58	42

Table 17: Annual number of cases Lung Cancer (2015-2020) Republic of Mauritius

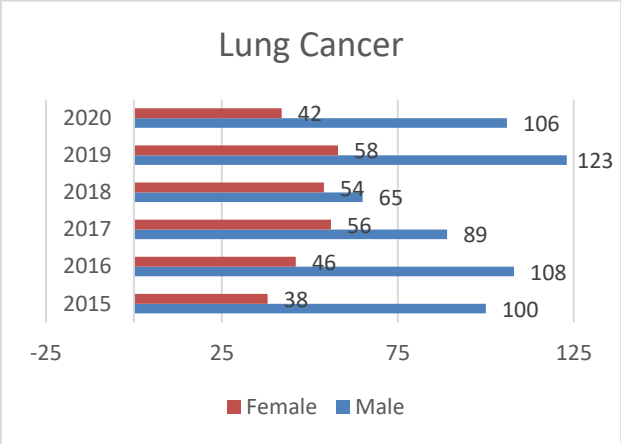


Figure 13: Annual number of cases Lung Cancer (2015-2020) Republic of Mauritius

The incidence of lung cancer reflects the smoking prevalence. About 90% of carcinoma lung arises as a result of tobacco use. The risk of developing lung cancer increases with the number of cigarettes smoked and the duration over which an individual has been smoking.

Out of 1431 deaths due to cancer in 2020, lung cancer is the second cause of cancer deaths in males (15.1%) and fifth cause in females (6.5%).

Number of deaths due to lung cancer– Island of Mauritius

Year	Male	Female	Both
2015	109	55	164
2016	123	32	155
2017	102	43	145
2018	90	53	143
2019	122	51	173
2020	102	49	151

Table 18: Number of deaths due to Lung Cancer (2015-2020) Island of Mauritius

Carcinoma lung is the most preventable cancer. Smoking cessation reduces the risk of lung cancer by 40%. It is strongly recommended to strengthen the antismoking campaigns. Laws should be reinforced to reduce the prevalence of smoking. Smokers should be further encouraged to attend Tobacco Cessation Clinics. The overall aim of the Ministry of Health and Wellness is to reduce the incidence and mortality due to lung cancer.

Passive smoking increases the risk of lung cancer by 20 - 30% (U.S. Department of Health and Human Services, 2006). The antismoking policy which aims at reducing the number of people exposed to second hand smoke should be revised. Other causes of lung cancer are air pollution and occupational hazards. People exposed to certain heavy metals like cadmium, nickel or other substances like asbestos, coal, tar etc. are at risk of developing lung cancer. Measures should be taken to protect and to reduce the exposure of the workers who are at risk.

Main objectives

- To reinforce anti-smoking campaigns (lung cancer prevention). Early diagnosis, timely treatment and introduction of Immunotherapy to reduce mortality significantly.

Specific Objectives

- To promote anti-smoking campaigns through mass media and School Health Programmes.
- To raise public awareness on the signs and symptoms of lung cancer.
- To reinforce legislation against tobacco smoking in public.
- To improve referral system from health centres to Regional Hospitals.
- To establish Standards of Procedures and Protocols to be adopted by medical and paramedical cadres.
- To adopt 3-D Conformal Radiotherapy.
- To add Molecular Studies in the department of Pathology.

Key Strategies

- To strengthen the anti-smoking campaigns.
- To educate and sensitise both adults and children about tobacco smoking and its strong association with lung cancer.
- To improve both diagnosis and treatment outcome of lung cancer.

Key strategies	Short term 2022	Mid term 2023-2024	Long term 2025
To strengthen the anti-smoking campaigns	National Action plan on Tobacco 2022-2026 to be validated	Implementing National Action plan on Tobacco 2022-2026	Implementing National Action plan on Tobacco 2022-2026
To educate and sensitise both adults and children about tobacco smoking and its strong association with lung cancer	To target 15% of population	To target 25% of population	To target 50% of population
To improve both diagnosis and treatment of lung cancer	Training of chest physicians on endoscopy and biopsy of complex cases	To appoint Interventional Radiologists (IR)	NCH to become a Centre of excellence with experienced and well-trained staff for both diagnosis and management
To improve the treatment outcome for lung cancer by 2025.	Aim at early diagnosis	Better treatment outcome with Conformal Radiotherapy and Novel Therapy (Immunotherapy)	Improve surgical skills in thoracic surgery. Recruit a thoracic surgeon and train surgeons

Table 19: Key Strategies – Carcinoma Lung

Recommendations

- To strengthen antismoking campaigns.
- To appoint Interventional Radiologists and Thoracic Surgeon.
- To improve on Radiotherapy techniques (Conformal Radiotherapy).
- To start with Molecular Studies in the department of Pathology.
- To introduce Immunotherapy in the drug formulary for Lung Cancer.
- To train the concerned personnel.

Cervical cancer

For more than a decade, cervical cancer had been the second most common cancer amongst the female population in Mauritius. According to the NCR 2020, cervical cancer is now the fifth most common cancer and 91 (5.6%) new cases were registered in 2020 as compared to 2009 where 123 new cases were registered. The incidence of cancer cervix over the last 10 years has decreased which is partly accounted by the introduction of screening (Papaniacolaou Smear) Programmes in the early 2000 and regular health education campaigns. In 2020, there were 76 deaths due to cervical cancer. Cervical cancer is easily detectable and one of the most preventable cancer and is curable in its early stage.

Incidence of cervical cancer in the Republic of Mauritius (2015-2020)

Site of tumour	Annual number of cases					
	2015	2016	2017	2018	2019	2020
Cervix uteri	94	107	64	54	74	91

Table 20: Incidence of Cervical Cancer (2015-2020) Republic of Mauritius

Human Papilloma Virus vaccination has been successfully introduced in the Expanded Programme of Immunisation (EPI) since 2016 in line with WHO. The Cancer awareness programme should include risk factors, signs and symptoms of cervical cancer.

Main Objectives

- To expand access to Cervical Cancer awareness, prevention, early detection, treatment and to reduce mortality.

Specific Objectives

- To increase Cervical Cancer awareness and its risk factors by 50% by 2025.
- To scale up cervical cancer screening by establishing HPV/ Cotesting and ensure timely referral and management of pre-cancerous lesions. Women with advanced lesions should be referred to Regional hospitals.
- To work in line with the National Cancer Screening Programme, which will be officially launched by the MOHW in 2022.
- To disseminate adequate information regarding HPV vaccination through HIEC materials.
- To establish and adopt Standards of Procedures (SOP) and Protocols.
- To standardize the treatment protocols of surgery and chemoradiation.
- To develop quality improvement systems in all cervical cancer screening clinics.

Key Strategies

- Increase awareness of the general population about cervical cancer through mass media, pamphlets and school education.
- To work in line with the National Cancer Screening Programme and screen at least 50% of the target population by 2025.
- Standardise the management protocols Gynae Oncologists/ Conformal Radiotherapy (Brachytherapy)/ Chemotherapy.

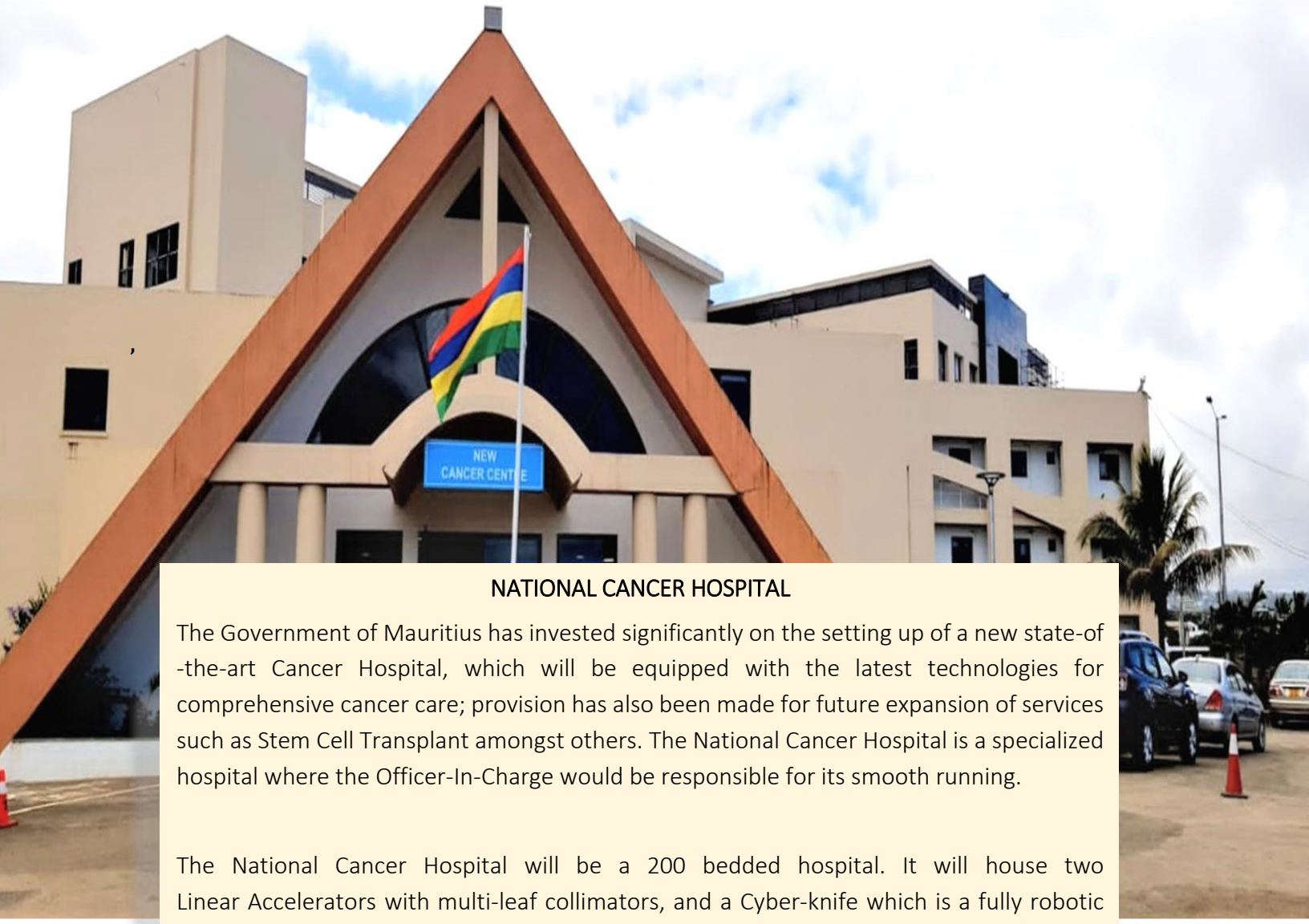
Key strategies	Short term 2022	Midterm 2023-2024	Long term 2025
Increase awareness of the general population about cervical cancer	To screen at least 15% of the target population	To screen at least 25% of the target population	To screen at least 50% of the target population
Work in line with the Cervical Cancer Screening Programme	To screen at least 15% of the target population	To screen at least 25% of the target population	To screen at least 50% of the target population and introduce co-testing
Standardise the treatment protocols	To validate and standardize Chemotherapy and radiotherapy protocols on 2D Radiotherapy	To standardize Gynaecological interventions in 25% of patients To validate and standardize Chemotherapy and radiotherapy protocols on 3D Radiotherapy	To standardize Gynaecological interventions in 50% of patients To validate and standardize Chemotherapy and radiotherapy protocols on 3D Radiotherapy

Table 21: Key Strategies – Cervical Cancer

Recommendations

- To work in line with the Cervical Cancer Screening Programme.
- To screen at least 50% of the target population by 2025.
- To upscale HPV vaccination.
- To standardize management guidelines on Cervical Cancer (Gynae Onco/ Chemotherapy/ Radiotherapy.
- To install and commission the HDR Brachytherapy at the National Cancer Hospital.
- To train the concerned personnel.

NATIONAL CANCER HOSPITAL



NATIONAL CANCER HOSPITAL

The Government of Mauritius has invested significantly on the setting up of a new state-of-the-art Cancer Hospital, which will be equipped with the latest technologies for comprehensive cancer care; provision has also been made for future expansion of services such as Stem Cell Transplant amongst others. The National Cancer Hospital is a specialized hospital where the Officer-In-Charge would be responsible for its smooth running.

The National Cancer Hospital will be a 200 bedded hospital. It will house two Linear Accelerators with multi-leaf collimators, and a Cyber-knife which is a fully robotic radiotherapy device. A complete spectrum of radiological modalities X-ray, Ultrasound, CT Scan, MRI, DEXA Scan and Mammography will be also available. The NCH will provide Nuclear Medicine facilities, PET CT Scan and other therapeutic facilities. In addition to the palliative care services currently being offered, the National Cancer Hospital will also offer educational and complementary services including clinical trials, genetic testing and counseling, cancer screening programmes and survivorship programmes.

The National Cancer Hospital will provide the following services:

Radiotherapy

The existing Radiotherapy Unit at Victoria Hospital uses Conventional Radiotherapy to treat patients. The Centre will offer modern techniques, 3-D conformal Radiotherapy, Intensity-Modulated Radiation Therapy (IMRT), Image-Guided Radiation Therapy (IGRT), stereotactic body radiation therapy (SBRT), Stereotactic Radio-Surgery (SRS). HDR-Brachytherapy will also be made available.

Nuclear Medicine: (PET-CT and SPECT-CT)

A Nuclear Medicine Unit will be set up in the National Cancer Hospital. PET-CT scan will be introduced. This investigation has a direct bearing, on the management of more than 30% of cancer cases. It helps oncologists make early diagnosis of cancers, its staging status and allows in differentiating benign from malignant cancers. It also provides useful images to assess treatment response and monitor relapses. Provisions have been made to enhance Targeted Radionuclide Therapy (also called molecular radiotherapy) for the treatment of many types of cancers.

Chemotherapy

Chemotherapy services in the National Cancer Hospital are being provided in a patient friendly and conducive environment. As per the WHO essential drug list, all the cytotoxic drugs are listed in the hospital drug formulary. Endocrine Therapy, Targeted Therapy and Immunotherapy will be also offered to cancer patients. The hospital drug formulary will be updated on a regular basis.

Imaging facilities

The Radiology Unit will be equipped with X-Ray, CT-Scan, MRI, Echography and Mammography machines.

Setting up of a Hematopoietic Stem Cell Transplant Unit in the National Cancer Hospital

Provisions have already been made in the National Cancer Hospital for the setting up of a Hematopoietic Stem Cell Transplant (HSCT) unit with the help of experts from established international centres. HSCT is often the only curative option in several hematological malignancies. Twinning of the Bone Marrow Transplant Unit will offer the opportunity to provide advice, expertise, support and technology transfer.

Palliative Care Services

Palliative care requires a multi-disciplinary team approach to provide care and treatment to terminally ill cancer patients. The overall aim is to support the patients mentally, psychologically and morally during the last phase of their life.

Surgery in Oncology

Provision has been made to have four operating theatres to conduct Surgical Oncology cases, hence reducing the waiting time for treatment. Surgical interventions performed by Surgical Oncologists will improve the treatment outcome in cancer patients.

Paediatric Oncology

There will be a dedicated Paediatric Ward in the National Cancer Hospital.

The vision of the National Cancer Hospital

The National Cancer Hospital aims at becoming a centre of excellence in the region of the Indian Ocean. According to the National Cancer Institute, the National Cancer Hospital must meet specific criteria to be acknowledged as a comprehensive cancer centre: -

a. Strong basic laboratory and clinical cancer research and the translational research that forms the bridge between them;
b. Innovative cancer treatment involving clinical trials;
c. Cancer prevention and control programmes;
d. Training and education of healthcare professionals;
e. Cancer information services; and
f. Community outreach and education.

HUMAN RESOURCE REQUIREMENTS FOR THE NATIONAL CANCER HOSPITAL

The National Cancer Hospital will have the latest technologies which will provide better cancer care and treatment to patients.

Highly-skilled health professionals are required to provide comprehensive cancer care. Medical staff, nurses, allied health professionals and volunteers have a role to play in the delivery of cancer care.

Human Resource Planning helps to ensure that the National Cancer Hospital has the appropriate number of qualified staff to meet the strategic and operational goals of the organisation and to serve its expected patient population. Human resources in cancer care should be looked at as a continuum from community to specialised level of care.

Human Resource Planning

COSTING OF PROPOSED HUMAN RESOURCES REQUIREMENTS FOR NCCP

(i) SPECIALISED PERSONNEL

(a) To be redeployed

SN	Designation of staff members	Number in post	Number of posts to be redeployed	Estimated Cost 2022-2025(Rs)
1	Clinical & Radiation Oncologist	11 + 2 CIC*	-	Nil
2	Principal Physicist	1	-	
3	Senior Hospital Physicists (with medical physicist qualification)	3	-	
4	Hospital Physicists	14	-	
5	Principal Radiation Therapist	2	-	
6	Senior Radiation Therapist	5	-	
7	Radiation Therapist	15	-	
8	Student Radiation Therapist	2	-	
9	Nursing officers with palliative care training	4	20 (redeployed)	
10	Oncology Nurses	0	50 (redeployed)	
11	Community Physician	0	2 (redeployed)	
12	Physiotherapist	3	0	
13	Medical Social worker	0	2 (redeployed)	

SN	Designation of staff members	Number in post	Number of posts to be redeployed	Estimated Cost 2022-2025(Rs)
14	Nutritionist	0	4 (redeployed)	

*** - One of the CIC will be the Officer-In-Charge of the National Cancer Hospital**

Table 22: Cost of proposed human resources requirements for NCCP – Specialised Personnel - To be redeployed

(b) Funded posts

SN	Designation of staff members	Request for Cancer Centre	Remarks
1	Clinical Psychologist	2	**Funds have already been earmarked in the budget 2021/2022 for these posts.**
2	Principal Medical Imaging Assistant	1	
3	Hospital Physicist/Senior Hospital Physicist	3	

Table 23: Cost of proposed human resources requirements for NCCP – Specialised Personnel – Funded posts

(c) To be recruited

SN	Designation of staff members	Number of posts to be created	Remarks
1	Medical oncologist	2	**The specialised personnel with the necessary skills and capacities will be recruited as and when new services will be introduced and funds will be earmarked in the Annual Budgets.**
2	Palliative care Physician	6	
3	Physician Internal Medicine	2	
4	Radiologist	4	
5	Interventional Radiologist	2	
6	Clinical Haematologist	2	
7	Surgical oncologist	2	
8	Gynaecological Oncologist	2	
9	Thoracic Surgeon	1	
10	Paediatric Oncology	1	
11	Onco pharmacist	2	
12	Occupational Therapist/SOT	3	
13	Physiotherapy Assistant	2	
14	Maintenance Engineer / Bio Medical Engineer	3	
15	Paediatric Surgeon	1	

SN	Designation of staff members	Number of posts to be created	Remarks
16	National Coordinator for Cancer Screening Programmes	1	
17	Occupational Therapy Assistant	2	
18	Radiation Protection Officer	1	
19	A team of Foreign Experts (on contract)		

Table 24: Cost of proposed human resources requirements for NCCP – Specialised Personnel – To be recruited

(ii) COSTS OF NURSING CADRE REQUIREMENTS*

(a) Funded posts

SN	Grade	Male	Female	Remarks
1	Nursing Administrator	1		**Funds have already been earmarked in the budget 2021/2022 for these posts.**
2	Nursing Supervisor	2	2	
3	Ward Manager	3	4	
4	Charge Nurse	11	14	

*excluding specialised nurses

Table 25: Cost of proposed human resources requirements for NCCP – Costs of Nursing Cadre – Funded posts

(b) To be recruited

SN	Grade	Male	Female	Remarks
1	Nursing Officer	29	40	**These personnel will be recruited as and when new services will be introduced and funds will be earmarked in the Annual Budgets.**
2	Health Care Assistant	15	20	

Table 26: Cost of proposed human resources requirements for NCCP – Costs of Nursing Cadre – To be recruited

(iii) COSTS OF PARAMEDICAL GRADES (PHARMACY, HEALTH RECORDS, PUBLIC HEALTH AND FOOD SAFETY INSPECTORATE ETC)

(a) Funded posts

SN	Grade	Request for Cancer Centre	Remarks
1	Hospital Administrator	1	**Funds have already been earmarked in the budget 2021/2022 for these posts.**
2	Hospital Administrative Assistant	1	
3	Principal Pharmacy Technician	1	
4	Pharmacy Stores Manager	1	
5	Senior Pharmacy Technician	1	
6	Pharmacy Technician	4	
7	Catering Supervisor	1	
8	Hospital Executive Assistant (on shift)	4	
9	Health Records Officer	1	
10	Senior Health Records Clerk	1	
11	Higher Health Records Clerk	5	
12	Health Records Clerk	6	
13	ECG Technician (Male)	1	
14	ECG Technician (Female)	1	
15	Surgical Technologist	1	
16	Supervisor, Central Sterile Supply Department	1	
17	Central Sterile Supply Department Assistant	2	
18	Ambulance Care Attendant (on shift)	4	
19	Ambulance Driver (on shift)	4	
20	Driver (Heavy vehicles above 5 tonnes)	1	
21	General Worker	3	

Table 27: Cost of Paramedical cadres (Pharmacy, Health Records, Public Health and Food Inspectorate – Funded posts

(b) To be recruited

SN	Grade	Request for Cancer Centre	Estimated costs for 4 years
1	Catering Officer	1	1,574,950
2	Assistant Catering officer	1	1,259,050
3	Senior Health Records Officer	1	1,342,900
4	Higher Health Records Clerk	2	2,332,850
5	Telephonists	4	3,410,160
	Total Estimated Costs		**9,919,910**

Table 28: Cost of Paramedical cadres (Pharmacy, Health Records, Public Health and Food Inspectorate – To be recruited

(iv) COSTS OF HUMAN RESOURCES FOR NUCLEAR ONCOLOGY IMAGING

SN	Designation of staff members	Number of posts	Remarks
1	Nuclear Medicine Technologist	3	**Funds have already been earmarked in the budget 2021/2022 for these posts.**
2	Nuclear Medicine Specialist	3	**These personnel will be recruited as and when new services will be introduced and funds will be earmarked in the Annual Budgets.**
3	Radiopharmacist	2	
4	Nuclear Medicine Physicist	2	
5	Senior Nuclear Medicine Technologist	1	
6	Nuclear Medicine Nurses	8	
7	Specialised Health Care Assistants	4	
8	Health Records Clerks	1	
9	Hospital Care Attendants	4	

Table 29: Cost of Human Resources for Nuclear Oncology Imaging

(v) COSTS OF HUMAN RESOURCES FOR LABORATORY SERVICES INCLUDING COLORECTAL SERVICES

(a) Funded posts

SN	Designation of staff members	Number of posts to be created	Remarks
1	Clinical Scientist/ SCS Biochemistry	2	**Funds have already been earmarked in the budget 2021/2022 for these posts.**
2	Medical Laboratory Technologist-Biochemistry	2	
3	Pathology Lab Assistant/SPLA	2	

Table 30: Cost of Human Resources for Laboratory Services including Colorectal Services – Funded posts

(b) To be recruited

SN	Designation of staff members	Number of posts to be created	Remarks
1	Pathologists	2	**These personnel will be recruited as and when new services will be introduced and funds will be earmarked in the Annual Budgets.**
2	Haematopathologist	1	
3	Clinical Scientist-Haematology	1	
4	Principal Medical Laboratory Technologist	1	
5	Medical Laboratory Technologist-Biochemistry	2	
6	Medical Laboratory Technologist-Haematology	2	
7	Medical Laboratory Technologist-Molecular Pathology	4	
8	Medical Laboratory Technologist- BTS	4	
9	Blood Bank Assistant	2	
10	Blood Bank Officer	1	
11	Pathology Lab Assistant/SPLA	9	
12	Health laboratory Attendant/SHLA	7	
13	Cytoscreeners	3	

Table 31: Cost of Human Resources for Laboratory Services including Colorectal Services – To be recruited

(vi) ESTIMATED COSTS OF HUMAN RESOURCES AND LOGISTICS FOR CANCER SCREENING PROGRAMMES

(a) Staff to be recruited

SN	Grade	No. required per health region	Total no. required	Estimated costs for 4 years
1	Medical and Health Officer	2	10	22,327,500
2	Specialized Nurse (Health Promotion)	3	15	4,075,500*
3	Specialized Health Care Assistant (Health Promotion)	3	15	1,950,000*
4	Community Health Development Motivator	3	15	12,382,500
5	Attendant Hospital Services (Female)	1	5	4,127,500
Total Estimated Costs				**44,863,000**

***Salary increments only considered as selection will be among existing officers in the grade of Nursing Officers/HCAs with experience**

Table 32: Estimated costs of Human Resources for Cancer Screening Programmes - To be recruited

(b) Logistics

SN	Logistics (to be acquired in 2022)	No. required per health region	Total no. required	Estimated costs
1	Van (15 seater)	1	5	7,500,000
2	Software to set database (For data entry/analysis)		Lot	2,000,000
Total Estimated Costs				**9,500,000**

Table 33: Estimated costs of Logistics for Cancer Screening Programmes

TRAINING

Training in Oncology

It is essential to train all concerned personnel who work in cancer care: Nurses, Radiation Therapy Technologists, Pharmacists, Medical Practitioners and others. Continuous Medical/ Nursing Education is the way forward to establish a centre of excellence.

(i) Short course training for Medical and Paramedical staff

Fields	Methods	Remarks
Nursing officers	To provide training to nurses so as to be recognized as Specialised Onco Nurses	**MOHW will arrange for training courses from appropriate training bodies**
Occupational therapist	Specialised training in lymphatic drainage massage for patients with lymphoedema	
Clinical Psychologist	To provide courses specifically in palliative care	
Radiation Therapist (RTT)	To train in Conformal Radiotherapy	
Radiation Protection Officer (RPO)	To train a Medical Physicist or a Senior Radiotherapy Technologist to be appointed as RPO.	
Interns	To include an optional posting in the department of oncology for interns	
Physicists	To train in Conformal Radiotherapy and HDR Brachytherapy) Training of Medical Physicist	
Oncologist	To train in Conformal Radiotherapy +HDR Brachytherapy)	
Haematopathologist	To train Pathologists	
Technologist	Training to be provided to cytoscreeners technologists	
Nursing officers and Health Care Assistants involved in Palliative care	Palliative Care training to existing staff	

Table 34: Short Course training for Medical and Paramedical staff

(ii) Specialist and Super specialisation training of Doctors

Fields	Methods	Remarks
Clinical Haematology/ Haemato-oncology	Priority list for Physician (Superspecialisation)	**MOHW will arrange for training courses from appropriate training bodies**
Surgical Oncology	Approved courses in a recognized institution	
Gynecological Oncology	Approved courses in a recognized institution	
Palliative Care Physician and other cadres	Training for **5** current Medical Health officers/ Specialists, **4** Charge Nurses, **5** Social Workers and **1** Nutritionist	
Radiologist	Training in interventional radiology	
Pediatric Oncology	Approved courses in a recognized institution	

Table 35: Specialist and Super specialization training of doctors

(iii) Training for Hospital Physicist

Fields	Methods	Remarks
Hospital Physicist	Hospital physicists (6) employed by the MOHW will need to be trained further so as to be known as medical physicist (Clinical and academic)	**MOHW will arrange for training courses from appropriate training bodies**

Table 36: Training for Hospital Physicist

(iv)Training in Nuclear Oncology

Fields	Methods	Remarks
Nuclear Medicine Physician	Academic training: To be on the priority list for doctors who are going for specialization in a recognised institution.	**MOHW will arrange for training courses from appropriate training bodies**
Nuclear Medicine Physicist	Academic training	
Radio-pharmacists	Academic training	
Nuclear Medicine Technologist	Academic training	
Specialised Nurses	Local training	
Specialised HCAs	Local training (On the job training)	

Table 37: Training in Nuclear Oncology

RESEARCH

It is important to set up a Research Unit with dedicated personnel at the National Cancer Hospital to address all aspects of cancer care and treatment. This will build our understanding of cancer, develop new therapeutic and diagnostic designs of new treatment and prevention strategies.

Adequate research on the causes and cure of cancer can save lives and to develop safe and effective methods for its prevention, detection, diagnosis, treatment and cure. Research will help the medical cadres gain extensive knowledge about the biological processes involved in cancer onset, growth, and spread in the human body. This will lead to the development of effective and targeted treatments and prevention strategies. In this respect, it is recommended to partner and collaborate with international centres or researchers who may contribute their know-how for the setting up of a Research Unit at the National Cancer Hospital. Advances on research are the result of constantly building on earlier discoveries and observations in order to come up with ideas and solutions combining today's evolving technology proposing a better treatment outcome for the future.

PLANNING CANCER CONTROL PROGRAMME

Quality control in implementation of National Cancer Control Programme

An important component of the NCCP is to have a strong leadership which will ensure that the main pillars of cancer control and cancer prevention are evaluated and monitored so that the NCCP's goals can be achieved.

NCCP Steering Committee

A Steering Committee will be set up under the chair of the Director General Health Services to oversee the implementation of cancer control activities. It will comprise Officers from the Ministry of Health and Wellness, representatives of other key ministries and Non-Government Organisations. Sub-Committees on Cancer Awareness (Health Education), National Cancer Screening Programme, Diagnostics and Treatment, Palliative Care and Research will be also set up. The Committee will be held every 3 months to supervise and evaluate the fulfilment of the key strategies and specific objectives of the programme. Deviations from the set objectives of the programme will be identified in the quarterly meetings and measures will be taken to improve the necessary activities so as to reach the objectives.

The management, implementation, evaluation and the analysis of NCCP 2022–2025 indicators falls under the NCCP Steering Committee.

Objectives of the Committee

- To provide professional management and coordinate the implementation of the Programme.
- To carry out an annual draft report on the achievements of the Programme.
- To act as a facilitator in the adoption of NCCP.

FINANCING OF NATIONAL CANCER CONTROL PROGRAMME 2022– 2025

Healthcare Financing for Cancer Services

1.1 The development of a National Cancer Control Programme (NCCP) for the period 2022-2025 conforms to Government's policy in the health sector, which aims at achieving the highest standards of good health among people. A prerequisite for the successful implementation of the plan will be the earmarking of sufficient public financial resources to expand access to needed health technologies, acquire the necessary manpower and build skills in order to develop a comprehensive range of affordable and effective services for cancer patients in Mauritius.

1.2 Health financing consists of the mobilization, accumulation and allocation of money to cover the health needs of the population, individually and collectively. In practice, financing a complex set of services such as those in cancer control requires considerable analysis and contextualization if the objectives of Universal Health Coverage (UHC) are to be met. Consideration such as allocation of funds for cancer within the overall UHC envelope, benefits from the allocation, beneficiaries targeted, are generally addressed in an investment case.

1.3 The Government of Mauritius is fully aware that cancer patients have a better overall survival when they have access to affordable early cancer detection and treatment. As per Budget 2021-2022, the estimated project value of the National Cancer Hospital (NCH) with a total surface area of approximately 14,630 square metres at Solferino, for the provision of state-of-the art facilities to these patients, is around Rs 1.6 billion. The main objectives of improving funding for cancer control are to promote UHC through equitable and greater financial risk protection, reduce out-of-pocket payments for expensive cancer treatments and improve access to high-quality cancer services in the country.

Costing Methodology

2.1 Key stakeholders were interviewed and information has been provided by the user departments on the human resources and training requirements, equipment specificities and activities/ interventions to be undertaken.

2.2 The costing of the human resources has been based on the range of salaries of the different cadres as stipulated in the Pay Research Bureau Report 2021. The estimated cost of equipment has been benchmarked from the prevailing market prices. The costing has been done for the remaining four years of the Plan that is 2022 to 2025. The CHL participated in the provision of estimated costs for the laboratory related services. The Nuclear Medicine Department of the Jawaharlal Nehru Hospital provided the necessary information on the provision of new Nuclear Medicine Services at NCH. The NCD, Health Promotion and Research Unit came up with an estimated costs for Cervical Cancer Screening.

Main Costs Elements of NCCP

3.1 The major startup costs for strengthening cancer services in Mauritius as determined by the user department include investment in infrastructure, human resources and equipment. Funds for the procurement of major equipment for the NCH have already been earmarked by Government.

3.2 Costs of human resources for the initial operations and services at the NCH have been earmarked in the current budget. No additional costs will be incurred for staff that has been redeployed. Over the coming years, as and when new specialized services will be introduced, new posts will be created for required specialized staff and the availability of additional funds will be ensured through the annual recurrent budget.

6. COSTING OF PRIMARY PREVENTION

RISK FACTOR	ACTIVITIES	STRENGTHS	GAPS	RECOMMENDATIONS	ESTIMATED COSTS FOR 4 YEARS (Rs)
Tobacco	The 6 MPOWER measures	1)Strong Health policies (no-tobacco policy) 2)8 new pictorial warnings to the public is in use since June 2009.	Lack of individual and public responsibility and accountability towards the no-tobacco policy	New Regulations on Tobacco Control is currently being worked out by the Ministry.	Nil
				Inter-ministerial collaboration (MOHW, concerned Ministries and Mauritius Police Force)to work towards tobacco cessation (Regular workshops -at least 2 per year)	600,000 (Short-term to Long-term)
Alcohol	Legislation & policies pertaining to alcohol in Mauritius	Good Government initiatives	Failure of public to abide by established law	Reinforce Regulations and Legislation	All costs of activities already catered in the costing of National Action Plan to reduce the harmful use of alcohol.

RISK FACTOR	ACTIVITIES	STRENGTHS	GAPS	RECOMMENDATIONS	ESTIMATED COSTS FOR 4 YEARS (Rs)
	Creation of user-friendly interfaces to quell the scourge of alcohol			School Health Education on harmful consumption of alcohol Increase in price of alcoholic beverages Increase campaigns	
Obesity, Nutrition, Physical inactivity	a) Health promotion campaigns by Health Information Education and Communication Unit	Strong will of the policy makers to reduce obesity	Sedentary life style and unhealthy eating habits	Strengthening campaigns on healthy eating habits	(a) 300,000 (Short-term to Long- term)
	b) Outpatient clinics by Dieticians at primary health care centres and hospitals	Healthy school canteen strategies		Educating the population about carcinogenic food/substances Additional outpatient clinics by dieticians at Community Centres Encourage physical activity at all levels,	Nil

RISK FACTOR	ACTIVITIES	STRENGTHS	GAPS	RECOMMENDATIONS	ESTIMATED COSTS FOR 4 YEARS (Rs)
				creation of more nature parks Creation of sports clubs at work, e.g., Zumba, Yoga classes	
Sexual Health Education (SHE)	Exposure of Children to quality comprehensive sexual health education	At the primary level, SHE has already been incorporated in the curriculum of Standards V and VI since 2011	Still a taboo (not freely discussed).	Health Education on the association of cancer with Sexually Transmitted Diseases	Nil
Infections	Health programmes on the corelation of infections and cancer	Strong Vaccination programmes (EPI). Introduction of HPV vaccines for girls since 2016		Increase sensitisation programmes via mass media about the association of infection and cancer. Introduce HPV Vaccination in young boys.	Nil
Environmental	1) Ambient air quality monitoring station (Ministry of Environment,	The Ministry of Environment, Solid Waste Management and Climate Change		To reinforce legislation and regulation	Nil

RISK FACTOR	ACTIVITIES	STRENGTHS	GAPS	RECOMMENDATIONS	ESTIMATED COSTS FOR 4 YEARS (Rs)
	Solid Waste Management and Climate Change): a) The National Environmental Laboratory of the Department of Environment at Medco, Cassis b) A mobile station circumstantially displaces to sites where high pollution levels are suspected	controls air pollution.		To hold sensitisation workshops in collaboration with Ministry of Environment, Solid Waste Management and Climate Change	200,000 (Short-term to long-term)
		Authorities are aware of the presence of asbestos in some existing buildings		Routine checks of buildings for asbestos in order to make the environment safe	
TOTAL ESTIMATED COSTS (4 YEARS)-PRIMARY PREVENTION (RS)					**1,100,000**

Table 38: Costing of Primary Prevention

7. COSTING OF SECONDARY PREVENTION

SCREENING	ACTIVITIES	STRENGTHS	GAPS	RECOMMENDATIONS	ESTIMATED COST (Rs) FOR 4 YEARS
BREAST CANCER SCREENING (BCS)	1)National Screening Programme for Breast Cancer.	Breast cancer screening leads to early detection.	1) Mammo-graphy is not yet a part of the existing screening programme.	To establish a well-structured National Screening Programme for Breast Cancer in Mauritius by 2025.	1) Cost of equipment 30,200,000 (Short Term to Mid-term).
	2) Clinical breast examination at the primary health care.				Nil
	3)Educating about breast self-examination.				Nil
	4) Distribution of pamphlets for cancer awareness.				550,000 (Short – term to Long-term).

SCREENING	ACTIVITIES	STRENGTHS	GAPS	RECOMMENDATIONS	ESTIMATED COST (Rs) FOR 4 YEARS
CERVIX	1)Liquid Based Cytology (LBC)/ Thin Prep and Bethesda Protocol are carried out.	1)Cervical cancer screening programme is already being implemented in Rodrigues.		1)To upscale and wotk in line with the National Cervical Cancer Screening Programme.	1) Cost of Equipment, 390,000 (Short Term to Mid-term) and 430,000 (Long-term).
	2)Technical Team of LBC trained cytoscreeners.			2)Training of cytoscreeners technologists.	2) Included in training section above.
	3)HPV Vaccination is ongoing.	3)Introduction of HPV vaccination in the national vaccination programme since 2016.			
	4)Colposcopy Unit has been set up.	4) Existing Colposcopy Unit in Regional Hospitals.		4)Dedicated colposcopy unit with Centralized information system. (data capture, quality assurance, call/recall/follow-up) and maintaining of databased of target population	

SCREENING	ACTIVITIES	STRENGTHS	GAPS	RECOMMENDATIONS	ESTIMATED COST (Rs) FOR 4 YEARS
COLORECTAL	A pilot study has been carried out by the Ministry of Health and Wellness.		No National Colorectal Screening Programme	To establish a National Colorectal Cancer Screening Programme Equipment and Reagents & consumables: Phase 1 (a) Point of care FIT Test (i) Mid –term -10,000 tests (2023) (ii) Long term- 40,000 tests (2024 & 2025) Phase 2 (a) Automated Occult Blood Analyzer (Equipment) (b)Reagents cost	(Starting in 2023, three years only) Phase 1 (a) Point of care FIT Test (i) Mid –term - 1,050,000 (ii) Long-term – 3,200,000 Phase 2 (a) 2,000,000 (2023 only) (b) 120,000 (Mid-term) 480,000 (Long-term)
TOTAL ESTIMATED COSTS (4 YEARS)- SECONDARY PREVENTION (RS)					**38,420,000**

Table 39: Costing of Secondary Prevention

DIAGNOSIS	STRENGTHS	WEAKNESS/GAPS	RECOMMENDATIONS	ESTIMATED COSTS (RS) FOR 4 YEARS
IMAGING	1)Availability of radiological facilities: Diagnostic X-Ray, USG, CT Scan, MRI, Mammography in Regional Hospitals	1) Long waiting list leading to delay in diagnosis and staging.	1) Imaging facilities at the National Cancer Hospital for appropriate and timely management to improve overall survival.	(1) & (2) Nil (Already achieved)
		2) No available expertise in Interventional Radiology.	2) To train 2 or more radiologists in interventional radiology.	(2) Already included in training section above.
NUCLEAR ONCOLOGY IMAGING.	1) Availability of nuclear oncology diagnostic imaging	1a)Non availability of radioactive reagents on local markets	1a) To ensure regular supply of reagents	(1-3) Funds will be made available as and when the new services will be introduced.
		1b)No hybrid imaging –PET CT & SPECT CT scan available in the country	1b) To install and commission a PET CT & SPECT CT Scan at the National Cancer Hospital	
		1c)non availability of PET tracers for specific tumour imaging	1c) To have yearly supply of one Gallium generator	
	2)DEXA studies (bone densitometry, body composition)- (Already achieved)			

DIAGNOSIS	STRENGTHS	WEAKNESS/GAPS	RECOMMENDATIONS	ESTIMATED COSTS (RS) FOR 4 YEARS
	3) Radioactive Iodine is administered in the department of radiotherapy at Victoria Hospital	(3) No facilities are available for discarding radio-nuclear waste	(3) Administration of RAI should be carried out in a specialised Nuclear Medicine department, where radiation safety measures can be taken.	
LABORATORY SERVICES	i)**Pathology**: Histopathology and Cytology Liquid Based Cytology (LBC) Immunohisto-chemistry technique for breast cancer are all carried out at the CHL(ISO)	1)Immunohisto-chemistry testing apart from those available at the CHL is mandatory for confirmation of the types of malignancy. IHC is not routinely carried out.	1)Immunohistoche-mistry Unit with all facilities to be set up at the National Cancer Hospital.	1(a) 7,000,000 (Short Term to Mid-term) 11,000,000 - (Long term) 1(b) 3,750,000 (Long term) 1(c) 1,000,000 (Mid-term) and 2,000,000 (Long term)
	2)Biochemistry**:** Tumour markers are carried out at the Biochemistry Department of the Central Health Laboratory.		2) Colour coding of histopathology and immunohistochemistry reports.	2) Nil
			3) Scale up circulating tumour markers (Blood)	3) 12,000,000 (Short Term to Mid-term) and 12,000,000 (Long-term)

DIAGNOSIS	STRENGTHS	WEAKNESS/GAPS	RECOMMENDATIONS	ESTIMATED COSTS (RS) FOR 4 YEARS
HAEMATOLOGY	**iii) Haematology:** The hematology laboratories provide "routine" support investigations. The laboratory discipline plays a central role in the diagnosis of leukemia, bleeding disorders and other hematological malignancies.	3) Classification of leukemia not yet available	3) Classification of leukemia by Flow Cytometry will be introduced shortly Immmunophenotyping of leukaemia	3) 2,000,000 (Mid-term) and 4,000,000 (long term)
	iv)**Microbiology:** Malignancies are associated with specific virus infections, opportunistic, other microbial, viral infections and reactivations infrequently complicate cancers, particularly their therapy.	4) HPV DNA test not available	4) HPV DNA test has been approved by the FDA to be used without a pap test to screen for cervical cancer, if positive for HPV 16 or 18. It would be useful in our set up for high-risk group.	4) 1,000,000 (Mid-term) and 2,000,000 (Long term)
			5) Rapid investigation of neutropenia	5) 400,000 (Short Term to Mid-term) and 600,000 (Long term)
TOTAL ESTIMATED COSTS (4 YEARS)- DIAGNOSIS(RS)				**58, 750,000**

Table 40: Costing of Diagnosis

8. THERAPY
(i) ESTIMATED COST OF TREATMENT FOR RADIOTHERAPY

Modalities of Treatment	STRENGTHS	WEAKNESS/GAPS	RECOMMENDATIONS	ESTIMATED COSTS (RS) FOR 4 YEARS
Radiotherapy	2D Radiotherapy and LDR brachytherapy are available since 1969	Conformal Radiotherapy (3DCRT), HDR brachytherapy are not being provided in Mauritius	Conformal radiotherapy (3D CRT and IMRT) to be introduced at the National Cancer Hospital	
	Maintenance of the existing brachytherapy machine Low Dose Rate Curietron machine (cesium 137)		Acquisition of a HDR brachytherapy at the National Cancer Hospital 3D Brachytherapy by using also interstitial implants.	Funds already earmarked
			Image guided radiation therapy as the mainstay in radiation treatment delivery	
			3)Acquisition of a cyber-knife (Radiosurgery for both malignant and non-malignant cases)	Funds already earmarked
	Adequate dosimetry with Quality Assurance (QA) for cobalt machines are	Limited dosimetry with no Quality Assurance (QA) for linear accelerator	Training of Staff for monitoring and verification of treatment. Quality Assurance (QA) should be introduced	

Modalities of Treatment	STRENGTHS	WEAKNESS/GAPS	RECOMMENDATIONS	ESTIMATED COSTS (RS) FOR 4 YEARS
	regularly being performed			
2D Radiation therapy (2 Cobalt 60 machines)	Treatment using Radiotherapy is available in Mauritius	Transition from 2-D to 3-D Radiotherapy is not yet provided in Mauritius	Acquisition of 2 Linear Accelerators with multi-leaf collimators (3D & IMRT) IMRT to be the standard of care To change the Cobalt sources in due time	Funds already earmarked
1 linear accelerator which has passed twice its life span	Ongoing maintenance of the existing linear accelerator		Acquisition of a Linear Accelerator to be housed in the existing bunker at Victoria Hospital	
X-ray Simulator	Maintenance of existing X-Ray simulator	Regular breakdown of the simulator	Acquisition of 3D CT simulator	Funds already earmarked
Training of Medical Physicists for monitoring and verification of treatment.	Quality Assurance (QA) is being done.		To strengthen the Quality Assurance Programmes	MOHW will arrange for training courses from appropriate training bodies
TOTAL ESTIMATED COST				**Funds already earmarked**

Table 41: Estimated cost of treatment for Radiotherapy

(i) ESTIMATED COSTS OF OTHER TREATMENTS

MODALITIES OF TREATMENT	STRENGTHS	WEAKNESS/GAPS	RECOMMENDATIONS	ESTIMATED COSTS (RS) FOR 4 YEARS
2)Chemotherapy and biological drugs	1) In line with WHO essential drug list, more than 60 cytotoxic therapy is available in the hospital drug list formulary.	1i) The Department does face shortage of Cytotoxic Drugs.	1i) Pharmacy and therapeutic committee to be held on a quarterly basis to ensure that the hospital staff selects, improves, monitors and evaluates medicinal agents. To introduce other targeted therapy and Immunotherapy in the hospital drug formulary.	1) (i) Nil
		1ii) No specialized Oncology Nurses	1ii) Training of nursing staff to be recognised as Oncology Nurses (Specialised Nurses)	1(ii) Already considered in training section above.
	2) Good standards of care in the Chemotherapy Day Care Unit is practiced. International guidelines NCCN, ASCO, ESMO are commonly referred to.		To have a dedicated Unit like other Regional Hospitals at Flacq.	

MODALITIES OF TREATMENT	STRENGTHS	WEAKNESS/GAPS	RECOMMENDATIONS	ESTIMATED COSTS (RS) FOR 4 YEARS
	3) Decentralization of chemotherapy (day care) services to 3 other Regional Hospitals.	3)Chemotherapy Day Care Unit at Dr Bruno Cheong Hospital is still pending.	To consider allocating a specific budget for new drugs.	3) New Teaching Flacq Hospital budget.
	4)A revised set of criteria to include more patients to received Monoclonal antibodies (Trastuzumab and Rituximab).			
	5)Novel Therapy in cancer			5) Funds will be made available from Annual Budget
	6)Dedicated pediatric oncology ward	6) No pediatric oncologist	6)Recruitment/Training of pediatric oncologist Twinning with an established international centre.	6) Already considered in HR/training section above

MODALITIES OF TREATMENT	STRENGTHS	WEAKNESS/GAPS	RECOMMENDATIONS	ESTIMATED COSTS (RS) FOR 4 YEARS
3)Palliative care	1)Palliative Care forms an integral part of the services offered to cancer patients	1)No palliative services at community and domiciliary level	1)The Palliative Care services for cancer patients should be further developed at the level of: i)Hospital ii)Community iii)Domiciliary	Cost of drugs: Rs 6,180,461 and cost of equipment and consumables: Rs1,470,000
	2) A list of drugs for cancer palliative care patients has been approved		2(i) To include an additional list of drugs for palliative care as follows: (1) Docusate sodium (2) Macrogols 3350 (3) Pregabalin (4) Tramadol injection (5) Oxycodone (6) Ibandronic acid, and (ii) list of equipment and consumables is as follows: (1) ambulatory syringe pumps (10) and subcutaneous infusion catheter (600 units) for both male and female patients.	

MODALITIES OF TREATMENT	STRENGTHS	WEAKNESS/GAPS	RECOMMENDATIONS	ESTIMATED COSTS (RS) FOR 4 YEARS
	3) "Train the Trainer" course in Palliative Care was offered under the WHO Biennium.	3)Limited number of staff trained in palliative care	3)i) Training of all cadres (Medical and Health Officer as palliative care physician, nurses (male and female), nutritionist, psychologist, Medical Social Worker, Health Care Assistant in palliative care so that it can be expanded to other hospital, community and domiciliary	3)i) Already considered in Training Section above.
TOTAL ESTIMATED COST FOR OTHER TREATMENTS				**7,650,461**

Table 42: Estimated cost for other treatments

9. IMPROVING TRANSFUSION SUPPORT IN CANCER MANAGEMENT

Objective	Activity	Estimated cost (starting 2023)	Remarks
Implement hemovigilance programme to monitor adverse reaction to transfusion of blood and blood products in cancer patients	• Training of nursing and medical staff in transfusion reaction • Distribute hemovigilance forms • Analyse data and give feedback	Nil	Immediate
Strengthen apheresis programme to provide adequate platelets in a timely manner	• Purchase two apheresis machines and consumables	4,000,000	Mid-term and long-term
Use leukoreduced blood components for oncology patients	• Purchase additional leukoreduction filters	Nil	Short-term Already purchased
Provide irradiated blood components to prevent GVHD	• Purchase γ irradiator for irradiating blood components • Setting guidelines on irradiation of blood products • Training of staff • Quality monitoring of irradiated products	6,000,000	Long-term
Support transplant programme	• Stem cell collection and banking • Setup protocols for stem cell collection and banking • Training of staff • Purchase of equipment and consumables	5,000,000	Mid-term and long term
TOTAL ESTIMATED COSTS FOR IMPROVING TRANSFUSION SUPPORT		**15,000,000**	

Table 43: Improving Transfusion Support in Cancer Management

10. SUMMARY OF COSTING FOR ACTIVITIES/INTERVENTIONS

SN		Short to Mid-term		Long-term		TOTAL ESTIMATED COSTS (RS) 4 YEARS
	DETAILS OF ACTIVITIES	**2022**	**2023**	**2024**	**2025**	
1	**PRIMARY PREVENTION**	275,000	275,000	275,000	275,000	1,100,000
	Sub-total	**275,000**	**275,000**	**275,000**	**275,000**	**1,100,000**
2	**SECONDARY PREVENTION**					
	Breast Cancer Screening	20,137,500	10,337,500	137,500	137,500	30,750,000
	Cervix Cancer Screening	190,000	200,000	210,000	220,000	820,000
	Colorectal Cancer Screening	Nil	3,170,000	1,840,000	1,840,000	6,850,000
	Sub-total	**20,327,500**	**13,707,500**	**2,187,500**	**2,197,500**	**38,420,000**
3	**DIAGNOSIS**					
	Imaging (training)					**Already included in HR /training above**
	Nuclear oncology imaging					**Funds will be made available as and when new services will be introduced**
	Laboratory Services and Haematology	9,100,000	14,300,000	18,050,000	17,300,000	58,750,000
	Sub-total	**9,100,000**	**14,300,000**	**18,050,000**	**17,300,000**	**58,750,000**
4	**THERAPY**					
	Radiotherapy					**Funds already earmarked for equipment**
	Chemotherapy (excluding HR and training)					-
	Palliative Care	1,717,940	1,917,637	2,018,919	1,995,964	7,650,460
	Sub-total	**1,717,940**	**1,917,637**	**2,018,919**	**1,995,964**	**7,650,460**
5	**IMPROVING TRANSFUSION SUPPORT**	**Nil**	**3,500,000**	**8,500,000**	**3,000,000**	**15,000,000**
	TOTAL ESTIMATED COSTS	**31,420,440**	**33,700,137**	**31,031,419**	**24,768,464**	**120,920,460**

Table 44: Summary of costing for activities/ interventions

Recap of the indicative estimated costs for 4 years:

Total estimated cost of Activities**: Rs 120,920,460**

Total estimated cost of HR (excluding redeployed/funded/posts to be created as and when new services are to be introduced): **Rs 54,782,910**

Total estimated cost of other logistics**: Rs 9,500,000**

Total Estimated Cost (Activities, HR and Other logistics): Rs 185,203,370

Average estimated cost per year: **Rs 46,300,843**

The economic burden borne by cancer is substantial. NCCP is all about people. The main aim is to reduce incidence and mortality related to cancer and improve the quality of life of cancer patients. The NCCP will focus on the five main pillars: Cancer Awareness Campaigns, Screening, Diagnosis, Treatment and Palliative Care.
The main recommendations and salient features of the National Cancer Control Programme 2022-2025 are as follows:

1) setting up of a modern state-of-the-art National Cancer Hospital with high-tech equipment.

2) strengthening of cancer awareness campaigns.

3) introduction of National Cancer Screening Programme for Colorectal and Breast as well as strengthening of the existing Cervical Cancer Screening Programme.

4) provision of more specific and sensitive laboratory and imaging services at the National Cancer Hospital.

5) implementation of nuclear medicine services such as PET CT Scan and SPECT CT Scan at the National Cancer Hospital.

6) focus will be laid on the five most common cancers namely: Breast, Prostate, Colorectal, Lung and Cervix without excluding other cancers.

7) setting up of a Bone Marrow Transplant facilities and High Dose Chemotherapy Services at the National Cancer Hospital.

8) extension of palliative care services from hospital to community and domiciliary.

9) access to modern Radiotherapy services will maximise treatment outcomes whilst minimizing radiotherapy-induced toxicity.

10) multidisciplinary team (MDT) approach to all cancer patients.

11) setting up of a Research Unit at the NCH to develop therapeutic and diagnostic designs for new treatment and prevention strategies.

12) set up a National Cancer Control Programme Steering Committee to oversee the

implementation of cancer control activities.

13) recruitment and training of medical and paramedical cadres specialised in cancer care.

14) adoption of Standards of Procedures (SOPs) and Treatment Protocols by all medical and paramedical cadres.

15) twinning on the National Cancer Hospital with a reputed international cancer centre.

Summary of proposed activities for the 5 commonest cancers in Mauritius

Malignancies	Proposed activities
Breast	• To establish Breast Health Units (BHU). • Develop quality improvement systems in all Breast Health Units screening clinics. • To increase coverage of mammography services. • Educate the health professionals of all cadres about signs, symptoms, clinical examination and importance of early diagnosis and improve referral system. • To adopt Standards of Procedures and protocols by concerned medical and paramedical cadres by 2025.
Colorectal	• To promote a healthy lifestyle through mass media, pamphlets and school education. • To increase public awareness about colorectal cancer and its risk factors through mass media, pamphlets and school education. • To introduce an efficient colorectal cancer screening programme by 2025. • To optimize the endoscopy unit in all 5 regional hospitals and to work in close collaboration with surgeons. • To implement a Multidisciplinary team approach for all CRC patients. • To adopt Standards of Procedures and protocols by concerned medical and paramedical cadres by 2025.
Prostate	• To sensitise the general population about prostate cancer. • To train medical and paramedical cadres to diagnose carcinoma prostate at an early stage. • To improve the treatment outcome for prostate cancer. • To adopt Standards of Procedures and protocols by concerned medical and paramedical cadres by 2025.
Lung	• To sensitise the general population about lung cancer. • To strengthen the anti-smoking programmes. • To improve both diagnosis and treatment of lung cancer. • To adopt Standards of Procedures and protocols by concerned medical and paramedical cadres by 2025.
Cervical	• To increase awareness of the general population about cervical cancer. • To improve and strengthen the cervical screening programme. • To adopt Standards of Procedures and protocols by concerned medical and paramedical cadres by 2025.

Table 45: Summary of proposed activities for the 5 commonest cancers in Mauritius

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