REPUBLIC OF MAURITIUS

NATIONAL CANCER CONTROL PROGRAMME

ACTION PLAN

2010 - 2014

CANCER CAN BE PREVENTED

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THE MAURITIUS CANCER PROGRAMME 2010 – 2013

1. EXECUTIVE SUMMARY

1.1. INTRODUCTION

Cancer has become the third major health threat after diabetes and cardiovascular diseases in the Republic of Mauritius.

Nearly 1400 new cases of cancers and 950 cancer deaths occur each year. In 2008, cancers accounted for 11.9% of all deaths in the country. There were, in total, 2286 and 3280 new cases of cancer in men and women respectively between 2005-2008, and 58 % of all female cancers occurred in the age group of 15-60 years, while 1.7 % of all cases occurred in children below the age of 14 years. The total number of new cases has risen by 41 % and 40 % in men and women respectively between 1992 and 2008. There has been a doubling of the incidence rate of female breast cancer between the periods 1989-1992 and 2005-2008.

In order to slow down this alarming trend, it is essential to have a National Cancer Programme which defines objectives and priorities, sets out strategies and coordinates activities in the main areas of Cancer Control i.e. cancer prevention, screening and early diagnosis, therapy and palliative care, in line with the recommendations of the World Health Organisation.

The incidence and prevalence of the different types of cancers vary in different parts of the world. In Mauritius, breast cancer in females and cancer of the colon & rectum in males are the commonest, while in children, acute leukaemia is the commonest cancer.

The population should be informed about the common cancers and about the risk factors and lifestyles that predispose individuals to develop such cancers. Avoiding risk factors and lifestyles will help to reduce the incidence of some of the preventable cancers in the population.

Tobacco smoking is unequivocally associated with a variety of cancers mainly those of the lungs, mouth and throat. The development of uterine cervix cancer in women is related to sexual lifestyles and the Human Papilloma virus.

Many cancers are curable, e.g uterine cervix, breast, colon, mouth and throat, blood cancers and many childhood cancers, if they are diagnosed early. For this to be a reality in Mauritius, it is necessary that the public is made aware of early symptoms and signs, health professionals are educated about cancer, and treatment facilities are provided to enable effective therapy. A new Women's Hospital which will include cancer care for women is in the pipeline.

In general, one-third of all cancers are preventable, one-third are treatable and the remaining one-third are at present incurable. Palliative care provision, which includes the control of pain and relief of symptoms, needs to be structured and patient-centred. This aspect of cancer control costs little and yet is important in improving the quality of life of cancer patients.

During the preparation of this Action Plan, several major aspects of the Action Plan have already been formulated and have reached the stages of implementation. A multidisciplinary Breast Tumour Board has been set up at Victoria Hospital consisting of surgeons, pathologists, oncologists and radiologists. A National cervical cancer screening coordinator is in charge of re-engineering the new colposcopy services to be provided for cervical cancer based at Victoria Hospital. A Children Cancer Unit has been inaugurated in May 2009 at Victoria Hospital and work is in progress for extension to a state of the art 13 bedded- children cancer Ward. Two new Specialists have been recruited in the Department of Radiotherapy. New equipment has been received in the Department of Nuclear Medicine at J. Nehru Hospital for cancer diagnosis and new diagnostic endoscopy facilities have been set up at SSRN Hospital.

Mauritius, with its vision of becoming a regional medical hub, will need a Comprehensive National Cancer Center, which will offer modern care to all cancer patients of the country. The setting up of a National Cancer Institute will be the way forward to bring along the changes in cancer care and to enable the country to confront the future predictable challenges of cancer in the Republic of Mauritius before it becomes the main scourge of the country's health.

WHAT IS A NATIONAL CANCER CONTROL PROGRAMME?

A national cancer control programme is a public health programme designed to reduce the incidence and mortality of cancer and improve the quality of life of cancer patients through the systematic implementation of evidence-based strategies for primary prevention, early detection, treatment, and palliation, making the best use of available resources.

At present, cancer deaths in Mauritius account for approximately 11% of all deaths registered annually.

The health economic consequences are therefore significant and a National Cancer Control Programme should be funded to implement effective measures. For such a programme to succeed, there should be a commitment by the government to the objectives of the programme. Policy measures required to achieve those objectives should be put in place.

The 4 basic steps which would be required for the successful implementation of the National Cancer Control Programme in the Four-Year Cancer Plan in Mauritius are:-

1. Assessment of the magnitude of the cancer problem: incidence and prevalence
2. Setting measurable cancer control objectives
3. Monitoring and Evaluating possible strategies
4. Identification of the priorities for the cancer Control programme

The Statistics of the Ministry of Health and Quality of Life, the National Cancer Registry and epidemiological studies are reliable sources of data to estimate the extent of the cancer problem.

The resources required for the Four-Year cancer programme include infrastructure, financial and human resources. The government, non-governmental organizations (NGOs) and the public and private sector through Corporate Social Responsibility should be involved in developing these resources.

1.2 GENERAL OBJECTIVES

The overall aim of the Four-Year Cancer Programme is to formulate, plan and implement a coordinated and cost-effective program for the prevention, treatment and control of cancer in the Republic of Mauritius.

The Objectives of the Mauritius Cancer Programme are:

1. To prevent cancer through public education
2. To reduce the morbidity and mortality due to cancer
3. To promote early detection of cancer
4. To provide adequate therapy
5. To develop an effective palliative care service

Specific Objectives For The Cancer Programme

- To determine the incidence and prevalence of cancer in Mauritius
- To promote public awareness about cancer i.e early symptoms and prevention strategies.
- To promote early diagnosis and referral, and provide effective therapy and palliative care.
- To provide adequate infrastructure, equipment and drugs for the treatment of cancer patients.
- To promote scientific, epidemiological and clinical research in cancer in Mauritius
- To mobilize resources from government, the private sector and Non-governmental organizations (NGOs) for the Cancer Programme
- To co-ordinate all cancer activities
- To advise the Government on legislation needed for the Cancer Programme
- To monitor and evaluate the Cancer Programme
- To develop strategies for better implementation.

1.4. PRIORITIES OF THE FOUR YEAR MAURITIUS CANCER PROGRAMME

1.4.1. Strengthen Cancer Registry in Mauritius

1.4.2 Provide Cancer Education to the Public and School Children:

Methods will include the use of posters, articles in the press, talks on radio and television, and visits to schools, meeting places and work places. Incorporation of educational materials on cancer prevention suitable for primary and secondary school syllabus. Funds will be made available for a well designed cancer awareness programme.

1.4.3 Prevention of Cancer

Prevention means minimizing or eliminating exposure to cancer causing agents, and offers the cheapest opportunity for long term cancer control. The public, non-governmental organizations and the government must participate in eliminating factors in the environment that contribute to the occurrence of cancer. The exact causes of many cancers are unfortunately not known.

In Mauritius, priority will be given to the following areas:

(a) Cancer of Uterine Cervix through sexual health education and screening
(b) Breast Cancer through lifestyle changes
(c) Tobacco-related cancers. The public needs to be continually reminded about the high risk of cancers related to the regular use of tobacco
(d) Alcohol and diet. Excessive consumption of alcohol, especially in those who smoke as well, carries a high risk of cancers in the mouth, throat pancreas and oesophagus. The public will be informed of the benefits of a balanced low-fat diet containing fruits and vegetables.

1.4.4 Early Detection and Treatment.

Many types of cancers common in Mauritius are amenable to early detection, at a stage when they are most likely to be cured and the treatment less radical. These include cancers of the cervix, the breast and colon. Mauritius already has the basic infrastructure and facilities for therapy of cancer using surgery, chemotherapy and radiotherapy. More effort should be made to improve the service through training of more personnel, provision of adequate medication, modern infrastructure, and modernisation of radiotherapy equipment, as well as their proper maintenance, and ensure quality control.

1.4.5 Palliative and Supportive Care

Palliative Care is inadequate in Mauritius. There is no purpose-built Hospice or palliative care unit or dedicated pain control unit in the public sector. Morphine is available in both the public hospitals and private clinics but not adequately prescribed by medical staff. The aim will be to progressively extend palliative care practices to all hospitals and Area Health Centres and provide home-based care after training of the necessary workforce.

1.4.6 Training of Health Personnel.

There is need for continuing education for the medical & nursing staff and other workers in the health service, with respect to, especially, the holistic and humane approach to the cancer patient and, on the other hand, to modern high technology cancer therapy

1.4.7 Infrastructure / Equipment .

Recommendations will be made for essential radiotherapy equipment required. The need to train an adequate number of Radiotherapy technicians and provide them with the tools and means to properly maintain these expensive machines must be emphasised. There is need for more outpatient and inpatient ward space to cope with the rapidly increasing number of cancer patients.

1.4.8 Drugs

A separate budget for regular and adequate supply of drugs for cancer treatment should be made available. A Chemotherapy Committee needs to monitor the supply and usage of chemotherapy drugs. This Committee will make recommendations on the types of tumours, which can be treated with chemotherapy, especially with the escalating cost of new drugs for cancer.

1.4.9 Research

Clinical, epidemiological and scientific research on cancer in Mauritius will be encouraged. These studies should include defining the possible causes of cancer, prevention, methods of achieving early diagnosis and improvement in therapy, and changing lifestyles of the population. The roles of the Mauritius Research Council, the University of Mauritius, the Mauritius Institute of Health and the National Cancer Registry need to be coordinated in this respect by creation of a Clinical Research Council.

1.5 Managerial Activities Required by the Cancer Plan.

The main types of managerial activities that will be required in the Cancer Plan are:

1. Integration of the Cancer Programme within the NCD Programme
2. Implementation of the Programme
3. Fund Raising.
4. Public Education
5. Professional Education and Development
6. Information systems
7. Quality Assurance
8. Research and Policy Development
9. Monitoring and Evaluation

1.6 Conclusion

The Cancer Plan for Mauritius will be most effective when it is integrated into the country's Health Sector Strategic Programme. This will allow coordinated action on common risk factors for several diseases, for example tobacco as the cause of both cancer and cardiovascular diseases. The Ministry of Health should provide leadership in collaboration with NGOs interested in cancer services. The Mauritius Cancer Society will need to be revived.

A comprehensive cancer program will require a multisectoral approach to include several Ministries because factors that contribute to the causes of cancer have a broad base in society. Plans to minimize cancer hazards should be incorporated into agriculture and industry, and any potential carcinogenic exposures should be identified and standards established and enforced for their control.

It must be emphasized that the successful implementation of the cancer plan will require a commitment by the government to the objectives of the programme and the provision of extra resources. Adequate budget should be allocated for the Cancer programme.

2. ASSESMENT OF CURRENT SITUATION IN RELATION TO CANCER SERVICES

2.1 Country Profile of Mauritius

Area 2040 sq. km

Age Structure

AGE (years)	MALES	FEMALES
0 – 4	49 940	48 131
5 – 14	105 864	103 394
15 – 49	341 953	339 742
50 - 59	56 174	59 337
60 - 64	15 608	17 984
65 +	32 697	45 745

2.2. Mauritius Health Profile

Crude death rate per 1000 = 7.3

Crude birth rate per 1000 = 13.8

Life expectancy at birth (2008) = 69.1 years (males) / 76.1 years (females)

Infant mortality rate (2006) = 13.5 per 1000 live births

Maternal mortality rate (2006) = 0.18 per 1000 live births

Children immunization coverage (2006) = 89.3 per 100 live births

Population:Doctor ratio = 876 inhabitants per doctor

KEY ECONOMIC AND HEALTH INDICATORS
(Republic of Mauritius)

	2008
Gross Domestic Product (GDP) at market prices	Rs 233.7 billion US 7.7 billion
Per Capita Income	Rs 184,000 US 6,133
Inflation Rate	6.9%
Estimated Total Health Expenditure (public & private)	Rs 10.8billion US$ 0.36billion
Government Expenditure on Health (GEH)	Rs 4.9 billion US$ 0.16 billion
GEH as % of Total Government Expenditure	6.9 %
Per capita Government expenditure on Health	R 3,979 US$ 132
Per capita Total Expenditure on Health	Rs 8,752 US$ 291
Public Health Expenditure as % of GDP	1.8 %
Total Population	1,234,042
Infant Mortality Rate per thousand live births	14.4
Under-Five Mortality Rate per thousand live births	16.6
Maternal Mortality Rate per thousand live births	0.37
Life Expectancy-Males	69.1
Life Expectancy-Females	76.1
No. of beds in public hospitals	3,500
No. of beds in private clinics	582
Doctor-population ratio per thousand population	1.14
Nurse-population ratio per thousand population	2.61

2.3.1 Epidemiology of Cancer in the Republic of Mauritius

According to data from the Health Statistics Unit of the Ministry of Health and Quality of Life, cancer accounted for a total of 4 666 discharges (including deaths) from hospitals in 2006. It was responsible for 11.9 % of mortality compared to 22.6 %, 21.7% and 9.3% for diabetes, heart diseases and cerebrovascular diseases respectively.

The Department of Radiotherapy at Victoria Hospital recorded a total of nearly 1000 new cases of cancer presenting to the public sector for the year 2009 with 19 682 outpatient attendences in the same year. National cancer Registry data show that the incidence of cancer is nearly 1,400 cases per year with approximately 950 cancer deaths occurring each year.

The commonest sites of cancer, based on the latest report by the National Cancer Registry, are in males : Colon-rectum (14%), Prostate (10.5%), Oral cancer (8%) and Lung (9.6%). Among females, Breast cancer (38%) is the most prevalent site of cancer followed by cancer of the uterine cervix (10%), Colon-rectum (4.8%) and Ovaries (5.6%). Mean age for cancer incidence is 56.4 years in males and 59.7 years in females.

The table below shows the commonest cancers in both sexes (2005-2008).

MALES	Numbers	%
Colon	320	14
Prostate	241	10.5
Lung	220	9.6
Oropharynx	186	8.1
Lymphoma/Leukaemia	192	8.4
Stomach	182	8
Bladder	112	4.9

FEMALES	Numbers	%
Breast	1239	37.8
Cervix	334	10
Colon	159	4.8
Ovary	183	5.6
Uterus	166	5.0
Leukaemia	73	2.2

Between 2005 and 2008, there were 2286 new male cancer cases registered and 3280 new female cancer cases. Breast cancer in females accounted for a total of 1239 new cases and childhood cancers for 96 new cases during that period. There were 1950 male cancer deaths and 1900 female cancer deaths recorded between 2005-2008.

High risk Factors for Cancer

Although the exact causes of cancer are unknown, the development of cancer is often associated with life styles, diet and environmental conditions. Cancers of the lung, throat and mouth, oesophagus have been directly linked to tobacco smoking. Cancer of the cervix has been linked to sexual transmission and certain Human Papilloma Virus subtypes. Diet has also been linked to causation of cancer of the bowel, stomach and breast. Infection with hepatitis B and C viruses is associated with liver cancer.

2.4 Overall Disease Policy

The public health system in Mauritius is completely free to all citizens: patients do not have to pay for the cost of any drug therapy or radiotherapy or surgery. The work of the Non Communicable Disease Unit of the MoHQoL unit focuses primarily on diabetes, hypertension, hyperlipidaemia, cardiovascular diseases and cancer.

2.5. Cancer Surveillance

The cancer incidence and prevalence data is important to ascertain the extent of the cancer problem in Mauritius. Data will also be collected to evaluate morbidity in addition to mortality due to cancer. Cancer surveillance system takes place through the following channels:

- The routine health information system based within the MOHQoL
- The Central Laboratory National Cancer Registry (pathology-based)
- The Radiotherapy Department Patient Register

2.5.1. Routine Health Information System

The Central Health Information System is based at the Ministry of Health. The unit is responsible for collection of routine health information including Regional Hospital medical record data.

The National Cancer Registry of the Republic of Mauritius is based at the Central Pathology Laboratory, Candos. It registers all pathologically-diagnosed cancer cases in the public sector. Since 2000, private pathological laboratories also provide data for comprehensive cancer registration.

2.5.2 Death Registration

Data on deaths due to cancer or any other cause is recorded by Civil Status Office (Prime Minister's Office).

2.6. NATIONAL CANCER REGISTRY

The idea of starting a Cancer Registry was put forward in 1989 and the first publication for 1989-1996 cancer statistics was issued in 1999. It has been continually functional and updated since. The latest published statistics on the cancer incidence and mortality for 2005-2008 have been released providing one of the most comprehensive cancer data collection for an African country.

Function of the National Cancer Registry
The main functions of a cancer registry should be as follows:

To assess the incidence of cancer by achieving complete registration of all diagnosed cancers.

To provide information on cancer trends to help in assessing future needs of cancer services.

To try to identify risk factors associated with cancer

To provide data for epidemiology and other research

The National Cancer Registry

The Registry is currently operating in restricted space with limited staff at Central Laboratory, Candos. There is one clerical staff who is responsible for the day to day running of the registry. Data is collected from several sources both public and private sector. The information resulting from analysis of this data is of international standard and have been presented to International Meetings and Forums.

3. JUSTIFICATION and RATIONALE of the Cancer Programme

3.1 Justification

Many cancers with known causes can be prevented and their incidence will eventually fall. Many patients with cancer can be cured of their disease with adequate therapy, if detected early. Patients with incurable cancers should expect to receive a good quality of life.

3.1.1 Cancer Prevention

Certain cancers may be easily preventable, e.g. cervical cancer (by promoting sexual health), lung and other tobacco-related cancers (by control of smoking)

3.1.2 Early Diagnosis

The outcome of cancer treatment are generally improved when cancers are detected at an early stage, as in cervical and breast cancer. Cancer may be diagnosed early by proven screening methods. Public awareness campaigns to alert the public to cancer symptoms will also lead to earlier diagnosis.

3.1.3 Curative Therapy

More cancers can nowadays be cured, especially cervical, breast, head and neck, leukaemias and children's cancers. One or more of the treatment modalities of surgery, radiotherapy and chemotherapy may be necessary. This requires adequate manpower with sufficient training, also the necessary equipment and provisions for its maintenance, and adequate supply of drugs to be delivered within an appropriate infrastructure.

3.1.4 Palliative Care

Some cancers such as liver, kidney, lung, stomach, pancreas, are at present incurable in the majority of cases. It is however important to offer such cases best symptomatic and supportive treatment (i.e palliative care). The majority of such patients should be able to enjoy a good quality of life and remain pain-free for the rest of their lives.

3.2 Rationale

Mauritius is fortunate in already having a dedicated Radiotherapy unit attached to a regional hospital with medical and surgical specialists, nursing and paramedical personnel. Cancer-related activities will however be most effective if they are well co-ordinated. Early diagnosis and referral will not help unless treatment facilities are available, maintained and upgraded. Thus the rationale of the cancer action Plan is primarily to coordinate activities in prevention, promote early diagnosis and referral, and improve treatment and palliative care.

3.6. CURRENT STATUS OF CANCER SERVICES : INFRASTRUCTURE & RESOURCES

There are three major ways of treating cancer, namely by surgery, chemotherapy and radiotherapy. Others include hormonal therapy and immunotherapy. These are available in Mauritius, but not all necessarily in the public sector. Treatment facilities especially for Radiotherapy and Chemotherapy are centered at the Radiotherapy Unit at Victoria Hospital. Chemotherapy may also be administered in Rodrigues.

4.2.1 Surgery

There are a number of general surgeons and gynecologists in Mauritius, but no surgical oncologist or dedicated breast surgeon yet. Most of the surgeons and gynecologists operating on cancer patients have received no specialist oncological training. Not all cases are discussed within a multidisciplinary board of specialists before surgery.

4.2.2 Radiotherapy

There is only one Radiotherapy centre in Mauritius. The current infrastructure was setup in 1968, and later, further structural modification was carried out to house a linear accelerator, a simulator and planning section in 1994. A low dose remote controlled brachytherapy machine is functional since 2007. One of the two Cobalt units has been replaced in March 2009. The linear accelerator is due to be replaced. Six Radiotherapists have been trained abroad in Radiotherapy and Chemotherapy. There is a Medical Oncologist accreditated from UK since 2003.

4.2.3 Chemotherapy

A good standard of chemotherapy care is already practised in Mauritius. More than 40 chemotherapy drugs are readily available free of charge to hospital patients. The objectives over the next four years will be to increase the access to modern chemotherapy drugs and to provide curative chemotherapy and eventually stem-cell transplant for curable types of cancers affecting especially children.

Chemotherapy protocols according to European ESMO and American NCCN guidelines have been adapted to the Mauritian context and are being implemented according to cancer-types. All chemotherapy are prescribed by Specialists only. Chemotherapy care for children are supervised jointly by an oncologist and a paediatrician.

There are nurses who are involved in administering chemotherapy either for in-patients or out-patients. However, they need continuous nursing education for update in chemotherapy, cancer and its complications. Flow cabinets are available for the safe reconstitution of chemotherapy drugs. Intravenous Chemotherapy is currently administered on the wards for inpatients and in a Chemotherapy Day Unit for outpatients. Portacath venous systems are available in baby, children and adult sizes and are inserted by two trained surgeons at present, including a paediatric surgeon.

There is only one centre in Mauritius for the treatment of patients with cancer. It would be advisable to decentralise chemotherapy for some patients for many practical reasons, such as limited space at Victoria Hospital and transport. However, such a measure would require more trained staff to administer chemotherapy under supervision in other regional hospitals.

A system of categorization of tumours needs to be devised for treatment purposes as chemotherapy drugs are expensive and potentially toxic. One category should include cancers in which a good response is anticipated for instance, lymphoma, leukemia, tumours of testes, childhood tumours, breast cancers. A second category should list tumours in which chemotherapy is not beneficial. Patients with these tumours should not be subjected to cytotoxic drugs, but can best be treated with other appropriate methods.

Chemotherapy regimes appropriate for use have already been devised by a 'sub-committee for cancer diagnosis and treatment' following the NCCP workshop in 2006.

Regular monitoring of usage and expenditure of all chemotherapy drugs will be carried out. A separate oncology (cytotoxic) drug budget will be requested from the Ministry of Health and Quality of Life.

4.2.4 Other Forms of Treatment

Hormonal therapy e.g Tamoxifen, and Immunotherapy e.g Interferon, are available. Vesanoid is available for Acute Promyelocytic leukaemia. Mauritius has benefited from the International GIPAP programme to provide the drug Glivec to eligible patients mainly with Chronic Myeloid Leukaemia. Newer drugs such as aromatase inhibitors and other modern targeted therapies will need to be considered for addition to the formulary in individual cases. All chemotherapy drugs are provided freely to all patients in the public sector.

4.2 Ward facilities for patients

The ambulant relatively fit patients undergoing radiotherapy and chemotherapy are treated on an out patient basis. About 30 patients attend the outpatient Chemotherapy Day Unit on a daily basis and a further 90 patients undergo radiotherapy daily.

There are 2 wards at the Radiotherapy Unit set aside for male and female cancer patients with a bed capacity of 57 beds but more often than not, cancer patients inappropriately occupy beds in other medical and even surgical wards in the hospital.

Children with leukaemias are treated in one of the paediatric wards at Victoria Hospital with basic isolation facilities within a general paediatric ward. Other children are treated in an area within the female ward in the radiotherapy Unit. A new state of the art Children Cancer Unit was opened in May 2009 and is being extended to a full dedicated ward in 2010.

Adolescents with cancer are treated together with adults. There is no dedicated ward or hospice for terminally ill cancer and non-cancer patients in Mauritius.

4 HEALTH SRATEGIES AND APPROACHES IN PREVENTION AND CONTROL

Strategies for controlling cancer in Mauritius in the 4 year cancer plan will include:-

- Implementation of the National Cancer Control Programme
- Primary Prevention
- Secondary Prevention
- Upgrading of Treatment care and facilities
- Strengthening Palliative Care

Development of a National Cancer Control Programme

A workshop on " Plannning and Development of a National Cancer Control Programme" in the Republic of Mauritius was organised by the Ministry of Health and Quality of Life in September 2006. A Cancer Action Plan Task Force was set-up in January 2007 and four multi-disciplinary sub-committees provided proposals on:

1. Palliative Care Programme, including capacity building and training, multidisciplinary palliative care team, networking with NGOs, Review of the Dangerous Drug Act, and setting-up of Palliative Home Care
2. Re-engineering of the Cervical Cancer Screening Programme
3. Cancer Treatment guidelines based on published International protocols
4. Cancer Prevention Strategies

5.1 Supporting Organizations Involved in Cancer Activities

The NCCP will facilitate co-ordination, prevent duplication and enhance national distribution of existing resources. The Radiotherapy Department at Victoria Hospital will act as the focal point, since at the moment it is the only specialised cancer unit in Mauritius. Cancer prevention is currently based at primary care level. Supportive services are offered by 'Link to life', an NGO. There two other NGOs dealing with leukaemias and children's cancers and another one with cancer counselling and palliation.

5.3 National Cancer Control Committee.

The objectives of the above committee are to:

- Implement, monitor and evaluate the National Cancer Programme for the control of cancer. This programme will have an intial four year plan.

- The National Cancer Control Committee will form several sub-committees to work on various areas of cancer control. These subcommittees have already submitted proposals for cancer prevention, palliative care, cervical cancer and main cancer therapy guidelines.

5.4 Mauritius Cancer Association

The Mauritius Cancer Association is a foundation established under the Mauritius Cancer Society Act 1970. However, it has not been active for some time and needs reviving as soon as possible to coordinate the activities of all cancer-associated organisations in the country. The objectives of the Society need to be updated.

5.5 Primary Prevention

Primary prevention offers the greatest opportunity for long term cost effective cancer control. Health protection measures are those which can be taken by government and private sector to shield people from harm e.g. limiting alcohol and banning of smoking in public places, pollution.

Health promotion are activities that individuals and communities can use to develop healthy life styles e.g. diet, exercise.

5.5.1 Health Education on Cancer

At the present time, there is a coordinated national cancer education programme for the public integrated within the NCD programme. A plan for Cancer Education in Mauritius will include the following objectives:

- Formulation of a cancer education plan. This plan is to reflect the National Plan and focus on priority cancers e.g. cervix, breast, colon and tobacco-related cancers.
- Organize mass media cancer education .
- Establish a Cancer Action Week to increase public awareness, eg around World Cancer Day and Breast Awareness month in October.
- To develop nation-wide awareness of World Tobacco Day.

5.5.2 Aim of Health Education

The aim of health education about cancer is to help individuals in reaching their optimal health potential by lowering their risk of developing disease such as cancer.
Health education involves raising public awareness and educating the public on ways to reduce their risk of cancer and ways to detect cancer early. This requires a behavior change, which often occurs over a long period of time and is difficult to quantify.

5.5.3 Educating School Children

To assist schools in cancer prevention projects such as anti tobacco & sexual education which is already in progress by the Non-Communicable Disease Unit of the M.o.H & Q.oL.

5.5.4 Education of the Public

Public education activities are aimed at increasing community awareness of the known preventive measures as well as the importance of early detection of cancer. A plan for educating the public includes the following:

Develop information modules about the prevention of cancer e.g. Facts and Myths about cancer, and Healthy Living. Conduct preventive programs using these information modules in the work place and in different organisations
Teach the community health worker how to give talks on the prevention of cancer.
Produce posters, written leaflets, use the media, TV on preventive measures against cancer

5.5.5 Immunization Programme for Hepatitis

Many primary liver cancers are attributable to hepatitis B virus, an infection which can be prevented by vaccination. Mauritius has incorporated Hepatitis B vaccine into its extended programme since 1997 and is considering the new Human Papilloma Virus vaccines.

Main Objectives

HBV vaccination to be considered for other age groups

Objectives for Implementation:

1. Collaboration with those interested in hepatitis control
2. Educate high risk groups on vaccination.
3. Consider Vaccination of all children against hepatitis B

Evaluation:
There will be a reduction in the incidence of Hepatitis-B, a reduction in the number of HBV carriers and a gradual decline in the incidence of primary liver cancer.

5.5.6 Prevention of Tobacco Related Cancers

Rationale:

Tobacco causes lung cancer and is also attributed to cancers of the oral cavity, pharynx, oesophagus and bladder. In Mauritius, 200 deaths each year are estimated to be related to smoke-related cancers. Smoking is also responsible for causing chronic lung disease and cardiovascular disease. Passive exposure to tobacco also increases the risk of cancer.
According to the estimates of the American Cancer Society's Cancer prevention Study II the death toll from tobacco will rise from one million in mid 1960's to three million by mid 2020's. 70% of which will occur in developing countries.

Justification for Plan Action
The plan of action is to inform and protect Mauritians from the harmful effects of tobacco. Objectives of this plan include education, legislation and policy.

Education
Initiate anti-smoking campaigns to school-children from primary school onwards. Promote public awareness of smoking health hazards use and passive smoking and danger to children who should benefit from a smoke-free environment to grow up.

Legislation and Policy
New Tobacco Regulations in force since 2009 include a warning label that tobacco causes lung cancer and other cancers along with other health hazards.

Evaluation:
There will be a noticeable decline in the number of children and adults who take up smoking. There has been in fact a continuous fall in the percentage of people smoking from 31% in 1988 to 18% in 2004, more noticeable amongst males. In the long term, there should be a reduction in the incidence and mortality of tobacco related cancers and other diseases.

5.6 Primary Prevention

Education of the public and health personnel about cancer is of paramount importance. A co-ordinated approach is needed between the Government and Non-governmental Organizations (NGOs) to organise cancer prevention strategies in the following areas:

1.Tobacco
Tobacco use remains the single largest preventable cause of cancer and premature deaths in Mauritius. It is estimated that at least 200 new cancers each year are causally related to tobacco smoking in the country. Currently efforts are being made to discourage people from smoking and new anti–tobacco legislation will be implemented.

2. Diet
The WHO estimated that diet is a contributing risk factor to nearly one third of all preventable cancers globally. Everyone is encouraged to eat a healthy balanced diet. The Health Promotion Unit in the Ministry of Health is always highlighting this fact. The posters regarding the importance of healthy balanced diets are displayed in various places like hospitals. A National Action Plan for Nutrition has been finalised.

Screening and Early Diagnosis

4.5.1 Cancer of the Breast

In view of the relatively high proportion of breast cancers occurring in the younger than 45-year age group in Mauritius, mass population-screening by mammography is not currently advisable. Breast awareness and self-examination campaigns to target women above the age of 30 years need to be reinforced. Women above the age of 30 years are currently being encouraged to attend for clinical breast examination at the primary care facilities. Targeted Mammography should be considered in women in the age-group 50-59 years to include those at higher risk e.g familial cases initially as a pilot project. A digital mammography service is highly recommended. A dedicated Breast Health Unit should be setup to provide comprehensive advice and care to women with breast lumps. Such a unit will include specialists from the radiological, cytological, surgical, and radiotherapy departments.

4.5.2 Childhood Cancers

There were a total of 133 new cancers in children in the age group 0-14 between 2001-2004, with 52 new Leukaemia cases, the most common type of childhood cancer and also one of the most curable. Historically, paediatricians have been treating children with leukaemias in Mauritius in general paediatric wards. The chemotherapy drugs are generally available but good supportive care, in terms of management of infections and blood problems, is sometimes lacking. The management of these diseases is very complex and demands oncological and/or haematological expertise along with the appropriate isolation facilities to prevent life-threatening infections occurring in these immunocompromised patients. A preliminary review of Leukaemia services had been carried out in May 2001 by Professor Jeff Szer. Priority should be given to settting up a dedicated Leukaemia Unit soon, as many of these patients have curable cancers.

5.6 Secondary Prevention

Secondary prevention involves early detection and diagnosis of cancer. Early detection includes that every individual continually monitoring him/herself for signs and symptoms of cancer
e.g. B. S.E, testicular examination. Screening may be done periodically by health professionals e.g. Papanicolaou Smear or VIA, Clinical breast examination, Digital rectal examination for prostate and rectal cancers, according to specific guidelines to be introduced.

5.6.1 Screening

Screening is aimed at detecting early cancer before the individual would be able to detect its presence i.e before the symptomatic stage. For some cancers such as cancer of the cervix and breast, the pre-symptomatic stage of the disease may extend for several years and provide an opportunity for screening.

5.6.2 Goals for Screening

Resources such as finance, manpower and technology are limited and therefore influence the choices and goals for screening. The goals for cancer screening are to:

- Develop public awareness campaigns to encourage individuals to assume responsibility for their own health.
- Identify and priorities those cancers most likely to be detected early by screening methods e.g. cervix, breast.
- Educate health care professionals to be aware of the signs and symptoms of cancer
- Develop a policy of referral for diagnosis, treatment and follow-up in all cases.

5.6.3 Cytology Screening for Cancer of Cervix

Rationale:

Cancer of the cervix is the second most common cancer in women in Mauritius. Many of these women do not attend for screening test in their life-time. Since the PAP smear can be a technically difficult test, Visual Inspection of cervix by Acetic Acid (VIA) should also be encouraged.

Plan

Implement a cervical cancer of screening programme using the VIA methodology at Victoria Hospital with the aim to reach the majority of women aged 35-55 years.

Objectives for Implementation

1. Establish health education for awareness of early sign and symptoms
2. Establish a policy for screening of women over 35 years.

Strategies:

- Identify women age 30 – 60 years
- Set up a pilot project at Victoria Hospital
- Ensure equipment is available for VIA and colposcopy
- Train at least two cytotechnicians
- Establish laboratory with quality control at international level
- Ensure adequate co-ordination between identification of abnormality and referral system for diagnosis, treatment and followup

Evaluation:

A decrease in the proportion of cases of invasive cervical cancer with presenting advanced disease should be expected. Long term effects of this plan will show a decrease in the incidence and mortality of cervical cancer.

5.6.4 Screening for Cancer of Breast

Rationale:
Cancer of the breast is the most common cancer in women accounting for 34% of all female cancers in Mauritius. A population-based mammography screening programme is presently not cost-effective for Mauritius as there is a relatively high proportion of premenopausal cases but age targeted opportunistic mammography is expected to reduce the mortality from breast cancer in the age group 50-59 where the disease is most prevalent. A hospital based study showed that more than half of cases in Mauritius present with pT2 breast lesions (i.e 2 - 5 cm in diameter). Breast Self Examination (B.S.E.) is encouraged and is being taught in Area Health Centres as part of the Chronic Diseases Prevention Programme.

Plan:
Implement an educational programme on B.S.E
Encourage women to attend for clinical breast examination by mailing written information
Setup a pilot Mammography Screening Unit to target high risk groups eg. Postmenopausal women with familial breast cancer

Main Objective:
All women aged 25 and upwards will receive instruction on B.S.E.
Objectives for Implementation:

- Establish health education for awareness of screening
- Train primary health care workers to teach B.S.E. and to refer suspicious cases to specialist units in hospitals.
- Acquisition of a Digital Mammography equipment with facilities for biopsy

Evaluation:
A decrease in the proportion of cases of invasive breast cancer presenting with advanced disease should be expected in the future. This plan will show a gradual decrease in the mortality of breast cancer in the long-term.

5.7 Treatment Facilities

Treatment facilities are centered at the Radiotherapy Unit at Victoria Hospital in Candos. Long distances plus costly and time-consuming transportation limit easy access to the cancer treatment centre. Simple adjuvant chemotherapy could be undertaken by trained staff in other regional hospitals.

5.6.1 Surgery (see 4.2.2.)

5.6.2 Radiotherapy (see 4.2.3)

5.6.3 Chemotherapy – A high standard of chemotherapy is already practiced in Mauritius. The objective over the next 5 years will be to improve this standard.

1. At the moment, all out-patient chemotherapy is administered in a Chemotherapy Day care Unit by trained non-specialist nurses. In-patient chemotherapy is administered in two wards, one male and one female (including children), but there is often a severe shortage of available beds resulting in delays in treatment.

2. Treatment protocols have been devised for the Mauritian context based on International published guidelines and are due to be implemented.

3. A separate drug budget is necessary for chemotherapy drugs

4. Specialist chemotherapy nurses should be trained

5. Chemotherapy usage will be reviewed to give the greatest possible benefit to patients and to ensure the most useful utilization of available resources.

5.6.6 Manpower requirements and areas of Training

In the 4-Year cancer Plan, we should aim to increase the number of Oncologists, Physicists, Surgeons, Gynecologists and Pathologists with interest in Oncology:

- One radiation oncologist per 200,000 population and One Medical Oncologist per million population and one Clinical Haematologist per million population
- One specialists to be trained in each of the following areas: Surgical oncology and Pathology, Clinical Oncology and Clinical Haematology.
- Four medical Physicists to be trained.
- Two Therapy Radiographers to be trained each year

5.6.7.Palliative Care/Terminal Care

The need for a comprehensive Palliative Care Programme in Mauritius has been elaborated during a Cancer Control Workshop which took place in 2006. Most of the Palliative care work including prescription of opiate analgesia is currently being done by the oncologists at Victoria Hospital.

A Palliative Care Programme will have to include Education and Dissemination of information and maximising delivery of care to those in greatest need with new emphasis on home based and community care.

The aim would be to disseminate information on palliative care throughout the health system and to develop or extend the practice of palliative care using the existing infrastructure as far as possible. Methods used would include:

- Educational programs
- In the medical school curriculum
- In the nursing school curriculum
- Training workshops and CMEs
- Use of WHO palliative care manuals

Requirements would include:

- Ministry of Health ensuring drug and equipment continuous availability at all levels e.g. tramadol, morphine, Fentanyl transdermal patches, syringe pumps, ostomy appliances.
- Release of Nurses/Doctors to attend training sessions
- Provision of educational materials
- Curricula reviews from Training Institutions
- Ready access to simple analgesics
- Setting up of a Pain Control Clinic and a Community-based Palliative Care Team

5.6.8. Services Concerned With support of the Cancer Patient

Rationale:

The goal of cancer rehabilitation is to assist the patients to reach their optimal level of well being. A cancer help line and counseling services e.g through NGOs should be available.

Problems:

- Patient's difficulty in accessing specialised cancer rehabilitation services

Plan:

To have access to clinical psychologists with interest in cancer care and paramedical staff trained in dealing with emotional and psychological support of the cancer patient

Main Objectives

To ensure that cancer patient have access to rehabilitation services mainly through NGOs.

Objectives for Implementation:

- Educate all levels of health care professionals on the rehabilitation services available
- Establish a counseling and support service (Social Services)

Manual "Oncology in Mauritius"

The manual will give an overview of all aspects of cancer, including principles of treatment, features of individual tumours, treatment modalities, palliative care and supportive services adapted to local context. The manual will be intended mainly for doctors and nurses but should provide valuable information to all health workers, including nursing and medical students.

6.Human Resources and Development

6.1 Aims and Objectives

The aims and objectives of Human Resources development are:-

- To train adequate manpower for Cancer control
- To train existing health workers in the management of cancer patients
- To ensure additional cancer services are provided to all regions in the country

6.2 Existing and Projected Human Resources

	EXISTING	REQUIRED
Physicists	2	6
Therapy Radiographers	10	18
Maintenance Technicians	1	2
ChargeNurses	8	16
Ward Manager	2	4
Nursing Officers	12	24
Health Care Assistants	4	10
Cancer Registry / Records Clerks	2	4

6.2.1 Staff Requirement to be able to provide services to other regions of Mauritius

Oncologists and oncology nurses will be required as described below.
In addition, in-service training for local health workers will be organized in the area of Cancer Prevention, Supportive and Palliative Care

6.3. Staff Education and Professional Development In Oncology

There is a need to provide cancer nurses with the knowledge, skills and attitude in oncology nursing care, which demands different needs and approaches compared to mainstream nursing care.

At present there are no nurse in the country who are specifically trained in oncology nursing. The need for oncology nurses can be illustrated by considering the number of cancer patients seen. The following are the average attendances:-

1. **Out patient attendance**
   Radiotherapy centre – 75 patients daily
   Chemotherapy Day Unit – 30 patients daily
2. **In patients**
   Radiotheraphy Centre over 70 patients daily with more than 10 outliers in other wards

There has been no increase in cancer bed numbers since establishment of the Radiotherapy Centre in 1968. The radiotherapy wards have 57 beds for cancer patients yet patients have to be cared for in non-cancer wards of the hospital on a daily basis.

Training of Nurses in Oncology
It is essential to enhance the skills of nurses in the following areas:

1. Participation in cancer education of the patient, the family and the community
2. Counseling and arranging the follow-up of patients
3. Assisting with palliative care and symptom control in patients
4. Participating in the reconstitution and administration of cytotoxic drugs
5. Giving nursing care to patients undergoing cancer treatment

Recommendations
It is recommended that nurses be trained in the following oncology programs:

1. 2 nurses to be trained to form the core group of future trainers

2. Initially 4 posts to be established; thereafter one new posts per year for the duration of the 4 year cancer plan. This will enable at least one trained nurse to be posted to each of the other 4 hospitals in the country, apart from Victoria Hospital.

3. The administrative authorities to realise the importance and urgency of specialisation in oncology nursing.

Major Equipment Requirements

The demand for radiation therapy is increasing rapidly and has been such that the existing equipment is inadequate. Furthermore some of it requires replacement.

The equipment listed below is considered to be essential for the successful implementation of this programme and provision of routine radiotherapy services.

EQUIPMENT	QUANTITY	REMARKS
Cobalt 60	2	One replacement implemented 2009
Linacs with electron	1	To add new to existing equipment 2013
Simulators	1	To replace existing equipment 2011
Mouldroom Equipment	1	Adequate
Physics Equipment	1	Calibrator and dosimeter 2010
Brachytherapy	1	Available since 2007

Buildings and Space Requirements
More facilities and increase in workload will result in need for mote patient space: both out-patients and inpatients. Also the projected increase in staff will mean more space requirements for staff. Major equipment also require space.

Listed below are projected additional space requirements:

- Outpatient waiting area and toilet facilties in the radiotherapy department
- New Radiation Physics Department to be set up
- New Chemotherapy Day Unit with 30 beds
- New Consulting Rooms (4 additional)
- Two new Staff rooms for doctors and radiographers

Provision will need to be made for increased bed capacity for patients especially the following areas:-

- Palliative Care
- Leukaemia
- Childhood Oncology

New space has become available at Victoria Hospital with the opening of the new OPD block, thereby releasing space in the old Casualty - Pharmacy block and paediatric outpatient. This area could be converted into a purpose-built oncological department.

However, in the log term,master plans for a purpose built Cancer Hospital will become a necessity in the not too distant future

DRUGS
To ensure a regular supply and efficient usage of cytotoxic drugs, an effective cytotoxic drug policy is essential. Several issues are being addressed here:

1. Selection of a cytotoxic drug formulary (chemotherapy Committee is necessary)
2. Procurement of drugs
3. Distribution of drugs Chief Pharmacist
4. Policy/guidelines on drug usage (NCCP subcommittee)
5. Regular assessment of drugs utilized - Chemotherapy Service
6. Regular assessment of expenditure/budget (Chief Pharmacist)
7. Coordination of all the above

The aim over the next 4 years is to strengthen each section of the policy relating to cytotoxic drugs. Mechanisms for all the above sections are already in operation, but need better coordination. Factors such as reputation/reliability of supplier should also be of major consideration.

For Palliative Care

Morphine is the most important drug in this context. It is necessary to formulate and implement an effective cancer pain policy on:

Procurement of adequate supplies of morphine (injections, tablets, slow release forms)
Familiarisation of medical and nursing staff to the prescription and use of analgesics for moderate to severe pain and pharmacology of these drugs

Community based palliative care is under-developed and needs manpower training

Books/Booklets

Copies of the following should be supplied to all hospitals

- WHO booklets covering various aspects of cancer
- Health leaflets to be produced by the MoHQoL

Reference cancer text books are to be obtained and housed at the Radiotherapy Department

Journals

A list of required journals need to be drawn up.
Photocopies of certain articles to be distributed to other hospitals on a regular basis.

Educational Material for patients and relatives

All available material of this nature will be compiled at the radiotherapy unit or HIEC office:

- Revision of material where appropriate
- Writing of new material where necessary e.g radiotherapy and chemotherapy booklets
- Ensuring information is available in easily understood format

8. Legislation to Support the Cancer Control Programme

8.1 Aim of Legislation

The main aim of legislation is to protect the public from the harmful effects of predisposing factors to cancer such as tobacco or environmental factors.

Objectives

1. To prevent young people from developing the habit of smoking and to encourage those who have already started to stop the habit.
2. Reduce smoking in the adult population
3. To reduce the hazards in the environment

Activities

New Amendment to legislation of Public Health Act: Tobacco Regulations 2008

Monitoring the Environment

There is need to strengthen existing laws to encourage effective monitoring of the environment.

There should be statute to ensure constant monitoring of individuals working in hazardous areas, such as those dealing with pesticides and potentially carcinogenic agents e.g asbestos, and those exposed to occupational risks e.g radiographers.

The wide use of pesticides needs to be better monitored and controlled.

A study on environmental pollution should be undertaken urgently.

9.0 RESEARCH PRIORITIES

These may be grouped under the following headings:-

- Statistics on incidence and prevalence of cancer
- Research into cancer prevention
- Research into early cancer detection
- Research into cancer treatment

9.1 Statistics on Incidence and Prevalence of Cancer in Mauritius

The reports of the National Cancer Registry constitute an invaluable tool for monitoring trends in the incidence and mortality of various tumours. It will be important to assess whether the common cancers in the country are being detected at an earlier stage or are less frequent, as a result of increased cancer awareness and primary prevention.

Statistics of Research

A register of research projects that have been or are being carried out in Mauritius should be available at the Mauritius Research Council.

9.2 Research into Cancer Prevention in Mauritius

Efforts are needed to implement strategies aimed at preventing certain cancers, which are prevalent in Mauritius. These include:

a) Tobacco - related cancers, i.e Lung, Oral, Neck and Oesophageal Cancers
b) Human Papilloma virus prevalence in cervical and oropharyngeal cancers

Research into Early Detection of Cancer

It is recognised that both the public and health workers should be educated on early symptoms and signs of cancers, and that efforts should be concentrated on :

Carcinoma of cervix
Carcinoma of breast
Carcinoma of prostate
Carcinoma of the colon
Carcinoma of the mouth

Research into Cancer therapy in Mauritius

Cervical Cancer

Studies in the prevalence of subtypes of HPV should be conducted in Mauritius before considering the widespread introduction of HPV vaccine. Different methods of screening by Papanicolaou smears and Liquid- based cytology can be part of a research project. New diagnostic techniques by molecular PCR should be investigated.

Children's Cancer

Children's cancer represents a highly curable group of tumours, especially acute lymphoid leukaemias. Epidemiological Research may look into case clustering and possible viral/environmental causes.

Lymphoma and Leukaemia
Research has to be done to explore the optimal treatment regimens for these potentially curable malignancies to achieve the best possible survival rates and long term cure rates.

Breast Cancer
The multi-ethnic diversity of the population in Mauritius should be exploited to look into population genetics for predisposition to breast cancer and ovarian cancer.

Colorectal cancer

Research into clinical presentation of colorectal cancers and duration of symptoms before diagnosis. The possibility for primary prevention involving aspirin could be undertaken.

Cancer Programme Action Plan

10.1 Introduction

The Action Plan is intended to outline the major activities involved, in each case stating the objective(s), the methods to be used, the bodies or organizations responsible and the approximate timing and budgeting estimation where possible. In many cases, the organization involved often overlap. This emphasizes the importance of coordination and the multi-disciplinary and multi-sectorial approach.

10.2 Prevention of Cancer

Objectives	Methods	Body /Organizations	Timing	Cost
To reduce incidence of cervical cancer	Cervical screening organisation Educate public on risk factors	Cervical Screening Programme Health Promotion unit MOH	Ongoing ongoing	
To reduce incidence of breast cancer	Lifestyle & diet changes Prevention programme	MOH Health Promotion Unit	ongoing	See Sexual and reproductive health AP
To reduce incidence of carcinoma of lung, mouth and larynx	Reduce tobacco consumption Public education Tobacco legislation	Health Promotion unit MOH /MIH MoH	Ongoing Ongoing Implemented 2008	New legal framework

Prevention of Cancer

Objectives	Methods	Body organization	Timing	Cost
To encourage patients to present early	Mass Education of Public Media	MOH NGO MBCTV-Radio	On going	
Early detection of cancer of cervix	Screening protocol for cancer of cervix	Cervical screening programme	Ongoing	
Early detection of cancer of breast	Encourage breast self and clinical examination	Health Promotion Unit MoH	On going	
Early detection of colorectal cancers	FOB protocol Endoscopy units	MoH SSRN	From 2009	

Education On Cancer Control

Objectives	Methods	Body/ Organizations	Timing	Cost
To educate the public about all aspects of cancer	Media materials e.g. TV, posters, radio, newspapers	MoH NGOs	On going	
Educate health professionals about cancer	Production of oncology manual CME	MoH MIH	2010 On going process	
To educate health workers about Palliative Care	Training modules National seminars and workshops	WHO MIH MoH UoM	2010 – 2012	

Specialist Training of Doctors

Objectives	Methods	Body/Organisation	Timing	Cost
Specialist training of doctors Specialist in Clinical Oncology Breast Surgery, Surgical Oncology and Haemato - oncology Specialist in Palliative Medicine	 Approved Degrees/ diplomas and other courses Training for one current Specialist	 MOH, MIH WHO Online modules	2010-2012 2011-2013 2012-2013	

Nurse Training

Ojectives	Methods	Body/Organizations	Timing	Cost
Training of nurses in oncology	Initial group to be trained externally to form core group	UICC/WHO Melbourne University	2011	
Specialist oncology nurses training Inclusion of more oncology in basic nursing curriculum	 subsequent groups to be trained in Mauritius	 MOH – Nursing MIH	2011 2011	

10.4. Palliative Care for Cancer Patients

OJECTIVES	METHODS	BODY/ ORGANIZATIONS	TIMING	COST
To upgrade radiotherapy equipment	Regular reports on status of radiotherapy equipment and maintenance	Head of Radiotherapy Unit Medical Physicist	ongoing	
To provide a regular supply of drugs for oncology To review drug formulary and usage	Regular reports on consumption, costs budget	MOH – DPS Medical Stores Dept. Oncology Drug Committee	In Progress	
To improve and extend palliative care to all regions of Mauritius	Home care/ Hospices Palliative Care services in all regional Hospitals and community	Private institutions MoH	2011	
To extend supportive care to cancer patients	Counseling, supportive and rehabilitation services NGOs	Establishment of PAIN unit and PAIN CONTROL team New Psychology Service	2010 2010	

Coordination of Cancer Activities

Objectives	Methods	Body/Organization	Timing	Cost
To coordinate activities of all bodies concerned with Cancer	Workshops Cancer Task Force to set up	Cancer Coordinator MOH	On going	
Use of multi-sector approach	Director Health Services as focal point with a NCCP coordinator	MOH	On going	

Data Collection on Cancer

Objectives	Methods	Body/ organizations	Timing	Cost
To determine incidence, prevalence and other clinical data about cancer	Pathology reports	National cancer Registry	On going	
	Discharge summaries	Radiotherapy Unit Register	In progress	
	Annual report	MOH – Health Statistics Unit	On going	

11. National / International collaboration for Cancer Control

The Ministry of Health plans to organise a cancer network to collaborate with local, regional and international governmental and non-governmental organizations. There is a need for local and international technical and financial support if the cancer control program is to succeed and to be sustainable.

Areas of technical and financial assistance are listed below:

- Training for personnel involved in cancer Control
- Developing a data bank on cancer control i.e. books and publications.
- Assistance in developing the four year Plan on cancer (WHO)
- Support in developing research in cancer control with international cancer centres
- Assistance in developing cancer control protocols (WHO)
- Collaboration between Health Services and Academic Institutions
- Link-up with International Reference Laboratories for specialised investigations

12. Evaluation of the National Cancer Control Programme

Outcomes of the Cancer Cancer Control Programme can be evaluated in terms of short and long term planning. Annual evaluation and data management shall be made at local level and national level. Annual reports will reflect on achievements, failure to meet objectives, constraints and future plans. Workshops will be used as platforms for reviewing strategies and coming up with recommendations for future activities. A Cancer Task Force / Committee need to be set up to ensure the monitoring and implementation of the Action Plan.

13. PROGRAMME BUDGET

1. Publicity and Education
   - Media (Radio, TV, newspapers, posters)
   - Support pamphlets
   - Seminars, medical courses, workshops

2. Early detection
   - Digital Mammography Unit
   - Cervical Screening and Colposcopy Therapy Unit
   - Colonoscopy

3. Cancer Registry

4. Diagnosis
   - Radiology - Mammography
   - Echography machines
   - CT scans, PET-CT scan
   - Laboratory – Immunohistochemistry, Flow cytometry, Cytogenetics, PCR

5. Surgery

   Breast Surgeon / Surgical Oncologist

6. Treatment
   - Radiotherapy equipment, including new Cobalt 60 machine
   - Chemotherapy Drugs
   - Accessories e.g wigs, portacaths, breast prosthesis

7. Rehabilitation
   - Physiotherapy and equipment
   - Accessories for walking aids and moulds

8. Training/education
   - Medical experts
   - Nursing staff
   - Administration staff
   - Technical staff

9. Technical assistance

   IAEA (imPACT)
   WHO
   IARC, IACR, AFROX
   International Universities

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15. National Cancer Action Plan Task Force Members

Chairman: Dr K Pauvaday (Director Health Services)

Members:

Dr S.Manraj, Consultant in Charge Lab.Services & National Cancer Registry Coordinator
Dr Yap San Min, Consultant in Charge Radiotherapy, Victoria Hospital
Dr K Ng Cheng Hin, Consultant Surgeon in Charge, JN Hospital
Dr Dustagheer, Radiologist, Nuclear Medicine Department, J. Nehru Hospital
Dr Gunessee, Consultant Plastic Surgeon, Victoria Hospital
Dr T. Mangar, Paediatrician, Jeetoo Hospital
Mrs Jankee, Director Pharmaceutical Services
Dr S.B. Poorun, Radiation Oncologist, Victoria Hospital
Dr T. Hemoo, Radiation Oncologist, Victoria Hospital
Dr A. Mohith, Medical Oncologist, Victoria Hospital
Dr S Sewsurn, Radiation Oncologist, Victoria Hospital
Dr Y. Saccaram, Radiation Oncologist, Victoria Hospital
Dr Ramdaursing, Specialist Gynaecologist, National Cervical Screening Coordinator
Mr D. Gaoneadry, PAS MoH
Dr (Mrs) Aboobakar, RPHS
Dr Deelchand, RDHS
Dr Ramdin, Occupational Health Physician
Dr (Mrs) A. Surnam, NCD Coordinator
Dr (Mrs) Mungur, NCD Coordinator
Dr Ramhith, NCD Coordinator
Dr (Miss) Joonas, Chief Clinical Scientist
Mr S.Kowlessur, Health Promotion Coordinator
Mrs Lingaya, Principal Radiographer, Victoria Hospital
Mrs Putty, Nursing Officer, Victoria Hospital
Mrs L. Moossa, Research Officer, Mauritius Institute of Health
Mr N Gopaul, MRC
Mr S Desai, Link to Life NGO

APPENDIX 1

MoHQL Additional Cancer Budget 2010-2014

APPENDIX 2

RECOMMENDATIONS OF NCCP 2006 WORKSHOP

These recommendations were analysed by the Cancer Task Force of MoH and by the working subcommittees and form the backbone of the National Cancer Action Plan 2010-2014.

APPENDIX 3

REPORTS FROM POST-WORKSHOP SUBCOMMITTEES: :

1. 'Cancer prevention' subcommittee
2. 'Cancer screening & early detection' subcommittee
3. 'Cancer diagnosis and treatment' subcommittee
4. 'Cancer palliative care' subcommittee

APPENDIX 4

Cancer incidence and Cancer Mortality 2005-2008

[Report of the National Cancer Registry - December 2009]

APPENDIX 5

CANCER CONTROL PROGRAMME 2010-2014

4 year estimate for Staffing and Training

ITEM	2011		2012		2013		2014
PERSONNEL							
Radiologist for mammography	1		1		0		0
Clinical Oncologist/ Haematologist	1		1		1		1
Cytologists	2		1		0		0
Therapy and Diagnostic Radiographers	4		2		2		2
Medical Physicists	3		0		0		0
Communtity Palliative care Nurses	5		0		5		0
Oncology Nurses	1		1		1		
Lab.Pathologist/ Haematologist	1		1		1		1
Breast Surgeon	1		0		0		0

Appendix 6

STAKEHOLDERS WITH DIRECT INVOLVEMENT IN ASPECTS OF CANCER CONTROL IN THE REPUBLIC OF MAURITIUS

Participants in the workshop " Planning and Development of a National Cancer Control Programme" held in September 2006

Government agencies:

Ministry of Health and Quality of Life
Ministry of Education & Human Resources
Ministry of Gender Equality, CD & FW
Ministry of Social Security, NS & RI

NGOs:

Link to Life,
The Leukaemia Foundation
Enfants et Lumieres
Blood Donors Association,
VISA Association Mauritius
MFPWA
Palliative Care (Mauritius)

University of Mauritius

Department of Health Sciences

Belle Rive Medical School

Private Clinics

Clinique Darné, Clinique Mauricienne, Medpoint Clinic,
City Clinic, Medisave clinic, Clinique du Nord
Clinique de Lorette, Clinique Ferriere, Clinique du Bon Pasteur

Private institutions and Corporates through CSR (SUN RESORTS LTD)

Mauritius Cancer Society

International institutions: WHO / IAEA / IACR / IARC/

APPENDIX 7

Main recommendations of Professor Jeff Szer (Royal Melbourne Hospital, Australia) review of Leukaemia Services in Mauritius, May 2001:

1.The diagnosis and management of leukaemia needs to be centralised in a single institution in Mauritius in order to foster experience, encourage research, and enable uniformity of management protocols to optimise outcomes.

2.A basic requirement for the development of such a centre would be the training of medical and nursing staff in the management of these patients and the recruitment of appropriate specialist staff to initiate a new program.

3.Diagnostic laboratory facilities should be brought up to standard so that minimal essential facilities are made available. Such facilities should include flow cytometry and cytogenetics and molecular diagnostics.

4.The Blood Transfusion Service needs a defined and ongoing budget to encourage and facilitate a regular and safe red cell and platelet supply for these patients. Consideration should be given to the installation of a blood cell irradiator.

MINISTRY OF HEALTH AND QUALITY OF LIFE
NATIONAL CANCER CONTROL PROGRAMME

ADDITIONAL BUDGET 2010-2014

ACTIVITIES	ESTIMATED COSTS (MRU)				
	FY 2010-11	FY2012	FY2013	FY2014	**TOTAL**
1. Celebration of World Cancer day	500 000	500 000	500 000	500 000	2 000 000
2. Production of leaflets on Cancer	400 000				400 000
3. Sensitisation campaigns - Breast awareness month	200 000	100 000	100 000	100 000	500 000
4. Acquisition of 2 digital mammography	8 000 000		8 000 000		16 000 000
5. Setting up of a colonoscopy unit		100 000	100 000	150 000	350 000
6. Acquisition of colposcopy equipment	3 000 000				3 000 000
7. Leukaemia immunotyping for 50 patients annually	250 000	500 000	500 000	500 000	1 750 000
8. Acquisition of 1 apheresis machine			2 000 000		2 000 000
9. Production of Oncology Manual (CME)		200 000			200 000
10. Cancer software		500 000			500 000
11. Computers for cancer information	100 000				100 000
12. HIEC campaigns through TV/radio/posters	750 000	500 000	500 000	500 000	2 250 000
13. Upgrading of Radiotherapy wards	500 000	500 000			1 000 000
14. Training workshop palliative care	125 000			125 000	250 000
15. Training of 1 surgeon in Breast/cancer surgery	800 000				800 000
16. Training of 2 cytologists abroad (2 months)	200 000	200 000			400 000
17. Training of 1 radiologist abroad (3 months)	100 000	200 000			300 000
18. Training of 2 Nursing officers in cancer	200 000	200 000			400 000
TOTAL	15 025 000	3 500 000	4 500 000	1 775 000	**32 200 000**

N.b For training abroad, financial assistance will be sought from agencies e.g WHO, IAEA
Infrastructural cost of new cancer centre is not included

National Cancer Control Programme Strategic Plan 2010-2014

1. Reduce the incidence of cancer through primary prevention

Objectives/ outcomes	Methods	Stakeholders	Phase / Timing 2009-2012	Cost
Reduction in smoking prevalence	Taxation + smokefree legislation (WHO FCTC)	MoH NCD NGO Schools		
Reduction in rate of people taking up smoking	strategies to reduce smoking initiation among youngsters	NCD Schools MoE	World Cancer Day 4 Feb	Rs 0.5 M
Increased awareness Of healthy nutritious food	National AP for nutrition	MoH		
Reduce incidence of cervical cancer	Health Education on sexual reproductive health To Assess need for HPV vaccine Promote condom usage	MoH, MoE MFPA, NGO AHC Central Lab. MoH,MoE, NGO,MoW,MoY	Cervical cancer leaflets x 20 000 Research Project ongoing	Rs 0.4 M Rs 1 M
Assess links between infectious agents and cancer e.g cervix, liver and stomach	Evaluate HPV serotype and prevalence Hep B vaccination in expanded immunization programme Research in *H.Pylori* AIDS strategic framework	Central Lab MoH	ongoing	
Reduced exposure to, and raised awareness of, carcinogenic agents in the workplace & environment	collection of data on occupation-related cancers optimal use of Pesticide To phase out dangerous chemicals Health Promotion at workplace	Occupational Health Unit MoA, OHU AREU DCCB, MoH OHU	ongoing	

2. **Screening and early detection to reduce cancer incidence and mortality**

Objectives/ outcomes	**Methods**	**Stakeholders**	**Phase / Timing**	**Cost**
Identify interventions to improve survival	strategies to increase early detection + diagnosis: colposcopy (cervical) BSE (breast)	1.New Cervical Screening Pilot Project 2. Breast Unit	2009 ongoing	
Reduce breast cancer mortality	New Breast Cancer Unit Breast Awareness Month (October) Targeted Mammography for high-risk	Training in Breast Surgery Health Promotion Unit, NCD,NGO Digital Mammography pilot phase	2010 every year Aim at 8 000 screened women/year	MoH **Rs 0.1 M** Equipment Rs 8M x 2
Early detection of colon cancer	Colonoscopy for at risk groups Occult blood (FOB)	Availability of colonoscopy unit At SSRN	2009	

3. **Effective Diagnosis and Treatment of cancer**

Objectives/ outcomes	**Methods**	**Stakeholders**	**Phase / Timing**	**Cost**
New Children Cancer Ward/ National Cancer Centre	Project at VH See Szer report Appendix A	MoH, PPP(Sun Resorts) MoH	2010-2015	**Rs 10 M**
New Colposcopy Unit	Expand cervical cancer screening programme Colposcopy / screening study at VH and HPV study	Gynaecologists at VH MoH Molecular Pathology	2009-2013 2009-2012	**Colposcopy** Equipment **Rs 3 M**
New Breast Health Unit	Digital Mammography (+stereotactic biopsy facility)	Breast Surgeon x 1 Radiologist x 1 Radiographers x 2 Cytologist x 1 Physicist x1	Training of breast surgeon	**Mammography Rs 8 M**
Link-ups with international reference labs	For special tests not locally available Accurate Leukaemia diagnosis Lab. Accreditation & QA	Clinicopathology committee Flow cytometry or PCR	2010-2012	Leukaemia immuno-typing X 50 patients
Standardise pathology reporting	Adopt international norms	Tumour Board	ongoing	
Standardise Treatment	Clinical guidelines and protocols (ESMO/NCCN)		ongoing	**10% increase drug budget**
Supportive Therapy	New Apheresis Machine GCSF New cancer drugs		2011-2013	**Rs 3 M**

6. To improve Cancer Control through Research and Surveillance

Objectives/ outcomes	Activities/Methods	Stakeholders	Time Frame				Target indicators				Cost
			2010	2011	2012	2013	2010	2011	2012	2013	
A. Strengthen National Cancer Registry (NCR) for Surveillance	Update NCR form	MIH, CHL	✓								
	Increase use of NEW NCR form			✓	✓	✓		30 %	60 %	90%	
	Improve manpower for NCR	MOHQL		✓		✓		+ 1 F.T			
	Introduce use of GIS			✓	✓	✓					
	Shift to CANREG5			✓							
B. Conduct cancer Research activities in priority fields	Carry out survival study for prevalent cancer sites	**MOHQL, MIH,WHO**		✓	✓	✓					
	Carry out a detailed epidemiological survey of female breast cancer in Mauritius	MOHQL, MIH, UOM WHO, IARC, NIH		✓	✓						
	Introduce use of GIS for analysing cancer distribution			✓	✓	✓					
	Conduct feasibility study for introduction of HPV vaccine in Mauritius	MOH, WHO, IARC		✓							
	Train NCR officer/s in Health Research Methodology	MOHQL, MIH, UOM		✓	✓						
C. Develop a National Cancer Information Centre	Research Plan for cancer control	MIH, UICC, Link to Life			✓	✓					
D. Develop core clinical data sets for prevalent sites (besides breast and cervical cancer)	- ENT - Neurosurgery - Lung	IARC WHO		✓	✓	✓					
E. IACR International Conference 2011 (Mauritius)	Preparatory work for National Cancer Registry	MOHQL,MIH,CHL	✓	✓	✓						Rs 1M

MINISTRY OF HEALTH AND QUALITY OF LIFE
NATIONAL CANCER CONTROL PROGRAMME

ADDITIONAL BUDGET 2010-2014

ACTIVITIES	ESTIMATED COSTS (MRU)				
	FY 2010-11	FY2012	FY2013	FY2014	**TOTAL**
1. Celebration of World Cancer day	500 000	500 000	500 000	500 000	2 000 000
2. Production of leaflets on Cancer	400 000				400 000
3. Sensitisation campaigns - Breast awareness month	200 000	100 000	100 000	100 000	500 000
4. Acquisition of 2 digital mammography	8 000 000		8 000 000		16 000 000
5. Setting up of a colonoscopy unit		100 000	100 000	150 000	350 000
6. Acquisition of colposcopy equipment	3 000 000				3 000 000
7. Leukaemia immunotyping for 50 patients annually	250 000	500 000	500 000	500 000	1 750 000
8. Acquisition of 1 apheresis machine			2 000 000		2 000 000
9. Production of Oncology Manual (CME)		200 000			200 000
10. Cancer software		500 000			500 000
11. Computers for cancer information	100 000				100 000
12. HIEC campaigns through TV/radio/posters	750 000	500 000	500 000	500 000	2 250 000
13. Upgrading of Radiotherapy wards	500 000	500 000			1 000 000
14. Training workshop palliative care	125 000			125 000	250 000
15. Training of 1 surgeon in Breast/cancer surgery	800 000				800 000
16. Training of 2 cytologists abroad (2 months)	200 000	200 000			400 000
17. Training of 1 radiologist abroad (3 months)	100 000	200 000			300 000
18. Training of 2 Nursing officers in cancer	200 000	200 000			400 000
TOTAL	15 025 000	3 500 000	4 500 000	1 775 000	**32 200 000**

N.b For training abroad, financial assistance will be sought from agencies e.g WHO, IAEA
Infrastructural cost of new cancer centre is not included

4: Improve Quality of Life of cancer patients (Palliative care)

Objectives/ outcomes	Methods	Stakeholders	Phase / Timing	Cost
Training in palliative care & pain control	Diplomas Home Care Pain clinics Psychologist	MoH NGOs IAEA MoSS	See palliative care/ pain control team below	Community Palliative care Nurses x 2 Train 75 CBR
Patient education		MoH	2010-2013	**Rs 0.2 M**
Home based Palliative care programme	CMEs Review DDA Accessory supply (colostomy, prosthesis, diet)	NGOs Regional Hospitals / AHC Community	2010-2013 Extend opiate drug list	Training cost

5: Improve Delivery of Cancer services through Planning

Objectives/ outcomes	Methods	Stakeholders	Phase / Timing	Cost
Appropriate levels of recruitment, training, and professional development	stocktake of present cancer control workforce Capacity Building	MoH WHO ImPACT/ IAEA	ongoing	
Oncology Pharmacist	Training of chemotherapy pharmacist	Oncology Centre MoH		0
↑Cytopathologists Cytotechnicians x 2	Cervical /Breast Screening Quality assurance	Cytology Lab	2011	Training
Therapeutic Radiographers x 2/year	Mammography Radiotherapy	IAEA	2011-2014	Training
↑Hospital physicists x 3	QA diagnostic equipment	IAEA WHO	2010	Training
Heath care Assistants x 4	Customer Care	MoH	2010-2013	0
Pathologists/ Haematologist x 1	Prof Szer' report (appendix)	Central Lab / blood bank		Training
↑Cancer Nursing workforce capacity	Define scope of Oncology Nurse / Diploma in Cancer Nursing	MIH MoH	Recruitment and retention of workforce involved in support aspects of cancer	Training
Palliative Care Nursing	New roles for nurse practitioners in palliative care	Melbourne University/ WHO	2010-2011	Training
Educate health professionals about cancer	Production of Oncology Manual CME	MoH	2011-2012	**Rs 0.1 M**

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