MINISTRY OF HEALTH AND POPULATION

GOVERNMENT OF THE REPUBLIC OF MALAWI

NATIONAL CANCER CONTROL STRATEGIC PLAN

2019-2029

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FOREWORD

Cancer is one of the leading causes of morbidity and mortality in Malawi. It is estimated that it contributed to 13% of Total NCDs Disability Adjusted Life Years (DALYs) in 2016.

The burden of cancer could be underestimated due to inadequate cancer diagnostic services and underreporting of clinically diagnosed cases given that only 18% of all reported cancers had pathological confirmation in 2009.

Despite the underestimation, the cancer patterns in Malawi indicate cancer control efforts, if focused on common seen cancers (i.e Kaposi's Sarcoma (KS), cervical cancer, breast cancer, non-Hodgkin's lymphoma and esophageal cancer) will have the maximum impact on reducing cancer burden. Given the fact that cervix cancer accounts for 24% of cancer burden in Malawi, its eventual elimination by a judicious combination of HPV vaccination and screening and HIV control and prevention will have a dramatic impact on overall cancer control in Malawi. Kaposi's Sarcoma accounts for an additional 18% of cancers in Malawi hence the need for focused action to reduce the cancer burden.

In addition, cancer survival from the time of diagnosis has also been poor with median survival time of about 9 months and only 6% of patients survived for 5 years or more; the 5-year survival from Kaposi sarcoma, esophagus, liver and breast were 13.1%, 1.6%, 3.8% and 0% respectively. Improvement in early detection, diagnostic capability, access to treatment and palliative care services could improve cancer survival.

This significant cancer burden and poor survival in Malawi requires urgent public health action and coordinated implementation of resource appropriate preventive, early detection, treatment and palliative care strategies for cancer control by the Ministry of Health and population (MOHP) and other multi-sectoral stakeholders to avert ill health and suffering by patients and further catastrophic costs at health system and household level. This could as well contribute to the global target of 25% reduction of premature mortality from Non-Communicable Diseases (NCDs) by the year 2025

This National Cancer Control Strategy (2019-2029) will therefore, provide a strategic framework to guide a systematic approach focusing on the whole continuum of cancer care to reduce the incidence and mortality of cancer and to improve the quality of life of cancer patients in Malawi.

Honourable Jappie Mtuwa Mhango, MP

MINISTER OF HEALTH AND POPULATION

ACKNOWLEDGMENTS

The Ministry of Health and Population is pleased to have developed this first ever comprehensive National Cancer Control Strategic Plan (2019-2029) which emanates from the Health Sector Strategic Plan (2017-22), the umbrella document in the Health Sector. This is an important landmark towards an organized fight against cancer in Malawi. The development process involved extensive consultations and collaboration among various sectors and stakeholders to ensure that its content adequately responds to all aspects of cancer control in the country. The Ministry is thankful to the people, too numerous to mention individually, who worked tirelessly towards the development of this plan for their dedication, expertise and technical input under coordination and direction from the Department of Clinical Services in the Ministry. The commitment and efforts of the stakeholders will go a long way in ensuring that the plan leads to reduction in incidence, morbidity and mortality of caner and improved quality of life for all Malawians.

The Ministry is further indebted to various partners and institutions including the International Atomic Energy Agency, World Health Organization, (Malawi Office) Cancer Association of Malawi, Christian Health Association of Malawi, Women Coalition Against Cancer, College of Medicine, University of North Carolina and the Malawi health regulatory bodies for their unfaltering technical and moral support during the entire process of developing this strategic plan.

Together we can fight cancer in Malawi.

Dr. Dan Namarika

SECRETARY FOR HEALTH AND POPULATION

ABBREVIATIONS AND ACRONYMS

AIDS: Acquired Immunodeficiency Syndrome

AFP: Alpha-Feto Protein

ASR: Age Standardized Rate

CAM: Cancer Association of Malawi

CBE: Clinical Breast Examination

CD: Cluster of Differentiation

CECAP: Cervical Cancer Control Program

CHAM: Christian Health Association of Malawi

CSOs: Civil Society Organizations

CT: Computerized Tomography

DCS: Directorate of Clinical Services

DPPD: Department of Planning and Policy Development

DHIS: District Health Information System

EML: Essential Medicine List

GDP: Gross Domestic Product

GLOBOCAN: Global Cancer Data

HES: Health Education Services

HBV: Hepatitis B Virus

HCV: Hepatitis C Virus

H& E: Hematoxylin and Eosin

HIV: Human Immunodeficiency virus

HPV: Human Papilloma Virus

HSSP: Health Sector Strategic Plan

HTSS: Health Technical Support Services

IAEA: International Atomic Energy Agency

IARC: International Agency for Research on Cancer

IHC: Immunohistochemistry

KCH: Kamuzu Central Hospital

KS: Kaposi's Sarcoma

LEEP: Loop Electrosurgical Excision Procedure

MCC: Malawi Cancer Consortium

MCH: Mzuzu Central Hospital

MDA: Ministries, Government Departments and Agencies

MNCR: Malawi National Cancer Registry

MOA: Ministry of Agriculture

MOHP: Ministry of Health and population

MRI: Magnetic Resonance Imaging

MSTGs: Malawi Standard Treatment Guidelines

NCCP: National Cancer Control Program

NCDs: Non-communicable diseases

NGOs: Non-governmental Organizations

PAM: Physical Asset Management

PACAM: Palliative Care Association of Malawi

PBCR: Population-Based Cancer Registry

PC: Palliative Care

PHC: Primary Health Care

PPP: Public PrivatePartnership

QA: Quality Assurance

QoL: Quality of Care

QUECH: Queens Elizabeth Central Hospital

RHD: Reproductive Health Department

SHN: School Health Nutrition

UHC: Universal Health Coverage

UNAIDS: United Nations Programme on HIV/AIDS

UNC: University of North Carolina

USD: United States dollar

VIA: Visual Inspection of the Cervix Using Acetic Acid

WHO: FCTCT-WHO-Framework Convention on Tobacco Control

WHO: World Health Organization

ZCH: Zomba Central Hospital

EXECUTIVE SUMMARY

In Malawi cancer is of growing concern, causing significant morbidity and mortality due to lack of comprehensive cancer prevention, early detection, treatment and palliative care services. The IARC GLOBOCAN estimates for Malawi indicate total annual new cancer cases at 15,349, with 5966 cases among men and 9383 in women around 2012. Among women, the major cancers were; uterine, cervix (n=3684), Kaposi's sarcoma (KS, n=997), esophagus (n=895), breast (n=762); among men, the major ones were KS (n=1810), esophagus (n=1094), non-Hodgkin lymphoma (n=695), prostate (n=349) and urinary bladder (n=309). Malawi has the highest age standardized incidence rate (75.9/100,000 women) of cervical cancer in the world, with the risk of one out of 14 Malawian women developing cervical cancer in her life time. The projected cancer burden might be underestimated due to inadequate cancer diagnostic services and underreporting of clinically diagnosed cases given that only 18% of all reported cancers had pathological confirmation.

This national cancer control strategy will serve as the policy document for planning and implementing cancer prevention, early detection, treatment, follow-up and palliative care interventions at different levels of governance and for the efficient monitoring and evaluation of the cancer interventions. It outlines a multi-sectoral partnership to address key issues related to specific major cancer types, taking into consideration the disease burden, risk factor prevalence, available resources and a variety of stake holders. This Strategy aligns itself to the efforts of non-communicable disease (NCDs), Clinical Directorate and National Health Sector Strategic Plans (HSSP Ⅱ) (2017-22) and other policy documents.

The strategy aims to achieve a state of health for all the people of Malawi with low burden of cancer that would enable them to lead high quality and highly productive lives, boosting national development. It will provide strategic direction in implementing a coordinated and responsive cancer control framework leading to a reduction in incidence, morbidity and mortality and improved quality of life through effective partnerships and collaborations for prevention, diagnostics, treatment, palliation and financing of cancer control activities to improve the wellbeing of Malawians.

To achieve the above objectives, planned interventions and monitoring and evaluation are organized into six thematic areas: 1) prevention; 2) screening and early diagnosis; 3) treatment and follow-up care; 4) palliative care and survivorship; 5) governance and financing; 6) cancer control research, monitoring and evaluation.

The planned prevention strategies include; avoiding cancer causing chronic infections, tobacco use, reduce alcohol consumption, maintaining a healthy body weight, regular physical activity and consuming healthy diets. Primary interventions encompass those which reduce exposure to potential risk factors associated with cancers as well as immunization against infectious agents commonly associated with cancers such as human papillomaviruses (HPV) and Hepatitis-B viruses. Integrating the various forms of interventions into other programs will likely give optimal public health benefits, with minimal costs and long-term cancer control benefits. Some areas of possible integration include sexual and reproductive health initiatives, human immunodeficiency virus (HIV)/ acquired immunodeficiency syndrome (AIDS) control programs, national immunization programs to improve uptake of HPV and Hepatitis B vaccinations, occupational and environmental health initiatives and other lifestyle modification programs targeting the general public. A multi-sectoral approach is critical in the context of tobacco control, since Malawi has some key challenges as tobacco farming and exports are major contributor to Malawi's economy and the country has not yet ratified WHO Framework Convention on Tobacco Control. Recently, Malawi has completed HPV vaccination of around 23,000 girls aged 9-13-year-old girls with high coverage and is planning a national scale up is underway. A national HIV prevention strategy for the period 2015-2020 is currently being implemented to achieve the UNAIDS 90-90-90 targets by 2020, which will have important implications for the prevention of Kaposi's Sarcoma.

Cancer detection at its early stages enables treatment that is generally more effective, less complex and more affordable, resulting in long-term survival and high cure rates with good quality of life. Early detection involves two major approaches, namely screening involving detection of preclinical disease in asymptomatic people and early diagnosis involving early detection in symptomatic patients. These two are fundamentally different in resource and infrastructure requirements, impact and costs, but require prompt linkage to treatment and follow-up care without delay. In response to the high incidence and mortality from cervical

cancer, Ministry of Health and Population (MOHP), is implementing nationwide visual inspection screening with acetic acid (VIA) for cervical neoplasia as part of the Cervical Cancer Control Program (CECAP) in collaboration with its stakeholders. Efforts are taken to expand and improve the coverage of VIA screening and treatment of screen positive women. With a judicious combination of HPV vaccination and screening, Malawi can anticipate dramatic future reductions of cervical cancer.

Infrastructure and trained human resources for major cancer treatment modalities such as surgery, radiotherapy, chemotherapy and hormone therapy are grossly inadequate or lacking in Malawi with consequent poor survival outcomes. Type of cancer, stage at diagnosis and quality of treatment and follow-up care are important determinants of treatment outcomes. Efforts will be taken to improve availability and access to cancer early diagnosis and treatment and it is anticipated that most cancer patients will get optimal, resource appropriate Treatment and care in due course.

Cancer treatment in Malawi is anticipated to take new dimension with the development of the National Cancer Treatment Center (NCTC) in Lilongwe which is due to open in 2020. The operationalization of the cancer centre will be the single most important initiative in the national cancer control program of Malawi given the fact that cancer treatment is currently highly fragmented and provided in overextended hospitals with limited infrastructure, consumable supply chain problems and limited skilled and experienced human resources. The cancer center is planned within the campus of Kamuzu Central Hospital (KCH), as a matrix type of cancer centre with its own cancer surgery, radiotherapy, chemotherapy, hormone therapy, palliative care, medical records and hospital cancer registry services and sharing pathology and other allied diagnostic and super-specialty treatment services with KCH. Cancer services are provided with highest quality of care in cancer centres that are autonomous, without administrative and beaurocratic entanglements and hitches. It is important that the proposed National Cancer Treatment Center should be an autonomous body with its own governing and scientific councils for is efficient functioning.

Government of Malawi recognizes the importance of palliative care to improve the quality of life and symptom burden for all patients and families affected by life threatening illnesses including cancer. In October 2014, MOHP, Government of Malawi formulated a national palliative care policy to take forward the national agenda for the health sector. The National Cancer Control

Strategy will heavily rely on the implementation of the national palliative care policy including appropriate access to immediate release morphine for the treatment of severe cancer related pain to achieve tangible progress in extending high quality appropriately staffed palliative care services across Malawi.

The national cancer control strategy and its monitoring and evaluation shall be implemented in a program mode under the supervision of a national cancer control coordinator supported and advised by the cancer control advisory committee. Monitoring and evaluation forms an essential component of the cancer strategy and will seek to link and benefit from existing systems such as population based cancer registration, hospital registries, medical records departments, cross-sectional surveys, follow-up studies and case series. The inputs of interventions and the evaluation of outcomes will be monitored and evaluated using short-term (1-2 years), medium term (3-5 years) and long term (5-10) time lines.

The National Cancer Control Strategy will risk remaining a paper tiger unless it is linked with planned budget outlays and budget lines to support its implementation and evaluation.

INTRODUCTION

Cancer is a major cause of morbidity and mortality worldwide, with approximately 14 million new cases in 2012 and 8.8 million deaths in 2015 and it is the second leading cause of death globally [1] . Nearly two thirds of cancer cases and deaths occur in low- and middle-income countries (LMICs) where resources available for prevention, diagnosis, treatment and palliation are limited [2] . The increasing socio-economic impact of cancers on households and health systems is significant as evidenced by the annual economic cost of cancers at US$ 1.16 trillion [3]. Avoiding major cancer risk factors such as chronic infections with human immunodeficiency virus (HIV), human papillomaviruses (HPV), hepatitis B (HBV) and C viruses (HCV) and helicobacter pylori, tobacco use, alcohol drinking, inadequate physical activity, overweight and obesity and low vegetable and fruit intake confers immense potential for cancer prevention and saving precious health care resources. Of the above HIV and HPV infections are highly prevalent in Malawi [4].

In Malawi cancer is of growing concern, causing significant morbidity and mortality due to lack of comprehensive cancer prevention and care. Studies carried out in Malawi indicate poor survival outcomes for want of access to and availability of adequate cancer health services [5].
The IARC GLOBOCAN estimates indicate total annual estimated new cancer cases at 15,349, with 5966 cases among men and 9383 in women around 2012(1). Among women, the major cases were cervix (n=3684), KS (n=997), esophagus (n=895), breast (n=762); among men, the major ones were KS (n=1810), esophagus (n=1094), non-Hodgkin lymphoma (n=695), prostate (n=349) and urinary bladder (n=309). The GLOBOCAN figures show that, at 75.9/100,000, the country currently has the highest age standardized incidence rate of cervical cancer in the world; one out of 14 Malawian women will develop cervical cancer in her life time; cervical cancer mortality, at 49.8/100,000, is also the highest recorded internationally[1] and one Malawian study suggests 5-year survival was only 2.9% [5].

Even the projected cancer burden by GLOBOCAN might be underestimates due to inadequate cancer diagnostic services and underreporting of clinically diagnosed cases given that only 18% of all reported cancers had pathological confirmation. Despite the underestimation, the cancer

patterns Malawi indicate cancer control efforts if focused on KS, cervix cancer, breast cancer, non-Hodgkin lymphoma and esophageal cancer will have the maximum impact on reducing cancer burden. Given the fact that cervix cancer accounts for 24% of cancer burden in Malawi, its eventual elimination by a judicious combination of HPV vaccination and screening and HIV control and prevention (KS accounts for an additional 18% of cancers in Malawi) will have a dramatic impact on cancer control in Malawi.

Although skin cancer is not among the commonest cancers in the country, it is a highly predominant malignancy among those living with albinism in Malawi. It is estimated that over 10,000 Malawians had albinism in 2006. Majority of them fall under the population that is below poverty line of 52% which limits their opportunity of consistent use of assistive devices against skin cancer and other associated medical conditions.

Cancer health services are not optimally developed in Malawi (See Annex 1). In one study which estimated survival among cancer patients in Malawi had shown that from the time of diagnosis, the median survival time was about 9 months and only 6% of patients survived for 5 years or more; the 5-year survival from Kaposi sarcoma, esophagus, liver and breast were 13.1%, 1.6%, 3.8% and 0% respectively. Although this was not overly a nationally representative study but the findings give an oversight with conclusion that improvement of early detection, diagnostic capability, access to treatment and palliative care services could improve cancer survival [6] The significant cancer burden and poor survival in Malawi calls for urgent public health action and coordinated implementation of resource appropriate preventive, early detection, treatment and palliative care strategies for cancer control by the Ministry of Health and population (MOHP) and other multi-sectoral stakeholders to avert ill health and suffering by patients and further catastrophic costs at health system and household level and to contribute to the global target of 25% reduction of premature mortality from Non Communicable Diseases (NCDs) by the year 2025[4].

Importance of the National Cancer Strategy

The national cancer strategy will serve as the policy document for planning and implementing cancer interventions at all levels of governance and for effective, efficient monitoring and evaluation of cancer interventions. It outlines a multi-sectoral roadmap to address key issues related to specific cancer types taking into consideration the disease burden, risk factor

prevalence, available resources and a variety of stake holders. Just as many LMICs, Malawi is experiencing a double burden of disease with infectious diseases remaining a significant cause of ill health and death coupled with a rising risk of NCDs. The National Cancer Control Strategy 2019-2029 will thus provide a strategic framework to guide a systematic approach focusing on the whole continuum of cancer care to reduce the incidence and mortality of cancer and to improve the quality of life of cancer patients. The implementation matrix and the monitoring and evaluation matrix for the proposed national cancer control strategy are given in Tables 1 and 2 respectively.

Guiding principles

This Strategy aligns itself to the efforts of non-communicable disease (NCDs), Clinical Directorate and National Health Sector Strategic Plans (HSSP Ⅱ). In order to achieve its intended outcomes, below are some guiding principles.

I. **Equity and universal coverage**. The HSSP II is streamlined towards achieving national universal health coverage needed to ensure equitable access to the entire range of cancer prevention and control services with a focus on the most vulnerable populations.

II. **National Ownership and Leadership:** All partners in the health sector shall respect national ownership and government leadership will remain central in guiding the implementation of this cancer strategy;

III. **Primary Health Care**: Provision of health services related to cancers shall be based on the principle of Primary Health Care (PHC).

IV. **Human Rights-Based Approach**: All people in Malawi – including vulnerable population and residents of hard-to-reach areas – receive the same high quality health care.

V. **Gender Sensitivity**: Gender mainstreaming shall be central in the planning and implementation of this policy and its overarching National Cancer Control Program (NCCP);

VI. **Ethical Considerations:** The ethical principles of autonomy, beneficence, non-maleficence and justice will be adhered to when developing both cancer services and research.

VII. **Efficiency and Effectiveness:** All stakeholders shall be expected to use available resources for health efficiently and effectively to maximize health gains.

VIII. **Coordination and collaboration:** Coordination between partners operating within the health sector and across sectors will be promoted addressing fragmentation and reducing duplication of cancer interventions.

IX. **Community Participation**: Community participation shall be central in addressing health needs of the people of Malawi.

X. **Evidence-based decision-making**: Health sector strategies and activities are chosen and pursued to achieve the optimal possible 'outcome', based on value, effectiveness and quality, as informed by the best available evidence.

XI. **Decentralization**: Health service provision and management shall be in line with the Local Government Act 1998, which entails devolving health service delivery to Local Government structures.

XII. **Appropriate Technology:** Health care providers shall use health care technologies that are safe, appropriate, relevant and cost-effective and beneficial to Malawi.

XIII. **Accountability for results and expenditures:** To ensure successful implementation of this strategy, activities performance measurement and accountability will be central to achieving health targets.

XIV. **Sustainability**: A central requirement of any system of UHC is that the range of cancer services made available to the population is equitable without imposing added burden of financial hardship on those receiving services and sustainable.

THE VISION, MISSION, GOAL, OBJECTIVES OF THE NATIONAL CANCER CONTROL STRATEGY

The vision, mission and goals of this strategy are informed by the overall Ministry of Health and Population vision and mission.

Vision

To achieve a state of health for all the people of Malawi with low burden of cancer that would enable them to lead high quality and highly productive life.

Mission

To provide strategic leadership in implementing a coordinated and responsive cancer control framework that leads to reduction in incidence, morbidity and mortality and improved quality of life through effective partnerships and collaborations for prevention, diagnostics, treatment, palliation and financing of cancer control activities to improve wellbeing of Malawians.

Goal

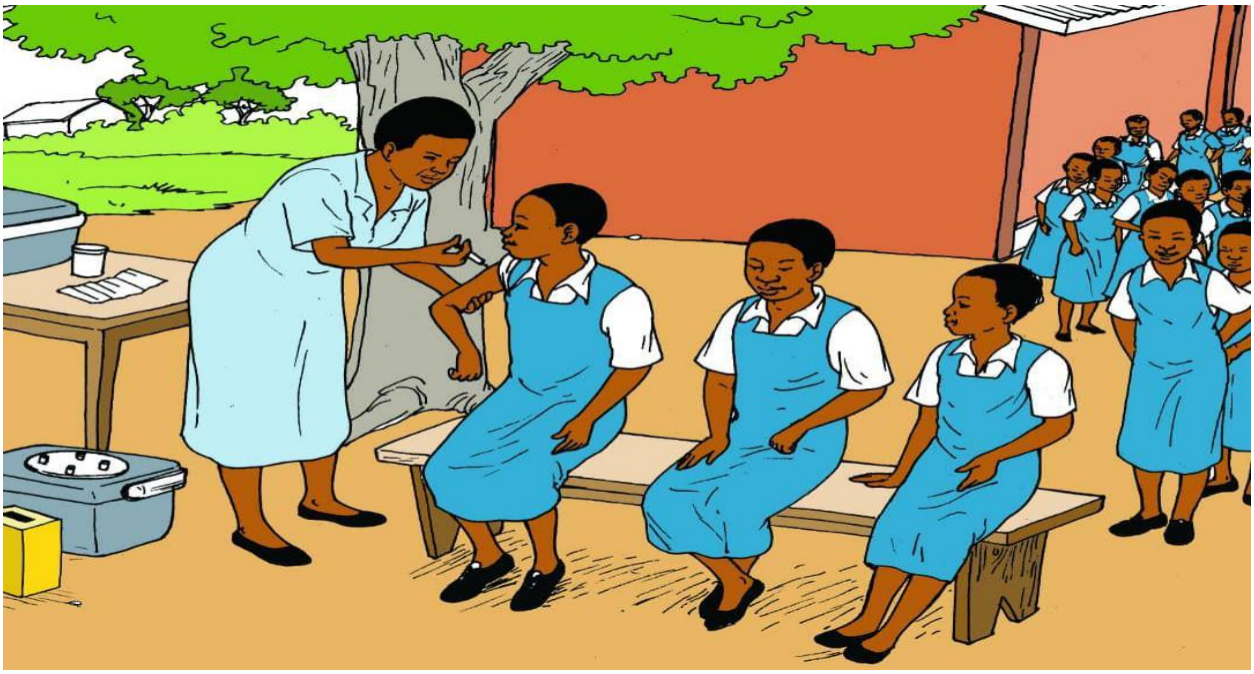
Move towards Universal Health Coverage (UHC) in reducing cancer incidence, mortality and improve cancer down-staging and survival rates in Malawi through access to population based primary prevention, early detection, quality diagnostics, treatment and follow-up services by the year 2029.

UHC is defined as a situation where everyone – irrespective of their ability-to-pay gets the health services they need of sufficient quality to be effective without suffering any undue financial hardship. Malawi is moving towards UHC through implementation of the Essential Health Package (EHP), which government and its development partners will endeavor to make accessible to every Malawian free at the point of care.

Objectives

To achieve the goal of this strategy, there are several strategic objectives which are organized into six thematic areas: 1) prevention; 2) screening and early diagnosis; 3) treatment and follow-up care; 4) palliative care and survivorship; 5) governance and financing 6) cancer control research, monitoring and evaluation.

THEMATIC AREA 1: CANCER PREVENTION



Background

Prevention is an essential and the most cost-effective component of a cancer control program as approximately 40 % of cancers are preventable by modifying or avoiding major risk factors. Prevention strategies include; avoiding cancer causing chronic infections, tobacco use, reduce alcohol consumption, maintain a healthy body weight, regular physical activity and consuming healthy diets. Primary interventions encompass those which reduce exposure to potential risk factors associated with cancers as well as immunization against infectious agents commonly associated with cancers such as human papillomaviruses (HPV) and Hepatitis-B viruses.

Integrating all these various forms of interventions into other programs will likely give optimal public health benefits, with minimal cost implications and long term cancer control benefits. Some areas of possible integration include sexual and reproductive health initiatives, human immunodeficiency virus (HIV)/ acquired immunodeficiency syndrome (AIDS) control programs, national immunization programs to improve uptake of HPV and Hepatitis B vaccinations,

occupational and environmental health initiatives and other lifestyle modification programs targeting general public. Ultimately, a multi sectoral approach will play key roles in health promotion approaches to cancer control. To achieve such overall goal, several activities in broad areas are considered under different strategic objectives based on key challenges experienced by the Malawian population.

Situation analysis

Malawi has an agro-based economy accounting for 83% of its foreign exchange earnings. Tobacco is the main driver accounting for 60% of export and contributes about 13% of gross domestic product (GDP) [7]. This emphasizes the significance of tobacco as a major earner of forex and consequently posing a major challenge to tobacco control initiatives in Malawi. Malawi has not yet ratified the WHO–Framework Convention on Tobacco Control (FCTC) and established tobacco control measures are yet to be comprehensively implemented. The current **tobacco use** prevalence in Malawi are as follows: men aged 15-59 years 18.0%; women 0.4%; boys aged 13-15 years 16.7% and girls aged 13-15 years 11.4%. Smokeless tobacco use is increasing, especially among youth (boys 11.2%, girls 7.4%) [8]. Currently cigarettes are taxed at the rate of 30 USD for 1000 sticks. The cheapest cigarette costs 400 Malawi Kwacha (55 cents USD) for per pack of 20 cigarettes. Currently health warnings on harmful effects of tobacco use occupy < 30% of cigarette packs on the sides and none in the front and back of the packs.

World Health Organization has identified highly cost-effective interventions for reduction of **alcohol consumption** at population level, known as “best buy” interventions, which include tax increases, bans on alcohol advertising and restricted access to retailed alcohol. Only three of the twelve national policy documents related to alcohol in Malawi included at least one “best buy” intervention indicating that Malawi’s national legislations and policies have inadequate inclusion of the “best buy” interventions for control of harmful use of alcohol [9].

According to WHO data, alcohol drinking prevalence among adult men and women were 15.9% and 4.6% respectively in 2010 [10] Although such status puts the country in the lower end of global statistics and a favorable position to alcohol prevention, it carries a greater risk

particularly among men. To curtail alcohol consumption, the Government launched a national alcohol policy on 18 August 2017 [10]. The national alcohol policy focuses on interventions such as increasing taxes on alcoholic beverages, enacting and enforcing bans or comprehensive restrictions on exposure to alcohol advertising, enacting and enforcing restrictions on the availability of retailed alcohol such as reduced hours of sale, enacting and enforcing drink-driving laws and blood alcohol concentration limits and providing psychosocial interventions for those with hazardous drinking habits. Currently the excise taxation is 250% of production cost for spirits, 30% of production costs for opaque beer and 90% of production cost for clear beer.

Malawi has the lowest **physical inactivity** prevalence in sub-Saharan Africa. Although there no universally used measure or instrument for physical (in) activity, WHO defines it into two main levels. Total physical inactivity (level 1) is defined as doing no or very little activity at work, home, or for transport (WHO,2004). Insufficient activity (level 2) is defined as doing some physical activity but less than 150 minutes of moderate-intensity or 60 minutes of vigorous-physical activity a week. In Malawi, physical inactivity is pegged at 9.5% with higher prevalence among women (12.7%) than males (6.4%) [11]. There is well documented evidence on causal relationships between level of physical inactivity and colon, breast and prostate cancers. In Malawi, 21.9% of population are overweight while 4.6% are obese [12]). Between May 16, 2013, and Feb 8, 2016,15 013 (62%) of 24 367 eligible urban adults in Lilongwe and 13 878 (88%) of 15 806 eligible rural adults in Karonga District were surveyed. 18% of urban men (961 of 5211 participants) and 44% (4115 of 9282) of urban women, and 9% (521 of 5834) of rural men and 27% (2038 of 7497) of rural women were overweight or obese [13].

Unhealthy diets characterized by high consumption of refined carbohydrates, saturated fats, and low fibre foods increase the risk of developing cancers and other NCDs. Despite the slow rate of urbanization, Malawi experiences high importation of refined foods from other countries and lately moving to high consumption of the same.

Malawi is currently implementing the Malawi National HIV/AIDS Prevention Strategy 2015-2020[14]. HIV prevalence has declined to 10.4% in 2010 and 9.2% in 2016 among persons aged 15-49 years in Malawi from the peak of 16.4% in 1999. In 2016, women had a higher prevalence than men (12.8% vs 8.2%), with the largest disparity being in the 15-19-year-old age group (14.1% in women and 4.8%). HIV was more prevalent in urban communities (17.4%) compared

to rural communities (9%). New infections have reduced from 98,000 in 1999, to 55,000 in 2011 and to 36,000 in 2016, with half of new infections in those aged 15-17 years. There were 24,000 AIDS related deaths in 2016. Despite impressive progress in recent years, implementation of effective HIV prevention interventions to reduce new infections still poses a challenge in the national response to HIV and AIDS. The 2015-2020 National HIV and AIDS Strategic Plan (NSP) aims to achieve diagnosis of 90% of all people living with HIV (PLHIV), starting and retaining 90% of those diagnosed on antiretroviral therapy (ART) (68% in 2016) and achieving viral suppression for 90% of individuals on ART by 2020, on track to achieve UNAIDS 90-90-90 targets.

A pilot demonstration project on school-based HPV vaccination of 23, 381 girls aged 9-13 years in Rumphi and Zomba districts of Malawi during 2013-2016 indicated the feasibility, acceptability and safety of HPV vaccination as primary prevention strategy for cervical neoplasia [15]. In addition, 2051 girls under the age of 9 and 884 above the age of 13 received the vaccine. The project showed high acceptance as demonstrated by the 82.7% coverage for the last dose of vaccine. Based on the success of the pilot project, HPV vaccination will be rolled out in the entire country initially, targeting 9-year-old girls (but later will target the age bracket 9-13-year-old girls).

Coverage of 3rd dose of Hepatitis B vaccination is around 84% in 2016. Hepatitis B vaccine is now administered as part of pentavalent vaccine in Malawi.

Another major item in cancer prevention is to focus on individuals with albinism due to their partial/complete lack of melanin which predisposes them to greater risk of cancer and gradual loss of sight since their eyes are more sensitive to bright light. Due to limited access to protective supplies such a sunscreen lotion, umbrellas, spectacles, hats and long sleeve clothing, these are even exposed to greater risk of skin cancer. Similarly, services such as dermatology and ophthalmology are not available in many health facilities especially those offering primary health care.

Goal

Reduce the incidence of cancer through primary prevention among Malawian population by 2029.

Objective 1.1: To reduce incidence of cancers due to known lifestyle risk factors such as harmful tobacco use, unhealthy diets, alcohol consumption and physical inactivity.

Objective 1.1.1: To reduce harmful use of tobacco use/ tobacco products and exposure to its by-products

Strategies

1. Develop communication strategy to facilitate awareness on harmful exposure and use of tobacco.
2. Advocate for government ratification of WHO-FCTC and implement FCTC requirements.
3. Advocate for finalization and implementation of tobacco control policy and legislation as well as successive increase in tobacco taxes
4. Scale up awareness campaigns on impact of harmful use of tobacco on health, social, economic and environmental effects
5. Increase taxation of tobacco products in successive budgets
6. Collaborate with Malawi Tobacco Control Commission on the community-based cancer intervention strategies
7. Identify and implement other sources of income as alternatives to tobacco farming
8. Advocate for implementation and enforcement of smoke free environments in all indoors, workplaces and public places.
9. Regulate tobacco packaging including pictorial and verbal warning of harmful effects of tobacco use
10. Incorporate tobacco control into school health programs and school curriculums
11. Reduce lung cancer prevalence and incidence
12. Lower or maintain low prevalence of tobacco use

Objective 1.1.2: To reduce harmful alcohol consumption and eliminate exposure of alcohol to the under-aged population (<18 years)

Strategies

1. Scale up public awareness campaigns against harmful alcohol consumption

2. Advocate for implementation of the national strategy on prevention and control of harmful use of alcohol

3. Advocate for comprehensive ban on all forms of advertisement of alcohol products
4. Incorporate information on the risks of alcohol consumption in the school health curriculums
5. Increase domestic exercise tax on alcohol in successive budgets
6. Initiate and implement enforcement of drinking and driving laws and blood alcohol concentration limits
7. Reduce alcohol consumption frequency

Objective 1.1.3: To reduce risk posed by unhealthy diets, physical inactivity and obesity

Strategies

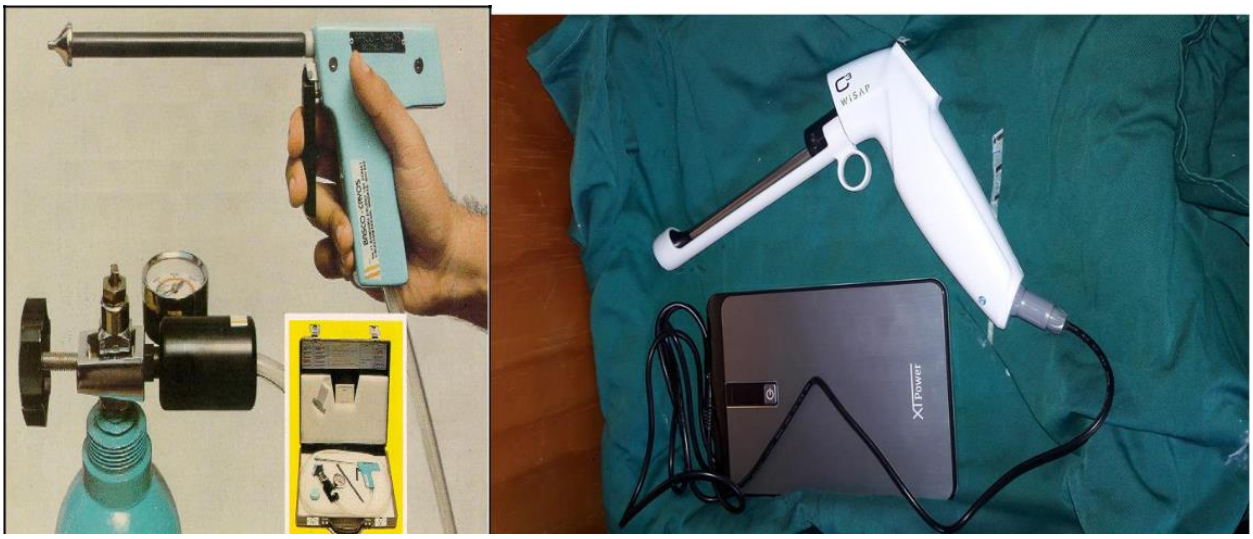
1. Implement public awareness campaigns to promote and maintain physical activity
2. Advocate for the implementation of national guidelines on diet, nutrition and physical activity
3. Promote educational and information campaigns about reducing consumption of unhealthy diets and encourage consumption of more fruits and vegetables and diverse whole unrefined grains
4. Promote safe cooking and preservation methods of food commodities
5. Promote farming and storage methods that reduce cancer risks such as aflatoxin exposure, use of chemical fertilizers, herbicides and pesticides.
6. Advocate for enactment of legislation to control and / or ban advertising of unhealthy foods and drinks
7. Advocate for regulation of food industry with regard to disclosure and labelling of food content and preparation methods
8. Advocate for taxation on refined sugars / sugary drinks (sin tax) and unhealthy foods in successive budgets
9. Reduce frequency of overweight and obesity from baseline of 12.7% (men);36% (women)
10. Increase current high level of physical activity (93.6% in men;87.3% in women)

Objective 1.2: To reduce exposure to known infectious and other agents associated with cancer risk

Strategies

1. Implement public awareness campaigns to ensure high coverage (>85% of target girls) for HPV vaccination when it will be nationally scaled up in 2019 targeting 9-13-year-old girls and from 2020 onwards 9-year-old girls
2. Advocate for the integration of HPV vaccine in the routine national Extended Program of Immunization.
3. Educate parents on safety and need for full infant immunization schedules with the aim of increasing uptake and coverage of Hepatitis B vaccine (above 90% of target population) among other childhood vaccines
4. Monitor and document any adverse events and safety data when HPV vaccination is being scaled up and develop a communication plan to counter misinformation and false alarms by anti-vaccine lobbies.
5. Continue to implement and reinforce existing HIV infection/AIDS control strategies in Malawi as stipulated by the Malawi National HIV Prevention Strategy 2015-2020 to achieve the UNAIDS 90-90-90 targets by 2020.
6. Support the establishment of local production units of sunscreen lotion.
7. Advocate for production and procuring assistive devices for use by persons with albinism.

THEMATIC AREA 2: SCREENING AND EARLY DIAGNOSIS



Background

Prevention alone is insufficient in the fight of cancer. Millions of people globally still develop cancer because not all cancers are preventable. In addition, causes of cancers are multifactorial and existing prevention strategies may not reach out to all targeted populations. Therefore, early detection and treatment should be available and should also be prioritized. Cancer detection at its early stages enables treatment that is generally more effective, less complex and more affordable [3]. Early detection involves two major approaches, namely screening and early diagnosis which are fundamentally different in resource and infrastructure requirements, impact and costs [16, 17].

Screening:

Cancer screening is defined as identification of asymptomatic disease in apparently healthy target population by means of tests (e.g. HPV testing, fecal occult blood test), examinations (e.g. visual inspection of cervix with acetic acid (VIA), oral visual inspection), imaging (e.g. mammography) or endoscopy (e.g. colonoscopy, gastroscopy) that can be applied rapidly and accessed widely by clients [17].In population based screening, an entire population is evaluated for unrecognized cancer (precancerous conditions and preclinical, asymptomatic invasive cancer) and the majority of the individuals tested will not test positive. The screening process therefore includes a system of informing and inviting the population to participate, administer the screening test, follow-up with results and referral for further triaging and diagnostic

procedures among those with abnormal test results as well as treatment and follow-up care of those diagnosed with disease. If the screening process detects precancerous lesions, treatment of such lesions leads to prevention of invasive cancer (e.g. cervical cancer screening) and if it leads to detection of early invasive cancer, treatment of which will lead prevention of premature deaths due to cancer.

Situation analysis

The Government of Malawi is currently supporting use of some screening interventions, such as cervical cancer screening and breast examination. In response to the high incidence and mortality from cervical cancer, Ministry of Health and population (MOHP), has been implementing a Cervical Cancer Control Programme (CECAP) in collaboration with its stakeholders such related Ministries, government departments and agencies (MDA), non-governmental organizations (NGOs) and civil society organizations (CSO). The CECAP has largely focused on screening women with Visual Inspection with Acetic Acid (VIA) and treatment of pre-cancerous lesions with cryotherapy. From 2013, Malawi started implementing an HPV vaccine pilot demonstration project in Rumphi and Zomba districts [15] and is planning national scale up from 2019 onwards. Eventual introduction of affordable form of HPV testing based screening replacing VIA screening can dramatically reduce cervical cancer incidence and lead to its eventual elimination in Malawi, given the effectiveness of both HPV vaccination[18] and HPV screening [19, 20].

Between 2011 and 2015, number of cervical cancer screening sites, number of women screened and coverage per annum increased from 75 to 130, 15,331 to 49,301 and 9.3 % to 26.5 % respectively [5]. During this period, a total of 143,778 women were screened. Of these, 13,298 (9.4%) were VIA positive and of them 6,249 (4.3 %) were having advanced cervix cancer [21]. Among 27,755 women with data on HIV status, 21,546 were HIV negative and 6,249 (15.9 %) were HIV positive. VIA positivity rate and prevalence of suspect cancer were significantly higher in HIV positive than HIV negative women (13.8 % vs 8.0 %, 5.0% vs 3.0 %). The main challenge of the programme was failure to treat a large proportion of VIA positive women eligible for cryotherapy. Over the five-year period, the programme only treated 2867 of 7215 VIA positive women (39.7%) out of 2,311 eligible women and only 266 (31.8 %) of the 836 women with large lesion or suspect cancer who were referred, received the health care at the referral centre. The reasons for failure to provide cryotherapy treatment were unavailability of

refrigerant gas, faulty/broken cryotherapy machine (usually connectors or probes) or no cryotherapy machine at all in the whole district. For women with large lesion or suspect cancer; lack of loop electrosurgical excision procedure (LEEP) machine or inadequate gynecologists at the referral centre, were the major reasons. Recent research shows that thermocoagulation is a more viable and sustainable option for treating women with cervical precancerous lesions [22, 23]. In 2016, there were 154 VIA screening sites in the country and 220 trained providers. Some sites could provide cryotherapy services (32 sites), thermos-coagulation (11 sites), loop electrosurgical excision procedure (LEEP) (1 site).

In October 2017, Ministry of Health, Government of Malawi, in association with UNFPA published a National Cervical Cancer Strategy for 2016-2020 [21]. This strategy has been developed to incorporate emerging issues from existing efforts at cervical cancer prevention and control, and also to incorporate HPV vaccine and promote integration of cervical cancer screening into HIV care. The strategy outlines comprehensive interventions to be taken by government and other partners in mitigating the burden of cervical cancer.

The situation with respect to breast cancer in Malawi is different. The current Malawi Standard Treatment Guidelines (MSTG), (p235, 2015) state that, “Women of reproductive age group should have clinical breast examination (CBE) by a nurse or clinician every 6 months.” However, this policy has never been actively implemented, although breast examination is included in the 6-week postnatal check protocol. Also, health economic analysis has estimated that to implement the above policy would occupy primary health workers approximately 50% of their patient time, and the costs per cancer detected would be prohibitive in Malawi [24].

Furthermore, the MSTG state, “Mammography for all women of 50 years of age though recommended in countries like USA… is not cost effective for Malawi therefore is not feasible for population based programme.” This policy is sup-ported definitively by the WHO Position Paper on Mammography Screening, 2014 [25].

The multifactorial reasons particularly pertinent to Malawi for this include, lack of human resource in specialist mammography, low relative incidence of breast cancer in Malawi, differences in tumor biology and behavior, high screening cost per case detected, lack of sensitivity of mammography particularly in the age group breast cancer tends to present, and the increasing controversy regarding the cost-benefit of mammographic screening even in high

resourced settings which has led to the abandonment of certain national mammographic screening programmes.

An alternative approach is being considered, namely to incorporate clinical breast examination with each cervical screening episode. This approach would be cost-effective, raise breast cancer awareness in the general population, and be expected to reduce the proportion of patients presenting with breast cancer at an advanced stage in Malawi. [26]

Early diagnosis

Early cancer diagnosis is defined as early identification of cancer in symptomatic individuals by applying appropriate diagnostic investigations [16, 17]. Early diagnosis aims to detect the disease at its earliest possible clinical opportunity and link them to treatment and follow-up care without delay. There are two important steps for the success of early diagnosis:

1. Awareness of cancer symptoms and signs by patients and clinical staff prompt referral
2. Access to diagnostic evaluation, staging, treatment and follow-up care

Early diagnosis generally improves clinical outcomes, quality of life and prognosis and reduces health care costs. It is therefore important to prioritize on early, good quality and comprehensive triaging and diagnostic services. Such services include routine hematology and blood biochemistry, tumor markers, imaging, endoscopy, cytology, hematoxylin-eosin (H & E) histopathology, and immunohistochemistry (IHC).

While routine hematology and blood biochemistry, tumor markers, imaging, endoscopy, cytology are useful in suspecting and triaging early cancers in different contexts, H&E histopathology is the most widely used final diagnosis reference investigation in cancer detection and most cancers are diagnosed using this procedure. Commonly used IHC markers include CD 15 and CD 30 for Hodgkin's lymphoma, CD20 for B cell lymphomas and CD 3 for T cell lymphoma and CD 10 for acute lymphatic leukemia. Accessible, available, affordable and effective diagnostic services are crucial for early detection of cancer in symptomatic individuals and screen positive individuals. Accurate and complete diagnostic data forms the basis for evidence-based treatment and follow-up and monitoring of patient outcomes and also critical for cancer registration and surveillance.

Situation analysis

Currently, imaging in Malawi is mostly based on conventional plain and contrast x-rays only and few computerized tomography (CT) scan or magnetic resonance imaging (MRI) are available in public health services in Malawi. There are two CT scans in the private sector. Ultrasonography is available in almost all central hospitals, district hospitals and CHAM

facilities however linear probes for breast scanning are not available for most ultrasound machines. Digital mammography equipment in KCH, QECH, MCH and ZCH donated by India are not functional. The only functional mammography units are in private facilities. There are no nuclear imaging services in Malawi. There are three government radiologists in the public sector at the time of this write-up. Endoscopy services and blood auto analyzers are available at KCH, QECH, MCH, ZCH and other district hospitals but consumables are always in short supply, often resulting in manual procedures. Tumor markers such as alpha-feto protein (AFP) and carcinoembryonic antigen (CEA) are done in KCH and QECH, but not always available due to erratic supplies of consumables.

Malawi has 3 pathology laboratories, one each at KCH (organized by University of North Carolina (UNC)), faculty of Medicine, Blantyre and a private laboratory in Blantyre. There are 2 pathologists in the public sector, 1 in KCH and one in Blantyre and a visiting pathologist in KCH. There are 3 pathologists and one hematologist in the private sector.

The pathology laboratory by UNC at KCH is state of art, well organized laboratory with excellent infrastructure (two multi-headed microscopes, two microtomes, one automatic cover slip mounter, 1 auto-processor, 1 auto-staining machine, automatic and manual equipment for IHC (estrogen, progesterone, Her2 neu receptors, Ki 67, CD3, CD20, CD 15, CD 30, CD 138, MPO, TdT, Pax5, HHV 8, LANA, AE1/AE3, synaptophysin among others) and well trained staff (two pathologists, 4 technicians and 1 data assistant). It processes around 3500 gross surgical specimens, 3500 biopsies and 2500 cytology smears annually with a report turn-around time of 4 days. This is a model histopathology laboratory for entire sub-Saharan Africa and should be replicated in the north and south of the country.

In a case series involving 310 women with cervical cancer in QECH during 1 January 2015 to 31 June 2015, 300 patients were included (mean age 44.9 years; HIV prevalence 47%), representing 8% of the estimated annual number of new presentations in Malawi [27]. Forty-

four percent of patients (n = 132) had stage I cervical cancer and 168 (56%) reportedly presented with more advanced disease (stage II-IV). There was a mean delay of 10.5 months between symptom onset and attending QECH. The most common management plans at initial consultation was: same-day biopsy (n = 112; 37.3%), booking for curative surgery (n = 76; 25.3%), and referral to palliative care (n = 93; 31%). At 2 months, 64 biopsies (57%) were reported, 31 operations (40.8%) were completed, and 27 patients (29%) had attended palliative clinic. The lack of diagnostic, particularly pathological and inadequate surgical capacity and the absence of radiotherapy severely limited the possibility of curative treatment for invasive cancer. Improving awareness of cervical cancer in the community and among primary care physicians, and better recognition and improving infrastructure and human resources within the public health service, are important in reducing the cancer burden for women in Malawi.

Early diagnosis of breast cancer rests, (in any setting), on symptom recognition by patient and primary health worker. The awareness of breast symptoms which may be indicative of breast cancer is low among both the general population and the health workers in Malawi. There is a need for awareness programmes both to reach the general population and Malawi's healthcare workers in primary and secondary care.

There are now two breast one-stop triple assessment (clinical, imaging and pathology) clinics in Malawi, one at QECH and one at KCH. There is a monthly satellite triple assessment clinic in Mangochi District Hospital run by a specialist breast surgeon from Blantyre. A triple assessment clinic service at Mzuzu Central Hospital will shortly be established. These clinics, run according to global standards by consultant surgeons with a special interest in breast disease, accept referrals from across the regions, allowing for earlier cancer diagnosis in patients who present symptomatically to the service. They fulfil the globally defined fundamental requirements of specialist breast clinics to optimize outcomes of treatment, by each managing in excess of 150 cases of breast cancer per year in a multidisciplinary setting. However, the operation and expansion of these clinics is compromised by current resource limitations.

Key challenges experienced in the area of cancer diagnosis include: limited pathological, hematological services, inadequate screening sites for cervical and breast cancer. There is need to address inadequacies with regards to human resource, equipment and operational costs, as

well as enforcing regulation of professional requirements for documenting and reporting cancer diagnoses.

Goal

Achieve comprehensive and well-coordinated services for early detection of cancer.

Objective 2.1: To improve and strengthen cancer pathology and laboratory services

Strategies

1. Develop t needs assessment plan for equipment and human capacity for laboratory services in Malawi.
2. Design, develop and implement a common training plan based on the human resource needs/skills with a focus on sustainability and retention.
3. Improve availability of estrogen receptor immunohistochemistry at QECH.
4. Develop three pathology laboratories, one each in the north, central and southern regions of the country with adequate infrastructure and human resources for quality assured H& E histopathology and immunohistochemistry for estrogen receptor testing, and the diagnosis of lymphomas in the public health either by upgrading existing laboratories or investing in new laboratories.
5. Ensure processing/reporting turnover time of 7 days from the reception of the tissue specimens.
6. Upgrade and develop one of the above three laboratories as a functional comprehensive national cancer reference laboratory
7. Improve the supply chain and availability of basic pathology reagents and consumables within the Central Medical Trust
8. Develop policy and guidelines for procurement and maintenance of equipment for cancer diagnostics
9. Scale up of core biopsy and fine needle aspiration cytology services for the early detection of solid cancers.
10. Develop implementation plan for pathology and laboratory data collection, compilation, utilization and reporting, using standardized International Agency for Research on Cancer (IARC) tools and templates,

11. Develop centralized medical information systems to include cancer pathology diagnosis and develop linkages with District Health Information System (DHIS) and cancer registration and surveillance
12. Develop private public partnerships for diagnostic services

Objective 2.1: To increase access to quality and equitable, screening and early diagnosis services for cancers

Strategies

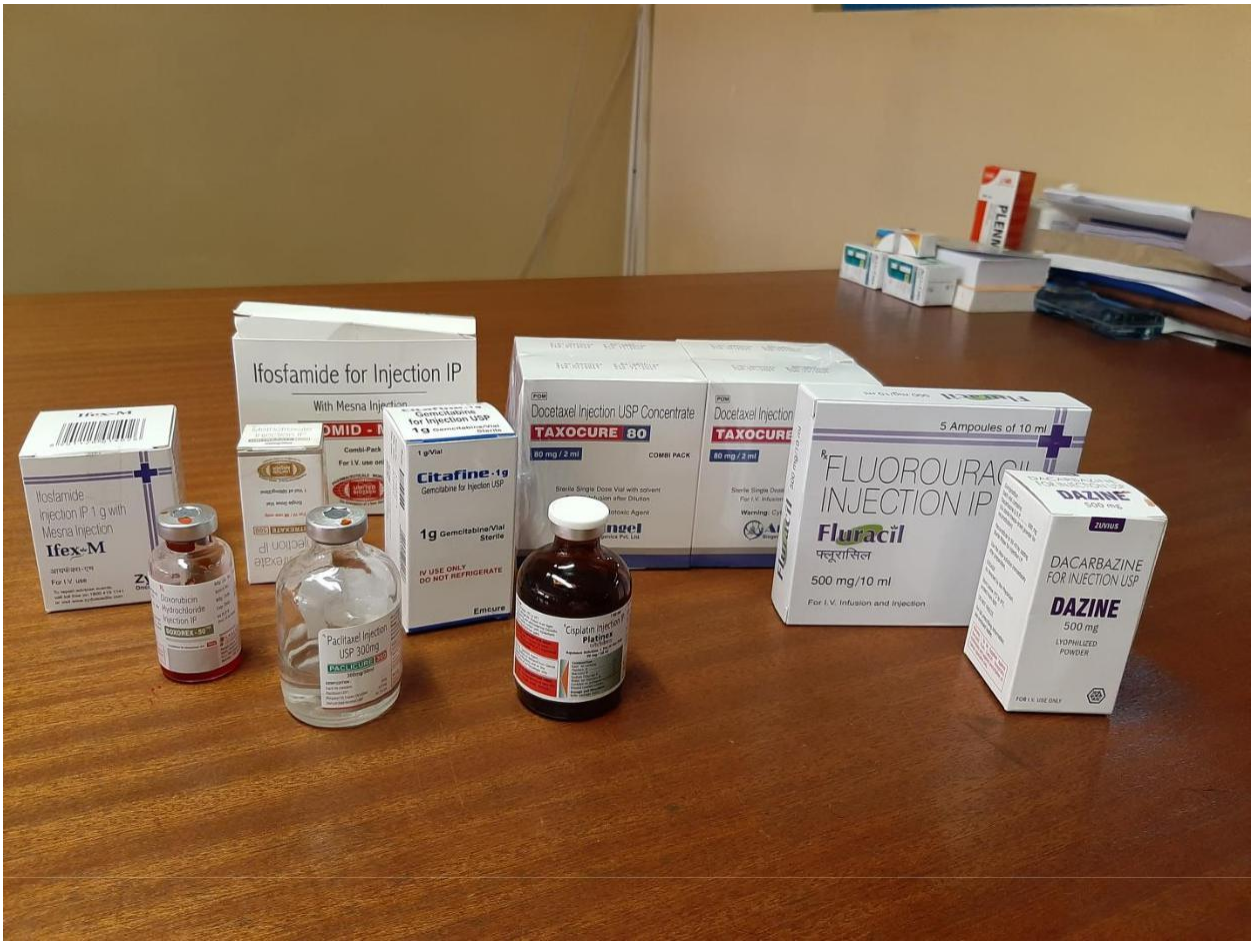
1. Scale up breast/cervical and other cancers awareness campaigns across the country.
2. Develop and implement national guidelines for cancer screening and early diagnosis including a referral and follow up mechanism
3. Advocate for inclusion of cancer screening and early diagnosis packages in various medical schemes.
4. Scale up screening coverage for cervical cancer and incorporate clinical breast examination into each cervical cancer screening episodes.
5. Introduce thermocoagulation services in VIA screening sites
6. Scale up PAP smear screening and Loop Electrosurgical Excision Procedure (LEEP) services in Malawi
7. Adopt scalable primary health care services and affordable technologies for screening and early diagnosis of various cancers
8. Strengthen genetic counselling and screening to address genetic and familial cancers
9. Integrate childhood cancers into existing public health promotion programs.
10. Sensitize healthcare workers on clinical presentation of childhood cancers and prompt referral.
11. Increase frequency of early diagnosis of cervical cancer stage 1) in all health facilities and establish robust referral routes from primary and secondary health facilities for patients with breast symptoms to triple assessment clinics at the three specialist central hospital hubs.
12. Consolidate and develop further rapid access triple assessment one-stop diagnostic breast clinics in central hospitals according to international standards and guidelines

Objective 2.2: To improve and strengthen cancer medical imaging, endoscopy and auto-analyzers for hematology and blood chemistry analysis

Strategies

1. Design, develop and implement a common training plan based on the human resource needs/skills in cancer imaging, endoscopy and laboratory services with a focus on sustainability and retention
2. Develop or upgrade three imaging services with diagnostic mammography, diagnostic ultrasonography, CT and MRI scans and three endoscopy services with bronchoscopy, esophagus- gastroscopy, colonoscopy and colposcopy services in the public sector, one each at northern, central and southern regions of the country in a time bound manner over the next 5 years
3. Improve the availability of advanced (CT/MRI) imaging services available and accessible at Malawi cancer centre.
4. Develop one centralized nuclear imaging service for the entire country
5. Introduce blood auto-analyzers in all tertiary care and secondary care hospitals in a time bound manner
6. Develop operational standards and guidelines for diagnosis of cancer imaging, including for childhood cancers and endoscopy
7. Develop, adopt and adapt guidelines and algorithms for diagnostic imaging workup of priority cancers in both children and adults for each level of care
8. Develop and conduct training programs for hospital administrators on roles, responsibilities and referral algorithm in the efficient functioning of the cancer assessment imaging/endoscopy diagnostic network
9. Develop and manage national QA guidelines (including safety) for various levels imaging/endoscopy services for cancer in collaboration with relevant regulatory bodies
10. Develop and implement national guidelines for radiology diagnostic imaging and nuclear medicine imaging (aligned to IAEA guidelines on nuclear medicine)

THEMATIC AREA 3: CANCER TREATMENT AND FOLLOW-UP CARE



Background

Cancer treatment and follow-up care is one of the key components of cancer control. The aims of treatment include: achievement of "cure" through long-term survival (i.e. achieving normal life expectancy), prolongation of life and improvement of quality of life [28]. Early detection linked with the most effective and efficient treatment provides a higher probability of cure and better quality of life. Type of cancer, stage at diagnosis and quality of treatment and follow-up care are important determinants of treatment outcomes. Through this strategy, it is anticipated that all cancer patients will get optimal treatment which encompasses receiving resource appropriate treatment and incorporation of best practices for cancer treatment which are customized to each setting. Cancer treatment approaches are broadly classified as "radical" treatment with curative intent when there is a high probability of cure, "palliative" treatment aiming at palliation of

symptoms in advanced cancer using cancer directed treatment when the intention is not cure but to alleviate symptoms and "symptomatic" treatment when the disease is too advanced for any form of cancer directed treatment and the symptoms are alleviated by medical and supportive care.

Cancer treatment follows multi-disciplinary approach which mostly involve: surgery, radiotherapy, chemotherapy, and hormone therapy and in certain instances targeted drug therapy focusing on specific genes or proteins to help stop cancer from growing and spreading, targeted radionuclide therapy and immunotherapy among others. While combined modality approaches are frequently used for cancer treatment, single modality treatments are possible for very early cancers yielding high cure rates, improved organ and function preservation and good quality of life (e.g., radiotherapy for stage I laryngeal or oral cancer; local excision for stage I oral cancer; surgery for stage I cervix cancer). Follow-up care after completion of treatment is critical in the early detection and treatment of recurrences to improve the chances of cure and to manage short- and long-term sequelae of cancer therapy.

Situation analysis

Cancer treatment guidelines have been incorporated into the Malawi standard treatment guidelines (MSTGs) [29]. Currently, QECH and KCH are the two tertiary hospitals with oncology units being run by one clinical oncologist at each unit. Chemotherapy and surgery are the main treatment modalities offered. Simple cancer surgeries such as wide excision, simple and modified radical mastectomy, simple hysterectomy and conization are carried out in tertiary care centres such as KCH, QECH, MH and ZH and other secondary hospitals. Complicated cancer surgeries are not carried out in the country due to the lack of critical infrastructure and trained human resources. In a retrospective analysis of 7076 operative procedures in KCH during 2007-2010, 406 (16%) were cancer surgeries; of these 90 (22%) were breast surgeries (55% with curative intent), 62 were colorectal surgeries (27% with curative intent), 45 and 41 were prostate and gastric cancer surgeries respectively (>90% with palliative intent) [30]. The study indicated that most procedures were palliative, consistent with overall worse outcomes for cancer care observed in sub-Saharan Africa.

Key challenges in the provision of cancer treatment services in the country include; high rate of late diagnosis while other cases go undiagnosed due to inadequate cancer services, low

awareness of symptoms; low rate of treatment acceptance and adherence because of challenges of geographical access ,personal resources and use of alternative therapy instead of conventional therapies; low index of suspicion by health providers; inadequate and deficient diagnostic and treatment infrastructure; poor referral systems, inadequate cancer specialists, lack of effective patient navigation systems and direct and indirect costs associated with cancer treatment.

Anti-cancerous drugs are in short supply with erratic supply chain, despite the availability of the national essential medicine list. There are no radiotherapy services in the country. Significant proportion of patients present in advanced clinical stages and do not complete the prescribed course of treatment due to various barriers, limitations and challenges.

The differential survival outcomes following grossly inadequate and some form of treatment is evident from survival experiences in Malawi. For instance, in a retrospective analysis of 73 patients treated for Burkitt's Lymphoma during June 2013 to May 2015 in Malawi with 6 cycles of cyclophosphamide, Adriamycin, vincristine and prednisolone (CHOP), 18-month survival was 29% [31] and Kaposi's sarcoma was 12.9% which received some form of chemotherapy (7). On the other hand, 5-year survival was only 2.9% for cervical cancer [5] and 0% for breast cancer (7) where adequate treatment with combinations of surgery, radiotherapy and systemic treatment is of paramount importance.

In September, 2014, the Malawi Cancer Consortium (MCC) to strengthen cancer care services was initiated in partnership with the UNC Libeberger Comprehensive Cancer Center, Malawi Ministry of Health, University of Malawi College of Medicine, and lighthouse Trust [32]. MCC includes three support cores (administration, analysis, mentoring) and three multi-institution research projects in Blantyre and Lilongwe: (1) a national HIV-cancer match study to assess cancer incidence in the ART era; (2) a longitudinal cohort to identify clinical and molecular correlates of KS chemotherapy response; and (3) a longitudinal cohort to elucidate lymphoma biology and develop better treatments for HIV-associated lymphoma.

Patients requiring radiotherapy, complicated cancer surgeries and intensive chemotherapy are referred to India and other countries at considerable costs to the national exchequer. AIDS defining cancers such as Kaposi's sarcoma are treated in ART clinic sites of almost all district and central hospitals.

Cancer treatment in Malawi is anticipated to take new dimension with the development of the National Cancer Treatment Center (NCTC) in Lilongwe which is earmarked for opening in 2019. The development and operationalization of the cancer centre will be the single most important initiative in the national cancer control program of Malawi given the fact that cancer treatment is currently highly fragmented and provided in overextended hospitals with limited infrastructure, consumable supply chain problems and limited skilled and experienced human resources. The cancer center is planned within the campus of KCH, as a matrix type of cancer centre with its own cancer surgery, radiotherapy, chemotherapy, hormone therapy, palliative care, pathology and other allied diagnostic services, medical records and hospital cancer registry services. Cancer services are provided with highest quality of care in cancer centres that are autonomous, without administrative and bureaucratic entanglements and hitches. It is important that in the long term, the upcoming National Cancer Treatment Center should be an autonomous body with its own governing and scientific councils for its efficient functioning. the proposed National Cancer Treatment Center should be an autonomous body with its own governing and scientific councils for is efficient functioning.

Goal

Improve the quality of life for patients undergoing cancer treatment.

Objective 3.1: To provide optimal and quality treatment to individuals with various forms of cancer

Strategies

1. Open National Cancer Treatment Centre (NCTC) in Lilongwe
2. Construct Nuclear Medicine Block at NCTC
3. Introduce extension matrix type of cancer centres in the northern and southern region
4. Procure PET/ cyclotron for Nuclear medicine at NCTC.
5. Improve quality and documentation of cancer treatment data in medical records
6. Increase number of health workers trained in various oncology specialties
7. Expand cancer specialist outreach programs in medical oncology/ chemotherapy at all levels of health care
8. Introduce post graduate training programs in cancer surgery, radiotherapy and clinical oncology, pathology, imaging and cancer nursing in due course

9. Establish and strengthen multidisciplinary teams in facilities offering cancer services to improve patient care
10. Establish a national cancer task force composed of experts from all areas of cancer services to identify major areas of cancer services which require attention
11. Ensure timely access to treatment currently recognized as providing optimal outcomes
12. Work with radiotherapy services to develop standards for the utilization, replacement and addition of radiation oncology equipment.
13. Establish mandatory policies aligned to international and regional guidelines (as adapted to low-resource settings) for the establishment and maintenance of cancer units.

Objective 3.2 To improve the standard of treatment for individuals with cancer

Strategies

1. Increase number of cancer patients undergoing complicated cancer surgery at the Malawi Cancer Treatment Centre
2. Develop and disseminate national treatment guidelines for various types of cancer
3. Develop referral policy specific for cancer
4. Develop guidelines for cancer centers establishment, accreditation focused on human resource, and infrastructure
5. Work with HMIS to ensure indicators are included to allow monitoring and evaluation of cancer services
6. Work with relevant government offices to address alternative and complementary medicine regulation

Objective 3.3: To improve capacity for cancer treatment by providing infrastructure, equipment and consumable.

Strategies

1. Stabilize the Malawi NCTC with full range of functioning of surgical, medical and radiation oncology.
2. Support establishment of accommodation facilities for both patients receiving cancer treatment services and for care givers
3. Address ethical dilemmas in cancer care through medical legal committees as part of multidisciplinary teams

4. Provide education support and advocacy to patients diagnosed with cancer including people living with disabilities and other vulnerable groups.
5. Create awareness among healthcare providers and the community on the availability of treatment and follow-up care services
6. Develop IEC materials to address myths and misconceptions about cancer and customize them for the different target populations including those living with disability
7. Provide timely supportive services (blood & blood products, infection control, nutrition.
8. Build capacity on private and Christian Health Association of Malawi (CHAM) facilities on the provision of cancer care services alongside ensuring robust policing of standards, audit, outcomes within those facilities as well as within government better standards of care.
9. Provide dermatology and ophthalmology services to persons with albinism to address skin cancer.

Objective 3.4: To improve human resource for cancer treatment services

Strategies

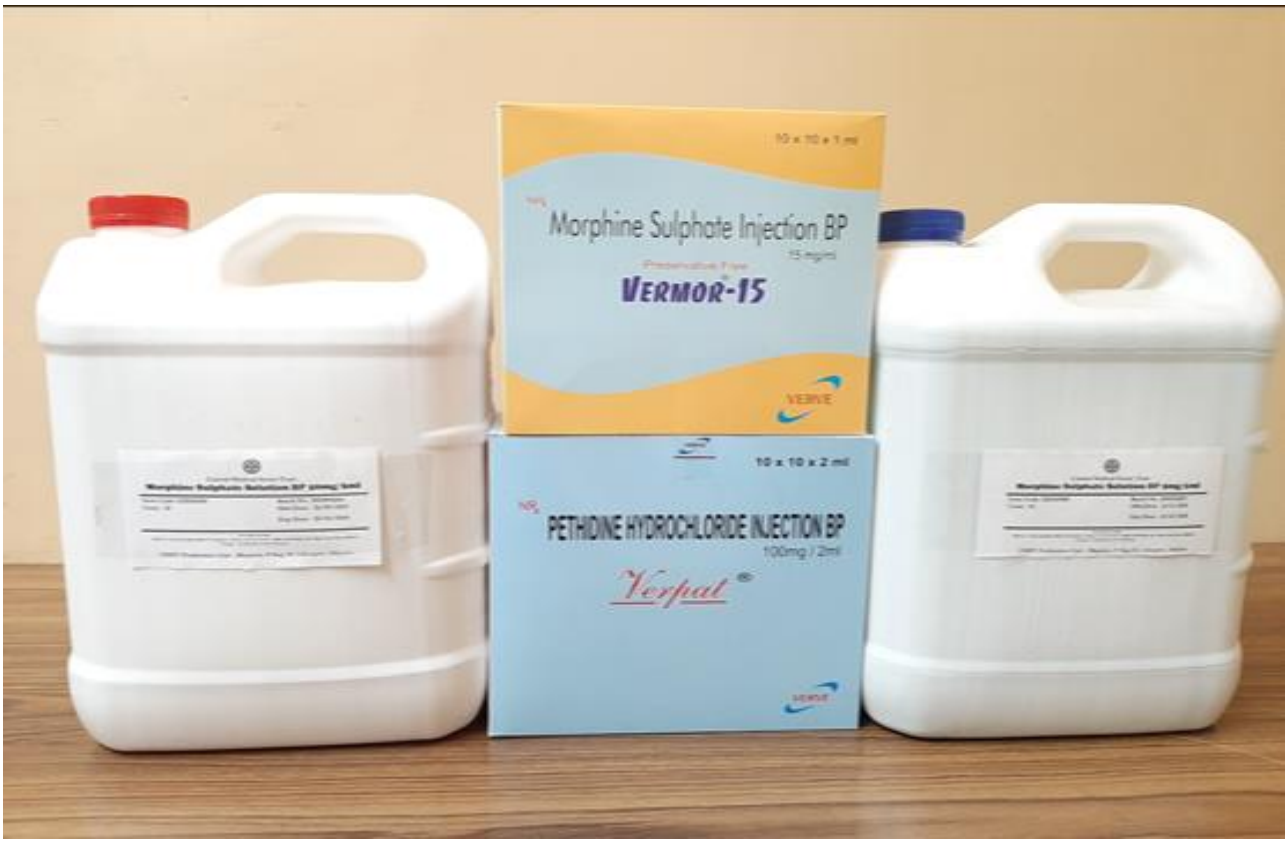
1. Train and retain health workers at National Cancer Treatment Center.
2. Introduce postgraduate training programmes in cancer specialties such as medical oncology, clinical/radiation oncology, medical physics, oncology nursing, oncology pharmacy, pathology, histology, cytology, palliative care, radiation safety, surgical oncology, gynecology nursing, pediatric oncology, pediatric nursing, radiographers and biomedical engineering
3. Work in collaboration with the regulatory bodies to develop career paths in cancer services that allow appropriate deployment based on skills and competencies and give staff retention incentives to retain them and ensure continuity of service.
4. Provide in-service training for cancer providers for different cadres

Objective 3.5: To optimize treatment and follow-up care for childhood cancers

Strategies

1. Integrate pediatric cancer treatment and supportive care into existing treatment facilities.
2. Advocate for the review and reorganization of existing treatment facilities / programs to incorporate paediatric cancer treatment and supportive care services
3. Advocate for pediatric chemotherapy and adjuvant formulations to be incorporated in the Malawi Essential Medicine List (EML)
4. Advocate for adoption and finalization of evidence-based treatment protocols for common childhood cancers in Malawi

THEMATIC AREA 4: PALLIATIVE CARE AND SURVIVORSHIP



Background

Palliative care (PC) is a specialized medical discipline that focuses on improving the quality of life of patients with terminal or life-threatening illness and their families, through the prevention and relieving of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual [33]. Palliative care is the active total care of the body, mind and spirit of the patient, and involves giving support to the family from the time of diagnosis and throughout the whole continuum of care. Therefore, palliative care is applicable to any cancer patient regardless of age, type of cancer and stage of diagnosis.

The type of support given to cancer patients may include: pain relief, wound care, stoma care and incontinence care, nutritional support, patient navigation (clinical, lay and physical navigators), psychosocial support, end of life care, financial support and accommodation.

The whole process of having cancer or living with cancer and its post cancer treatment life to those who survive is termed as survivorship. Survivorship has three main sub-categories based on time and these include;

1. Acute Survivorship-described as the time when a person is being diagnosed and/or in active treatment of cancer
2. Extended Survivorship-described as the time immediately right after treatment is completed and it is usually measured in months
3. Permanent survivorship-described as a long period of time after treatment. It is measured in years.

Effective palliative care requires a broad multidisciplinary approach that includes the family, NGOs, CSOs, PACAM and makes use of available community resources. It can be successfully implemented even if resources are limited. Timely access to immediate relief morphine and other strong opiates is an essential part of palliative care as recommended by the World Health Organization. Appropriate legislation to support access to morphine as close as possible to the patient and family following
suitable assessment and follow up is a mark of delivery of quality services. Integrating PC into oncology care is clearly necessary for better patient outcomes such as quality of life (QOL).

Situation analysis

Government of Malawi recognizes the importance of palliative care to improve the quality of life and symptom burden for all patients and families affected by life threatening illnesses including cancer. In October 2014, Ministry of Health, Government of Malawi formulated a national palliative care policy to take forward the national agenda for the health sector [34]. In Malawi, palliative care has a desk officer under the nursing directorate of Ministry of Health. Palliative care services are conducted either as home visits, hospital visits or outreach clinics in about 78 nationwide sites in 2016.This represented an increase of 15% from 72 sites in 2015. There were 1141 trained service providers in the same reporting period. There were 61,323 patients that accessed palliative care services representing 36% of the cases that needed it. Adults contributed 76% while 24% were children. The palliative care sites are categorized into three levels:

1. Health centre and community PC (level 1)-comprises 22 functional sites
2. District/rural hospital PC services (level 2)- comprises either district, community or

CHAM facilities.

3. Central hospitals/hospice palliative care services (level 3)-comprising central hospitals. So far, only St. Gabriel in Lilongwe and Ndimoyo in Salima offer hospice services.

Oral morphine is available in most health facilities under the 78 nationwide palliative care sites. All licensed clinicians (doctors and clinical officers in Malawi) can prescribe opiates. Immediate release oral morphine is the cheapest effective formulation available globally and is recognized as the gold standard for the management of severe pain in cancer. It can be prescribed following assessment to both adults and children affected by cancer, starting with the lowest effective dose and titrated upwards depending on the response of the patient. Other strong opiates (fentanyl, oxycodone, methadone) are not yet available in Malawi due to cost restrictions.

Goal: Improve quality of life to individuals with progressive and / or life threatening cancer disease.

Objective 4.1: To scale up palliative care to improve quality of life to individuals with life threatening or terminal cancer disease and their families through support and rehabilitation

Strategies

1. Develop and implement national palliative care standards; end of life care and survivorship.
2. Provide palliative care and pain relief services at all levels of care including community level (home based care) for very sick patients
3. Support the Integration of palliative care at all oncology facilities (including posting of palliative care clinicians and nurses with specialist level training) in all appropriately staffed facilities for cancer care
4. Undertake campaign of public education and dissemination of information to address issues relating to discrimination and other potential barriers to returning to work for cancer survivors
5. Work in collaboration with Ministry of Education and relevant key stakeholders, to develop guidelines for the support and rehabilitation of children and adolescents with cancer
6. Provide timely and ongoing support and rehabilitation, including early identification and appropriate intervention for all survivors of childhood, adolescent and adult cancers and people with albinism.

Objective 4.2: To provide supportive and rehabilitative services to cancer patients and those that needs it

1. Revise and update guidelines for support and rehabilitation of cancer patients and families (emotional, nutritional, spiritual and psychosocial)
2. Provide services for rehabilitation and survivorship for cancer patients.

THEMATIC AREA 5: GOVERNANCE AND FINACING OF THE CANCER CONTROL PROGRAM

Background

The national cancer control strategy and its monitoring and evaluation outlined in this document should be implemented in a program mode under the supervision of the national cancer control coordinator supported and advised by the cancer control advisory committee whose chairperson will be the Secretary for Health and whose executive secretary will be the national cancer control coordinator. The members of the committee will consist of the Director of the National Cancer Treatment Centre, Directors of KCH, QECH, MCH and ZCH, Director of Clinical Services, and the Head of Non-Communicable Diseases and Mental Health. The Committee will meet quarterly to deliberate on the implementation of the program and to suggest any mid-course interventions.

The program will be implemented through the existing health sector's institutional, infrastructural, human resources and coordinating framework. The cancer control unit headed by the national cancer control coordinator within NCDs under MoHP shall take full responsibility for coordinating and ensuring successful implementation and attainment of the objectives of this plan. However, several other players will be involved in its implementation and these include: National Cancer treatment center in Lilongwe, tertiary care centres such as KCH, QECH, MCH, ZCH among others, other line ministries and government departments, Christian Health Association of Malawi (CHAM), private sector, traditional and alternative medicines sector, civil society/communities, training institutions and cooperating partners.

In particular, the National Cancer Control Coordinator will seek to ensure enhanced coordination, effective partnerships and sustainable financing and technical support from the Ministry of Health and other stake holders for cancer control is in place. Health systems need to work in partnership with other sectors to ensure social determinants are considered in service planning and provision within communities.

The National Cancer Treatment Center will have a major role and will act as a major nodal agency for implementation of all components of the cancer program outlined in this document. In the long term, it is proposed that the center will be an autonomous institution under the Ministry of Health headed by a Director with long standing experience in cancer control. The center will be governed a governing council chaired by the Honorable Minister of Health. Its executive secretary will be Secretary for Health and Population. Other members will include Minister of Finance, Secretary Finance, Secretary for Education, two senior oncologists and the national cancer coordinator. The Centre will have a Scientific Council to advise the Director of the Centre on technical matters and scientific research.

Financing for cancer control remains a challenge for many low and middle-income countries including Malawi. Deliberate efforts should be made to ensure adequate and sustainable funding for the National Cancer Control Program by ensuring a committed budget line for coordination and implementation involving all players at all levels. Various global and regional declarations recognize the importance of universal health coverage, especially through primary health care and social protection mechanisms. Adequate financial mechanisms are needed to provide access to health services for all, in particular, to the most vulnerable populations.

***Goal*:** Improve governance and financing of cancer services

Objective 5.1: To strengthen management and governance National Cancer Treatment Centre

Strategies

1. Operationalize National Cancer Treatment Centre
2. Institute national cancer control advisory committee
3. Establish a governing council for the NCTC
4. Provide adequate financial resources to the cancer center from the Government of Malawi
5. Provide adequate human resources and infrastructure for the cancer centre
6. Achieve Universal health care coverage

7. Link the cancer centre with established cancer centres in other countries such as in Africa, China, India, Europe and North America for technical exchange programs and scientific and clinical collaboration.

Objective 5.2: To strengthen public private partnerships (PPPs)

Strategies

1. Develop public private partnerships (PPPs) framework for cancer control
2. Adopt relevant regulations under the PPP Act to promote private sector investment in service delivery.
3. Establish robust and measurable standards of service (including key performance indicators (KPIs), with common audit, to be implemented throughout the health sector.

Objective 5.3: To establish a strategic structure and mechanism to support cancer advocacy, communication and social marketing.

Strategies

1. Advocate for the development of a cancer health communication strategy
2. Mobilize resources for development, dissemination, monitoring and evaluation of the cancer health communication strategy
3. Identify and map the appropriate communication tools based on stakeholder needs and current determinants of health
4. Map and identify platforms available to disseminate cancer information for various audiences
5. Identify and engage multi-sectoral stakeholders to support cancer communication

Objective 5.2: To improve coordination structures at all levels of hospital management

Strategies

1. Conduct a baseline assessment of existing coordination structures

2. Establish a coordination framework for cancer services at all levels
3. Establish and operationalize multi-sectoral Technical Working Groups (TWGs)
4. Establish a specific TWG to coordinate childhood cancers

Objective 5.3: To strengthen partnerships at all levels

Strategies

1. Establish partnership forums with regular meetings
2. Strengthen and regularly update information on cancer prevention and control activities within the NCD platform
3. Create a mechanism for mainstreaming cancer prevention and control in all sectors

Objective 5.4: To strengthen national cancer control program (NCCP)

Strategies

1. Appoint national cancer control coordinator
2. Increase financial resource allocation cancer activities from the Government
3. Increase human resources for health at cancer control unit of NCDs
4. Promote the creation of focal persons for cancer at district level
5. Provide policy guidance on integration of priority cancer services with other services at health facilities e.g. reproductive health (RH), maternal and child health (MCH), HIV.

Objective 4.5: To establish sustainable financing for cancer prevention and control

Strategies

1. Support establishment of a cancer control fund to support cancer control priority interventions
2. Advocate for access to levies accrued from taxation of products whose consumption is linked to cancer
3. Advocate to local government to allocate budget line for cancer prevention, screening and early diagnosis

Objective 5.6: To promote access to affordable essential medicines and technologies for cancer services

Strategies

1. Advocate for the inclusion of essential medicines (by treatment regimen), and technologies for priority cancers in the EML
2. Improve the availability of cancer related drugs
3. Advocate for lower cost of cancer services and products and increase the use of generic drugs

THEMATIC AREA 6: CANCER CONTROL RESEARCH, MONITORING AND EVALUATION

Background

Cancer control research

Just like in all areas of cancer control, multi-disciplinary approach is very critical to effective implementation of cancer strategy. The research agenda for cancer encompass different approaches from basic science, interventional or operational research and use of routine data for surveillance. The main objective of cancer research agenda is to identify and evaluate the means of reducing cancer morbidity and mortality and of improving the quality of life of people living with, recovering from or dying of cancer. Research is needed across the spectrum of cancer control to provide the basis for continual improvement

There is need for increased social, behavioral, environmental, psychological and health services research to determine and evaluate better methods of preventing cancer; encouraging timely access to screening, diagnosis, treatment and palliative care services; and improving rehabilitation and support activities. Therefore, research has great potential to inform intervention which reduce the incidence and impact of cancer. Training as well as funding will be needed to stimulate research in these areas. According to WHO recommendation, the following are not exhaustive but fundamental areas for research, (WHO,2002).

1. Laboratory (e.g. biological mechanisms underlying cancer)
2. Epidemiological (e.g. environmental or human behavioral factors)
3. Clinical (e.g. determining most effective treatment)
4. Psychosocial and behavioral (e.g. factors impacting on prevention, the response to screening and impact of diagnosis and treatment)
5. Health systems and health policies (e.g. how services can best be implemented and organized)

Monitoring and evaluation (M&E) forms an essential component of the National Cancer Control Strategy (NCCS) and will seek to build on existing systems. Detailed M&E plan is very fundamental to operationalization of this strategy. The NCCP will establish an overall evaluation protocol, as well as develop and over-see implementation of an evaluation plan. It will determine the needs, questions, methods, measures of effectiveness, and framework for evaluation of the strategy activities and outcomes. Using routinely available data as well as data from research, the NCCP will generate on a regular basis reports covering the five categories of this strategic plan.

Situation analysis

A lot of research in being conducted in the country aligned to various cancers but at times it is not well coordinated and evenly distributed. There is need to harmonize research through National Research Agenda from MoHP as the controlling entity in order to avoid duplication of efforts and the background of limited resources. There is annual cancer consortium that is spearheaded by MoHP with collaboration from university of North Carolina (UNC) and lighthouse. Various training institutions and research institutions are also conducting research in Malawi in the cancer field. Despite the challenges, some the past research in domains such as cancer patterns in Malawi, HPV vaccination, cervical cancer screening, and tobacco control among others have been valuable in informing cancer control strategy directions.

***Goal*:** Achieve a comprehensive and well-coordinated cancer program

Objective 6.1: To ensure effective coordination of cancer research

Strategies

1. Advocate for government funding for cancer research
2. Develop a research agenda for cancer prevention and control in the national research agenda
3. Create dissemination channels for research on cancer such as annual cancer symposiums
4. Work with other research institutions to develop strategic process for facilitating cancer research

Objective 6.2: To conduct research and surveillance on the effectiveness of cancer treatment and palliative care

Strategies

1. Include cancer treatment and palliative care services indicators in national surveys such as demographic and health survey, STEPs.
2. Support testing of new technologies and treatment protocols in clinical cancer management
3. Work with relevant institutions to support research on alternative medicine use in cancer services

Objective 6.3: To strengthen research and data use

Strategies

1. Strengthen the cancer research technical working group and promote use of the cancer registry data for research

Monitoring and evaluation

Monitoring and evaluation is essential to a unified, scientific and public health approach to cancer prevention and control. It is the ongoing, timely, and systematic collection and analysis of information on cancer risk factors (such as lifestyle factors, behavioral influences, genetic predispositions, or environmental exposures), screening and early detection, new cancer cases, cancer deaths, extent of disease at diagnosis, treatment, clinical management, and survival. Key to the success of cancer prevention and control is the timely dissemination of cancer data to the public health agencies and scientists responsible for designing, implementing, and evaluating cancer prevention and control activities [35].

Cancer registration is an important component of monitoring and evaluation of cancer control. It is an information system designed for collection, storage, analysis, interpretation and reporting of

data on patients with cancer. There are two main types of cancer registries namely: hospital and population based. Hospital-based registry is concerned with recording of information on the cancer patients seen at a particular hospital. Its main objective is to contribute to patient care by providing readily accessible information on individuals with cancer, treatment they received and outcomes. The data collected is used mainly for administrative purposes and for reviewing clinical performance and therefore it cannot provide measures of burden of cancer in the population.

Population-based cancer registry collects data on all new cases of cancer occurring in a well-defined population. Its main objective is to provide statistics on the burden of cancer in a target population and to provide a framework for assessing and controlling the impact of cancer in the community and therefore it is ideal for planning and evaluating cancer programs.

Other important sources of monitoring evaluation of various cancer control interventions include hospital cancer registries, medical record reviews, WHO STEP surveys, household surveys by the Government, cross-sectional and follow-up studies by researchers, cancer survival studies and mortality registration systems among others.

Situation analysis

There are two population-based cancer registries in Malawi. The population-based cancer registry called Malawi National Cancer Registry (MNCR) based at QECH in Blantyre was initiated in 1989 and became fully operational in 1993, but data quality and completion need to further improve. A new population-based cancer registry has now been organized in Lilongwe. No cancer incidence data from Malawi have been published in "Cancer Incidence in Five Continents" or in per reviewed journals. Currently, there are two hospital-based registries: Kamuzu Central Hospital in Lilongwe and Mzuzu Central Hospital in Mzimba district respectively.

WHO STEP surveys and some focused cross sectional studies by researchers are valuable resources for monitoring and evaluation on Malawi. The death registration system in Malawi is incomplete and many deaths are not registered.

Objective 6.4: To improve monitoring and evaluation of cancer program Strategies

Strategies

1. Adapt standard IARC data collection tools and quality standards and ensure ICD-compliance
2. Develop detailed monitoring and evaluation plan.
3. Develop cancer reporting database
4. Develop cancer indicators and modernize cancer data collection methods.
5. Design and develop legislation on mandatory reporting of cancer (notifiable disease)
6. Produce annual progress reports on implementation of the strategy.

Objective 6.5: To create a network of cancer registration and surveillance with well-defined roles and responsibilities

Strategies

1. Stabilize the Blantyre population-based cancer of registry and ensure the inclusion of its data in the next edition of "Cancer Incidence in Five Continents" published by the IARC by enhancing registry quality and completion
2. Establish Lilongwe population-based cancer registry
3. Establish NCTC hospital cancer registry
4. Improve data quality and completion in the two registries
5. Establish governance structures for cancer registration and surveillance
6. Increase the reliability cancer survival data for breast and cervix cancer patients.
7. Link data collection on cancer to Health Management Information Systems (HMIS)
8. Integrate cancer indicators into other existing databases/research platforms such as STEPS surveys, household surveys, and cross-sectional studies

IMPLEMENTATION MATRIX

Goal: Reduce the incidence of cancer through primary prevention among Malawi population by 2029							
Objective 1.1; To reduce incidence of Cancers due to known lifestyle risk factors such as harmful tobacco use, unhealthy diets, alcohol consumptions and Physical activity							
Strategies:1-11							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1. Develop a communication strategy to facilitate awareness on harmful exposure and use of tobacco	Conduct a situational analysis	Reduce tobacco use by 20% from baseline use (18% in men aged above 15 years; boys (10 – 14 years) 16%, girls (11.2%) in 2016	7.1	0	0	7.1	NCD/HES/Community Health Department
	Conduct communication strategy development Workshop		1.28	0	0	1.28	NCD/HES/Community Health Department
	Present to Technical Working Groups (Health Promotion & Essential Health Package)		0	0	0	0	NCD/HES/Community Health Department
	Present to Senior Management for approval		0	0	0	0	NCD/HES/Community Health Department
	Printing the communication strategy		1.35	0	0	1.35	NCD/HES/Community Health Department
	Orientation (TOT) of health workers on cancer and risk factors including tobacco		12.4	0	0	12.4	NCD/HES/Community Health Department
	Orientation of health workers in respective districts	On going	76.5	229.5	76.5	382.5	NCD/HES/Community Health Department
	Conduct health facility talks on harmful use of	1	0	0	0	0	NCD/HES/Community Health Department

	tobacco						
	Conduct Radio campaigns on harmful effects of use and exposure to tobacco and its products		0	0	0	0	NCD/HES/Community Health Department
2. Conduct awareness campaigns on impact of harmful exposure to use of tobacco on health, social, economic and environmental effects.	Ratification of the WHO-FCTC.	Scale up health warning on harmful effects of tobacco use/pictorial warnings to occupy at least 50% of front and back of tobacco packs. The current status has coverage less than 30%.	0	0	0	0	NCD/HES/Community Health Department
	Conduct a meeting for developing draft tobacco control policy		7.2	0	0	7.2	Community Health Department, NCD/HES
3. Develop IEC materials on impact of harmful exposure to and use of tobacco on health, social, economic and environmental effects	Conduct material development workshop	100% ban of tobacco use in public places such as schools, hospitals, restaurants	35.5	0	0	35.5	Community Health Department, NCD/HES
	Design & Development of materials		8.6	0	0	8.6	NCD/HES/Community Health Department
	Pre-test materials (Focus group discussions (10 community members, 4 district staff, 4 national		4.9	0	0	4.9	NCD/HES/Community Health Department
	Finalization of materials		10.3	0	0	10.3	NCD/HES/Community Health Department
	Printing materials (Flyers		2.1	0	0	2.1	NCD/HES/Community Health Department
	Printing materials (Posters)		3.9	0	0	3.9	NCD/HES/Community Health Department
	Distribution of print		2	0	0	2	NCD/HES/Community Health

	materials						Department
	Production of radio & TV materials		4.3	12.9	21.5	38.7	NCD/HES/Community Health Department
	Production of radio & TV materials		3.3	9.9	16.5	29.7	NCD/HES/Community Health Department
	Airing & featuring of radio products (Radio - 1 min. jingle, 3 times a day, 3 days a week for 52 weeks) - 3 jingles		3.3	9.9	16.5	29.7	NCD/HES/Community Health Department
	Airing & featuring of TV products (TV - 1 min. jingle, prime time) 3 times a week for 52 weeks		7.3	21.9	36.5	65.7	NCD/HES/Community Health Department
	Airing and featuring 15 minute radio program		3.5	10.5	17.5	31.5	NCD/HES/Community Health Department
	Monitor of radio & TV program coverage		4	12	20	36	NCD/HES/Community Health Department
4. Conduct targeted media campaigns against tobacco use.	Advocate for development of Policy Briefs on tobacco use and exposure as it relates to cancer	Increase taxation of 1000 cigarettes by 2-4-fold compared to current 30 UDS/1000 cigarettes	0	0	0	0	NCD/HES/Community Health Department
	Conduct media orientation meetings		2.6	7.8	13	23.4	NCD/HES/Community Health Department
	Run Press Release in newspapers		3..2	9.6	16	28.8	NCD/HES/Community Health Department
5. Commemorate World Cancer and Breast Cancer Days as opportunities	Commemorate World Cancer Day every year Commemorate World Breast Cancer Day every year	3 Campaigns per year	20	30	50	100	NCD/HES/Cancer Association of Malawi (CAM), CSOs
	Commemorate World						NCD/HES/CAM

for raising awareness on cancer.	Breast Cancer Day every year						CSOs, NGOs
6. Advocacy meetings with MOE and other stakeholder to include information on risks of exposure and use of tobacco in school curriculum	Meet with MOE (School of Health) on incorporating issues of tobacco use and exposure in school curriculum	School Curriculum updated	0	0	0	0	NCD/HES/SHN
	Conduct a curriculum development/review workshop to incorporate issues of tobacco and cancer		20.6	0	0	20.6	NCD/HES/SHN
	Pre-test curriculum		8	0	0	8	NCD/HES/SHN
	Conduct workshop to finalize materials		7.09	0	0	7.9	NCD/HES/SHN
	Disseminate revised curriculum		2..6	0	0	2.6	NCD/HES/SHN
	Division level orientation meetings on revised curricula		12.8	0	0	12.8	NCD/HES/SHN
7. Training teachers on tobacco and cancer issues in the curriculum	Conduct orientation for teachers (Cascade mechanism from Division to lowest level)		0	52.8	0	52.8	NCD/HES/SHN
8. Advocacy meetings with key stakeholders on ratification of WHO FCTC	Organize advocacy meetings on ratification of WHO FCTC	100% ban of tobacco use in public places such as schools, hospitals, restaurants	0	0	0	0	
9. Develop &	Ratification of the WHO-		0	0	0	0	(NCD)MOHP/MOA/

implement modalities for enforcing smoke free public places	FCTC.						MOT
	Conduct a meeting to develop modalities for enforcing tobacco ban		0	0	0	0	(NCD)MOHP/MOA/ MOT
	Advocate for Publishing agreed modalities to general public (Press release in newspapers, radio and TV)		0	0	0	0	(NCD)MOHP/MOA/ MOT
10. Develop and disseminate tobacco cessation guidelines	Conduct a meeting with Stakeholders to develop tobacco cessation guidelines		4.2	2.1	0	6.3	NCD (Mental Health Section)
	Present draft guidelines through appropriate TWG		0	0	0	0	NCD (Mental Health Section)
	Print tobacco cessation Guidelines		0	6	0	6	NCD (Mental Health Section)
	Distribute cessation guidelines to Health workers		0	20.6	0	20.6	NCD (Mental Health Section)
	Orientation of mental health coordinators on the tobacco cessation guidelines						
11. Incorporate tobacco control issues into community health strategy	Advocate for inclusion of tobacco control issues during community health strategy revision.		0	0	0	0	NCD/Community nHealth Unit/HES

Goal 1.1.2:							
Objective 1.1.2; To reduce harmful alcohol consumption and eliminate exposure of alcohol to the under aged population							
Strategies:1-7							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1. Develop communication strategy to guide awareness campaigns on harmful effects of excessive alcohol	Conduct a communication strategy development workshop		0	0	0	0	Non-Communicable Disease (NCD) /HES
2. Develop IEC materials on risks of excessive drinking.	Conduct a Material Development workshop		0	0	0	0	NCD/HES
	Design & development of materials (together with tobacco issues - No cost		0	0	0	0	NCD/HES
	Pre-test materials (together with tobacco issues - No cost)		0	0	0	0	NCD/HES
	Conduct a workshop to finalize materials (together with tobacco issues - No cost)		0	0	0	0	NCD/HES
	Print (together with tobacco issues - No cost		0	0	0	0	NCD/HES
	Disseminate (together with tobacco issues - No cost		0	0	0	0	NCD/HES
3. Conduct	Intensive radio campaigns		6.9	12	20	38.9	NCD/HES

awareness campaigns against harmful alcohol.	on issues of excessive use of alcohol and cancer (No cost – to combine with tobacco campaign).						
	Conduct Health talks in schools on harmful alcohol consumption		7.5	22.5	37.5	67.5	NCD/School Health and Nutrition (SHN)/HES
	Meeting with Ministry of Education to incorporate issues of excessive drinking and cancer in school curriculum		0	0	0	0	NCD/SHN/Health Education Services (HES)
	Conduct a curriculum development/review workshop to incorporate issues on excessive use of alcohol (No cost. To be done together with tobacco issues)		0	0	0	0	NCD/SHN/HES, CSOs
	Pre-test revised curriculum		0	0	0	0	NCD/SHN/HES
	Conduct workshop to finalize materials		0	0	0	0	NCD/SHN/HES
	Disseminate revised curriculum		0	0	0	0	NCD/SHN/HES
4. Engage relevant stakeholders through establishment of a Multi-sectoral Technical Working Group on alcohol	Set up a sub-TWG on alcohol and cancer (covered under leadership and Governance)		0	0	0	0	NCD
	Conduct sub TWG Meetings		0	0	0	0	NCD

5. Provide technical guidance to partners and stakeholders in implementation of the national alcohol policy.	Conduct meetings with key implementers of the alcohol policy to activate its implementation (20 people, 1 day in Lilongwe		0	0	0	0	NCD (MoHP) /MOE/Ministry of Information, Ministry of Local Government
6. Advocate for increase in domestic exercise tax on alcohol in successive Budgets.in school curriculum	Lobby for meetings between the MOH & MOF and other key stakeholders to lobby for domestic taxation increase for alcohol.		0	0	0	0	NCD/Ministry of Finance (MoF), Ministry of Homeland Security
7. Conduct meetings with manufacturers to advocate that alcohol advertisements should include health risk messages. Lobby with Ministry of Trade	Lobby with Ministry of Trade & other Stakeholders to influence manufacturers on health risk messages in ads.		0	0	0	0	NCD/Ministry of Finance (MoF), Ministry of Homeland Security
8. Facilitate advocacy	Conduct a meeting to add alcohol control in school		0	0	0	0	NCD/Ministry of Finance (MoF)

meetings with ministry of education and other stakeholders to include alcohol control in school curricula.	curricula.						
9. Advocate for implementation of enforcement of drinking and driving laws and blood alcohol concentration limits.	Lobby with Ministry of Homeland Security & key players to enforce existing regulations						NCD/Ministry of Finance (MoF), Internal Security
	Meetings to lobby for procurement of test kits for testing alcohol levels on drivers.		0	0	0	0	NCD/MoF

Goal 1.1.3:							
Objective 1.1.3: To reduce risk posted by unhealthy diets, physical inactivity and obesity							
Strategies:1-10							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1. Promote Weekly Capital Hill Walk	Conduct open-ended walk for staff at Capital Hill and aerobics.	Maintain physical activity levels of above 87.3% in women and 93.6% in men as in 2016	0	0	0	0	NCD
2. Facilitate introduction of	Advocate for meetings with MOE to promote		0	0	0	0	NCD/HES

physical education (PE) in schools	Physical Education Programs in schools						
3. Maintain current high level of physical activity.	Increase ongoing public awareness (to be included in communication strategy).		0	0	0	0	NCD/HES
	Radio jingles to encourage healthy levels of physical activity (continuous)		0	0	0	0	NCD/HES, Ministry of Information
	Place articles in Newspaper to encourage healthy levels of physical activity (Continuous)		1.6	4.8	8	14.4	NCD/SHN/Department of Nutrition, Ministry of Information
4. Conduct meetings with stakeholders to advocate for implementation of national guidelines on diet, nutrition and physical activity (public & hospital).	Participate in development policy and strategy on physical activity with Ministry of Gender, HIV/AIDS & Nutrition & other Stakeholders.		0	0	0	0	NCD/SHN/Department of Nutrition, Ministry of Gender
	Support distribution and monitor implementation of hospital-based guidelines on Diet & Nutrition.		0	0	0	0	NCD/SHN/Department of Nutrition
1. Develop IEC materials on reducing unhealthy diets	Conduct an IEC Material Development workshop	Maintain physical activity levels of above 87.3% in women and 93.6% in men as in	21.3	0	0	21.3	NCD/HES, Ministry of Information

and encouraging healthy alternatives		2016					
	Design & development of IEC materials		4.3	0	0	4.3	NCD/HES, Ministry of Information,
	Pre-test IEC materials on reducing unhealthy diets and encouraging healthy alternatives		3.9	0	1	4.9	NCD/HES, Ministry of Information
	Finalize IEC Materials on reducing unhealthy diets and encouraging healthy alternatives		5.1	2	0	7.1	NCD/HES, Ministry of Information
2. Develop IEC materials on reducing unhealthy diets and encouraging healthy alternatives	Print IEC Materials (10000 flyers) on reducing unhealthy diets and encouraging healthy alternatives	10000 flyers	2.1	2.1	0	4.2	NCD/HES, Ministry of Information
	Print IEC Materials (10000 flyers) on reducing unhealthy diets and encouraging healthy alternatives		3.9	3.9	0	7.8	NCD/HES, Ministry of Information
	Print IEC Materials (8000 posters) on reducing unhealthy diets and encouraging healthy alternatives	8000 posters	1.1	1	0	2.1	NCD/HES, Ministry of Information
	Distribution of print materials on reducing unhealthy diets and encouraging healthy alternatives		2	0	0	2	NCD/HES Ministry of Information,
3. Conduct engagement meetings with manufacturers	Work with Ministry of Trade and Malawi Bureau of Standards to engage with		6.2	0	0	6.2	NCT/MOT

and stakeholders on safe cooking and preservation methods of food commodities.	manufacturers on safe cooking and preservation methods of food commodities.						
4. Conduct awareness campaigns on safe cooking and preservation methods of food commodities.	Conduct stakeholders' meetings on identification of safe means of food storage (30 people, 3 days, Lilongwe)		0	0	0	0	NCD/Ministry of Agriculture (MOA)
	Incorporate information and key messages on safe means of food storage in the communication materials (radio/Television jingles, programs etc.)		0	0	0	0	NCD/Ministry of Agriculture (MOA)
	Meeting with Ministry of Energy, Agriculture, gender and other stakeholders on channels of promoting safe cooking and preservation methods.		0	0	0	0	NCD/Ministry of Agriculture (MOA)
5. Provide technical support to inform promotion of farming and storage methods that reduce	Collect Baseline data on farming (use of chemical fertilizer, herbicides and pesticides) and storage practices for as a first step		0	0	0	0	NCD/Ministry of Agriculture (MOA)

cancer risks such as safe use of chemical fertilizers, herbicides and pesticides.							
6. Advocate for reinforcement of legislation to control and / or ban advertising of unhealthy foods and drinks.	Meetings /consultations with relevant stakeholders on banning adverts of unhealthy food and drinks		0	0	0	0	NCT/MOT, MOF, Ministry of Homeland Security,
7. Advocate for regulations with regard to disclosure of labelling food contents	Conduct a meeting with Malawi Bureau of Standards and other stakeholders on regulating labelling and disclosure of food contents for sale..		6.4	6	0	12.4	NCT/MOT, Ministry of Homeland Security
8. Advocate for Implementation of taxation on refined sugars / sugary drinks (sin tax) and unhealthy foods and drinks	Meeting with Malawi Revenue Authority, Ministry of Trade, Ministry of Finance and other key stakeholders.		2.9	2.9	0	5.8	NCT/MOT/MOF, Ministry of Homeland Security
9. Reduce frequency of overweight and	This is an outcome and not a target. No cost attached to this.	Reduce frequency of overweight and obesity by 40% from baseline	0	0	0	0	

obesity		prevalence of 23% in 2017					

Goal 1.1.4:							
Objective 1.1.4: To reduce exposure to known infectious agents and other agents associated with cancer risks							
Strategies:1-7							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1. Integrate HPV vaccine in the routine national Immunization	Advocate for adherence to HPV vaccine immunization schedule by EPI.	>90% coverage	0	0	0	0	EPI/HES/NCD/RHD
	Conduct community awareness campaigns in Churches. (No cost, EPI activity)		0	0	0	0	EPI/HES/NCD/RHD
	Conduct community awareness campaigns on radio		0	0	0	0	EPI/HES/NCD/RHD
	Conduct community awareness campaigns on TV		0	0	0	0	EPI/HES/NCD/RHD
	Provide health worker training sessions (school-based)		0	0	0	0	EPI/HES/NCD/RHD
2 Scale up coverage of hepatitis B vaccine.	Scale up Hepatitis B vaccine given to all children in under-five clinics	>90% coverage	0	0	0	0	EPI/HES/NCD/RHD
3 Scale up awareness of importance of	Conduct RED training (microplanning is included in	10000 flyers	0	0	0	0	EPI/HES/NCD/RHD

	full immunization coverage	the RED).						
4	Implementation of existing HIV/AIDS control strategies as stipulated by the Malawi National HIV prevention strategy to achieve 90-90-90.	Identify areas of Collaboration with HIV/AIDS program in achieving better control of new infections (No cost).	Achieve 90-90-90 UNAIDS target of HIV/AIDS management by 2020	0	0	0	0	NCD/Department of HIV/AIDS/RDH
		No costing is attached to HIV integration services targeting the youth since these already captured in the HIV strategy		0	0	0	0	NCD/Department of HIV/AIDS/RDH
		Monitor preventative measures (PREP).		0	0	0	0	NCD/Department of HIV/AIDS/RDH
		Increase availability of condom distribution in all hot areas		0	0	0	0	NCD/Department of HIV/AIDS/RDH
		Maintain provision of medical circumcision		0	0	0	0	NCD/Department of HIV/AIDS/RDH

Goal 2 : Achieve comprehensive and well-coordinated services for early detection of cancer							
Objective 2.1: To improve and strengthen cancer pathology and laboratory services							
Strategies:1- 11							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Design and Develop a common training plan for health workers to fill gaps in required skills and numbers in cancer diagnostics	Train 8 pathologists for 4 Central hospitals	Histopathologists trained and recruited.	57.3	171.9	229.2	458.4	NCD/Department of Planning and Policy Development (DPPD),Department of Human Resource and Management Development (DHRMD)
	Recruit 8 pathologists for 4 Central hospitals	8 Histopathologists trained and recruited.	12.6	50.3	125.5	188.4	NCD/DPPD/ DHRMD
	Expand pathology services to central hospitals.		0	0	0	0	NCD/DPPD/ DHRMD
	Train 8 Cytotechnologists		36.8	110.4	73.6	220.8	NCD/DPPD/ DHRMD
2 Train and retain pathologists, cytotechnicians and histotechnicians.	Train 8 Pathologists.	8 Histopathologists trained and recruited.	0	110.4	184	194.4	NCD/DPPD/ DHRMD
	Work with training institutions to develop curricula for training relevant staff		5	5	0	10	NCD/DPPD/ DHRMD
	Offer promotions		0	0	0	0	NCD/DHRMD
	Provide accommodations		0	0	0	0	NCD/DHRMD
	Top-up		0	0	0	0	NCD/DHRMD
3 Scale up training of healthcare providers on guidelines & algorithms for	Conduct Training workshops to familiarize health workers with guidelines and algorithms		8.3	8.3	0	16.6	NCD/Curative

	pathology cancer diagnosis and laboratory medicine.							
4	Establish pathology laboratories in remaining central hospitals (Mzuzu and Zomba).	Expand laboratories in existing infrastructure in Zomba and Mzuzu to include pathology and provide for storage and office space	2 pathology laboratories established.	25	0	25	50	NCD/Health Technical and Support Services/DPPD
		Provide equipment for 2 Path Labs.		0	100	0	100	NCD/Health Technical and Support Services/DPPD
5	Develop a comprehensive national pathology reference laboratory.	Rehabilitate available space at Community Health Services Unit (CHSU) to function as reference laboratory.	One at CHSU	0	75	0	75	NCD/Health Technical and Support Services/DPPD/Procurement unit
		Hire 2 Pathology Sub-Specialists.	Two sub-specialized Histopathologists trained and recruited.	15.1	28.8	26	79.9	NCD/Health Technical and Support Services/DPPD/DHRMD
		Train 2 pathology sub-specialists		0	54.4	0	54.4	NCD/Health Technical and Support Services/DPPD/DHRMD
		Provide all required lab equipment		0	50	50	100	NCD/Health Technical and Support Services/DPPD/DHRMD
6	Develop policy and guidelines for procurement and maintenance of equipment for	Conduct meeting to develop guidelines for maintenance of equipment		5.8	0	0	5.8	NCD/Health Technical and Support Services/DPPD/Procurement unit
		Implement Quality Assurance		0	0	0	0	NCD/Department of Quality Management (DQM)

	cancer diagnostics.	checks for all equipment.						
7	Conduct a needs assessment exercise for equipment in existing and yet to be established pathology laboratories.	Conduct annual needs assessment meetings.	1	0	3	5	8	NCD/HTSS/ Procurement
8	Develop pathology Equipment procurement plan.	Conduct a development meeting with Path Lab, Pathologists & NCD	Procurement plan developed.	5.8	0	0	5.8	NCD/HTSS/ Procurement
9	Develop policy and guidelines for procurement and maintenance of equipment for cancer diagnostics	Conduct a guideline development meeting with Path Lab, Pathologists & NCD		5.8	0	0	5.8	NCD/HTSS/ Procurement
10	Update CMT catalogue to include all basic pathology reagents, tumor markers, and consumables.	Conduct meetings with key stakeholders, (CMS, MOH, NCD, Pathologists, Institutions) to update CMST catalogue to		2..26	2	4.6	8.86	NCD/HTSS/Procurement/CMST

	include all basic pathology reagents, tumor markers and consumables.						
11 Develop cervical pap smear screening guidelines	Conduct meeting to develop guidelines.	Guidelines developed for pap smear	4.4	0	0	0	RHD/NCDS, DHIV/AIDS
12 Introduce cervical pap smear screening services in all central and district hospitals	Make Pap smears available in all central and district hospitals		0	0	0	0	RHD/NCDS, DHIV/AIDS
	Train 50 Cyto-technicians in Antenatal, Post Neonatal & Female Ward (pap smear techniques) 30 diploma holders for 2 years, 20-degree holders for one year (80 training years total, local).	50 Cyto-technicians trained.	20	60	80	160	RHD/NCDS, DHIV /AIDS/HTSS
	Train Nurses in Antenatal, Post Neonatal & Female Ward in oncology (2 years master's program)		0	138	230	368	RHD/NCDS, DHIV/AIDS/ Department of Nursing And Midwifery (DNM)
	Advocacy meetings with training institutions for introduction of		2.4	2	0	4.4	NCD/HTSS/ DHRMD

	Cytology Training course in Local training institutions (imbed in existing curriculum for Medical Laboratory Technicians?)						
13 Enroll the National Pathology Reference Laboratory in an accreditation program	Enroll the National Path Lab in an international accreditation program within 2 years after establishment.	National Reference Laboratory accredited	0	10	10	20	HTSS
14 Develop a national external quality assurance (EQA) program and guidelines for cancer pathology and laboratory medicine in collaboration with relevant regulatory bodies.	Implement EQA program in the pathology lab.		8	12	20	40	HTSS/DQM
	Orientation on existing standards by external assessors (Travel costs for external assessors - 5 people, 5 days, once a year).		3.25	9.75	0	13	HTSS/DQM
15 Develop service level agreements with private providers for cancer diagnostics services.	Consultation with college of Medicine and other providers on Development of SLA	SLA implemented	2.4	0	0	2.4	HTSS/DPPD

16 Forge partnerships with supra national cancer institutions to support advanced pathology diagnostic services.	Consultation with relevant partner organizations (e.g Telepathology at UNC Path Lab).		0	0	0	0	HTSS
	Explore institutions for collaboration on capacity building & research.		5	5	0	10	Research Department/NCD

Goal 2:							
Objective 2.2: To increase access to quality and equitable, screening and early diagnostic services to cancer							
Strategies:1- 10							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Develop and implement national guidelines for cancer screening, early diagnosis including a referral and follow up mechanism.	Hold multi-sectoral training workshop on developing guidelines for early screening, diagnosis and referral.	Histopathologists trained and recruited.	15.6	10	0	25.6	HTSS/RHD/NCD
	Hold multi-sectoral annual review meetings on early screening, diagnosis and referral (10 years for 50 people in Mponela).		5.2	7.8	13	26	HTSS/RHD/NCD
2 Engage medical insurance providers on importance of	Conduct meeting with Insurers (Institutional Med Scheme,		4.2	0	0	4.2	NCD/RHD

	including cancer screening and early diagnosis packages in their schemes.	Central Health Limited Medical Scheme, Liberty Health).						
3	Scale up primary health care services and affordable technologies for screening and early detection of various cancers. (DNA testing, thermal ablation, lab draws, training lay providers).	Train all lay providers at District Hospitals. (Ex. Cervical, Breast cancers).		0	73	50	123	HTSS/RHD
		Conduct Training workshops for Lab Staff.		123	300	69	492	HTSS/RHD
4	Develop and disseminate guidelines on how the affordable technologies can be used in the local setting.	Conduct a guideline development workshop		0	14.2	14.2	28.4	HTSS/RHD
		Distribute guidelines to districts through zones		0	0.65	0.65	1.3	HTSS/RHD
5	Increase cervical cancer screening and treatment sites in the country.	Open 50 new cervical cancer screening and treatment sites per year	50 screening and treatment sites are opened on yearly basis	0	0	0	0	HTSS/RHD/DHIV/AIDS
		Train health workers on cervical cancer screening and		0	0	0	0	HTSS/RHD/DHIV/AIDS

	treatment						
	Provide equipment and supplies for new cervical cancer screening site		0	0	0	0	HTSS/RHD/DHIV/AIDS
	Integrate cervical cancer Screening and treatment in ART sites (756 sites planned). 250 sites current cervical cancer screening and treatment.		12	10	0	22	HTSS/RHD/DHIV/AIDS
	Train ART providers on cervical cancer screening		0	0	0	0	HTSS/RHD/DHIV/AIDS
6 Introduce and scale upthermocoagulation services in cervical cancer screening and treatment sites.	Distribute 285 thermocoagulation machines to cervical cancer screening sites (With support from Global Fund)	285 thermocoagulation machines distributed	0	0	0	0	RHD/HIV UNIT/NCDs CLINICAL
	Conduct training on use of thermocoagulation (supported by Global Fund).		220	0	0	220	RHD/DHIV/AIDS/NCD
	Procure 471 thermocoagulation machines for cervical cancer screening sites (additional 50 sites per year).		190.5	381	0	571	RHD/DHIV/AIDS/NCD

	T Conduct training of health workers on use of thermocoagulation machines (to train 2500)	Train 2500 health workers	200	200	0	400	RHD/DHIV/AIDS/NCD
7 Scale up LEEP services in cervical cancer screening and treatment sites (Secondary level facilities).	Train health workers (Diploma Nurses, Clinical Officers/Technicians) in provision of LEEP services (two weeks training) - Minimum of two per facility - Total of 120 to be trained.	120 health workers to be trained.	20	21.2	0	41.2	RHD/DHIV/AIDS/NCD
	Distribute LEEP equipment to all district hospitals (Already procured)		1	1.5	0	2.5	RHD/DHIV/AIDS/NCD
	Procure and distribute additional LEEP machines for Rural/Community and CHAM hospitals (Assume 50 units)		106	212	0	318	RHD/DHIV/AIDS/NCD

Goal 3: IMPROVE QUALITY OF LIFE FOR PATIENTS UNDERGOING CANCER TREATMENT							
Objective3.1: To improve range and quality of treatment to individuals with various forms of cancer							
Strategies:1- 13							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Open Malawi National Cancer Treatment Center (NCTC).	Construct National Cancer Treatment Center with provision for mortuary services, Lab facilities, Operating theatres, ICU, HDU and Isolation facilities	1	6000	0	0	6000	DPPD/NCD/ HTSS/Department of Buildings
2 Construct Nuclear Medicine block and procure PET and cyclotron. Construct staff house houses and a parking area under the flats	Construct Nuclear Medicine block to house PET and Cyclotron	1	0	50	50	100	DPPD/NCD/HTSS/DOB/Procurement Unit
	Procure equipment for National Cancer Treatment Center		6000	0	0	6000	DPPD/NCD/HTSS/DOB/Procurement Unit
	Construct 1 bock for staff housing with 40 units		25	25	25	75	DPPD/NCD/HTSS/Procurement Unit/Department of Administration/DOB
	Construct 1 block		25	25	10	60	DPPD/NCD/HTSS/Procurement

	for parking						Unit/Department of Administration (DOA)
	Construct 1 block to house guardians and patients (40 units)		25.7	20	5.7	51.4	DPPD/DOB/HTSS/DOA
	Train Health workers for National Cancer Treatment Center		421.8	0	0	421.8	DPPD/DHRMD
	Provide operational Budget for National Cancer Treatment Center	Yearly operational budgets developed	6000	9000	15000	30000	DPPD/DHRMD
3 Increase number of facilities providing basic cancer care services to ensure timely access to treatment.	Conduct assessment in all 29 Districts to determine capacity for providing a) tissue biopsy services, b) Ultrasound Scanning & X-ray services; c) FNA's (Fine Needle Aspiration) d) Basic lab services including FBC and PBF e) HDU f) Isolation Wards g) patient follow up after	All district hospitals to provide basic cancer care services.	54.6	0	0	54.6	HTSS/Department of Clinical Services (DCS)/Procurement Unit

	completing chemotherapy.						
	Provide missing equipment and supplies in hospitals which do not have capacity to provide a)tissue biopsy services, b) Ultrasound Scanning & X-ray services; c) FNA's (Fine Needle Aspiration) d)Basic lab services including FBC and PBF e) HDU f) Isolation Wards g) patient follow up after completing chemotherapy.		0	22.5	22.5	45	HTSS/Department of Clinical Services (DCS)/Procurement Unit
	Provide equipment to 4 tertiary level hospitals to provide all services provided in District Hospitals plus chemotherapy services and surgical cancer		0	300	100	100	HTSS/Department of Clinical Services (DCS)/Procurement Unit

		interventions.						
4	Expand cancer specialist outreach programs in medical oncology, chemotherapy in facilities.	Conduct quarterly specialist visits for oncology services in secondary facilities.	Quarterly outreach reports submitted	109.2	163.8	273	546	HTSS/Department of Clinical Services (DCS)
5	Introduce an extension type of cancer center in the northern and southern Malawi.	Train Health workers at National Cancer Treatment Center		10	30	50	90	DCS/DPPD/HTSS/DNM
		Construct satellite sites in Mzuzu & Zomba.		0	1400	1600	3000	DCS/DPPD/DOB/AERA/Procurement Unit
		Equipping of satellite sites in Mzuzu & Zomba		0	1400	1600	3000	DCS/DPPD/DOB/AERA/Procurement Unit
6	Scale up availability of full range of immunohistochemistry for breast cancer and lymphoma.	Provide consumables to all 4 central hospitals for provision of flow cytometry and tumor marker services including AFP, PSA, CRP, CA125, CEA, BCR (Costs to be absorbed in operational budget)		0	0	0	0	DCS/DPPD/HTSS
		Orient all lab staff (approx. 32 staff, for one		12.8	217.6	420.24	665.04	DCS/DPPD/HTSS

	week) on provision of tumor marker services						

7 Open Malawi National Cancer Treatment Center (NCTC).	Construct National Cancer Treatment Center with provision for mortuary services, Lab facilities, Operating theatres, ICU, HDU and Isolation facilities	1	6000	0	0	6000	DPPD/NCD/ HTSS/Department Of Buildings
8 Construct Nuclear Medicine block and procure PET and cyclotron. Construct staff house houses and a parking area under the flats	Construct Nuclear Medicine block to house PET and Cyclotron	1	0	50	50	100	DPPD/NCD/HTSS/DOB/Procurement Unit
	Procure equipment for National Cancer Treatment Center		6000	0	0	6000	DPPD/NCD/HTSS/DOB/Procurement Unit
	Construct 1 bock for staff housing with 40 units		25	25	25	75	DPPD/NCD/HTSS/Procurement Unit/Department of Administration/DOB
	Construct 1 block for parking		25	25	10	60	DPPD/NCD/HTSS/Procurement Unit/Department of Administration(DOA)

	Construct 1 block to house guardians and patients (40 units)		25.7	20	5.7	51.4	DPPD/DOB/HTSS/DOA
	Train Health workers for National Cancer Treatment Center		421.8	0	0	421.8	DPPD/DHRMD
	Provide operational Budget for National Cancer Treatment Center	Yearly operational budgets developed	6000	9000	15000	30000	DPPD/DHRMD
9 Increase number of facilities providing basic cancer care services to ensure timely access to treatment.	Conduct assessment in all 29 Districts to determine capacity for providing a) tissue biopsy services, b) Ultrasound Scanning & X-ray services; c) FNA's (Fine Needle Aspiration) d) Basic lab services including FBC and PBF e) HDU f) Isolation Wards g) patient follow up after completing chemotherapy.	All district hospitals to provide basic cancer care services.	54.6	0	0	54.6	HTSS/Department of Clinical Services (DCS)/Procurement Unit
	Provide missing		0	22.5	22.5	45	HTSS/Department of Clinical Services

	equipment and supplies in hospitals which do not have capacity to provide a) tissue biopsy services, b) Ultrasound Scanning & X-ray services; c) FNA's (Fine Needle Aspiration) d)Basic lab services including FBC and PBF e) HDU f) Isolation Wards g) patient follow up after completing chemotherapy.						(DCS)/Procurement Unit
	Provide equipment to 4 tertiary level hospitals to provide all services provided in District Hospitals plus chemotherapy services and surgical cancer interventions.		0	300	100	100	HTSS/Department of Clinical Services (DCS)/Procurement Unit
10 Expand cancer specialist outreach programs in medical oncology,	Conduct quarterly specialist visits for oncology services in	Quarterly outreach reports submitted	109.2	163.8	273	546	HTSS/Department of Clinical Services (DCS)

	chemotherapy in facilities.	secondary facilities.					
11	Introduce an extension type of cancer center in the northern and southern Malawi.	Train Health workers at National Cancer Treatment Center		10	30	50	90	DCS/DPPD/HTSS/DNM
		Construct satellite sites in Mzuzu & Zomba.		0	1400	1600	3000	DCS/DPPD/DOB/AERA/Procurement Unit
		Equipping of satellite sites in Mzuzu & Zomba		0	1400	1600	3000	DCS/DPPD/DOB/AERA/Procurement Unit
12	Scale up availability of full range of immunohistochemistry for breast cancer and lymphoma.	Provide consumables to all 4 central hospitals for provision of flow cytometry and tumor marker services including AFP, PSA, CRP, CA125, CEA, BCR (Costs to be absorbed in operational budget)		0	0	0	0	DCS/DPPD/HTSS
		Orient all lab staff (approx. 32 staff, for one week) on provision of tumor marker services		12.8	217.6	420.24	665.04	DCS/DPPD/HTSS

Goal 3:							
Objective 3.2; To improve the standard of treatment for individuals with cancer							
Strategies:1- 6							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Introduce and conduct complicated cancer surgeries in Malawi.	Train at least 3 surgeons per tertiary hospital to build capacity in conducting a range of cancer surgeries (Breast, Cardiothoracic, Gastrointestinal, Gynecology, Orthopedics, Neurosurgery, Urology and Pediatric Surgery)	3 surgeons trained and recruited per central hospital	0	600	200	800	DCS
	Provide additional HDU/ICU equipment to improve post-operative care services (K200m per HDU)		0	600	200	800	DCS
2 Develop and disseminate national treatment guidelines for various types of cancer (breast, cervical cancers, Kaposis' Sarcoma etc).	Organize 3 meetings for relevant specialists (20 people for 5 days each, in Lilongwe) to draft national treatment guidelines for various types of cancers.	Cancer Treatment guidelines developed.	21.3	0	0	21.3	DCS/DPPD
	Present the draft		0	0	0	0	DCS/DPPD

	national treatment guidelines to stakeholders						
	Print national cancer treatment guidelines (A5, 40 pages, 2000 copies		0	4	0	4	DCS/DPPD
	Distribute national Cancer treatment guidelines to all health facilities including primary health care and health care worker training institutions.		0	2	0	2	DCS/DPPD
3 Develop referral policy specific for cancer.	Meeting to develop national referral policy specific for cancer (including proposals for reliable mechanisms for transporting tissue specimen and results between district hospitals and pathology labs	Referral pathway developed.	0	0	0	0	DCS/HTSS/DPPD
4 Work with relevant government offices to address issues on complimentary medicine.	Meeting to develop policy on complementary medicine	Complimentary Medicine Policy developed	2.1	0	0	2.1	DCS/HTSS/DPPD
	Convene a drafting team meeting for the national policy on complementary medicine practice (40 people, 2		5.2	0	0	5.2	DCS/HTSS/DPPD/MTH UO

	days in Lilongwe)						
	Conduct Regional consultative meetings on the draft policy (40 people, 2 days in Mzuzu, Lilongwe and Blantyre)		15.4	0	0	15.4	DCS/HTSS/DPPD/MTH UO
	Finalize policy and submit to MOH&P Senior Management		3.90	0	0	3.90	DCS/HTSS/DPPD/MTH UO
	National Dissemination meeting on the national policy on complementary medicine practice (50 people, 1 day in Lilongwe)		3.2	2	0	5.2	DCS/HTSS/DPPD/MTH UO

Goal 3.							
Objective 3.3 to improve capacity for cancer treatment by providing infrastructure, equipment and consumables							
Strategies:1- 9							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Establish the NCTC will full range of functioning radiotherapy, chemotherapy services	Introduce quarterly Specialist visits whose aim would be to provide diagnostic and follow up services for patients; and educational trainings for healthcare workers in secondary facilities.	1	364	546	910	1820	DCS/DNM/HTSS
	Provide additional	1	0	50	50	100	DCS/DNM/HTSS

	Construct Nuclear Medicine block						
2 Establish accommodation facilities for both patients receiving cancer treatment services and their care givers.	Construct 1 block of hostels to house 40 cancer patients/guardians per tertiary facility.	1 block constructed.	0	100	180	280	DCS/DNM/HTSS
	Procure supplies for occupational therapy for long term cancer patients and their guardians (e.g. piece work, nutritional classes, sewing/tailoring, sporting activities.		12	36	60	108	DCS/DNM/HTSS
	Construct block of flats and parking area to accommodate 50 staff members.		0	300	200	500	DCS/DOB/DPPD/DOA
	Provide transportation services e.g Ambulance or public transport for patients (use of concession tickets)		0	0	0	0	DCS/DOB/DPPD/DOA
3 Assess and implement viable solutions for addressing current weak areas in supply chain	Conduct Quarterly facility based supply monitoring visits (should ideally include reps from PMPB, Medical council,		301.6	452.4	754	1508	DCS/HTSS/DNMS

	management for high quality, safe and efficacious medical products, blood products and technologies for screening, diagnosis, treatment and care of cancer patients.	MBTS and Nurses Council). Need space, security of drugs, quality assurance, keep stock that will last for not less than 3 months						
		Conduct an assessment of storage for cancer drugs and consumables in facilities providing cancer services.		0	0	0	0	DCS/HTSS/DNMS
		Conduct annual review meetings on the supply chain management for high quality, safe and efficacious medical products, blood products and technologies for screening, diagnosis, treatment and care of cancer patients for at least 50 people, 2 days in Lilongwe.		5.2	15.6	26	46.8	DCS/HTSS/DNMS
4	Develop Cancer patient/community education and counselling	Conduct a meeting to adapt internationally available guidelines on patient		7.1	0	0	7.1	DCS/DNMS

	guidelines.	education and counselling						
		Hire a consultant to translate the draft patient education and counselling guideline into local language		0	0.2	0	0.2	DCS/DNMS
		Pilot the guidelines in conjunction with Health education unit.		0	8	0	8	DCS/DNMS
5	Develop counseling materials to address myths and misconceptions about cancer for different targeted populations.	Conduct a review of published materials on local myths and misconceptions pertaining to cancer.		0	0	0	0	DCS/DNMS
		Conduct a review of published materials on local myths and misconceptions pertaining to cancer.		0	0	0	0	DCS/DNMS
		Incorporate findings in the development of communication messages on cancer prevention, treatment and care.		0	0	0	0	DCS/DNMS
6	Create community awareness on the availability of treatment and follow-up services.	Conduct community awareness activities to address myths and misconceptions.		0	0	0	0	DCS/DNMS
7	Train and orient health workers in private and CHAM	Conduct Biannual training sessions (attachments) at		10	30	50	90	DCS/DNMS

facilities on basic treatment and care for cancer.	Cancer Center, Central Hospitals, CHAM & private hospitals for clinicians, nurses and support staff. 60 people trained in a year.						

Goal 3.							
Objective 3.4: To improve human resource for cancer treatment services							
Strategies:1- 4							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Introduce postgraduate training programs in local institutions for cancer surgeries, radiotherapy clinical/radiation oncology, medical physics, oncology nursing, oncology pharmacy, pathology, histology, cytology, palliative nursing, radiation safety, surgical oncology, gynecology nursing, Pediatric	Conduct stakeholders' meetings with training institutions on introduction of postgraduate training.	Training program developed and implemented	5.4	5	0	10.4	DCS/HTSS/DNMS /DHRMD

	oncology, pediatric nursing, radiographers and biomedical engineering.							
2	Train and retain health workers at NCTC.	Organize team meetings to develop course content and modalities for delivery of relevant short courses for health workers providing cancer services (4 meetings, 15 people of 5 Day duration, in Lilongwe)	Maintain above 80% of those trained to be retained.	10.3	11	0	21.3	DCS/HTSS/DNMS /DHRMD
		Establish committee to work on incentive package (No cost item)		0	0	0	0	DCS/HTSS/DNMS /DHRMD
		Hold meetings of incentive committee to define package of incentives (20 People, 2 days, 3 meeting)		7.1	0	0	7.1	DCS/HTSS/DNMS /DHRMD
3	In collaboration with regulatory bodies, develop career paths in cancer services to allow appropriate	Organize core team meetings of 20 people to look at the career path in cancer services.	Maintain above 80% of those trained to be retained	0	0	0	0	DCS/HTSS/DNMS /DHRMD

deployment based on skills and competencies and provide incentives to return skilled health workers to provide service							

Goal 3.							
Objective 3.5 To scale up treatment and follow-up care for childhood cancers							
Strategies:1- 3							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Review and reorganize existing treatment guidelines/ programs to incorporate pediatric cancer treatment and supportive care.	Conduct meetings to review national treatment protocols to incorporate pediatric cancers (3 within the first year, 2 meetings second year for 20 people, for 5 days to be held in Lilongwe).		7.2	7	0	14.2	DCS/HTSS/DNMS /DHRMD
	Conduct a national level dissemination meeting of the treatment protocols.		3.2	2	0	5.2	DCS/HTSS/DNMS /DHRMD
2 Incorporate pediatric chemotherapy and adjuvant formulations in the Malawi Essential Medicine List (EML).	Conduct interface meeting with CMST, HTSS and users on incorporation of Pediatric formulation in EML (No cost meeting in Lilongwe)		0	0	0	0	DCS/HTSS/DNMS /DHRMD

3 Finalize and adopt evidence-based treatment protocols for common childhood cancers in Malawi.	To be worked on in conjunction with guidelines in 1 meeting. No cost because we have already costed the guidelines.		0	0	0	0	DCS/HTSS/DNMS /DHRMD

Goal 4: Improve quality of life to individuals with progressive and or life-threatening cancer							
Objective 4.1: To scale up palliative care to improve quality of life to individuals with life threatening or terminal cancer disease and their families through support and rehabilitation							
Strategies:1- 6							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Develop and implement national palliative care standards; end of life care and survivorship.	Establish a cancer palliative care working group		0	0	0	0	Palliative Care Unit (DNMS)/NCD (DCS)
	Conduct meetings to adapt Malawi cancer palliative care guidelines (3 meetings, 10 people for 3 days each).		4.7	2.4	0	7.1	Palliative Care Unit (DNMS)/NCD (DCS)
	Print palliative care guidelines		0	4	0	4	Palliative Care Unit (DNMS)/NCD (DCS)
	Distribute palliative care guidelines to districts		0	2	0	2	Palliative Care Unit (DNMS)/NCD (DCS)
	Organise a team meeting toreview national cancer palliative care policy (20		1.9	1	0	2.9	Palliative Care Unit (DNMS)/NCD (DCS)

	people, 2 days in Lilongwe).						
2 Establish home care as the major mode of palliative care in>90% of patients	Procure vehicle to be used for district supervision of cancer palliative Care.		0	20	20	40	Palliative Care Unit (DNMS)/NCD (DCS)
	Compile baseline data on magnitude/prevalence of cancer cases in Malawi from health facility records		0	25	25	50	Palliative Care Unit (DNMS)/NCD (DCS)
	Roll out cancer palliative care in district and community Hospitals then Health Centres (Staff training)		0	0	0	0	Palliative Care Unit (DNMS)/NCD (DCS
	Conduct refresher training in cancer palliative care service for all 2500 palliative care providers.		147.6	295.2	0	442.8	Palliative Care Unit (DNMS)/NCD (DCS
	Train 100 new cancer palliative care providers.		21.3	63.9	21.3	106.5	Palliative Care Unit (DNMS)/NCD (DCS
	Conduct Annual review meetings on cancer palliative care services for cancer palliative care providers, volunteers and other district palliative care stake holders (1 regional meeting each in Mzuzu, Lilongwe and Blantye, 80 participants		16.7	50.1	83.5	150.3	Palliative Care Unit (DNMS)/NCD (DCS

	each, 2 days) .						
	Conduct national supervisions on cancer palliative care		37.7	113.1	188.5	339.3	Palliative Care Unit (DNMS)/NCD (DCS
	Conduct community sensitization on home care mode of palliative care		58	147	290	522	Palliative Care Unit (DNMS)/NCD (DCS
	Training of 100 volunteers in cancer palliative care. (5-day workshop each year, regionally based).		0	15	10	25	Palliative Care Unit (DNMS)/NCD (DCS
3 Strengthen district social services for comprehensive care/support	Lobby for inclusion of cancer patients on to social safety net program		0	0	0	0	Palliative Care Unit (DNMS)/NCD (DCS)
4 Increase drug availability of opioid to maximum of 30 days opioid supplies	Meeting with policy makers to lobby for utilization of opioids at center level (No cost meeting).		0	0	0	0	Palliative Care Unit (DNMS)/NCD (DCS)
	Train nurses and clinicians at health center on prescription of opioids		64	92	64	320	Palliative Care Unit (DNMS)/NCD (DCS)
5 Scale up availability and use of oral morphine with a 15-dayrefill in all health facilities	Consultation with CMST and lobby for availability of oral morphine at health center level (No cost).		0	0	0	0	Palliative Care Unit (DNMS)/NCD (DCS)
	Conduct meeting to update druglist at health		2.9	0	0	2.9	Palliative Care Unit (DNMS)/NCD (DCS)

	centre level toinclude morphine.						
6 Provide Human resources to provide physiotherapy services at district and tertiary levels	Recruit and deploy 38 physiotherapists to all district hospitals (at least 1 per district), and the Cancer Center		31.4	276.2	596	903.6	Palliative Care Unit (DNMS)/NCD (DCS), Medical Rehabilitation Unit
	Train 76 rehabilitation technicians for three years (local training)		51	153	252	456	Palliative Care Unit (DNMS)/NCD (DCS), Medical Rehabilitation Unit
	Train 38 psychotherapists for three years (ongoing training by Malawi Government)		0	0	0	0	Palliative Care Unit (DNMS)/NCD (DCS), Medical Rehabilitation Unit
	Recruit 38 psychotherapists (Grade I)		31.4	276.2	596	903.6	Palliative Care Unit (DNMS)/NCD (DCS), Medical Rehabilitation Unit
	-38 occupation therapists trained abroad (South Africa presumably) in next ten years		110.4	552.2	1192	1807	Palliative Care Unit (DNMS)/NCD (DCS), Medical Rehabilitation Unit
	Recruit 76 rehabilitation technicians		62.8	552.2	1192	1048.8	Palliative Care Unit (DNMS)/NCD (DCS), Medical Rehabilitation Unit
7 Conduct public education campaign on issues relating to discrimination and other potential barriers to returning to work for cancer survivors	Share information on return to work policy; discrimination on cancer survivors through churches, radios and TV programs. Using local government structures (committees).		1	1	0.6	2.6	Palliative Care Unit (DNMS)/NCD (DCS), Medical Rehabilitation Unit
Develop guidelines for	Conduct meetings to		7.2	7	0	14.2	Palliative Care Unit

the support and rehabilitation of cancer patients and families (emotional, nutritional, spiritual, psychosocial, etc.)	develop policy and guidelines for rehabilitation of cancer patients (3 sessions of 5-day meetings at Mponela for twenty people).						(DNMS)/NCD (DCS), Medical Rehabilitation Unit

Goal 4.							
Objective 4.2: To provide supportive and rehabilitative services to cancer patients and those affected							
Strategies:1-2							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Provide services for rehabilitation, and survivorship for all cancer patients	Link with social welfare department for social support; to be considered on social cash transfer schemes and other social services as appropriate.		0	60	100	160	Palliative Care Unit (DNMS)/NCD (DCS), Medical Rehabilitation Unit

Goal 5. Improve Governance and Financing of Cancer services							
Objective 5.1: Strengthen management and governance of the national cancer treatment center (NCTC)							
Strategies:1-6							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	

4	Develop Operational Budget for the Cancer Center.	Convene a drafting team meeting for the national policy on complementary medicine practice (40 people, 2 days in Lilongwe)		0	0	0	0	DPPD/DCS/HTSS /DNMS
		Conduct Regional consultative meetings on the draft policy (40 people, 2 days in Mzuzu, Lilongwe and Blantyre)		0	0	0	0	DPPD/DCS/HTSS /DNMS
2	Establish Cancer Control Advisory Committee.	Finalize policy and submit to MOH&P Senior Management		0	0	0	0	DCS/HTSS/DNMS/DAO/DHRMD
3	Conduct training needs assessment. Develop a training plan (i.e., short term & long-term training). Develop a recruitment plan.	Conduct training needs assessment (Need 6 Oncologists, 2 Epidemiologists, 4 Biomedical Engineers, 2 Pharmacists, 3 Medical Physicists, 1 Hematologist, 4 Medical Oncologists, 2 Gynecologists, 3 Surgical Oncologists, 2 Pediatric Oncologists, 18 RTTS, 2 Radiologists, 2 Nuclear Medicine Specialist, 2 Nuclear Medicine Technologist, 4		5	3	2	10	DCS/HTSS/DNMS/DAO/DHRMD

	Oncology Nurses & general Lab Services (Anatomical Path, Histology, Cytology, Hematology, biochemistry). (Minimum 148 training years in the region and 40 training years local)						
	Develop a training plan and implement it (i.e., short term & long-term training).		0	0	0	0	DCS/HTSS/DNMS/DAO/DHRMD
	Develop a recruitment plan.		0	0	0	0	DCS/HTSS/DNMS/DAO/DHRMD
	Conduct Biannual training sessions (attachment) at Cancer Center, Central Hospitals, CHAM & private hospitals for clinicians, nurses and support staff. 60 people trained in a year.		10	10	16.8	36.8	DCS/HTSS/DNMS/DAO/DHRMD
	Organize team meetings to develop course content and modalities for delivery of relevant short courses for health workers providing cancer services		5	2	10	10	DCS/HTSS/DNMS/DAO/DHRMD
	Organize core team meetings to look at the career path in cancer		8	6	6	20	DCS/HTSS/DNMS/DAO/DHRMD

	services.						
	Travel costs from Lilongwe to Blantyre for 5 Meetings with College of Medicine for 10 people, (2 nights each) to discuss introduction of training programs in cancer related areas. (Beyond the meetings, what other action can the Ministry take on this?)		9.6	5	4	18.6	DCS/HTSS/DNMS/DAO/DHRMD

Goal 5							
Objective 5.2: To strengthen public private partnerships (PPPs)							
Strategies:1-3							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Develop MOU's with other cancer sites.	Provide short-term training to all cadres.		10	30	50	90	DCS/HTSS/DNMS/DAO/DHRMD
	Conduct exchange visits.		10	30	50	90	DCS/HTSS/DNMS/DAO/DHRMD
	Provide ICT equipment for telemedicine.		7.5	4	3.5	15	DCS/HTSS/DNMS/DAO/DHRMD

Goal 5							
Objective 5.3: Establish a strategic structure and mechanism to support cancer advocacy, communication and social marketing							
Strategies:1-5							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Construction of staff houses and parking area under the flat. Waiting homes for guardians & patients.							

Goal 5							
Objective 5.4: Improve coordination structures at all levels							
Strategies:1-4							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Conduct a baseline assessment of existing coordination structures	Compile information on existing coordination structures for cancer services (desk work, no cost)		0	0	0	0	DCS/HTSS/DNMS/DAO /DHRMD
2 Develop a coordination framework for cancer services at all levels	Bi-annual meetings to evaluate partnership forums. 30 Participants in Salima		4.12	4.12	12.36	20.6	DCS/HTSS/DNMS/DAO /DHRMD
	Conduct regular		5.3	10.3	5	20.6	DCS/HTSS/DNMS/DAO

	Management meetings.						/DHRMD
3 Establish multi-sectoral Technical Working Groups (TWGs) including Malawi Tobacco Control Commission on cancer intervention	Conduct a Multi-Sectoral Sub- TWG Meeting.		1	1.56	0	2.56	DCS/HTSS/DNMS/DAO /DHRMD
	Conduct a stakeholder meeting		5.3	5.33	2.3	12.9	DCS/HTSS/DNMS/DAO /DHRMD

Goal 5							
Objectives: To strengthen National Cancer Control Program							
Strategies:1-5							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Appoint national cancer control program manager.	Appoint national cancer control program manager.	1	0	0	0	0	DCS/HTSS/DNMS/DAO /DHRMD
2 Develop a staff establishment for the national cancer control program	Deploy staff needed for establishment of NCCP		2	2	0.7	4.7	DCS/HTSS/DNMS/DAO /DHRMD
	Provide 4 vehicles for National Cancer control program.		70	50	40	160	DCS/HTSS/DNMS/DAO /DHRMD
3 Establish partnership forums at all levels	Conduct meetings to evaluate partnership forums.		2	2	0.2	4.2	DCS/HTSS/DNMS/DAO /DHRMD
4 Appoint district cancer control focal	Provide computer equipment (laptop &		10.2	10	9	29.2	DCS/HTSS/DNMS/DAO /DHRMD

	person.	printer) for each District					
5	Establishment of cancer focal persons and multi-sectoral committees at district council level	Conduct a meeting for district cancer focal persons.		9.4	15.6	26	51	DCS/HTSS/DNMS/DAO /DHRMD

Goal 5							
Objective 5.5: To improve access to affordable essential medicines and technologies for cancer services and establish sustainable financing for cancer prevention and control							
Strategies:1-3							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Engage Ministry of Finance Committee to allocate budget line for cancer prevention, screening and treatment	Conduct meetings with MOF on creation of budget line.	Yearly budget line developed and funded	0	0	0	0	DCS/HTSS/DNMS/DAO /DHRMD
	Conduct advocacy meeting for increase in budget for cancer services.		0	0	0	0	DCS/HTSS/DNMS/DAO /DHRMD
2 Establish a service package that integrates cancer with other services	Conduct meetings on integration of cancer and other relevant services.		2	0.6	0	2.6	DCS/HTSS/DNMS/DAO /DHRMD
	Keep at least a 3-month stock on hand at all times.		0	0	0	0	DCS/HTSS/DNMS/DAO /DHRMD

	Implement Quality Control Measures.		2	0.6	0	2.6	DCS/HTSS/DNMS/DAO /DHRMD
	Conduct an Advocacy meeting to use generic drugs on EML.		0	0	0	0	DCS/HTSS/DNMS/DAO /DHRMD
3 Procure generic drugs for cancer treatment.	Conduct an Advocacy meeting to use generic drugs on EML.		0	0	0	0	DCS/HTSS/DNMS/DAO /DHRMD
4 Establish private partnership framework for cancer control. Identify stakeholders for PPP framework.	Conduct meetings for PPP Stakeholders		7.7	20	26.2	53.9	DCS/HTSS/DNMS/DAO /DHRMD
5 Conduct meeting involving different multi-disciplinary teams of central hospitals	Revamp multidisciplinary teams' meetings at KCH & QECH.		0	0	0	0	DCS/HTSS/DNMS/DAO /DHRMD
	Increase multidisciplinary teams to 4 after the first 3 years (to include Mzuzu and Zomba).		0	0	0	0	DCS/HTSS/DNMS/DAO /DHRMD

Goal 6							
Objective 6.1: To implement effective coordination of cancer research							
Strategies:1-5							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Develop a proposal for funding cancer activities.	Conduct a meeting to develop proposal.	Yearly budget line developed and funded	0	0	0	0	NCD
2 Develop budget line for cancer research	Conduct meetings on integration of cancer and other relevant services. Consultation with Ministry of Finance to include budget line for cancer control, treatment and care.		0	0	0	0	NCD/Palliative Care Unit/RHD
3 Establish cancer symposiums	Participate in Research dissemination conferences to present findings on cancer research.		2.4	7.2	12	21.6	NCD/Palliative Care Unit/RHD
	Conduct review meetings to identify cancer indicators.		6	6.6	6	18.6	NCD/Palliative Care Unit/RHD
4 Conduct feasibility studies on alternative (complementary/herbal) medicines for cancer	Subscribe to journals	1	8	24	40	70	DCS/HTSS/DNMS/DAO /DHRMD
	Advocate for at least 1 study per year at College of Medicine and other training and research institutions.		0	0	0	0	NCD/Palliative Care Unit/RHD

6 Develop sub-technical working group on cancer	Conduct Sub-TWG meetings.	1	4	2	2	0	NCD/Palliative Care Unit/RHD

Goal 6							
Objective 6.2: To improve monitoring and evaluation of cancer program							
Strategies:1-6							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
1 Develop detailed M & E tool	Discussion with CMED on development of tool.	M & E tool developed	0	0	0	0	CMED/NCD
	Conduct meetings with relevant stakeholders to define indicators for cancer and palliative care.		2.2	2	0	4.2	CMED/NCD
	Procurement of 75 computers & 40 tablets (One per district and the rest for central hospitals)		0	50	25	75	CMED/NCD
	Conduct training for data clerks, Nurses & Clinicians on electronic data recording.		7.4	8	7.4	23.1	CMED/NCD
	Make cancer a notifiable disease		0	0	0	0	CMED/NCD
	Develop and endorse cancer notification form		1	1.9	0	2.9	CMED/NCD

	Disseminate cancer notification form through zonal meetings.		2.5	4	0	6.5	CMED/NCD
	Design electronic database of pathology reports for efficient feedback to clinicians		0	0	0	0	CMED/NCD
	Develop a uniform reporting template for all pathology reports (private and public)		0	0	0	0	CMED/NCD
	Integrate pathology cancer diagnosis notification form into District Health Information System		1	1.9	0	2.9	CMED/NCD

Goal 6							
Objective 6.3: To create a network of cancer registry and surveillance with well-defined roles and responsibilities.							
Strategies:1-8							
Intervention	**Sub-intervention**	**Target**	**Time Frame**			**Cost**	**Responsible Person**
			Year 1 - 2	**Year 3 - 5**	**Year 5 - 10**	**Million Kwacha**	
To create a network of cancer registry and surveillance with well-defined roles and responsibilities	Create staff establishment for all cancer registries.	Central Cancer Registry Repository established	0	0	0	0	CMED/NCD/DHRMD
Recruitment of staff	Recruitment of staff		0	0	0	0	CMED/NCD/DHRMD

Identify and allocate funds for operationalization of the four registries	Develop operational budget for cancer registries and present to Treasury for funding		0	0	0	0	CMED/NCD/DHRMD
Establish Lilongwe population-based cancer registry	Recruit and deploy the following 11 staff members: 1 Registrar, 2 Specialists (1 Pathologist & 1 Oncologist), 8 data clerks		25	75	125	225	CMED/NCD/DHRMD
	Orient 40 cancer registry staff on their roles		3	2	2.7	7.7	CMED/NCD/DHRMD
Support staff to attend international courses on cancer registration and surveillance	Support staff training abroad.		10	30	50	90	CMED/NCD/DHRMD
Appoint District Cancer Focal persons on Cancer Registration & Surveillance.	Conduct orientation meeting with all district focal persons.	District Cancer Focal Persons appointed	7.7	5	2.7	15.4	CMED/NCD/DHRMD
Transition to electronic medical recording system for cancer patients.	Hire a consultant to develop a computer network for exchange of data among sites providing cancer services and cancer registries		10.5	10	6.2	26.7	CMED/NCD/DHRMD

Develop Training Curriculum for Cancer Registry Staff.	Procure and provide required electronic equipment to operationalize the data networking system		21	10	5	36	CMED/NCD/DHRMD
GRAND TOTAL						**88,005,86**	

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ANNEX

CANCER CONTROL INFRASTRUCTURE AND RESOURCES IN MALAWI, 2019

National Agency or technical unit for tobacco control in the Ministry of Health & Population	Nil
Ratification of WHO Framework Convention on Tobacco Control (FCTC)	No
Conventional x-rays	Tertiary and secondary hospitals
Mammography	No functioning unit in public sector
Ultrasonography	Tertiary and secondary hospitals
CT scan	No functioning unit in public sector; 2 in private sector
MRI scan/PET scan	Nil
Radiologists	3 public sector
Nuclear Medicine services	Nil
Pathology laboratories	3
Pathologists	3 in public sector; 3 in private sector
Immunohistochemistry	1 at the UNC pathology laboratory at Kamuzu Central Hospital (KCH), Lilongwe
Tumor markers	2 services, one at KCH and another service at Queen Elizabeth Central Hospital, Blantyre
Endoscopy services	3 tertiary and some secondary hospitals
Cervical screening	154 VIA screening sites in the country and 220 trained providers; cryotherapy services (32 sites), thermo-coagulation services(11 sites), loop electrosurgical excision procedure (LEEP) (1 site)
Facilities for simple cancer surgery	Tertiary and secondary hospitals
Facilities for complicated cancer surgery	Nil
Radiotherapy services	Nil
Plan for establishing radiotherapy service	Yes
Radiation Oncologists in training abroad	3
Radiation physicists in training abroad	3
Radiation Oncology technicians in training abroad	6
National essential medicine list available	Yes
Cancer chemotherapy services	3
Doctors administering cancer chemotherapy	8
Availability of oral morphine	Yes
Oral morphine prescription rights	Primary care physicians, surgeons
Palliative care services	Available in 78 sites; 1141 service providers
Oncology nurses	2
Hospital cancer registry	2
Population based cancer registry	2

Structured medical record	Not available
Committed national budget line for cancer control	Nil
Cancer centres	Nil
Cancer centre in planning	1 in Lilongwe
National cancer control coordinator	1
National cancer control advisory committee	Nil