



Ministry of Health

NATIONAL STRATEGY FOR CANCER CONTROL IN GHANA

2012 - 2016

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Foreword

In Ghana, as in most developing countries, the burden of non-communicable diseases is increasing rapidly whilst infectious diseases continue to pose major challenges. We still have high birth rates, decreasing death rates and consequent increase in the older population leading to increases in those chronic and non-communicable diseases associated largely with ageing. The most significant of these are cardiovascular related diseases, diabetes and cancers. Crude estimates suggest that cancers are expected to continue increasing.

The Ghana Shared Growth and Development Agenda (GSGDA) 2010-2013 is the latest of national development frameworks adopted in 2010 to accelerate development attainment of the Millennium Development Goals (MDGs). As a requirement, the Ministry of Health developed the Health Sector Medium Term Development Plan (HSMTDP) 2010-2013. Two of the HSMTDP objectives focus on intensifying prevention and control of communicable and non-communicable diseases and improvement on institutional care service delivery. The major strategies to be employed were the promotion of healthy lifestyles including addressing the increasing burden of non-communicable diseases with focus on improving prevention, detection and management of non-communicable diseases, and to develop a national register of non-communicable diseases to map the patterns for comprehensive response strategies.

In related events, the May 2005, 58th World Health Assembly (WHA) adopted a resolution calling on Member States to intensify action against cancer by developing and reinforcing cancer control programmes aimed at reducing cancer incidence and mortality among others. In response to the WHA resolution, WHO, in 2008, published guidelines for effective cancer control programmes in six modules: Planning; Prevention; Early detection; Diagnosis and treatment; Palliative care; and Policy and advocacy. The strategy called for cancer control programmes to be established in a comprehensive and systematic framework and integrated within national health plans.

The ministry in its quest to achieve these objectives set up the National Cancer Control Steering Committee (NCCSC) to advise and guide the Government through the Ministry of Health in the development and implementation of national programmes for cancer prevention and control, to advise and assist the Minister in Resource mobilization for cancer prevention and control activities, to see to the development of a national cancer control Plan and a functional cancer registry and to advise the Government on the coordination, monitoring and evaluation of cancer prevention and control.

As part of its mandate, the NCCSC developed the national cancer control plan. A national cancer plan is regarded as an excellent tool (opportunity) for Ghana to accelerate her drive to combat cancer. Reliable data on cancers in Ghana are scarce and are limited to

institutional reports or data from models. The limited data indicate that cancer has emerged as an important cause of morbidity and mortality in Ghana.

This report in examining the burden of cancer in the country indicates that the number of cancer cases reported in our health facilities are increasing. The report also indicates that, analysis of autopsy records over a 10-year (1991-2000) period in the Department of Pathology, Korle Bu Teaching Hospital (KBTH), showed that the leading cancer deaths in females were cancers of the breast, cervix, haematopoietic organs, liver, stomach and colorectal while the top causes of cancer deaths in men are liver, prostate, haematopoietic organs, stomach, pancreas and bladder. Similarly, in children, the leading causes of cancer deaths are malignancies of the haematopoietic system, followed by brain, kidney, eyes, liver and bone tumours.

These are disturbing indications especially as the country does not seem to be placing itself in readiness to contain these conditions. It is generally noted that early detection and treatment of cancers can drastically reduce the mortality related to these diseases.

The cancer plan presents details of cancer care activities in the country, gaps that exist and the subsequent possible actions that can be taken to fill these gaps in a systematic fashion thus ensuring country wide coverage as opposed to adhoc measures in the past with limited coverage. The key elements which need to be put in place to enable the Government of Ghana improve on cancer are well detailed in this plan. The plan will no doubt revolutionize the handling of cancers in the country.

Points from the plan that require emphasis are that cancers are not invariably or even commonly untreatable and fatal. The evidence is that at least a third of all cancers are preventable. With early diagnosis and proper management another third can be fully treated. With good care the quality of life of those whose diseases cannot be treated can be given comfortable and reasonable quality of life. The plan calls on the Ghanaian public to be willing to help in prevention activities, to spread the message of early diagnosis and the fact that cancers can be cured. It will be implemented at the District level thereby ensuring country wide coverage. Another highlight of the report is the creation of a cancer control programme with the appointment of a programme manager.

The Ministry of Health is looking forward to working together with all its partners, relevant Ministries, Departments and Agencies (MDAs) and all stakeholders including Non-governmental Organizations in the implementation of this document towards a common goal. Considerable financial commitment will be needed for the successful implementation of the programme and we invite all our collaborators to assist in that regard. It is my fervent hope that all our collaborators would consider the implications of this document for their own activities and how best they can work together with the MOH. This is the opportunity for all of us to renew our commitment to providing Ghanaians with good health.

The ministry on its part will endeavour to support the implementation of the plan. A lot of effort has no doubt been put to the production of the document and the ministry is grateful to the team and all others who may have assisted in the production of the plan. Having the plan is only the beginning and it is hoped that the advisory board of the cancer control programme will play its role of advising on the other aspects of its mandate namely resource mobilization, implementation, coordination, monitoring and evaluation of cancer prevention and control.

Joseph Yieleh Chireh (MP)
Hon. Minister of health

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List of Abbreviations

ALL	Acute Lymphoblastic Leukaemia
AML	Acute Myeloblastic Leukaemia
CFR	Case Fatality Rate
CGL	Chronic Granulocytic Leukaemia
CHIM	Centre for Health Information Management
CHWS	Community Health Workers
CLL	Chronic lymphocytic Leukaemia
CPD	Continuous Professional Education
DHMT	District Health Management Team
GHS	Ghana Health Service
HBV	Hepatitis B Virus
HL	Hodgkin's Lymphoma
HPV	Human Papilloma Virus
IEC	Information Education and Communication
KATH	Komfo Anokye Teaching Hospital
KBTH	Korle-Bu Teaching Hospital
LEEP	Loop Electrosurgical Excision Procedure
MM	Multiple Myeloma
MOH	Ministry of Health
NHIS	National Health Insurance Scheme
NHL	Non-Hodgkin's Lymphoma
PMR	Proportional Mortality Ratio
VIA	Visual Inspection with Acetic acid
WHO	World Health Organization

Executive Summary

Introduction

The World Health Organization estimates that, globally, more than 11 million people are diagnosed with cancer every year. Cancer causes 7 million deaths every year - or 12.5% of the 58 million deaths worldwide - this being more than the combined total deaths from HIV/AIDS, TB and malaria. By 2020, it is estimated that there will be 15 million cases of cancer annually, 70% of which will occur in developing countries. The GLOBOCAN estimates that 16,600 cases of cancer occur annually in Ghana, yielding an age-standardized rate of 109.5 cases per 100,000 persons. The most frequent cancers in men are cancers of the liver, prostate, Non-Hodgkin's Lymphoma (NHL). The most frequent cancers in women are cancers of the cervix, breast and liver. It is also estimated that 12,700 cancer deaths occurred in 2008. There is also low awareness of cancer in Ghana and as a result most of the cases present in our facilities at the late stage.

The purpose of this document is to give strategic direction in order to attain the goal of reducing the incidence and impact of cancer in Ghana by 2016. The objectives of the plan are as follows:

Objectives

1. Document 50% of all cancer cases and establish a cancer registry to form the basis of delivering cost effective interventions, for research and surveillance.
2. Reduce the incidence and mortality of cancer by 30% through primary prevention, effective screening and early detection
3. Improve effective diagnosis and treatment of cancer by 30% through evidence based cost effective interventions to reduce morbidity and mortality
4. Improve the quality of life for those with cancer and their family by 40% through support, rehabilitation and palliative care
5. Improve the service delivery across the continuum of cancer control through effective planning and co-ordination linked to improved resources

Strategies

The strategies to achieve the objectives include the following:

Promote Healthy Diet

- Reduce the promotion of unhealthy foods to children
- Increase awareness for healthy food to enable people to make informed choices

Physical activity

- Increase uptake of physical activity by all Ghanaians by encouraging the provision of recreational centers
- Encourage workplace fitness programmes

Legislation

- Ban smoking at public places and taxation on tobacco and alcohol would be increased and the proceeds used for the control of cancers and other NCDs.
- Control advertising of tobacco and alcohol and sale to minors prohibited.
- Regulation of use of chemical and toxins such as pesticides and radioactive substances

Screening and Early Detection

- Establish cancer awareness and screening programs
- Employ both organized and opportunistic screening strategies

Treatment

- Psychotherapy and Diet therapy would be offered as part of treatment
- Treatment protocols and guidelines would be developed and used for the management of cancers
- Guideline for referral of cancers would be developed
- Pharmacovigilance would be an integral part of management
- Tumour boards would be established at all cancer centres to oversee the management of cancers

Palliative Care

- Palliative care services would be decentralized to sub-national levels including the community
- Essential medicines such as oral morphine would be made available at all levels.

Cancer Registry and Research

- Strengthen the routine data collection system through the cancer registry to capture reliable information, and undertake regular operational researches to provide evidence for decision making.

Partnerships

- Forge functional partnerships and mechanisms between departments and programmes within and outside the health sector.

Expected Outcomes

When these strategies are implemented, it is expected that these outcomes would be achieved:

- Improved cancer awareness among Ghanaians
- National Systematic Cancer Screening services
- Improved cancer treatment outcomes by having higher survival rate
- Functional palliative care services at all levels
- Functional population based cancer registry
- Improved human resource capacity for cancer control at all levels

CHAPTER ONE - Introduction

The World Health Organization estimates that, globally, more than 11 million people are diagnosed with cancer every year. Cancer causes 7 million deaths every year - or 12.5% of the 58 million deaths worldwide - this being more than the combined total deaths from HIV/AIDS, TB and malaria. By 2020, it is estimated that there will be 15 million cases of cancer annually, 70% of which will occur in developing countries.

There is a dearth of reliable data on cancers in Ghana; available data are obtained from institutional reports or modelled data. Institutional data are often limited by completeness in terms of geographical coverage and scope of diseases. In spite of this statistical limitation, available data indicate that cancer has emerged as an important cause of morbidity and mortality in Ghana.

1.1 Morbidity

GLOBOCAN estimates that 16,600 cases of cancer occur annually in Ghana, yielding an age-standardized rate of 109.5 cases per 100,000 persons (Table 1). The most frequent cancers in men are cancers of the liver, prostate, Non-Hodgkin's Lymphoma (NHL), stomach and colorectum. The most frequent cancers in women are cancers of the cervix, breast, liver, ovary and NHL.

Cancers are also an important cause of morbidity in young persons in Ghana. At the Korle Bu Teaching Hospital (KBTH), Burkitt's lymphoma was the fourth and third commonest cause of admission in boys and girls aged 5-14 years accounting for 5.6% and 8.3% respectively¹.

Table 1: Summary statistics on cancers in Ghana, 2008

GHANA	Male	Female	Both sexes
Population (thousands)	11833	11517	23350
Number of new cancer cases (thousands)	6.7	9.8	16.6
Age-standardised rate per 100,000	93.8	125.5	109.5
Risk of getting cancer before age 75 (%)	10.2	13.2	11.7
Number of cancer deaths (thousands)	5.8	6.9	12.7
Age-standardised rate per 100,000	82.1	92.9	87.3
Risk of dying from cancer before age 75 (%)	8.8	10.5	9.7
5 most frequent cancers	Liver	Cervix uteri	Cervix uteri
	Prostate	Breast	Liver
	Non-Hodgkin lymphoma	Liver	Breast
	Stomach	Ovary	Prostate
	Colorectum	Non-Hodgkin lymphoma	Non-Hodgkin lymphoma

Source: GLOBOCAN 2008

Table 2: Malignancies admitted to KBTH, 1996¹

Disease Category	Cases	Deaths	CFR	PMR Cases
Burkitt's tumour	151	15	9.9	16.5
Breast	117	11	9.4	12.8
Colon rectum	83	5	6.0	9.1
Urinary tract	65	6	9.2	7.1
Prostate	52	15	28.8	5.7
Myeloid leukaemia	41	11	26.8	4.5
Liver & intrahepatic ducts	41	18	43.9	4.5
Stomach	37	4	10.8	4.0
Cervix	26	8	30.8	2.8
Lip, pharynx	23	4	17.4	2.5
Head of pancreas	21	7	33.3	2.3
Ovary	18	3	16.7	2.0
Larynx	16	0	0.0	1.8
Other malignant neoplasm	223	34	15.2	24.4
Total cancers	914	141	15.4	100.0
Total all diseases	34,598	2,501	7.2	

Key:

CFR - Case Fatality Rate

PMR- Proportional Mortality Ratio

The Department of Pathology, KBTH analysed biopsies and resection specimens received between January 1974 and December 1994² comprising 3,757 females and 2,713 males. The mean age for females was 42.7 years and for males was 46.2 years. The commonest site in females was the breast (31.5%) followed by the cervix (27.1%) and malignancies of the female genital tract (41%). In males, the commonest cancers were cancers of the prostate (33.7%) and lymphomas (16%). The peak incidence in females occurred from 35 to 54 years, while in males, it occurred in those aged 65 years and older.

Data from the Oncology Directorate of Komfo Anokye Teaching Hospital (KATH) and Korle Bu Teaching Hospital (KBTH) are shown in tables 3 & 4 respectively. These cases reflect solid tumours referred for either Radiotherapy or chemotherapy and are often preceded by Surgery. Between 400 and 500 new cancer cases were seen annually at the Radiotherapy Unit at KATH from 2004 to 2006 (Table 3)³. Cervical cancers accounted for 34.7% of reported female cancers at KATH during the period, followed by breast cancers at 20.9% of the total cancers reported. The commonest male cancers were cancer of the prostate (23.6%), cancers of the accessory sinuses (5.2%), bones (4.3%), larynx (3.7%) and bladder (3.4%). There were a total of 135 deaths, yielding a CFR of 9.7%. Data from KBTH indicated that, between 800 and 1100 cases were seen from 2006 to 2009.

Table 3: Reported cases of cancers at the Komfo Anokye Teaching Hospital, Oncology Directorate Kumasi, 2004-2006

Period	Male	Female	Total
2004	90	372	462
2005	121	309	430
2006	115	378	493
Total	326	1059	1385

Table 4: Reported cases of cancer at the Korle Bu Teaching Hospital Oncology Department, Accra, 2006-2009

Period	Male	Female	Total
2006	218	520	738
2007	221	584	805
2008	306	644	950
2009	378	760	1118
Total	1123	2508	3611

The leading cases of cancer seen at the KBTH Oncology department in the year 2009 were Breast cancer (26%) , followed by Cervical (18%), then head and neck cancer (14%) and prostate cancer (10%).

1.2 Mortality

Data from 32 sentinel sites across the country show that generally cancers do not feature in the top ten causes of death in most regions of the country, except for Volta and Brong Ahafo Regions where they were the ninth commonest cause of death accounting for 2.8% and 3.6% respectively of the deaths in 2003⁴. Their respective case fatality risk were 14.4% and 29.6%.

This data however fails to capture information from the Teaching Hospitals where most cancers are diagnosed and treated. It is therefore impossible to give an accurate statement on the place of cancer among other causes of death.

An analysis of autopsy records over a 10-year (1991-2000) period in the Department of Pathology, Korle Bu Teaching Hospital (KBTH), showed that the leading cancer deaths in females were those of the breast, cervix, haematopoietic organs, liver, stomach and colorectum². On the other hand, the top five causes of cancer deaths in men are liver, prostate, haematopoietic organs, stomach, and pancreas. In children, the leading causes of cancer

deaths are malignancies of the haematopoietic system, followed by brain, kidney, eye, liver and bone tumours.

GLOBOCAN, Cancer Incidence and Mortality Worldwide 2008 estimates that 12,700 cancer deaths occurred in 2008, 5,800 deaths in men and 6,900 deaths in women (Table 1)⁵. The age-standardized death rate from cancers was 87.3 per 100,000 persons per year; representing 82.1 per 100,000 in men and 92.9 per 100,000 in women. The leading causes of cancer deaths in both sexes are malignancies of the uterine cervix, liver, prostate, breast, stomach, colorectum and Non-Hodgkin's lymphoma (NHL)⁵. The leading causes of cancer deaths in men are those of the liver, prostate, stomach, lung and NHL, whilst the leading causes in women are those of the cervix, breast, liver, stomach, and colorectum.

In 1996, malignant neoplasms were the third leading cause of deaths at KBTH¹. They accounted for 2.6% of all 34,598 admissions and 5.6% of all 2,501 deaths at KBTH, yielding a case fatality risk of 15.4%¹. Breast cancer was the sixth commonest cause of admission in women aged 45-64 years, accounting for 3.5% of the total admissions in this age group at KBTH in 1996. Prostate cancer was the sixth commonest cause of admission in men aged 65 years and older accounting for 3.4% of the total admissions in this group in 1996. During the eight year period from 1990-1997, cancers were the ninth commonest cause of both admissions and deaths at the medical department of KBTH, accounting for 3.1% and 2.5% of the total admissions and deaths respectively⁶.

Psychosocial impact

When someone develops cancer, its impact extends beyond the physical effects of the disease to include psychological, social, economic. This impacts on the families and other significant individuals linked to him/her and the family. In all societies, the human body is more than just a physical organism, fluctuating between health and illness. It is also the focus of a set of beliefs about its social and psychological significance, its structure and function. Consequently, ill health has several implications not only for the sick but also for those affected. As a chronic condition, therefore, cancer impacts significantly, for instance, on the resources, the psychological posture and the social relations of the affected and his/her family. In Ghana, as in many societies where serious health problems are also religious experiences, cancer patients – depending on the definition of their condition - may 'shop around' consulting allopathic practitioners, faith healers and traditional medical practitioners in the quest for therapy. This plural health-seeking behaviour may pose serious problems for therapy management in the long term.

1.3 Control and Prevention of Cancers in Ghana in the context of global strategy

In 1991, WHO produced a technical report on National Cancer Control Programmes. Following a meeting on national cancer control programmes in developing countries, WHO published a revision of the 1991 monograph as guidelines for the establishment and strengthening of national cancer control programmes in 2002⁷. In May 2005, the 58th World Health Assembly (WHA) adopted a resolution calling on member states to intensify action against cancer by developing and reinforcing cancer control programmes tailored to the socioeconomic context, and aimed at reducing cancer incidence and mortality and improving the quality of life of cancer patients and their families, specifically through the systematic, stepwise and equitable implementation of evidence-based strategies for prevention, early detection, diagnosis, treatment, rehabilitation and palliative care, and to evaluate the impact of implementing such programmes⁸.

The resolution identified the following outcome-oriented objectives for cancer control programmes, according to type of cancer:⁸

1. Preventable tumours (such as those of lung, colon, rectum, skin and liver): to avoid and reduce exposure to risk factors (such as tobacco use, unhealthy diets, harmful use of alcohol, physical inactivity, excess exposure to sunlight, communicable agents, including hepatitis B virus and liver fluke, and occupational exposures), thus limiting cancer incidence;
2. Cancers amenable to early detection and treatment (such as oral, cervical, breast and prostate cancers): to reduce late presentation and ensure appropriate treatment, in order to increase survival, reduce mortality and improve quality of life;
3. Disseminated cancers that have potential of being cured or the patients' lives prolonged considerably (such as acute leukaemia in childhood): to provide appropriate care in order to increase survival, reduce mortality and improve quality of life;
4. Advanced cancers: to enhance relief from pain and other symptoms and improve quality of life of patients and their families.

In response to the WHA resolution, WHO, in 2008, published guidelines for effective cancer control programmes in six modules: Planning; Prevention; Early detection; Diagnosis and Treatment; Palliative care and Policy and Advocacy⁹.

The WHO Regional Office for Africa also published a strategy for prevention and control of cancers in the African Region in 2008¹⁰. The strategy called for cancer control programmes to be established in a comprehensive and systematic framework and be integrated within national

health plans. Priority interventions would include development of policies, legislation and regulations; mobilization and allocation of adequate resources; partnerships and coordination; training of health personnel; acquisition of adequate infrastructure and equipment for primary, secondary and tertiary prevention; and strategic information, surveillance and research.

Cancer control aims to reduce the causes and consequences of cancer. It aims to reduce the incidence, morbidity and mortality of cancer and to improve the quality of life of cancer patients, through the systematic implementation of evidence-based interventions for prevention, early detection, diagnosis, treatment, and palliative care⁹.

WHO estimates that applying current knowledge could prevent one-third to 40% of all cancers, by stopping smoking, providing healthy food, immunizing against infectious agents (hepatitis B, human papilloma virus), treating infections (e.g. *Helicobacter pylori*, schistosomiasis) linked to cancers; and avoiding the exposure to carcinogens^{9,11}. Current knowledge would permit the early detection and effective treatment of a further one-third of cases. Many cancer types are curable by surgery, chemotherapy or radiotherapy, particularly if detected early. Effective strategies exist in palliative care to reduce pain and discomfort for cancer patients.

Thus, there are four basic components of cancer control – prevention, early detection, diagnosis and treatment, and palliative care. Prevention offers the greatest public health potential and the most cost-effective long-term method of cancer control⁷. Early detection comprises early diagnosis in symptomatic populations and screening in asymptomatic, but at risk, populations⁷. Early detection must ethically be linked to effective treatment. Two strategies are employed in early detection – early diagnosis and screening.

- Public education seeks to increase awareness of the early warning signs and symptoms of cancer, including lumps, sores that fail to heal, abnormal bleeding, persistent indigestion, and chronic hoarseness.
- National or regional screening of asymptomatic and apparently healthy individuals to detect pre-cancerous lesions or an early stage of cancer, and to arrange referral

Cancers represent a growing problem which will become a major public health problem if concrete steps are not taken now. A structured cancer control programme taking on board the recommendations of WHO AND WHA will be established.

Currently, the Ghana Health Service (GHS) with local and international partners have begun an awareness campaign in Ghana that highlights simple lifestyle changes that can help reduce cancer such as not smoking, exercising and having regular medical checkups.

1.4 The guiding principles

The planning, implementation, monitoring and evaluation of the national strategy for cancer control and prevention are underpinned by the following principles:

1. **Commitment:** Government leadership and commitment towards cancer control.
2. **Integration:** Decentralisation of service delivery and full integration into the existing health care system
3. **Equitable access:** Ensure reliable and equitable access for all people, including the most vulnerable on basis of gender-related disparities.
4. **Evidence Based:** The implementation will be guided by available evidence to ensure that interventions are based on what works and are cost effective.
5. **Health systems:** Strengthening and utilisation of the health systems, including those within the community to improve service delivery.
6. **Partnership:** Strengthening partnerships at all levels, including involvement of CSOs, NGOs, local and international partners; and research institutions.

1.5 The Objectives

The objectives of the Ghana programme are to:

1. Document 50% of all cancer cases and establish a cancer registry to form the basis of delivering cost effective interventions, for research and surveillance.
2. Reduce the incidence and mortality of cancer by 30% through primary prevention, effective screening and early detection
3. Improve effective diagnosis and treatment of cancer by 30% through evidence based cost effective interventions to reduce morbidity and mortality
4. Improve the quality of life for those with cancer and their family by 40% through support, rehabilitation and palliative care
5. Improve the service delivery across the continuum of cancer control through effective planning and co-ordination linked to improved resources

Priority cancers in Ghana are:

1. Breast Cancer
2. Cervical cancer
3. Prostate cancer
4. Head and Neck cancer
5. Haematopoietic cancers
6. Gastrointestinal cancers including liver cancer
7. Childhood cancers

The list is also based on available statistics, resources, ease, and success of treatment and prevention.

CHAPTER TWO - Preventing Cancer

2.1 Factors Associated with Cancers

Among the 7 million global deaths from cancer in 2001, an estimated 2.43 million (35%) were attributable to the joint effect of risk behavioural factors (overweight and obesity, low fruit and vegetable intake, physical inactivity, smoking, alcohol use). Alcohol abuse has synergistic risk with tobacco abuse.

Unsafe sex, contaminated injections and environmental factors (urban air pollution, indoor smoke from household use of solid fuels, radiation),¹² smoking, alcohol use, and low fruit and vegetable intake were the leading risk factors for death from cancer worldwide and in low-and-middle-income countries. These factors interact with genetic factors to the extent that the cause of cancer in an individual person may be difficult to determine and, may extend to the unborn child.

As in other countries, the incidence of most cancers in Ghana rises with increasing age. It appears certain cancers are occurring at a younger age than previously. The majority of persons affected by breast cancer in Ghana are aged 40-49 years, about a decade earlier than those in western countries¹³. Breast cancer in young women has more aggressive biological features, with more advanced disease at diagnosis and a poorer prognosis when compared to older post-menopausal women¹⁴.

Most of the cancer risk factors are lifestyle dependent. However, simply educating people to adopt healthy lifestyles does not by itself get people to change risk-taking behaviors such as smoking or over-eating. Coordinated public health policies and multi-faceted comprehensive interventions are needed to encourage and promote healthy social environments, and to support people to make healthy lifestyle choices. We also need to start early, such as using a structured public education programme on the risk factors of cancer across the country using multi-media especially in schools. and also including cancer awareness in school health programme.

2.1.1 Diet and Physical Activity - Obesity

According to WHO, dietary factors that convincingly increase risk are overweight and obesity; excess alcohol consumption (more than 2 units a day); some forms of salting and fermenting fish; very hot (thermally) salty drinks and food; and aflatoxins (fungal contaminants sometimes found on foods such as grains, peanuts, tree nuts, and cottonseed meal)¹¹.

Being overweight or obese increases the risk of several cancers, including cancers of the breast, colon, endometrium, oesophagus, and kidney cancers. The consumption of red and processed meat increases while intake of fish decreases colorectal cancer risk¹⁵.

High fat diets have been associated with an increased risk of cancers of the colon and prostate, but probably not with breast cancer. The risk relates to the type of fat in the diet, rather than the total amount of fat. Limiting saturated fat may be particularly important to reduce risk for both cancer and heart disease.

The prevalence of several of the behavioural risk factors in Ghana is high and some are increasing. The prevalence of overweight and obesity in women increased from 12.7% in 1993 to 29.9% in 2008^{16,17}. Prevalence of overweight and obesity of 62.3% has been reported among women in metropolitan Accra¹⁸; 60.2% has been reported among both sexes in the Greater Accra Region¹⁹. Low physical activity level has been reported by 27%-86% of respondents.¹⁹⁻²² Among school children aged 13-15 years in Ghana, 27.4% reported being physically inactive in 2007²³.

Studies show that more than 85% of Ghanaians consume less than the recommended five daily servings of fruits and vegetables.^{16, 19} Indeed, fruit and vegetable intake in Ghana is among the lowest in the world²⁴. Physical inactivity is estimated to cause, globally, about 10–16% of cases each of breast cancer, colon and rectal cancers²⁵.

Intense academic activities of pre-tertiary school curricula deprive school-going youth of physical activity and there is absence of workplace wellness programmes.

Strategy

The MOH in collaboration with its partners would promote the following

Healthy Diet

- Improve access to acceptable and affordable healthy foods
- Collaborate with Food and Drugs board to minimize consumption of carcinogenic food
- Reduce the promotion of unhealthy foods particularly to children
- Increase awareness for healthy food to enable people to make informed choices
- School feeding programmes in primary and secondary level schools to add/increase fruits, vegetables and high fibre diet to their menu.
- Produce a national dietary guideline within a year

Strategy

Physical activity

- Foster an enabling environment for undertaking physical activity by providing safer accessible environments such as parks, walkways and bicycle lanes
- Institute measures to prevent the development of obesity in children by controlling the marketing/availability of foods and beverages that are rich in calories and poor in nutrition
- Increase uptake of physical activity by all Ghanaians by encouraging the provision of recreational centers
- Encourage physical education and physical activity by encouraging intra- and inter- schools sports competition
- Encourage workplace fitness programmes
- Issue guidance on supervised programmes of physical activity for all people

2.1.2 Smoking and Alcohol

Among the modifiable risk factors, it is only tobacco use in men in Ghana that declined from 10.7% in 2003 to 8.1% in 2008.^{16, 26} Risk factors commonly cluster together – 56.0% of adults in the Greater Accra Region have at least three risk factors.¹⁹

At the household level, Ghanaians spent 2.6% of their total annual household expenditure on alcoholic beverages and 1.6% on tobacco in 2005²⁷. In comparison, they spent 3.5% of their total expenditure on health-related expenses. More than two-thirds of the total annual expenditure on alcoholic beverages and tobacco in Ghana is spent by rural residents. The prevalence of harmful alcohol consumption ranges from 3% to 6%.^{16, 19, 22}

Strategy

- Smoking at public places would be banned and taxation on tobacco and alcohol would be increased and the proceeds used for the control of cancers and other NCDs.
- Advocate for the passage of the tobacco bill.
- Advertising of tobacco would be banned and sale to minors prohibited.
- The advertisement of alcohol products would be controlled and the number of their points of sale and their opening hours regulated.

2.1.3 Occupational and Environmental exposure

Many of the 150 chemical or biological agents classified as carcinogens are encountered through occupational exposure²⁵. Occupational cancers are entirely preventable through elimination of the exposure, using proven occupational hygiene measures. Globally, occupational exposures account for about 10.3% of cancer of the lung, trachea and bronchus. About 2.4% of leukaemia is attributable to occupational exposures.

Since over 60% of workforce in Ghana is in the Agriculture sector, it represents a major portion of occupational exposure to chemicals including pesticides. agro-processing, dye industries and pharmaceutical industries has been found to be associated with cancer. High level of radon gas has been identified in certain geographical regions of the country, other sources of exposure to radiation can be found in the medical and mining industries.

Strategy

- Raise awareness among workers through health education
- Take measures to reduce exposure to carcinogenic compounds in the workplace
- Support Occupational Safety and Hygiene research into occupational exposures
- Improve the reporting of occupational cancers

2.1.4 Legislation, taxation, code of practice (e.g. on tobacco, food labelling, advertising).

The draft tobacco bill, coordinated by the Food and Drugs Board has stalled since 2006. It is surprising that while the world's first public health treaty, Framework Convention on Tobacco Control (FCTC) upon which the draft bill is modelled, was ratified by the Parliament of Ghana, without much difficulty in 2005.

There is also no legal requirement for the labelling of chemical and energy content of dairy products, tinned or canned foods, fast foods or other processed foods.

Strategy

- Draft bill on tobacco to be passed within a year.
- Legislation on chemical and energy content of processed food to be promulgated and enforced
- Regulation of pesticide use by Ministry of Agriculture and other agencies to reduce exposure.
- Standards Board, Food and Drugs Board, and Factories Inspectorate Department to enforce standards.
- Ghana Atomic Energy Commission to carry out structured environmental monitoring of radon activity and radiation exposure from medical and industrial use.
 - They would be enforced to ensure safety.

2.1.5 Infectious causes of cancer

Twenty percent of the 12 million people diagnosed with cancer each year, are attributed to infections that either directly causes or increase the risk of cancer. Infectious agents are responsible for almost 22% of cancer deaths in the developing world and 6% in industrialized countries. The major infectious agents and the cancer they cause relevant to Ghana are as follows;

- Hepatitis B virus (HBV) - Liver cancer

- Human papilloma virus (HPV) - Cervical Cancer, Oropharyngeal Cancer
- Helicobacter pylori - Stomach cancer
- Schistosoma haematobium - Bladder Cancer
- Epstein Barr virus-Nasopharyngeal and Burkitt's lymphoma

There are however vaccines available for the prevention of hepatitis B and Human papilloma virus infection for Liver Cancer and Cervical Cancer respectively.

Hepatitis B Vaccination

The most important risk factor for liver cancer is viral hepatitis – Hepatitis B and C, which is acquired through blood transfusions, contaminated needles, and for Hepatitis B by having unprotected sex. Mothers with the virus can pass it on to their children at birth or in early infancy.

Reduction in exposure and infection with Hepatitis B and C potentially represents the most important factor in the prevention of Primary liver cell cancer

Hepatitis B vaccine has been available routinely as part of the childhood immunization programme in Ghana since January 2000.

Strategy

- Increase awareness on hepatitis B and adults would undergo voluntary testing for hepatitis B.
- National and Regional Blood banks in the country would exercise strict checks in handling donated blood.
- There is no vaccine against hepatitis C, therefore awareness campaign on prevention such as avoidance of risk - safe sex practices and avoiding body fluids would embarked upon.

HPV VACCINATION

Oncogenic HPV infections are now known to be the underlying cause of over 95% of cervical cancer. HPV 16 is the most common oncogenic HPV type found in the cervix and in cervical cancers (detected in over 50% of cases). It is followed by HPV types 18, 45 and 31. Since June 2006, two highly safe, immunogenic and effective vaccines, a quadrivalent (Gardasil) and a bivalent vaccine (Cervarix) have been developed that can prevent infection with these oncogenic HPV types (16 and 18). These vaccines have been approved by the WHO and are licensed for use by national control authorities in more than 80 countries worldwide.

Data are not yet available on the HPV burden in the general population of Ghana. A recent study in Accra showed HPV infection rates of 10.6%. However, in Western Africa, the region within which Ghana is situated, about 21.5% of women in the general population are estimated to harbour cervical HPV infection at a given time. High HPV prevalence was noted not only among young women, but also in women of middle and older ages.

The quadrivalent vaccine also provides protection against two other HPVs that cause about 90% of genital warts. However, both vaccines also provide some cross-protection against non-vaccine HPV types, especially HPV 31.

Both vaccines are highly cost-effective when used as a routine vaccine in pre-adolescent girls, adolescent girls and young women. Vaccination against High Risk-HPV presently offers the greatest tool for a long-term solution to the cervical cancer problem. Ghana will offer HPV vaccination as an integral component of its cervical cancer control strategy.

Strategy

- Routine vaccination with one approved HPV vaccine would be offered for all females from 10 to 14 years of age.
- Routine immunisation of pre-adolescent females shall be done as part of the national immunisation programme and funded by the health care system. The approach to delivery of the HPV vaccine will be a combination of school-based vaccine delivery to reach girls in school and community based and outreach clinics to reach target girls who may not be in school.
- Catch up immunisations will be provided for girls aged 15 -18 years.
- Community-based immunisation will be provided routinely through the existing Expanded Program for immunisation (EPI)

CHAPTER THREE - Screening and Early detection

Early detection comprises early diagnosis in symptomatic populations and screening in asymptomatic, but at risk, populations⁷. Early detection must ethically be linked to effective treatment. Two strategies are employed in early detection – early diagnosis and screening.

Public education seeks to increase awareness of the early warning signs and symptoms of cancer, including lumps, sores that fail to heal, abnormal bleeding, persistent indigestion, and chronic hoarseness²⁸.

National or regional screening of asymptomatic and apparently healthy individuals seeks to detect pre-cancerous lesions or an early stage of cancer, and to arrange referral

3.1 BREAST CANCER

A) CURRENT STATE OF THE DISEASE

Breast cancer is the second commonest cancer among women in Ghana. It forms 15% of all cancer and 40% of female cancers. Estimates from the WHO put the Age Standardised Incidence Ratio (ASIR) at 37/100,000 of the population, though there is no cancer registry in Ghana to substantiate this.

In Ghana most patients (50-70%) present with advanced (stage III and IV) disease, many months (8-10 months) after first noticing a change in their breasts. The biological nature of breast cancers in Ghana also confers a poorer prognosis: The WHO estimates the incidence-mortality ratio of Breast cancer in Ghana as 0.68, compared to 0.2 in the USA²⁹. Mortality from the disease is therefore relatively high in Ghana and other developing countries. Baako found a 5-year survival of only 25% in Korle Bu Teaching Hospital (KBTH) compared to over 85% in the USA in 2001.

There has been increase in awareness on breast cancer by various organizations including CSOs and NGOs. They periodically organize clinical breast screening programs and promote self breast examination. These were previously uncoordinated, but presently there has been greater effort at coordination by the Ghana Health Service.

Breast cancer affects Ghanaians from as young as age of 20 years, even though most of the younger women have sarcomas of the breast. The disease is generally commoner as one gets older, but the majority of breast cancer cases in Ghana are between the ages of 40 – 49 years³⁰.

B) PUBLIC EDUCATION

Most cases of Breast Cancer do not have any identifiable cause. However women would be educated about the predisposing factors of breast cancer and encouraged to adopt healthy lifestyles. Women who have an increased risk of breast cancer (e.g. strong family history of breast cancer in first degree relatives) would be encouraged to be more.

C) EARLY DETECTION OF BREAST CANCER (SCREENING)

Two methods of early detection would be employed

- Breast Self Examination
- Clinical Breast Examination

Breast self examination would be taught as a means of creating breast cancer awareness and for encouraging early detection of diseases of the breast. This education would start from the age of sixteen and would be taught in all schools. The important message is to make women report any change in their breast. Breast awareness education would also be combined with education addressing the many misconceptions about breast cancer. In older women, educational messages would emphasise early detection and the importance of having prompt, recommended and adequate treatment. Lastly it must aim at reducing the stigma associated with the disease.

Breast self examination would be done a week after the menstrual periods in pre-menopausal, and on a particular day of each month for postmenopausal women.

Clinical Breast Examination would be done every three years for those who are below 35 years of age and once a year for those who are 35 years and above. Mammography would be used for women who are 40 years and above.

Strategy

- A program to control breast cancer would start in girls after age sixteen, by creating breast awareness, teaching about prevention of breast cancer and breast self examination
- Health professionals would be trained to offer Clinical Breast Examination in the health facilities every two to three years for those who are below 35 years of age and once a year for those who are 35 years and above
- Mammography would be used as a diagnostic tool

3.2 Cervical Cancer

A) CURRENT STATE OF THE DISEASE

Cervical Cancer is the leading cause of cancer related morbidity and death among females in Ghana and in other developing countries. There is overwhelming evidence to suggest that, majority of cases of cervical cancer are caused by infection with the high risk oncogenic types of Human Papillomavirus (HPV).

Ghana has an estimated population of 6.57 million women aged 15 years and older as at 2009, who are at risk of developing cervical cancer. Current estimates indicate that every year 3,038 women are diagnosed with cervical cancer and 2,006 die from the disease. Cervical cancer is the most frequent among women aged 15 to 44 years in Ghana. The estimated crude incidence rate for cervical cancer in Ghana is 26.4 per 100,000 per year.

The first national policy on cervical cancer prevention was developed in 2005 as part of the National Reproductive Health Policy. This policy recommended Screening for Cervical Cancer with Visual Inspection with Acetic Acid (VIA) along with treatment of pre-cancerous lesions with Cryotherapy for women aged 25-45 years and Cytology screening with PAP smear for women aged 45 and above. The National Screening program however has stalled with only a few centers still active post project (JHPIEGO Safe PROJECT). Presently screening using VIA are carried out in only Ridge Hospital, Accra and Kumasi South Hospital, Kumasi and KATH, Kumasi.

Cervical Cancer screening using paps smear is also done at a few private clinics and laboratories (mostly in urban settings) on request.

B) PUBLIC EDUCATION

There will be two key components to the educational strategy: (1) general awareness-raising about cervical cancer, causes, symptoms and signs and prevention through safe sex and vaccination and (2) specific awareness-raising on regular screening.

Key messages shall be tailored to specific target audiences i.e. adolescents, women of reproductive age, non medical professionals, medical professionals etc and will respect cultural norms

C) SCREENING FOR PRE-CANCER AND EARLY CANCERS

Screening will involve testing of all women at risk of cervical cancer, majority of them without symptoms to detect precancerous changes, which, if not treated, may lead to cancer. Women who are found to have abnormalities on screening are provided treatment and follow-up in order to prevent the development of cancer or to treat cancer at an early stage.

Screening for cervical cancer has been successfully employed for control of the disease for over 50 years in most developed countries. Studies have shown that that screening women once or twice, between ages 35 and 40, can lower women's lifetime risk of cervical cancer by 25 % to 35 %; conducting three lifetime screenings would reduce risk by more than 50 %.

Several tests are now available that can be used in screening for cervical cancer. They include the traditional Pap smear (cytology), the Visual inspection methods using acetic acid(VIA) or Lugols Iodine (VILI) and more recently HPV- DNA testing. These tests all have their advantages and disadvantages with respect to sensitivity/specificity and cost. Ghana has had some successful experience with use of PAP smear and VIA testing linked to cryotherapy treatment within limited project based programs. The national program will continue to use these two screening methods and shall introduce the newer improved technologies such as the HPV-DNA as they become more accessible.

Regardless of the screening methods used, cervical cancer screening is effective where services reach the largest proportion of women at risk, and where there are well organized systems for follow-up and treatment.

Strategy

- A cervical cancer awareness program would be in place by using health communication messages via posters, leaflets and electronic media
- Both organized screening and opportunistic screening would be employed to reach the target populations.
- Screening would be integrated into the existing health system such as the reproductive health programmes (Family planning and STI services).

3.3 Prostate Cancer

A) CURRENT STATE OF THE DISEASE

After hepatocellular cancer, prostate cancer is the second leading cause of male cancer deaths in Korle Bu Teaching Hospital². In 2009, 185 new cases of prostate cancer were diagnosed at Korle bu teaching hospital with 37 deaths. The number of prostate cancers reported has generally risen annually possibly due to earlier detection using the prostate-specific antigen (PSA) blood test, increased patient awareness, increased lifespan, and possible environmental factors. The burden of prostate cancer is likely to increase with the ageing of the Ghanaian population, and this has major public health and economic implications.

Evidence of early prostate cancer can be found at any adult age³¹ but it is more common in men over 60 years of age⁴¹. When it progresses and becomes more advanced, prostate cancer can kill men of any age.

Blacks have a 60% higher chance of getting prostate cancer than whites due to an unexplained genetic factor. In Africa some of the epidemiological studies have revealed the following incidences of the disease: Ghana >200/100,000, Nigeria 127/100,000 and Cameroun 130/100,000^{32,33}. There is scanty data on prostate cancer in Ghana. More than 70% of Ghanaians presenting with prostate cancer do so very late with locally invasive and metastatic disease⁴¹. On the other hand the natural history of prostate cancer indicates that most men will die with their prostate cancer than from their prostate cancer because some early prostate cancers may not progress

There is, nevertheless, some controversy surrounding early detection and treatment. This malignant disease, unlike most other cancers, often can have a very long natural history, taking many years to grow and progress. In fact, it may take so long to progress that the patient dies of other causes before their prostate cancer has had a chance to spread or even cause symptoms.

The controversy in testing large groups of men is that many men with prostate cancer will be identified who may never really need to undergo treatment. Since there currently is no way to determine which early cancers will progress, curative treatment (in the form of surgery or radiation) may be used on patients who might actually never need “curing.” The problem is that any form of curative treatment can have significant long-term side effects, impairing quality of life. In addition to the high cost involved for the patient, his family and the health care system.

Even though the Prostate Lung Colorectal and Ovarian (PLCO) trial failed to demonstrate any benefit for screening, the European Randomized Study of Screening for Prostate Cancer (ERSPC) study showed a 31% reduction in the risk of dying of prostate cancer in men actually screened, this is amidst questions over contamination and pre-screening in the control arm of the PLCO study³⁴. Screening however leads to over diagnoses and consequent over treatment of majority of prostate cancer that is indolent³⁵. It is also true that screening in the fashion reported by ERSPC showed that using PSA range of 3-3.9ng/ml harboured aggressive prostate cancer³⁴. These cancers will be missed with the traditional cut off of 4.0ng/ml. Such aggressive cancer tend to be more common in African American men as suggested by Powell et al that cancer grows more rapidly in black than in white men and /or earlier transformation from latent to aggressive prostate cancer occur in black than white men³⁶.

Thus in individuals with aggressive disease including people of African descent such as Ghanaians, more sensitive and more specific tools may be required. One way will be to increase the frequency of screening and lower the cut off using PSA, as above, this will however lead to detection and possible treatment of predominantly low grade disease that is potentially inconsequential in young men. It must also be said that using a higher cut off to prompt a biopsy and less intensive screening in order to avoid over diagnosis and overtreatment in the majority of men especially older men will also lead to significantly higher rates of aggressive disease going undetected especially in people of African descent. Individualized screening is therefore suggested taking into account family history, PSA density and velocity.

B) PUBLIC EDUCATION

There is low awareness of Ghanaians on prostate cancer. The key education strategy will be to increase the knowledge of Ghanaians on prostate cancer including the number of Ghanaians who are aware of prostate health through health education.

It will also aim to increase the number of men who are at increased risk for developing prostate cancer (family history) who get screened.

C) SCREENING

In testing for prostate cancer, the objective is to detect the disease early enough before it spreads. The following are tests for detecting prostate cancer:

Digital Rectal Exam (DRE)

Digital rectal examination is a simple and easy procedure that can be used to detect prostate cancer. An abnormal DRE needs further evaluation to determine if cancer is present. A normal DRE does not rule out cancer.

Prostate-Specific Antigen (PSA) Test

Prostate-specific antigen is a protein that is made by both normal prostate gland tissue and prostate cancer cells. PSA testing will be encouraged for all men above the age of 40 years.

Transrectal ultrasound and biopsy

Neither the PSA test nor DRE, alone or together, is a truly accurate test for prostate cancer. If abnormalities are detected by a PSA test or DRE, tissue specimens will be needed for diagnosis, usually with transrectal ultrasound (TRUS) imaging to permit spatial positioning of biopsy needles.

Strategy

- Awareness on the signs and symptoms of prostate cancer would be improved to encourage men with these sign to see a physician
- Voluntary screening among men who are 45 years and above and are at risk such as those with family history would be encouraged
- Emphasis on the relevance of screening would be placed on rate of change of PSA level (velocity)

3.4 Head and Neck Cancer

Head and Neck cancer is a term used to describe a range of malignant (cancerous) tumours that can appear in or around the throat, larynx (voice box), nose, sinuses and mouth. There are five main types of Head and Neck cancer, named by the part of the body where they begin namely:

- a) Laryngeal and Hypopharyngeal
- b) Nasal Cavity and Paranasal Sinus cancer
- c) Nasopharyngeal cancer
- d) Oral and Oropharyngeal
- e) Salivary gland cancer

A) Current state of Head and Neck cancer in Ghana

Epidemiology: The major primary tumour sites reported by the KATH are accessory sinuses, larynx, nasopharynx, thyroid and parathyroid. KBTH also reported major sites of location of squamous cell carcinoma of the head and neck as mandibles, maxilla, sinuses and tongue³⁷.

The above data from³⁷ is skewed as it is mainly data of patients seen at tertiary care centre which will exclude patients who were unable to report for treatment or not able to access the service..

B) Public Education

Awareness of early symptom of Head and Neck cancer as well as the risk factors by the population and health workers will be created through structured health education programme by the District Health management team using multimedia. There is the need to incorporate the early symptom of Head and Neck cancer in the curriculum of Basic education

C) Screening for Head and Neck cancer

There is currently **no population based screening tool** for early detection of Head and Neck cancer.

Strategy

- Awareness on the early warning signs of head and neck cancer would be improved.

3.5 Childhood Cancers

Childhood cancers refer to neoplastic disorders affecting individuals aged less than fourteen years, who constitute approximately 40% of the population of Ghana.

A) Current state of the Disease

Worldwide, childhood cancers account for about 1% of total cancers, however with early and appropriate treatment long term survival rates can reach over 75%, with some cancers having an over 90% cure rate. In Ghana, the chances of survival are usually dismal for most cancers, being less than 20%. This is as a result of various challenges including the general lack of awareness about childhood cancer, compounded by adverse socio-cultural practices and limited access to services, with few health workers trained in paediatric cancer management. Other limitations include inadequate diagnostic services, unavailability or irregularity in the supply and unaffordable costs of chemotherapeutic agents, limited access to suitable protocols and inadequate supportive care. Currently there are only two Paediatric Cancer Units in the country in Accra and Kumasi. The commonest cancers in order of reported cases at the Korle Bu Teaching Hospital, Accra, are lymphomas, leukaemias, retinoblastoma, Wilms' tumour, rhabdomyosarcoma, neuroblastoma and brain tumours.

Very little is known about the aetiology of most childhood cancers. Most of these cancers occur at an early age suggesting causative factors which operate before birth. With environmental factors – radiation is established as a cause. Pesticide use has been associated with acute myeloid leukaemia. Infections – viruses, for example E-B virus have been associated with Burkitt's lymphoma and nasopharyngeal carcinoma. Hepatitis B virus is associated with hepatocellular carcinoma. HIV associated with Lymphomas and Kaposi's sarcoma. Repeated malaria infections are also implicated in the development of Burkitt's lymphoma. Genetic factors – Less than 5% of childhood cancers can be attributed directly to genetic factors for example hereditary form of retinoblastoma and chromosomal breakage syndromes leading to increased risk of cancers.

Epidemiological data worldwide shows a wide variation in childhood cancer with the incidence at 80 – 150/million per year. There is no reliable data for sub-Saharan Africa due to the absence of population-wide cancer registries. In Ghana, about 150 to 250 cases are reported in our facilities yearly.

B) Public Education

Raise public awareness and knowledge about childhood cancers through the media, educational pamphlets, posters, the Ghana Health Service websites and other internet sites.

C) Screening

Screening of childhood cancer would be incorporated into our health care system and the school health program.

Strategy

- There would be general awareness creation on the signs and symptoms of childhood cancer to encourage early detection
- Health care workers would be trained to institute newborn checks for signs of some childhood cancers e.g retinoblastoma in all health facilities and follow up check in the well baby clinics

3.6 Gastrointestinal Tumours

The most common gastrointestinal tumours are liver, stomach, colo-rectal and pancreatic cancers.

Liver is the most common malignant neoplasm in both sexes in Ghana. It is commoner in young adults 20-40 years. However as Hepatitis B and C, the principal risk factor for the tumour is acquired in early childhood the target population would encompass the wider society from infancy to young adult hood.

Though globally declining, carcinoma of the stomach is still the second commonest malignant gastrointestinal tumour in Ghana. The incidence is relatively low in Black Africa, though increasing. There are no dependable indices of incidence in Ghana. This is a disease of middle age, predominantly males. In Ghana the peak age group is 40 – 60 years.

The risk factors for carcinoma of the stomach are mainly environmental; only 8-10% have familial or genetic component. Dietary influences – salt preserved food, smoked fish (benzpyrene, being the principal carcinogen), food preservatives (nitrites, nitrates converted to nitroso-amines by organisms in achlorhydric stomach) as well as smoking and alcohol abuse are contributory factors. However, currently the most important risk factor in the tropical world is *Helicobacter pylori* (class 1 – carcinogen). There is a high prevalence of *H. pylori* infestation among patients with dyspepsia in Ghana (> 75%)³⁸.

The prevalence of Colo-rectal cancer in Ghana, like the rest of the African Continent has been low compared with global trends, largely on account of the relative young age of the population. The improving life expectancy (now 57 for men and 58 for women) over the past two or three decades had meant that a significant portion of the population has entered the colorectal cancer age group. At the Korle-Bu Teaching Hospital, 33 new cases are seen on the average each year³⁹. The population at risk is in the age group 50-75 years. The predominant risk factor is helicobacter pylori infection, the dietary content of red meat-beef, lamb, pork and veal and its processed varieties

There is little information on the pathophysiology of pancreatic cancer in Ghana. Though not as frequently encountered as in Western countries, where it is responsible for about 10% of digestive tract cancers, the prevalence is rising in Ghana. It is presumed to account for 2.2% of all malignancies¹.

B) Public Education

Public education programmes would be instituted to enhance early diagnosis and detection of gastrointestinal cancer.

This can be achieved through active health education on symptoms and signs of early stages of the disease via the use of the media.

Health professional would also be sensitized on gastrointestinal cancers so that they will have a high index of suspicion to avoid diagnostic delays.

C) Screening and Early Detection

Screening and early detection of GI cancers would be part of a national systematic programme, where eligible individual will be screened for liver, stomach, colorectal and pancreatic cancers. Proposed screening tools are not feasible in the short to medium term and also seem not to be cost effective:

Liver cancer- ultrasound imaging and the use of tumour markers - α -faeto protein in target groups

Stomach Cancer- No population based cost effective screening method available

Colorectal Cancer- There is a dependable level of evidence⁴⁰ supporting the use of the simple guaic faecal occult blood (GFOB) test as screening tool for colo-rectal cancer (Hard castle, Nottingham trials) providing all the standard precautions are taken. The test would be done for men and women alike between 50-70 years. It has been demonstrated that the screening procedure effectively reduces mortality from large bowel cancer.⁴⁰ Only patients with positive GFOB tests are selected for Flexible Sigmoidoscopy, Colonoscopy, and visual colonoscopy (colonography using computerized tomography).

Strategy

- There would be public awareness on early warning signs of GI cancers particularly unexplained anemia and the need for GI cancer screening
- There would be training of health workers at all levels on the GI cancer screening techniques.

3.7 Adult Haematological Cancers

The adult haematological cancers seen in Ghana include acute myeloblastic leukaemia (AML), acute lymphoblastic leukaemia (ALL), chronic granulocytic leukaemia (CGL), chronic lymphocytic leukaemia (CLL), Non-Hodgkin's lymphoma (NHL), Hodgkin's lymphoma (HL) and multiple myeloma (MM).

Aetiology is unknown but the following predisposing factors have been identified.

- (i) Chromosomal disorders like Down's syndrome and Klinefelter's syndrome.
- (ii) Inherited disorders like Wiskott – Aldrich and Bloom's syndromes
- (iii) Familial clustering is sometimes seen in the lymphomas and chronic lymphocytic leukaemia
- (iv) Environmental factors like benzene, pesticides, radiation and alkylating agents.
- (v) Infections like Human Immuno Virus, Epstein-Barr Virus, Helicobacter pylori and malaria have been linked to lymphomas.
- (vi) Tobacco has also been linked to NHL.

A) Current status of the disease

Between January 2000 and June 2010, 830 cases were registered at the Haematology/Oncology clinic, Korle – Bu. In order of decreasing frequency they are: NHL (26.3%), MM (21.6%), CGL (19.2%), CLL (15.8%), ALL (6.7%), AML 6.0%), and HL (4.5%).

The mean ages in decreasing order of years are: CLL (60), MM (57), NHL (45), CGL (42), AML (38), HL (34) and ALL (29).

The sex distribution showed female preponderance in CLL, MM. and AML. The remaining diseases showed male preponderance.

In comparison with data obtained from the period 1996 – 2000 the number of cases seems to be increasing and multiple myeloma has leap – frogged from 4th to 2nd in frequency. Clinical impressions also indicate the following:

- (i) We are seeing more cutaneous and thoracic lymphomas than previously
- (ii) More cases of CGL appear to have hearing impairment

B) Public Education would be on the signs and symptoms of the disease.

C) Screening and early detection: There is currently **no population based screening tool** for early detection.

CHAPTER FOUR - Treatment

In spite of attempts to prevent cancer, it is well known that only a third is preventable, a further third can be cured with state of the art treatment. It has also been established that patients tend to have improved outcomes when managed by a multi-disciplinary team of experts, and in Centres with high volume disease. A typical multi-disciplinary management team for a specific cancer consist of the following:

a)Surgeon b)Clinical/Radiation Oncologist c) Medical Oncologist/Haematologist d)Radiologist e)Pathologist f) Nurse Coordinator g) Psychologist h) Social worker i) Dietician

Currently there are two national cancer centers in the country that offer comprehensive cancer services including radiotherapy. These are located in two teaching hospitals namely: Korle BuTeaching Hospital, Accra and Komfo Anokye Teaching Hospital, Kumasi. All the ten regional hospital including other quasi-government (such as the military and police hospitals) and private facilities offer surgery for most cancers. However, those who need referral for radiotherapy would be referred for further care.

Guiding Principles for treatment

Care providers must adhere to the following principles:

- Treatments must be tailored to the best interests of the patient.
- Cancer patients shall be given all the information they require about a procedure before it is performed. This will include the possible benefits, risks, potential side-effects and what to do if one or more occur, recovery time, cost, and chance of success
- Respect the culture, norms and customs of patients
- Be honest in your answers to questions raised by the patient particularly on prognosis and treatment outcomes

Treatment guidelines would be developed by a team of experts, barriers to geographical and financial access to care would be removed and a high standard of care would be maintained. The following sets out treatment modalities for selected cancers.

4.1 Breast Cancer

Make basic but standard treatment available to all women in Ghana. The modalities of treatment are

- Surgery

- Radiotherapy
- Chemotherapy
- Hormone therapy
- Biologic therapy (Immunotherapy)

Presently there are only two centres (KBTH in Accra and KATH in Kumasi) that offer the full treatment for Breast cancer. In the medium term, the two other Teaching hospitals in Tamale and Cape Coast would be equipped with the manpower and physical equipment to manage medical and surgical aspects of breast cancer. Regional multi disciplinary oncology teams will also be formed. Basic, inexpensive but standardised protocols for the management of breast cancer would be developed. In the long term, all regional hospitals would have the capacity to treat Breast cancer satisfactorily.

4.2 Cervical Cancer

Treatment methods for Precancerous Lesions

Treatment of diagnosed precancerous lesions shall be ablative (destroying abnormal tissues by heating or freezing) or excisional (surgically removing abnormal tissues).

Cryotherapy and LEEP are the recommended outpatient treatment options. Cryotherapy will be offered as a component of the single visit screen and treatment VIA test. LEEP shall be the treatment of choice when the lesion is too large for the cryoprobe or involves the endocervical canal, or when a histological specimen is needed. The two methods have comparable effectiveness. Cold knife conization shall be done when the eligibility criteria for the above mentioned outpatient methods are not fulfilled or when such methods are not available.

Management of Invasive Cancer

The management of invasive cervical cancer starts with diagnosis of the disease. Clients with asymptomatic disease may be identified following successful screening activity whilst those with advanced disease may present to health facilities with fulminant symptoms leading to their diagnosis.

Level of care

Invasive cervical cancer will be managed by specialists at specialized centers at the regional hospitals and/or tertiary level facilities. The specialized centers would be equipped to provide

the main methods of cervical cancer treatment which include surgery, chemotherapy, and radiotherapy, used alone or in combination. These centers will also be ultimately responsible for providing rehabilitation and palliative care for patients with terminal disease.

Cervical cancer treatment is expensive and requires long-term follow-up and contact with the cancer units. Patients presenting for care will be made aware of this fact before any therapy or even extensive investigations, are started.

Treatment Modalities

Primary treatment for cervical cancer is surgery or radiation therapy for early disease and chemoradiation alone for locally advanced disease.

4.3 Prostate Cancer

There are several methods for treating prostate cancer, which vary according to the stage of the disease. The treatments include surgery, radiation therapy, hormone withdrawal therapy, and chemotherapy. A non-treatment strategy often employed is “watchful waiting.”

There are several different management options available in Ghana

1. LOCALIZED DISEASE

- ;
- active surveillance or active monitoring;
- radical prostatectomy
- radiotherapy (external beam radiotherapy [EBRT])
- brachytherapy
- hormonal therapy

2. ADVANCED DISEASE

- Surgical castration
- Medical castration
- Chemotherapy
- Pain control with analgesics, bisphosphonates and radiotherapy.

4.4 Head and Neck Cancer

Diagnosis involves using biopsy specimens or aspiration cytology. Lasertherapy, cryotherapy and surgery are essential methods of treatment of precancerous lesions. Presently none of the head and neck surgeons (except ophthalmology) is using lasertherapy, as the equipment is not available.

Surgery is the mainstay of treatment for most of H&N cancers, (ablative surgery, with or without one form of neck dissection to deal with lymph nodes). Radiotherapy, and occasionally chemotherapy being used as adjuvant therapy following surgery. For locally advanced head and neck cancer which remains the commonest mode of presentation concomitant chemoradiation offers good results.

Chemotherapy with radiotherapy is used for treating lymphomas and in down-sizing large lesions. Extensive surgery requires reconstruction, there by possibly increasing morbidity.

4.5 Childhood Cancer

Childhood cancers are some of the most curable malignancies with 80% cure rates in industrialised countries. The key to success is to diagnose as quickly as possible, refer to an expert team , reduce the rates of refusal , treatment abandonment, and early toxic deaths. Treatment of patient on well established protocols with careful monitoring of patient, parent and doctor adherence with the treatment and supportive care guidelines is the key. In industrialised countries this strategy has led to ever increasing survival. Treatment by a multidisciplinary team of all the necessary specialities: oncologist/haematologist, radiotherapist, surgeon, pathologist, radiologist and especially dedicated nurses are required to deliver optimal care. However, there is limited human resource and infrastructure to offer this optimal care.

Standard protocols emanating from trials performed by reputable organisations involved in Paediatric cancer care for example International Society for Paediatric Oncology (SIOP), Childhood Cancer and Leukaemia Group (CCLG) and National Wilm's Tumour Study (NWTs) among others will be adopted for our setting.

4.6 Gastrointestinal Cancers

Liver Cancer

Treatment modalities include, surgery by radical segmental resections or liver transplantation, offer the only curative alternative. The overall 5 year survival is less than 15%.

As most patients present late with this condition there is need to initiate palliative care for relief of pain and other distressing systems as well as personal and family support measures early and integrate this into the district health care system.

Stomach Cancer

Surgery and adjuvant treatment with chemotherapy and radiation currently offers hope of a cure and if the efforts to enhance early detection prove fruitful the outcome of treatment would be very encouraging as has happened in Japan: 5 year survival – 75% and Germany: presenting; 65%). Currently curative surgery in the country is attempted in only 40% of patients 30% have palpable lesions and 10% have hepatomegaly. In practice surgical treatment only takes place in two Teaching Hospitals.

Colorectal Cancer

Surgery offers the best chance of cure and excellent results are obtainable in the early stages of the disease (5 years survival Stage I 95%, II 75-85 III 55% with chemotherapy, IV 0-7%). These results strongly support the institution of screening for colo-rectal cancer.

Pancreatic Cancer

Surgery offers the only hope of cure, if undertaken at an early stage. It represents extensive surgery with significant morbidity, with a 5 year survival of 25% for early cases. Recent advances in post operative care have reduced mortality in specialist units to 1-4%. The extent of surgery required for survival reduces the priority rating of screening measures for pancreatic cancer

4.7 Adult Haematological Cancers

Combination chemotherapy is the main stay of therapy. Intensive chemotherapy to manage the disease is often not feasible because of inadequate supply of blood components. This limits ability to offer cure in many cases.

Bone marrow transplantation offers a cure in many of the haematological cancers e.g. CGL, ALL, MM and some forms of lymphoma.

Strategy for overall treatment of cancers

- Psychotherapy and Diet therapy would be offered as part of treatment
- Treatment protocols and guidelines would be developed and used for the management of cancers
- Guideline for referral of cancers would be developed
- Pharmacovigilance would be an integral part of management
- Cancer Management Boards would be established at all cancer centres and Regional Hospitals to oversee the management of cancers

CHAPTER FIVE - Palliative Care

Palliative care is an approach that improves the quality of life of patients and their families facing terminal disease. It is an essential component of cancer management. The goal of palliative care is to avoid unnecessary suffering and to improve the quality of life of cancer patients through emotional support, symptom control, end-of-life care and bereavement care. It addresses the physical, psychosocial, and spiritual needs of patients and their families. The needs of the patient can be anticipated and preventive and treatment measures planned and put into effect. With good palliative care people with advanced disease can have dignity and peace during the difficult and final phases of life.

A large proportion of cancers in Ghana presents with late disease and are eligible for palliative care. Unfortunately such services are not always available and many patients die without adequate support. The goal of the cancer control program is to provide such care to 25% of eligible patient by 2020.

5.1 Principles and Components for Palliative care

Care provided will:

- Provide effective relief from pain and other distressing symptoms;
- Affirm life and dying as a normal process;
- Integrate clinical, psychological and spiritual aspects of care;
- Give the patient and his/her family as much control and decision-making power as they desire and are able to accept;
- Offer a support system to help patients live as actively as possible until death;
- Offers support system to help the family cope during the patient's illness and in their own bereavement;
- Use a team approach;
- Enhance quality of life, and this may positively influence the course of illness;
- Be applicable early in the course of illness, in conjunction with other therapies that are intended to prolong life, such as surgery and radiotherapy.

Essential components of care *involve prevention and management of symptoms. These include pain relief, management of metabolic complications, psychosocial and spiritual support and family involvement.*

5.2 Organization Of Palliative Care Service:

Palliative care will be offered by a team of medical and nonmedical care providers including family members of the patient. To be effective the team will be appropriately trained. Palliative care core teams will be established at the specialized cancer treatment centers and at all health facilities levels (Table 5).

In tertiary care or specialized settings, the core team may include a surgeon, an oncologist, a radiotherapy technician, a psychologist or counsellor, a nutritionist, a physiotherapist, an oncology nurse, a pharmacist, a social worker and a palliative care nurse.

The core team will be responsible for training community based care providers and family members.

Training will focus on the components and principles of care and topics shall include clinical and psychological care and management of psychosocial and medical problems in severely ill patients, essential medicines and other supplies needed for effective palliative care, Supportive supervision and linkage/ access to formal health system for consultation and referral of patients as and when needed.

Strategy for palliative care

- Palliative care would be offered by a multidisciplinary team of medical and nonmedical care providers including family members of the patient
- Services would be decentralized to sub-national levels including the community
- Essential medicines such as oral morphine would be made available at all levels.
- Training would focus on the components and principles of care and topics shall include clinical and psychological care and management of psychosocial and medical problems.
- Palliative Care Physicians and para medical staff will be trained within two years.
- There will be collaboration with NGOs involved in palliative care.

Table 5: Palliative care Activities at the various health care levels

<p>Community/ CHPS compounds</p>	<ul style="list-style-type: none"> • Community Health Worker (CHW) visits the patient’s home on a regular, scheduled basis, in order to anticipate and follow up problems. • Facilitate access to supplies and medicines. • Teach care and comfort-giving procedures to the patient and her family and check that they are being done. • Answer questions, provide information and keep records. • Encourage the family to keep the patient involved in their daily life as much as possible.
<p>Health centre</p>	<ul style="list-style-type: none"> • Supervise, support and maintain supplies for the CHWs who do home visits for people living with cancer. • Provide emergency or routine follow-up care for problems after diagnosis or treatment for invasive cancer. • Refer patients to other facilities for palliative care. • Use oral morphine to manage pain
<p>District hospital</p>	<ul style="list-style-type: none"> • Maintain contact with health centre and palliative care providers, and follow up patients referred from this level. • Support and supervise the team at lower levels. • Provide treatment and care. • Refer patients to central level for acute problems that are best managed there, such as uncontrolled bleeding and intractable pain.
<p>Specialized Center/ Hospital</p>	<ul style="list-style-type: none"> • Collaborate with district health care services in the organization of palliative care services • Assist, train and supervise lower-level providers and CHWs. • Provide certain palliative procedures, e.g. radiotherapy. • Counsel and educate the family and patient in how to prevent common problems, such as contractures and bedsores. • Participate in the development of an individualized home-based care plan for each patient. • Refer patients back to facilities closer to their home, instructing the facilities and providing distance supervision. • Write prescriptions for medications such as analgesics, including oral morphine, and give them to the patient or care givers for immediate or future use. • Visit the community from time to time to conduct training sessions for Home Based Care (HBC) workers or CHWs, and to learn from them about the conditions in which they work, and in which their patients live. • Establish specialized centers such as hospices to facilitate palliative care

CHAPTER SIX - Building Human Resource Capacity

To achieve the goals and objectives of the national cancer care plan, we have to develop the “human resource needs” capacity. The cancer control programme shall be run at various levels of the health delivery system. For each of these levels, specialized cadre of health professionals are required as shown in table 6 below. Can we put in targets for each cadre of personnel as per the document I sent you earlier on?

Table 6: Categories of specialized health professional for cancer control and management at various levels.

CATEGORY OF SPECIALIZED PERSONNEL / HEALTH SYSTEM LEVEL	NATIONAL	REGIONAL	DISTRICT	SUB-DISTRICT	COMMUNITY
Clinical/Radiation Oncologist	√				
Medical/ Paediatric Oncologist	√	√			
Palliative Care Physician	√	√			
Surgeons with Oncology skills*	√	√	√		
Pathologist	√	√			
Cytotechnologist	√	√	√		
Haematologist	√	√			
Haematology Technologist	√	√	√		
Psychologist	√	√	√		
Radiologist	√	√			
Oncology Nurses	√	√	√		
Dietician	√	√	√		
Nurses /Midwives (Specially trained in cancer screening)	√	√	√	√	√
Counsellors	√	√	√	√	
Community Health Nurses			√	√	√
Community Based Volunteers				√	√

- * Urologist, Gynaecologist, General, Head and neck and Paediatric surgeons

National Cancer Treatment Centres will exist at teaching hospital level. The regional hospitals will also provide treatment but will refer cases that will need special attentions such as radiotherapy. The district and sub-districts will serve as screening centres while the community will be the focus for client education and health promotion.

There is currently limited number of health personnel at all levels for the control and management of cancers, therefore required number of health professionals will be trained at all levels. Training will be targeted at three different levels as follows.

A) Training health professional in various areas of cancer specialty

This will be achieved through sponsorship of Postgraduate Fellowships in cancer related specialties for doctors, nurses and other allied health professionals. This would be undertaken as part of the Fellowship programme for the Ghana College of Physicians and Surgeons/West Africa College of Physicians/Surgeons and other post graduate colleges.

B) Pre- Service Training

The teaching of cancer control is deficient in some of the health training institutions and hence contributing to inadequate knowledge of the disease. The curriculum of all health training institutions would be modified to reflect current knowledge of the disease throughout the cancer continuum namely: prevention, early detection and screening, treatment, rehabilitation and support, palliative care and surveillance and research.

C) In-Service Training

There is currently low awareness of cancer among health professionals. Increased awareness of the diseases among the doctors and other health professionals in the district and peripheral hospitals will increase the index of suspicion of the disease and early detection with prompt referral. This would be done through CPDs and other in-service training programmes. There will be internship and elective programmes for health professionals providing cancer care in specialized centres.

Technical Supervision and Monitoring

There would be a trained core of experts to provide technical supervision and monitoring of cancer control activities in the country towards ensuring high quality care.

CHAPTER SEVEN - Improving Equipment and Infrastructure

The availability of equipment and infrastructure is key to the prevention, diagnosis and treatment of cancers. A wide variety of equipment is required for the management of the different cancers; this section focuses on the equipment required for management of key cancers discussed in this document.

General

There will be a structure dedicated for screening and treatment of cancer. The following equipment will be available to ensure effective management of cancers in the country:

Table 7: Some Key Infrastructure and Equipment for Cancer Control for specialized centres.

SCREENING	DIAGNOSTIC	TREATMENT
<p>Well equipped client examination rooms with relevant screening tools such as:</p> <ul style="list-style-type: none"> • Endoscopes • Mammography equipment • PAP smears kits • VIA kits • Cryotherapy equipment 	<ul style="list-style-type: none"> • Well equipped Pathology laboratories • Magnetic Resonance Imaging (MRI) Unit • Computerised Tomogram (CT) Unit • Mammography equipment • Specialised Ultrasonogram equipment • Endoscopes • Biopsy / sampling equipment 	<ul style="list-style-type: none"> • Radiotherapy Unit with Brachytherapy and Teletherapy • Specialised Oncologic surgical and anesthetic equipment for adult and pediatric cases • Cryotherapy Equipment

Contract agreement for repair of the equipment would be part of the procurement to ensure smooth running of the equipment and the centres.

Laboratory Accreditation

Laboratories in the country would be accredited to ensure high standard of test results. This will help to avoid false positives and negatives.

CHAPTER EIGHT - Cancer Registry and Research

Cancer Registry

The establishment of the Burkitt's lymphoma centre at KBTH in the mid-1960s probably motivated the start of a national cancer registry in the early 1970s. There has been a chequered history of attempts to establish a cancer registry in Ghana.

There are two types of cancer registries: the population-based and the hospital-based cancer registries. The population-based cancer registry records all new cases of cancer in a defined population or geographic area. Hospital-based cancer registries record all cancer cases diagnosed in a given hospital irrespective of where the patient has come from. Its main role is to support the care of cancer patients by providing data on the types of cancer seen at the hospital and on the type and result of therapy. Usually the population at risk is not known because of the variation in patient area of residence and so rates cannot be calculated.

Currently, there are two hospital-based registries in the two teaching hospitals namely Korle-Bu Teaching Hospital, Accra and Komfo Anokye Teaching Hospital, Kumasi. There is the need to establish a population-based cancer registry.

The objectives of the cancer registry are:

1. To register all cancer patients whose usual place of residence is Ghana and to record cancers of all patients managed in Ghana
2. To generate complete, accurate, timely and confidential data on all cancer cases
3. To provide annual reports on the incidence, prevalence, treatment and survival of patients registered, with a sufficient level of clinical and demographic detail to make them valuable to those involved in health planning and cancer management, and to disseminate these to all interested parties
4. To provide information on cancers for the MOH, GHS, hospitals, clinicians and all other interested parties
5. To assist in the evaluation of any new or existing screening programmes

6. To promote and facilitate the use of the data collected for the planning and management of services
7. To initiate and collaborate with others to research into the causes, distribution, treatment and outcome of cancers and to publish the findings

In order to achieve these objectives, an agreed, nationally consistent minimum data set will be developed. Extensive work has already been done in Ghana leading to the development of a draft policy document for the establishment of a national cancer registry in 2006⁴². The policy recommended initially starting in Accra and using the experience obtained to start a second registry in Kumasi to cover the Northern half of the country while up scaling the Accra Registry to cover the Southern half. This policy will be urgently implemented.

The programme will completely review the current status of the cancer registry, appoint a substantive head, recruit and train data collection officers, procure functional, renewable and user-friendly software. There is the need to establish the Technical and Advisory Committees to oversee the operations of the registration system in Ghana. Mechanisms for integrating the Kumasi and Accra data, will be set up and a plan developed to scale up coverage to other parts of the country.

Research

Social, behavioral, environmental, psychological and health services research will be supported to determine and evaluate effective methods of preventing cancer; encouraging timely access to screening, diagnosis, treatment and palliative care services; and improving rehabilitation and support activities. Collaborative research with local and international partners will be promoted.

CHAPTER NINE- Implementing the Cancer Control Programme

The cancer control activities would be implemented as an integral part of the health delivery system. It will also be implemented through a decentralized system where all levels of care will be involved with cancer control.

Given the projected increase in cancer burden, Ghana will put in place mechanisms and structures to forestall this emerging epidemic. The fear is that if concrete steps are not taken now, we would be inflicted by a double edged sword of communicable and non communicable diseases in the near future. The programme will seek to approach cancer control activities in a systematic manner in order to make it accessible countrywide, sustainable and effective.

CANCER CONTROL PROGRAMME

The public health component of cancer control activities in the Ministry of Health is currently under the Non Communicable Diseases Control Programme, even though a focal person for cancer was appointed in 2009. In order to be effective, and sustainable, the process of elevation to programme status within the framework of an integrated NCD strategy in a manner similar to others in the GHS like Malaria and Tuberculosis needs to be expedited. This will allow for the appointment of a Programme Manager, and ensure budgetary allocation.

A cancer control advisory/steering committee would be appointed. Its membership will include but not limited to the following:

1. A Public Health Physician/ Epidemiologist
2. Health Communication Expert
3. Paediatric Oncologist
4. Oncologist(Medical/Radiation/Surgical)
5. Palliative care Physician
6. Representative of the Government
7. Representative of NGO/CSO
8. Representative of Patient groups.
9. Representative of research/academic institution

COUNTRYWIDE IMPLEMENTATION

The cancer control programme will be run at various levels of the health delivery system. National Cancer Treatment Centres will exist at teaching hospital level. The regional hospitals

will also provide treatment but will refer cases that will need special attention such as radiotherapy. The district and sub-districts will serve as screening centres while the community will be the focus for client education. Outreach clinics by members of the multidisciplinary oncology teams at the Teaching Hospitals to the Regional Hospitals shall be encouraged. Table 8 below shows the level of activities at the various levels

Table 8: Level of cancer control activities at the various level of the health delivery system

SERVICE ACTIVITY / HEALTH SYSTEM LEVEL	NATIONAL TREATMENT CENTER	REGIONAL HOSPITAL	DISTRICT HOSPITAL	SUB-DISTRICT HEALTH FACILITY	COMMUNITY LEVEL
Radiotherapy	√				
Chemotherapy	√	√			
Oncological Surgery	√	√			
Marrow Transplantation	√				
Cancer Screening	√	√	√	√	
Diagnosis*	√	√	√		
Supportive care and palliation Treatments	√	√	√	√	√
IEC / Health Education	√	√	√	√	√
Immunization (HPV, HEP B)		√	√	√	√
Technical Supervision/Monitoring	√	√	√		
Program management and Resource Mobilization	√	√	√		√
Research	√	√	√	√	√

*Histopathology , cyto-pathology, chemical pathology, immunopathology, haematology

The major activities are summarized below:

SHORT TERM ACTIVITIES (One Year)

1. Elevation of Cancer control activities to a Programme status with appointment of a Programme Manager and an Advisory Board.
2. Establishment of a Population Based Cancer Registry.
3. Passage of bill on tobacco control.
4. Guideline and protocols on cancer prevention and control would be developed
5. Preparation of document on cancer for inclusion in basic school curriculum.
6. Establish modalities for HPV vaccination.
7. Educate/ Orient DHMTs on inclusion of Cancer control activities in the district health programmes.
8. Engage National Commission on Civic Education on Cancer Control activities.
9. Establish modalities for screening for cervical cancers in Accra, Kumasi, Cape Coast, and Tamale.
10. Engage Faculty of Laboratory Medicine of the Ghana College of Physicians and Surgeons to produce a plan to ensure extension of Pathology services to all Regions of the country.
11. Primary Care Physicians and health professionals would be engaged in continuous professional development in the area of cancer
12. Sponsor at least 2 physicians for fellowship training in Palliative care
13. Form Multi-disciplinary Oncology Treatment teams in Central and Northern Regions
14. Establish accreditation service for medical laboratories
15. Establish partnership with local/ International Non Governmental Organisations and development partners to help cover initial funding/ training gaps in cancer care in Ghana

MEDIUM TERM ACTIVITIES (Two to Five years)

1. Perform base line research on assessment indicators.
2. Operation of Registry with production of annual report on cancer statistics in the country
3. Provide mammograms to all Regional Hospitals
4. Establish modalities for screening for cervical cancer in all Regional Hospitals
5. Start palliative care services in at least three Regions
6. DHMTs to implement cancer control activities including clinical examination for breast cancer
7. Extend cervical cancer screening service the rest of the country, at least the regional capitals.
8. Form Multi-disciplinary Oncology treatment teams in all regions of the country
9. Establish a Cancer Centre including a Radiotherapy Service in Northern Region.
10. Cancer would be named as a notifiable disease

FUNDING

The current proportion of cancer care in the health expenditure is negligible, though the cancer burden is increasing. There is the need for government to increase resource allocation towards cancer control. It is also important to ensure chemotherapeutic agents and drugs required for treatment are included on the NHIS list and made available at NHIS registered pharmacies.

Ghanaians would have the option of taking higher premiums that will enable them afford more comprehensive cancer management. Secondly, the Establishment of Endowment Funds, at National, Regional and District levels, to support Cancer patients would be encouraged.

The establishment of a fund for childhood cancer treatment is required to ensure no child is denied access to care as a result of lack of funds. Hostels for children and carers to stay for duration of treatment are required in order to reduce abandonment of treatment shall be constructed at Teaching Hospitals.

Summary of Budget

Summary of required budget to undertake cancer control activities: 2012 - 2016						
Main intervention areas	Year					Total (US\$)
	2012	2013	2014	2015	2016	
Preventing cancers	1,150,000	1,255,000	1,550,000	1,890,000	2,115,000	7,960,000
Early Detection and Screening	1,825,000	2,025,000	2,380,000	2,502,000	2,650,000	11,382,000
Treatment	1,050,000	1,205,500	1,225,000	1,350,000	1,505,000	6,335,500
Palliative Care	796,500	965,000	985,000	1,180,000	1,210,000	5,136,500
Human Resource, Equipment and Infrastructure	1,250,000	1,700,000	2,130,000	2,300,000	2,550,000	9,930,000
Cancer Registry and Research	980,000	1,010,000	1,180,000	1,260,000	1,390,000	5,820,000
TOTAL	7,051,500	8,160,500	9,450,000	10,482,000	11,420,000	46,564,000

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ANNEX

Monitoring and Evaluation Indicators

Process Indicator for Prevention Cancers

Indicator	Means of verification	Frequency	Baseline	Relevant Level
Number of IEC materials produced and distributed	Records review	Annually		National
Proportion of health facilities with IEC materials	Records review	Annually		All levels
Number of materials/adverts produced on mass media	Records review	Annually		All levels
Number of advocacy activities carried out.	Records review	Annually		All levels

Outcome Indicator for Preventing Cancer

Indicator	Means of verification	Frequency	Baseline	Relevant Level
Percentage of the target population with knowledge on cancers	Survey	Annually		National
Proportion of the population with risk factors for cancer	Survey	Annually		All levels

Process indicators for Screening and Early Detection of cancers

Indicator	Means of verification	Frequency	Baseline	Relevant Level
Percentage of targeted health workers (doctors, pharmacists, nurses, medical assistants, laboratory technicians) given in-service training on cancer screening and early detection	Records review	Annual		All levels
Number of cancer screening equipment procured	Records review	Annual		National
Proportion of suspected cancer cases referred for treatment at higher levels	Records review	Bi-annual		All levels
Number of screening centres established	Records review	Bi-annual		All levels

Outcome Indicator for Screening and Early Detection of Cancers

Indicator	Means of verification	Frequency	Baseline	Relevant Level
Percentage of the population reached by cancer awareness for screening.	Survey	Annual		National
Percentage of facilities providing stage distribution of specific cancer screened.	Records review	Annual		All levels
Proportion of the population at risk screened for cancer	Survey	Annually		All levels

Process Indicators for Treatment of Cancers

Indicator	Means of verification	Frequency	Baseline	Relevant Level
Number of health professional trained in cancer control	Records review	Annual		All levels
Number of treatment guidelines and protocols produced.	Records review	Annual		All levels
Number of drugs procured for cancer	Records review	Annual		National
Number of CPDs organized for cancer management	Records review	Annual		National
Number of cancer centres established	Records review	Annual	2	National

Outcome Indicator for Treatment of Cancers

Indicator	Means of verification	Frequency	Baseline	Relevant Level
Percentage of cancer patients cured	Records review	Annual		All levels
Percentage of cancer patients with increased in survival	Records review	Annual		Regional and National

Process indicators for Palliative care

Indicator	Means of verification	Frequency	Baseline	Relevant Level
Percentage of targeted health professional trained in palliative care	Records review	Annual		All levels
Proportion of health facilities using oral morphine and volume of use.	Records review	Annual		National
Number of guidelines produced for morphine use and monitoring	Records review	Annual		All levels
Proportion of health facilities incorporating palliative care as	Records review	Annual		National

integral part of service delivery				
Number of hospices established in the country for palliative care	Records review	Annual		National

Outcome Indicator for Palliative Care for Cancers

Indicator	Means of verification	Frequency	Baseline	Relevant Level
Percentage of eligible patients having access to palliative care	Survey	Annual		All levels

Process Indicator for Cancer registry

Indicator	Means of verification	Frequency	Baseline	Relevant Level
Number of people trained in cancer registry	Records review	Annual		All levels
Number of equipment procured for cancer registry	Records review	Annual		National

Outcome Indicator for Cancer Registry

Indicator	Means of verification	Frequency	Baseline	Relevant Level
Number of facilities with functional cancer registration system	Records review	Annual		National
Number of facilities linked with the national population-based cancer registry.	Records review	Annual		National
Production of annual report	Records review	Annual		National
Proportion of pathology based diagnosis	Records review	Annual		National