World Health Organization
Regional Office for Africa
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KEY PREVENTION AND CONTROL INTERVENTIONS FOR REDUCING CANCER BURDEN IN THE WHO AFRICAN REGION

A Handbook for Leaders and Managers

World Health Organization
REGIONAL OFFICE FOR Africa

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Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
AFRO	WHO Regional Office for Africa
AORTIC	African Organization for Research and Training in Cancer
ACCP	Alliance for Cervical Cancer Prevention
BMI	Body Mass Index
BCE	Breast Clinical Examination
BSE	Breast Self-Examination
CBHC	Community-based Health Care
DPAS	Diet and Physical Activity Strategy
EBV	Epstein Barr Virus
EPI	Expanded Programme on Immunization
GNI	Gross National Income
HBC	Home- based Care
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
IACR	International Association of Cancer Registries
IAEA	International Atomic Energy Agency
IARC	International Agency for Research on Cancer
IEC	Information, Education and Communication
INCTR	International Network for Cancer Treatment and Research
KAP	Knowledge, Attitude and Practice
LEEP	Loop Electrosurgical Excision Procedure
MoH	Ministry of Health
NACP	National AIDS Control Programme
NCCP	National Cancer Control Plan
NCI	National Cancer Institute
NGO	Nongovernmental Organization
OCRI	Ocean Road Cancer Institute
PBCR	Population-based Cancer Registry
PHC	Primary Health Care
RHC	Reproductive and Child Health
SWOT	Strengths, Weaknesses, Opportunities and Threats
UICC	Union for International Cancer Control
VIA	Visual Inspection with Acetic Acid
VILI	Visual Inspection with Lugol's Iodine
WHO	World Health Organization

Foreword

In the WHO African Region, cancer is rapidly becoming a major health problem and interventions for its prevention and control are urgently required. The fight against cancer has entered a new phase, with the advent of some major advances that can dramatically improve patient care. Many cancer cases could be prevented either by stopping smoking, avoiding certain chronic infections or improving diet and implementing screening programmes. The WHO remains true to its goal to secure equal access to quality health care for every patient with cancer and prevent cancer by implementing primary prevention interventions. The WHO Regional Office for Africa (AFRO) has already developed a regional strategy for cancer prevention and control to tackle this increasingly important issue. Priority interventions are well defined in the strategy but no strong recommendations are made on the cost effectiveness of key interventions to be incorporated into existing health care systems in Africa. There is a need to provide guidance to countries on how to implement key interventions for reducing cancer burden in the WHO African Region.

This handbook aims to strengthen and accelerate the translation of cancer control knowledge into public health action and serve as a key reference document in developing national cancer control programmes. It is therefore intended primarily for leaders, managers and decision-makers in health and related fields; medical professionals; academic institutions; nongovernmental organizations and, more generally, for all stakeholders who need to keep abreast of cancer prevention and control. It is additionally intended to serve as a clear and comprehensive guide in choosing key and cost-effective interventions to be implemented according to local settings without forgetting what is feasible and desirable. It emphasizes the stepwise implementation of priority interventions in the short term, followed by expanded and optimal interventions to be implemented in the medium and long term within the limits of available resources.

The information provided here was compiled by experts in the field who are fully aware of the situation of cancer in the WHO African Region. This work highlights the fact that many cancers are preventable and all can be controlled even in low-resource settings.

I would like to thank my colleagues, the scientists and all those whose efforts made this work possible. We believe this handbook will serve as a comprehensive resource document for many years to come.

Dr Luis G. Sambo
Regional Director
WHO Regional Office for Africa

About the cancer prevention and control handbook

1. Background

Cancer prevention and control involves the public health action designed to reduce cancer incidence and mortality and improve the quality of life of patients, through the systematic implementation of evidence-based strategies for prevention, early detection, diagnosis, treatment and palliative care.

The aim of this publication is to strengthen and accelerate the translation of cancer control knowledge into public health action. It can also serve as an advocacy and practical tool that helps policy-makers and programme managers to acquire advice on key interventions in cancer control.

The objectives of the handbook are:

(a) To profile effective and feasible interventions covering prevention to end-of-life care.

(b) To provide practical options on how African countries can implement these interventions in an equitable and sustainable way, taking into account their particular socioeconomic settings.

(c) To provide comprehensive operational models based on successful demonstration areas and specialized expertise.

Cancer prevention and control interventions should be undertaken in a stepwise fashion, and should have clear measurable objectives with each step representing the basis for the development of the next stage. It is advisable to start small by concentrating efforts in a small demonstration area, with a good likelihood of success. The justification for developing this handbook is based on:

(a) The significant burden of cancer in Africa.

(b) The rising trend of cancer risks in Africa.

(c) The need to make more efficient use of resources set aside for cancer since at present most resources are used to treat advanced incurable cancers.

(d) The immense benefits to public health that may result from the proper implementation of the key cancer prevention and control interventions.

2. Development

This handbook was developed through a participatory process that incorporated the views and expertise of a wide number of international stakeholders, both in Africa and in developed countries. The proposed interventions were successfully field tested in different parts of the world including in Africa. The World Health Organization commissioned an African expert who compiled the existing evidence and suggested interventions to reduce cancer burden in the WHO African Region. Cancer specialists were asked to review the draft handbook and provide comments which were also reviewed in the above-mentioned meeting. The expert group provided guidance concerning revisions and amendments to be made. Finally, the Cancer Prevention and Control Handbook was edited for comprehension, technical accuracy, grammar and punctuation.

3. Content

This handbook sets out to provide background information and key intervention opportunities for cancer prevention and control in the WHO African Region. It also details the economic and social impacts of cancer in the Region and challenges in implementing interventions, and provides guidance for prioritizing interventions to improve the deployment of existing resources in expanding recommended prevention and control interventions.

The handbook has four chapters and annexes. The first chapter provides an overview of cancer in Africa. The second chapter describes eight key interventions to be implemented for cancer prevention and control in the African Region. The last two chapters provide guidance on the cost effectiveness of key cancer control interventions as well as three different scenarios for implementation based on resource realities.

This handbook complements a number of WHO publications such as the Global Report "Preventing Chronic Diseases: A Vital Investment"[1], the “Modules on cancer control: knowledge into action”,[2] “National Cancer Control Programs, Policies and Managerial Guidelines”,[3] "Building Blocks for Tobacco Control"[4] and the African regional strategy for cancer prevention and control.[5] A brief description of these WHO guides highlighting the added value of this publication is provided in Appendix.

4. Intended outcomes

The intended outcomes of this handbook are to provide guidance to Member States on:

(a) The development of tailor-made guidelines on how to implement effective key cancer control interventions in all African countries based on the local situation and current recommendations.

(b) The integration of key cancer prevention and control interventions into the existing health care systems.

(c) The development of a national human resource strategy for the cancer control programme.

(d) The development of national budget lines and proposals for external/donor funding for cancer prevention and control activities in African countries. The document will help in defining strategies for resource mobilization.

(e) The adoption of lessons learned from experiences in some African countries and other countries where similar conditions prevail when developing national action plans for cancer prevention and control.

(f) The improvement of the quality of life of cancer patients in Africa, increasing survival rates and decreasing incidence and mortality rates.

5. Intended users

The intended users of this publication are public health policy-makers, cancer programme managers in and outside the Ministry of Health and health-care institutions including national cancer institutes or equivalent institutions, leaders of nongovernmental cancer-related organizations, and all stakeholders who have the power to influence the development and setting up of effective cancer control programmes.

6. Implementation process

The handbook recommends the incorporation of cost-effective key interventions into existing health systems of Member States in the WHO African Region. It emphasizes the stepwise implementation of feasible priority interventions in the short term, followed by expanded and optimal interventions to be implemented in the medium and long term depending on the availability of resources. In most of Africa where resources are limited, converting knowledge into action by developing strategies on how to select and implement key cancer control interventions will be a big challenge.

This Cancer Prevention and Control Handbook has been designed as a generic document to complement the WHO publication "National Cancer Control Programmes – Policies and Managerial Guidelines, 2nd Edition, WHO Geneva, 2002". The decision on the selection of interventions and the degree of adaptation required will be dependent on each country's needs and circumstances. Leaders and managers are urged to analyze the handbook, select and adapt the generic key interventions into locally acceptable, culturally sensitive version to suit their country context. The team is encouraged to consider national norms and modifications to the national cancer control programme.

It is important to identify a group of key stakeholders and appoint a committee including representatives from the Ministry of Health, nongovernmental organizations, professional associations, health managers of private and government institutions, district health officers, other key ministries and departments, local opinion leaders, women's groups, religious groups and youth groups. The size of the committee will depend on each country's needs, but experience has shown that large groups for these tasks are often less functional. Once a committee has been appointed, a working brief or terms of reference for the group could be developed.

The committee will define which key interventions require attention and are suitable for the comprehensive national cancer control plan. Each country will have its own cancer policies, procedures, protocols and standards. It is important that the recommendations contained in this handbook are consistent with these policies. However, if there is a disparity, the committee should consider if the national policy has been based on the latest body of evidence.

CHAPTER ONE

Overview of cancer in Africa

Cancer is the generic term for a group of more than 100 diseases that can affect any part of the body and have defining features, namely proliferation of abnormal cells in the affected part of the body, capacity to grow beyond their usual boundaries and tendency to invade adjoining tissues and spread to secondary organs or tissues as metastases.

1. Cancer epidemiology

Globally, cancer is one of the most common causes of morbidity and mortality today. It is responsible for more than 10 million new cases and more than 6 million deaths each year worldwide. More than 20 million persons around the world live with a diagnosis of cancer, and more than half of all cancer cases occur in the developing countries. Cancer is responsible for about 20% of all deaths in industrialized countries and for 5%–10% in developing countries. It is projected that by 2020 there will be every year 15 million new cancer cases and 10 million cancer deaths.[1] Much of this increase in absolute numbers is a result of change in lifestyle and ageing of the populations worldwide. Based on data from the WHO, over 50% of all cancers occur among the three-quarters of the world's population who live in developing nations and who possess only 5% of the global resources that are now spent on cancer services.

Decades ago, cancer was thought to be rare in Africa and was regarded as a problem of the developed world where it is only second to cardiovascular diseases among the major causes of death. The alarming increase in the incidence of cancer is mainly due to infectious conditions including the HIV/AIDS pandemic, tobacco use and harmful use of alcohol, improper diet, physical inactivity, environmental pollution and a general increase in life expectancy. The Region is faced with a continuing high burden of communicable diseases along with the growing burden of noncommunicable diseases (NCDs) such as cancer, cardiovascular diseases, diabetes and chronic respiratory diseases. This result in a double burden of disease picture that needs to be dealt with effectively with the meager resources that are available, or else the gains from the control of communicable diseases may be lost to NCDs.

According to Globocan 2008 data, new cancer cases excluding non-melanoma skin cancers in the WHO African Region were 571 000 (318 000 in women and 253 000 in men).[6] The commonest cancers in males were prostate (13.7% of all cancers), liver (11.5%), Kaposi's sarcoma (8.7%) and esophagus (6.2%) and Non-Hodgkin lymphoma (6.2%). In females the commonest cancers were of the cervix (23.8%), breast (21.3%), liver (4.7%) and Kaposi sarcoma (3.8%). The number of deaths due to cancer in the Region in 2008 was 435 000 (226 000 in women and 209 000 in men). But mortality statistics in Africa are even sparse, due to the absence of comprehensive death registration in the great majority of countries. It is estimated that about 12.4% of WHO African Region's 804 million inhabitants will develop cancer before age 75. The risk increases with age: 90% of cancer cases will occur after the age of 40 in Africa other than Burkitt lymphoma, nephroblastoma and leukaemia. Cancer in children is at present not very common and represents 1% of all cases of cancer. If no interventions are put in place it is predicted that in the year 2020 the number of new cancer cases will be 804 000 (385 000 males and 418 700 females) and the number of deaths due to cancer will be 626 400 (310 100 males and 316 300 females).[7;8;9] If we act now we can save 100 000 lives annually by 2020.

The risk of developing cancer in Africa varies according to geographical area and it is found to be highest in densely populated urban areas. The various forms of cancer have different geographical distributions as well; for example, Kaposi's sarcoma – (HIV-related) is more common in sub-Saharan Africa than in the north of the African continent. Cancer modifiable risk factors belong to three main categories:

(a) Infectious factors: it is now well established that HPV16 and HPV18 are incriminated in the causation of cervix carcinoma. This virus is sexually transmitted and the risk of transmission is increased when sexual activities are started at an early age and when there are multiple sexual partners. Such behaviour also leads to increased risk of HIV transmission and the development of AIDS which subsequently also increases the risk of contracting HPV. The strategy used in AIDS prevention programmes should also be used in prevention of carcinoma of the cervix. A vaccine against HPV is available but is not widely used in Africa at present because of its high cost and a number of other factors. Immunization of children against hepatitis B should be lobbied for and made to be incorporated into the Expanded Programme on Immunization (EPI) in all African countries. This will significantly reduce the incidence of liver cancer and chronic liver diseases in the next generations of adults. In Africa most bladder cancers are associated with chronic infection with bilharzias (schistosomiasis). Efforts to eliminate the snails' vectors, provision of clean water supplies, better sanitation and the prompt treatment of affected individuals are some of the measures that can help reduce the risk of getting this cancer.

(b) Behavioural factors: the public needs to be continually educated about the high risk of cancers of the lung, mouth, throat and esophagus resulting from tobacco use. Education of school children on dangers of smoking, passive tobacco exposure along with a policy to regularly increase tobacco price should be implemented. Tobacco growers should be encouraged to shift to alternative commercial crops and other economic activities. The public should be made aware that the economic loss from tobacco-related diseases far outweighs the revenue from production and sale of tobacco. Heavy alcohol consumption, especially in those who smoke as well, carries a high risk of cancers especially of the mouth and throat, the liver and the esophagus. It also increases the risk of breast cancer. The risk of cancer increases whereas obesity and a balanced diet low in fat and containing plenty of fresh fruits and vegetables is associated with reduced cancer risks. Health education on how to avoid sexually-transmitted diseases and the use of condoms can help reduce the risk of cancer of the cervix and Kaposi's sarcoma (through prevention of HIV infection).

(c) Environmental factors: skin cancer is very common in albinos in Africa. The general public and school children should be made aware of the risk of prolonged exposure to direct sunlight in light-skinned individuals and albinos. The wearing of appropriate clothing and hats by the albinos should be encouraged. The incidence of AIDS- related Kaposi's sarcoma affecting the skin has risen rapidly in the last few years and will further increase.

2. Cancer prevention and treatment services

Cancer treatment services in general and radiotherapy facilities in particular are at the moment very inadequate.[10] Many African countries with economic, structural, logistical and transport difficulties still face acute shortages of chemotherapy, surgical and palliative care services. The other forms of treatment, while producing palliation, are very expensive and not cost effective. A fundamental consideration and necessary ingredient for improving palliative care in Africa is to

integrate this care into the existing health services, making sure that palliative care drugs, especially morphine, are included in the essential drugs list and procured.

3. Cancer survival

The survival of cancer patients at some defined intervals after diagnosis (e.g., three or five years) is widely used as a measure of success in cancer management. It reflects the efficacy of early detection and treatment activities, since the prognosis of a cancer patient depends above all on the stage of disease at diagnosis and the quality of treatment given (as well as other factors such as the age and general health of the patient). In Africa, such information has become available only recently from special groups of patients from hospital series (for example, treated by a single surgeon, or attending special clinics). Some recent results of population-based surveys undertaken in two countries of the Region, the cities of Kampala (Uganda)[11] and Harare (Zimbabwe),[12] have been published. The five-year survival rates documented are some of the lowest ever reported globally from population-based cancer registries. African patients, even the relatively affluent white Zimbabweans, have much lower five-year survival rates than cancer patients living in the United States (Table 1). Nevertheless, the results do show that cancer is not a uniformly fatal disease in Africa – for example, a third of women with breast and cervical cancers can expect to survive their cancers, even in current circumstances.

Table 1: Comparison of the cancer five-year survival rate (%) in Zimbabwe and the USA [11; 12]

	Zimbabwe (Harare)		USA	
Cancer site	Black patients	White patients	Black Americans, adjusted survival*	White Americans, adjusted survival†
Stomach	13.2	-	19.5	-
Colorectal	17.4	19.4	51.9	61.2
Liver	1.4	-	7.2	-
Lung	5.7	10.2	12.8	14.3
Breast	37.9	74.4	70.1	87.3
Cervix	30.5	-	58.1	-
Prostate ‡	27.1	83.7	95.9	99.2
Bladder	16.8	72.8	66.5	81.1
Lymphomas	23.1	-	53.2	-
Kaposi sarcoma	4.4	-	14.9	-

** adjusted to age distribution of Zimbabwean Black patients;*

† adjusted to age distribution of Zimbabwean White patients

‡ 3 years survival

4. Economic burden of cancer

Most African countries have similar political, economic and administrative structures. They are also beset by poverty, the HIV/AIDS epidemic, a hoard of communicable diseases and a number of other serious health problems including NCDs of which cancer is one which presents as a major public health concern. When addressing cancer prevention and control in Africa one should realize that African countries have a wide range of Gross National Income (GNI), the measure adopted by the World Bank to define countries by resource level). The cutoff for low-income economies is a per capita GNI of US$ 745 or less (in 2001), and middle-income ranges up to US$ 9,206 and with income above this value classified as high income. The availability of resources to be spent on health, and therefore on cancer control, varies with the income group to which the country belongs. Even those countries with similar income levels may have vastly different histories, cultural values and infrastructure, all of which affect their opportunities and priorities. The rate at which the economies of African countries are growing also affects how much can possibly be done towards cancer control. At the lowest income levels, that is in countries where economic growth is stagnant (which is unfortunately the case in a number of countries in sub-Saharan Africa) cancer prevention and control simply cannot be an area for increasing expenditures.

The magnitude of the problem of cancer in Africa is expected to double in the next two decades if no interventions are implemented now. The health and economic consequences as a result of this would therefore be substantial. According to World Bank reports, the economic impact of cancer in Africa is devastating and is far greater than the number of cases alone would suggest. Cancer affects individuals, families, communities, firms and governments and has an economic impact on all of them. If the magnitude of cancer in Africa continues to rise as expected from present trends, the overall gains in GDP will slowly be reversed. Cancer affects the overall health status of the society and leads to increased health-related out-of-pocket expenditures at household level. It lowers productivity and growth performance and therefore has an effect on macroeconomic performance. The economic impact of cancer in Africa is particularly severe because most cancers occur among those who are in the economically-productive age group. The economic shock often includes both the loss of income and expenses associated with health care costs. If this adverse economic impact is to be avoided in Africa, National Cancer Control Programmes (NCCP) integrated into existing health systems and related services should be formulated, funded and implemented urgently.

5. Risk or mitigating factors for the cancer burden

It is estimated that worldwide around 43% of cancer deaths are due to tobacco use, unhealthy diets, excessive alcohol consumption, physical inactivity and infections. Of these, tobacco use is the world's most avoidable cause of cancer. In addition to lung cancer, tobacco consumption causes tumours of the larynx, pancreas, kidney and urinary bladder. Excessive alcohol intake is associated with a high incidence of carcinomas of the oral cavity and the esophagus. Furthermore, the implementation of effective and integrated preventive strategies will reduce, in the long term, the incidence of other tumours in sites such as the stomach, liver, breast, cervix uteri, colon and rectum. Cancer in Africa is very much associated with social status. The cancer risk factors are highest in individuals with least education. In addition, patients with low social status have consistently poorer survival rates than those with high social status. The situation is worse in Africa because many people living with cancer do not have access to the care and support they need. In the name of good governance and in consideration of basic human rights, care and support needed by cancer patients should be seriously considered because good care

and support greatly improve the quality of life and survival. Cancer care should also include physical, social, emotional and spiritual support and access to adequate nutrition.

Although the existing body of knowledge about cancer prevention, treatment and palliative care is extensive, more still needs to be known in many areas, notably in understanding etiology, prevention and treatment. There is now sufficient understanding of the causes that can help prevent at least one third of all cancers worldwide. Information is also available that would permit the early detection and effective treatment of a further one third of cases. Effective methods exist for the adequate relief of pain and the provision of palliative care to all cancer patients along with appropriate support to their families, even in low-resource settings.

In many instances this wide knowledge is not usually put into practice. Efforts to prevent and control cancer are hampered by the low priority frequently given to the disease by governments and health ministries. At present there is excessive reliance and expenditure on treatment, and a considerable imbalance between resources allocated to basic cancer research and those devoted to its prevention and control. For example, primary prevention, early detection and palliative care are often neglected in favour of treatment-oriented approaches, even in cases where these approaches are not cost effective and cause unnecessary human suffering. Another example is the failure to take into consideration the social inequalities related to cancer prevention and control. Cancer incidence and survival are clearly linked to socioeconomic factors. Low-income and disadvantaged groups are generally more exposed to avoidable risk factors such as environmental carcinogens, alcohol abuse, infectious agents, and tobacco use. These groups have less access to the health services and health education that would empower them to make decisions to protect and improve their own health. In addition, changing lifestyles expose people to risk factors that were once primarily found only in developed countries (such as physical inactivity, diets high in animal fat and tobacco use).

6. Interventions for cancer prevention and control

6.1 Prevention frequently offers the most cost-effective long-term strategy for cancer control. Preventive measures are doubly beneficial as they can also contribute to the prevention of other chronic diseases that share the same risk factors. Infectious agents are responsible for almost 25% of cancer deaths in the developing world and 6% in industrialized countries. In low-resource settings with a high prevalence of cancers induced by biological agents, special measures are needed to combat these infections. For example, in areas endemic for liver cancer, hepatitis B virus immunization, integrated with other vaccination programmes, is the principal preventive measure. Vaccines had been developed and tested in human beings; they proved to be effective in preventing cervical cancer soon. Prevention of HIV infection will also reduce the incidence of HIV/AIDS-related cancers such as Kaposi sarcoma and lymphoma. A number of specific preventive and protective measures to control or avoid carcinogens or risk factors in the environment (including excessive exposure to direct sunlight in albinos in Africa) and the workplace will significantly reduce the incidence of cancers such as those of the lung, bladder and skin.

6.2 Early detection, which involves the screening of asymptomatic populations and creating awareness of early signs and symptoms, increases the chances of cure when treated promptly. However, it requires the facilities to confirm diagnosis and provide adequate treatment for the population in need. Awareness of early signs and symptoms is particularly relevant for cancers of the breast, cervix, mouth, larynx, endometrium, colon, rectum, stomach and skin. On the basis of available evidence, population screening can currently be advocated only for cancers of the breast, cervix, colon and rectum, in countries where resources are available for wide

coverage of the population and where appropriate quality diagnostic facilities and treatment are in place. Unfortunately, all of the above are in short supply in Africa. Nonetheless, studies are under way to evaluate low-cost screening methods that can be implemented and sustained in low-resource settings. For example, visual inspection after application of acetic acid (VIA) proved to be an effective screening method for cervical cancer screening in the near future. More studies are needed to evaluate low-cost alternatives to mammography screening, such as clinical breast examination.[13]

6.3 Cancer treatment is very expensive and aims to cure disease, prolong life, and improve the quality of life. The most effective and efficient treatment is linked to early detection programmes followed by evidence-based standards of care. Treatment and practice guidelines improve treatment outcome by setting standards for patient management. At present in most African countries basic cancer treatment services are inexistent and when available, frequent radiotherapy machine breakdowns due to lack of preventive maintenance are very common. When it comes to chemotherapy, lack of cytotoxic drugs, affordability and accessibility of the service are issues of great concern. Apart from these, most African countries have no cancer policy, no referral guidelines, no treatment and practice guidelines and resources such as cash, trained people and time are often limited. Under these circumstances, one wonders how African countries can make an impact on cancer prevention and control if careful strategic planning, advocacy and perseverance are not put in place.

In Africa, most cancer patients require palliative care as they usually report for treatment when their disease is at an advanced stage. Palliative care involves not only pain relief, but also spiritual and psychosocial support to patients and their families from the time of diagnosis, through the course of the disease up to the end of life and bereavement. It helps to improve the quality of life of patients and their families, regardless of the possibilities of cure. These services can be simple to provide and are quite inexpensive. For example, morphine for oral administration in the case of moderate to severe pain can be provided at relatively low cost and the experience in Uganda Hospice reveals that oral morphine for ten days costs US 30 cents.[14;15;16] Nonetheless, access to pain relief and palliative care services are often limited, even in high-resource settings because of lack of political will, lack of sufficient information and education to the general public, health care providers and patients, and the excessive regulation on the use of opioids.[17;18;19]

6.4 Other activities in cancer prevention and control are **surveillance and research.** Both of these are crucial for planning effective and efficient cancer control programmes and the monitoring and evaluation of their performance. A comprehensive surveillance system provides data on the cancer burden and trends in disease and risk factors. It also documents the effect of prevention, early detection, treatment and palliative care. African countries are conducting STEPs surveys for the assessment of the prevalence of NCDs and their risk factors including cancer. Cancer registries are part of the surveillance system. Population-based registries provide information on incident cases and incidence trends; whereas hospital-based registries provide information regarding diagnosis, stage distribution, treatment methods and survival. Research contributes to determining causes of cancer and evaluating strategies for prevention, treatment and control. Hence, research planning and priority setting are important elements of an effective cancer control programme.

WHO is committed to public health actions designed to reduce cancer incidence and mortality and to improve the quality of life of patients through the systematic implementation of evidence-based strategies for prevention, early detection, diagnosis, treatment, and palliative care. Several resolutions published on WHO website have been adopted and a number of

interventions have been implemented at global, regional and country levels. To ensure long-term sustainability, effective partnerships are essential for cancer prevention and control programmes. The WHO has strengthened its links with other institutions active in the field of cancer prevention and control. As a result, the alliance comprising international organizations, agencies of the United Nations system, government bodies, nongovernmental organizations and private-sector entities covering such fields of expertise as medicine, nursing, research, public health and communications has been launched. This alliance also includes the "Alliance for Cervical Cancer Prevention (ACCP)" and "My Child Matters ", a UICC campaign.

In the area of cancer research, the International Agency for Research on Cancer (IARC) which is part of the WHO, conducts focused research on cancer etiology and prevention. This agency provides evidence on global cancer prevalence and incidence, the causes of cancer and the mechanisms of carcinogenesis, as well as recommendations for the most effective strategies for cancer prevention and early detection. The research findings and reports from IARC publications provide the basis for cancer prevention and control policy development and programme implementation by the WHO. The recently published IARC Scientific Publication on "Cancer in Africa: Epidemiology and Prevention"[8] contains the latest epidemiological data and projections about cancer, current knowledge about the causes of cancer, and policy recommendations for cancer control programmes.

7. Justification for a NCCP

When implementing interventions to prevent and control cancer, there is a lot of room for improvement, and a successful National Cancer Control Programme (NCCP) can significantly improve outcomes through early diagnosis and optimizing the distribution of limited treatment resources. A well-conceived NCCP is the most effective instrument that will bridge the existing gap between knowledge and practice. When integrated into existing health systems and related services, these programmes ensure systematic and equitable implementation of control strategies across the continuum of prevention, early detection, treatment and palliative care, as set out in WHO's guidelines for NCCP.[3] Policy-makers and programme managers can make the most efficient use of available resources to benefit the whole population by taking a balanced approach to evidence-based interventions with the help of a well-conceived NCCP.

Decision-makers should realize that with the burden of AIDS and the persistent effects from other endemic diseases, cancer takes a constant toll in Africa. The magnitude of the cancer problem will increase as life expectancy increases. It is unlikely that African countries can immediately take on every aspect of cancer control, from prevention to treatment and palliative care, because of acute shortages of trained personnel, treatment facilities (cancer centres, hospitals, health centres, etc.) and reliable communication network and referral systems. It is therefore recommended that every African country, with whatever resources currently available, implement in a stepwise fashion specific actions that will lessen the impact of cancer on its population. The programme can then be expanded as financial and social conditions improve. Some aspects of cancer control in Africa which are not very expensive can be implemented without any further delay. African countries should also be aware of the fact that several organizations are willing to assist countries in need.

8. Experiences with establishing NCCP

The first thing that one notices when implementing a NCCP is that unlike other disease control programmes, cancer control is very complicated. The programme is dealing with a spectrum of diseases (notwithstanding the fact) that are caused by similar carcinogens such as tobacco,

infections or diet. The next thing one also realizes is that most evidence-based cancer control interventions are based on therapeutic models which work very well in western settings and are expensive, involve high technology and hence not easy to apply in low-resource environments. In the event that such procedures are for some reasons imposed in poor countries with inadequate resources, they are bound to fail because of lack of technical support as well as the inability of the public and the profession to sustain them. A good example is that of mammographic and Pap's smear screenings; experience in some African countries has shown that from a public health point of view, these two interventions are non-starters and not implementable. Mammography which is a cost-effective screening technique requires not only money but also a high level of technical expertise. Similarly, Pap's smear screening mandates high technical expertise and an organized health care delivery system. However, the emerging technologies for cervical cancer screening such as VIA and HPV testing can be implemented cost-effectively.

It is very important that in Africa the choice of key cancer prevention and control interventions be based on acceptability to the people for whom they are intended. These interventions should be affordable, adaptable to the local context and integrated into other national health programmes. The stepwise implementation of various aspects of cancer control is an option which should be seriously considered in resource-limited settings of Africa.

Reduction of cancer incidence is an essential objective for cancer control interventions. WHO in its document on NCCP[3] has identified and classified cancers which are preventable, easily detectable and effectively treatable and those for which only palliation is possible. These guidelines together with the information from IARC on cancer load and pattern can be used by African countries when formulating the NCCP.

CHAPTER TWO

Key interventions for cancer prevention and control in Africa

When considering adopting evidence-based interventions from rich developed countries, economic and ethical judgments as well as scientific ones have to be brought into play. The infrastructure is also a very important consideration because even a basic level of cancer care requires trained personnel, treatment facilities (cancer centres, hospitals and health centres), reliable communication and referral systems. All these are at present a long way off for many African countries. A situation like this one demands that countries should be guided on criteria that need to be applied in measuring the value of any interventions and prioritize the order of their implementation. The ideal scenario would be to ensure that all individuals have equal access to any interventions independently of their level of education and their status in the society. The reality in Africa is that what is made available depends on structures in place (organization, adequate personnel, resources, etc.) and processes (systems of values, how things are done and information). This poses a big problem because cancer does not top the health agenda in Africa and it has to compete for the same resources with other diseases. The use of resources this way without careful planning is wasteful and not very cost effective.

The recommended interventions

The recommended interventions for cancer prevention and control include well-coordinated and implementable cost-effective activities such as:

(a) The formulation of a national cancer policy and strategic plan as well as advocacy and cancer awareness.

(b) The establishment/reinforcement of reliable and sustainable sources of data collection, particularly cancer registries.

(c) Primary cancer prevention;

(d) Secondary prevention initiatives and early detection services.

(e) Quality cancer treatment services.

(f) Good palliative care services.

(g) Educational/training programmes to identify target groups.

(h) Various types of research on cancers.

How to prioritize interventions

When a specific situation analysis has been undertaken in a country, decision- makers faced with deciding how to allocate funds between cancer and other priorities or for different cancer interventions need more than just information on interventions that are widely accepted on the basis of evidence on cost effectiveness in countries other than their own country. The total cost of an intervention is usually the deciding factor, regardless of how desirable an intervention might otherwise be.

For example, the cost of an intervention such as hepatitis B vaccination for infants - which is a global priority for all countries - depends on the number of births and the expected coverage, the unit cost of the vaccine and the ability to incorporate the vaccine (e.g., the adequacy of the

cold chain) into existing immunization programmes. The calculation in this case is relatively straightforward. However, if the question is whether to institute a screening programme for cervical or breast cancer, the cost estimates become more complex, as do calculations of cost-effectiveness or cost-benefit ratios. In both cases, screening implies the availability of treatment for cancers (or precancerous conditions) detected, as well as maintenance of the screening structure itself. In this report, general information on cost- effectiveness or cost-benefit ratios of interventions as reported in the literature has been given as a guide because of the recognition that when a decision is to be made at a particular time in a particular country, much more specific calculations must be carried out. Some African countries have professionals in health economics capable of providing support for such decision making, but several others do not. In countries without professionals capable of doing the required calculations, technical assistance by WHO should be provided to help make decisions regarding allocations in health budgets. Other factors which should be considered when making these decisions in respect to budgetary allocations include availability of funds and accessibility; cost effectiveness and affordability of the methods of intervention; acceptability; feasibility; safety and quality assurance; sustainability and appropriate and comprehensive response.

To facilitate the conduct of a situation assessment and begin planning/scaling up a cancer programme, WHO has developed resources (Appendix) which contain a series of questions and proposed methodology that can be used by a programme manager.

In the next chapters, we describe how to operationalize the key interventions mentioned below.

1. **Intervention 1: Formulate a national cancer policy and strategic plan within the framework of NCDs**
2. **Intervention 2: Establish/reinforce reliable and sustainable sources of data collection**
3. **Intervention 3: Foster cancer primary prevention**
4. **Intervention 4: Foster secondary prevention initiatives and provide early detection services more widely**
5. **Intervention 5: Provide quality cancer treatment services**
6. **Intervention 6: Provide good palliative care services**
7. **Intervention 7: Conduct educational/training programmes for identified target groups**
8. **Intervention 8: Conduct various types of research on cancers.**

Details about how to go about choosing these key interventions based on local settings including available human, technical and financial resources are emphasized in Chapter 4.

2.1. Intervention 1: Formulate a national cancer policy and strategic plan within the framework of NCDs.

Strategy: Cancer Control Policy, Advocacy and Networking

It is believed that no matter what resource constraints a country faces, a well-conceived, well-managed national cancer policy culminating in a NCCP is the best way to achieve reduction of morbidity and mortality from cancer and improve the quality of life of cancer patients and their families. When formulating a national cancer policy, policy-making, administration, advocacy and the practice of medicine should act together in justifying priorities for achieving health for all.

Major NCDs are sharing common risk factors and this should be capitalized when formulating the cancer policy, strategic planning and networking. WHO has already published guidelines to help managers and leaders in developing and implementing national cancer control policies and programmes.[3] The NCCP or the strategic plan needs to be tailored to the local context. Sometimes policy-makers and health professionals may face ethical dilemmas when assigning priorities because of the small "budgetary cake to share". In these circumstances, they must ask themselves whether current systems and practice safeguard solidarity and equity in a way that is compatible with their values and a just distribution of wealth.

When planning cancer prevention and control, advocacy is an essential strategy directed toward influencing the way the public and policy-makers at all levels think and act. By informing and educating the public and policy-makers, cancer control advocates can positively influence the laws, regulations and rules that impact the experience of cancer from prevention through palliation. The networking aims to advance the cancer policy and associated strategic plan; to share learning and reduce duplication of effort; to work on common issues and topics with the aim of promoting consistency; to foster working relationships between all stakeholders in the country and across organizational boundaries to promote a collaborative approach to service planning and delivery.

***Table 2*: Proposed matrix of activities for cancer control policy and strategic planning, advocacy and networking**

Activities	Expected Outputs	Actors	Key Performance Indicators
Appoint a National Steering Committee for NCCP according to WHO Guidelines[3]	Representation of various sectors	The Minister of Health (MoH)	Regular meetings, minutes of meetings and resolutions.
Define priorities of cancer prevention and control based on an internal situation analysis within the context of the NCDs programme	Priorities clearly spelled out in the terms of reference of the appointed committee	MoH	Situation analysis NCDs policy document Terms of reference document for the National Committee for NCCP
Integrate cancer prevention and control activities into the PHC and other levels in the health system	Cancer control integrated into the PHC	MoH	Cancer control as one of the priorities in the PHC plans
Incorporate cancer control into NGOs health programmes [local and international]	Collaboration with NGOs and MoH	MoH and NGOs	Expansion of interested parties in cancer control NGOs representation in NCCP
Collaborate with other health programmes, e.g. malaria, schistosomiasis, AIDS control, hepatitis B, etc., for strengthening the health system	Cancer control integrated into health care delivery	Programme managers	Sharing and exchanging between NCCP and other health programmes
Advocate for cancer prevention and improved cancer services	Policy-makers influenced	All stakeholders	National cancer policy and strategic plan formulated and being implemented
Develop a communication strategy for cancer prevention and control	Individuals and communities sensitized Policy-makers influenced	MoH and other stakeholders	Alliance and networks for cancer prevention and control

2.2. Intervention 2: Establish/reinforce reliable and sustainable sources of data collection.

Strategy: Vital Statistics, Cancer Registries and Sample Surveys

A comprehensive NCCP requires reliable information on cancer burden and a system of surveillance of cancer, its determinants (risk factors) and outcomes. The WHO manual on NCCP[3] and the Module on cancer planning[2] describe the elements of a cancer surveillance system, including measurement of cancer burden (incidence, mortality, prevalence and survival) and of the prevalence of key risk factors. A surveillance system is also concerned with monitoring and evaluation of the results of the cancer control programme. The indicators of success of the various NCCP components should be defined when it is formulated.

Not only cancer burden should be measured. Key interventions for cancer prevention and control should be assessed and documented for easy comparison in African countries. Though costly and time consuming, the documentation of effects must be done because it is essential in assigning intervention priorities. The benefit of a particular intervention can also be measured in terms of prolonging life (reduced mortality) or improved health-related quality of life. While it is easy to measure survival, quality of life is difficult to quantify in a way that would allow for comparison with others in the same situation.

***Table 3*: Proposed matrix of activities for vital statistics, cancer registries and sample surveys**

Activities	Expected Outputs	Actors	Key Performance Indicators
Advocacy for regular population census	Information on general population	National bureau of statistics	Publication of national data
Registration of death certificate	Information on causes of death	Registers of deaths	Publication of death registers.
Establishing adequate histopathology services	Histopathology services delivered in time	MoH and institutions	Histopathology units which are well staffed/ equipped and funded
Establishing a population-based cancer registry	Staff recruited/ appointed and trained.	International organizations: IARC, NCI, WHO and UICC	IARC approved cancer register, cancer registry staff trained. Epidemiology/statistical expertise available.
Functional population-based cancer registry	Valid incidence statistics. Data on stage and outcome of incident cancers	Hospitals and MoH	Membership of IACR. Annual reports on cancer profile
Obtain basic population data on risk factor prevalence	Survey reports	MoH and hospitals	Prevalence data on tobacco, alcohol, aflatoxins, height/weight (BMI)
Obtain population data on infections related to cancer	Reports of prevalence of these infections	WHO, MoH and hospitals	Prevalence of HBV, HCV, HIV (HPV and *H. pylori*)
Release/publication of annual cancer reports	Annual cancer reports	Institutes and cancer registries	Regular publications

2.3. Intervention 3: Foster cancer primary prevention

Strategy: Cancer Prevention And Awareness

Cancer prevention

Prevention aims at minimizing or eliminating the possibility of exposure to cancer causing agents as well as reducing biological risk factors in the community. It offers the greatest and cheapest opportunity for long-term cancer control. It focuses on raising public awareness about risk factors and lifestyles that may lead to the development of cancer.

Cancer prevention is a political as well as medical responsibility. In order to prevent cancer, we need to know what factors can increase an individual's risk of developing cancer and take actions to reduce these factors. Prevention must have a long-term perspective, since the benefits of investment in prevention will only become obvious after several decades or in the following generation. Prevention and health promotion measures must be well-coordinated, and many of the measures that are effective in controlling cancer are also effective in controlling cardiovascular diseases and other chronic diseases.

The entire population, NGOs and the government must participate in reducing/eliminating factors in the environment that contribute to the development of cancer. In Africa, priority should be given to infectious, behavioural and environmental factors.

Cancer awareness

Raising cancer awareness can be achieved by providing cancer education to the public and school children. The methods which can be used are:

(a) Posters, articles in the press, talks on radio and television programmes in the local languages and official language of the countries.

(b) Health education at school, meeting places and workplaces.

(c) Incorporation of health education materials on cancer into primary and secondary school curricula.

***Table 4*: Proposed matrix of activities for cancer prevention and awareness**

Activities	Expected Outputs	Actors	Key Performance Indicators
Identify measures for preventable cancers such as immunization for liver and cervical cancers and anti-tobacco campaigns/measures	Clearly-defined cancer prevention measures for lung, cervical and liver cancers for the country	MoH and other stakeholders	Documentation of preventive measures for the common cancers in the country
Strengthen immunization against hepatitis virus and introduce HPV vaccines	Increased number of people in the country immunized against cancer-causing chronic infections	MoH and other stakeholders	Percentage of the population who have been vaccinated for hepatitis B virus and HPV
Disseminate information on cancer prevention to the general public, including environmental and occupational carcinogens	Public awareness raising using IECs on cancer prevention in local perspectives	MoH, media and other stakeholders	Percentage of the population aware of cancer prevention interventions Number of IEC materials developed for cancer prevention
Advocate for behaviours favouring cancer prevention such as healthy diet, physical activity, safe sex, etc. and direct educational programmes at schools and workplaces	Increased number of people in the country practising anticancer behaviours, e.g. no smoking; no harmful use of alcohol; adopting healthy diet and practising physical activity	MoH and other stakeholders	Percentage of individuals who have changed their behaviours and life-styles

2.4. Intervention 4: Foster secondary prevention initiatives and provide early detection services more widely

***Strategy*:** Cancer Screening and Early Cancer Detection

Many types of cancers common in Africa allow easy screening and early detection at the precancerous stage when it is possible for them to be cured. These include cancers of the cervix, breast, mouth, throat, larynx and skin. Some children's cancers such as retinoblastoma (eye tumour) and Wilm's (kidney tumour) also fall in this category.

Secondary prevention involves early detection and diagnosis of cancer when the cancers are curable. Early detection includes breast self-examination (BSE) where every individual is continually monitoring for signs and symptoms of cancer while screening is done intermittently or periodically by the health professional, for example screening of cervical cancer using VIA and breast clinical examination (BCE).

Cancer screening

Cancer screening aims at detecting precancerous lesions and early cancer before the individual is able to feel and/or detect its presence.

Goals for screening

(a) Develop public awareness campaigns to encourage individuals to assume responsibility for their own health.

(b) Liaise with the Ministry of Education to incorporate screening methods for cancer into the school curriculum.

(c) Develop and establish national screening programmes for those at risk.

(d) Educate the public and school children on self-screening methods such as BSE and seven Warning Signs of Cancer.

(e) Identify and prioritize those cancers most likely to be detected early by screening methods, e.g. cervical, breast and childhood cancers.

(f) Educate health care professionals to be on the lookout for signs and symptoms of cancer.

(g) Develop a clear policy for screening, referral, diagnosis, treatment and follow-up of all cases.

Screening for cancer of the cervix

- ***Rationale***

Cancer of the cervix is the most common cancer in African women.[9] Late presentation is a common problem. Many women do not have access to screening tests in their life time because they reside in rural areas. Since the Pap's smear is a technically difficult test and is quite expensive, visual inspection methods such as VIA and VILI should be encouraged.

- ***Implementation plan***

For poor women at high risk of developing cancer of the cervix in Africa, one of the ways of making sure that at least 80% of these women aged 25 to 59 years are screened is to have a decentralized service at the primary level of the health system. A mobile screening service programme in collaboration with the Maternal and Child Health/Family Planning units of the MoH as an integral part of safe motherhood and maternal health and family planning/population policy programmes will be very useful. In countries where the community health approach to palliative care has been introduced, the vehicle used for this programme could also serve as the mobile service screening programme provider.

- ***Implementation objectives***

(i) Establish health education to increase awareness of early signs and symptoms.
(ii) Establish a clear policy for regular screening of women aged over 25 years.

- ***Strategies***

(i) Identify women aged 25 – 59 years for screening.

(ii) Train community health workers to use a checklist for high-risk groups to be referred for screening.

(iii) Train primary health care workers to examine the cervix and do VIA/VILI at clinic level.

(iv) Ensure equipment availability for VIA/VILI and gynaecological examinations.

(v) Train doctors and nurses on VIA/VILI techniques, colposcopy, cryotherapy and Loop Electrosurgical Excision Procedure (LEEP).

(vi) Establish laboratories with histopathology services at regional level.

(vii) Ensure link between identification of abnormality and referral for diagnosis, treatment and follow-up.

- ***Evaluation***

The programme will reduce the number and overall percentage of cases of invasive cervical cancer with advanced (stage II+) disease. Long-term effects of this plan will show a decrease in cervical cancer incidence and mortality.[21]

Early diagnosis and referral

Over 80% of patients in Africa at first presentation have advanced incurable cancer.[10;11] This is a big problem which can be mitigated by informing the general public about early symptoms and signs, educating health professionals on cancer and establishing quick referral procedure to hospitals with adequate available diagnostic and treatment facilities.

Breast cancer

- ***Rationale***

Cancer of the breast is the second most common cancer in African women. Many of these breast cancer patients attend hospital with advanced disease as national mammography screening programmes are expensive and not readily accessible to most women in most African countries. Breast clinical examination (BCE) and BSE should be encouraged as an integral part of safe motherhood, maternal health and family planning/population policy programmes.

- ***Implementation plan***

A good educational programme on BCE and BSE is the most important strategy in this intervention.

- **M*ain objective***

Aims to disseminate implementation of BCE and give instruction on BSE to 80% of women aged 15.

- ***Strategies***

Establish health education for creating awareness of BSE screening (start in schools).
Train primary health care workers to perform BCE and teach BSE.

- ***Evaluation***

The programme will reduce the number and overall percentage of cases of invasive breast cancer with advanced disease (stage II+). Long-term effects of this plan will show a gradual decrease in breast cancer incidence and mortality.

Childhood cancers

- ***Rationale***

Burkitt's lymphoma, Wilm's tumour, retinoblastoma, leukaemias, sarcomas and neuroblastomas are the commonest cancers occurring in children, mainly in the first ten years of life. If these cancers are diagnosed and treated early, most are curable. Burkitt's lymphoma and Wilm's tumour cure rate is high if detected early. Health education about these tumours will be integrated into child health programmes.

- ***Main objective***

To ensure that most childhood cancers are detected early by all levels of health-care workers.

- ***Implementation objectives***

(i) Educate health-care workers on the importance of screening well-children by observation and physical examination.

(ii) Educate parents on the importance of regular well-children check-ups which would be incorporated into the MoH clinics and immunization programme.

(iii) Sensitize health workers on common cancers in children and the importance of early referral for retinoblastoma, Burkitt's lymphoma and other childhood cancers.

- ***Strategies***

Establish health education for creating awareness of childhood cancers (start by informing mothers and health professionals).

Train primary health care workers to detect early childhood cancers.

- ***Evaluation***

The programme will reduce the number and overall percentage of cases of invasive childhood cancer with advanced disease (stage II+). Long-term effects of this plan will show a gradual decrease in childhood cancer incidence and mortality.

***Table 5*: Proposed matrix of activities for cancer screening and early cancer detection**

Activities	Expected Outputs	Actors	Key Performance Indicators
Create a favourable environment for cancer screening, e.g. clear recommendations and guidelines including affordable and accessible screening services	Accessible and equitable cancer screening services	MoH and other stakeholders	Number of screening programmes established
Institute early detection services in the health system, e.g. VIA for cancer of the cervix	VIA services for early detection at all levels of the health system	MoH and programme managers	arly detection programmes established down to the PHC
Build the capacity of health workers at all levels of the health system	Health workers equipped with knowledge of early detection techniques	Programme managers	Number of health workers trained on early detection procedures
Educate the public on the importance of self-detection, e.g. BSE	Increased self-detection for detectable cancers	Institutes and hospitals	Training manuals and pamphlets produced Number of women practising BSE
Provide a wider range of facilities in the health care system with adequate equipment for early detection	Referral system is strengthened and early detection carried out at various levels of the health care system	MoH	Number of regional or district referral hospitals equipped for cancer early detection

2.5. Intervention 5: Provide quality cancer treatment services

***Strategy*:** Cancer Therapy

The first step in cancer management is to make an accurate diagnosis. This calls for a combination of careful clinical assessment and diagnostic investigations including endoscopy, histopathology, imaging, cytology and laboratory studies. Once a diagnosis is confirmed, it is necessary to undertake further assessment to ascertain the extent of cancer spread (staging). The goals of cancer staging are:

(a) To aid in the choice of therapy.

(b) To aid in assessing prognosis.

(c) To facilitate the exchange of information.

(d) To determine when to stop therapy.

(e) To standardize the design of research treatment protocols.

The basic principles of cancer treatment are the same throughout the world; however, emphasis accorded to treatment will depend on local patterns of the disease, that is, the commonest types of cancer and the relative proportions of early and late stages at diagnosis. The specific treatment approaches adopted in each country will also depend on the availability of human,

physical and financial resources, as well as the political will to bring about the necessary changes in cancer care.[20]

The principal methods of treatment are surgery, radiotherapy, chemotherapy (including hormonal manipulation) and psychosocial support. Although each has a well-established role and can cure some types of cancer, multidisciplinary management is more effective than sequential independent management of patients. Except for surgery of very limited disease or of precancerous lesions, oncological services are dependent on a sound tertiary hospital infrastructure, with services for timely diagnosis and staging of all requests made.

The primary goals of cancer treatment are:

(a) Cure.

(b) Prolongation of useful life.

(c) Improvement of quality of life.

Cure in this instance is defined as the attainment of normal life expectancy and has three important components:

(a) Recovery from all evidence of disease (complete remission).

(b) Attainment of a stage of minimal or no risk of recurrence or relapse.

(c) Restoration of functional health (physical, developmental and psychosocial).

Effective and affordable therapy

Most countries in Africa do not have satisfactory infrastructure and facilities for cancer therapy using surgery, chemotherapy and radiotherapy.

Furthermore, properly trained personnel able to work in African environments, adequate drug supplies[20] and replacement of ageing radiotherapy equipment as well as their proper maintenance are in most cases lacking. Since good quality treatment is very expensive, it is very important that policies are put in place to ensure that government provides adequate funding for these services and that efforts are made to improve the current situation.

***Table 6*: Proposed matrix of activities for cancer therapy**

Activities	Expected Outputs	Actors	Key Performance Indicators
Develop/adapt standard treatment guidelines for the common cancers in the country	Treatment guidelines applied at different levels in the health system	MoH, hospitals and partners	Treatment guidelines developed with relevant levels of application
Develop quality assurance mechanisms to oversee proper management for cancer patients and adherence to ethics	Quality care to cancer patients	MoH	Quality assurance schemes, treatment policies and ethical layouts in place
Ensure that the quality of laboratory and treatment equipment, infrastructure and materials [including drugs] for cancer treatment is of high standard.	Quality management services to cancer patients	MoH, institutes, hospitals and partners	Quality equipment, infrastructure and materials delivered at respective levels of service delivery
Ensure continuous availability and affordability of medicines for cancer chemotherapy	Cancer chemotherapy widely available and affordable to cancer patients	MoH, institutes and hospitals	Continuous cancer treatment services delivery
Identify appropriate referral criteria for various cancer patients	Appropriate referrals	MoH and hospitals	Referral criteria for various cancer patients developed and implemented

2.6. Intervention 6: Provide good palliative care services

***Strategy*:** Palliative Care

The situation of cancer care in Africa is quite different from the one in developed countries: 80%-90% of patients are incurable at the time of presentation; less than 5% of cases are prevented and only 10%–15% are curable when given appropriate treatment.[14;15]

In 1986, WHO stated in its booklet on "Cancer Pain Relief"[16] that chemotherapy and radiotherapy would not be available to the majority of patients suffering from cancer in the developing world for several generations because of the cost. This is true for Africa. The WHO therefore stressed the necessity of making pain and symptom control through the Hospice movement a priority. This service is relatively more affordable as the drugs used are cheap but are often not available in Africa and other developing countries. When faced with a situation like this, the most appropriate thing for African countries to do is to ensure that good accessible and affordable palliative care is made available to cancer patients and to other patients with chronic illnesses. They should be aware of the fact that palliative care costs very little, is do-able and yet is very important in improving the quality of life of cancer patients and other patients with chronic illnesses.[17-18]

Palliative care is an approach that improves the quality of life of patients and their families facing the problem associated with life threatening illness. It acts through the prevention and relief of suffering by means of early identification and proper assessment and treatment of pain and other physical, psychosocial and spiritual problems. In Africa, 70%–80% of patients with late stage cancers are in need of palliative care very early on in the management of their

diseases.[14;15] Contrary to what many people believe, patients with cancer can lead a normal life and work full time for several years even if they have not been cured. Thus, the lack of capacity to provide the most appropriate measures for relieving symptoms in most cancer patients in Africa represents a serious ethical dilemma.

Considerable expertise is required to provide palliative treatment and high-quality terminal care. In Africa, there is little available expertise in palliative care because little or no priority is given to this in medical training. As a result, there is a general lack of standard palliative care provision resulting, among other things, in considerable and unnecessary suffering of cancer patients.

In order to put into place an effective national policy and programme on pain relief and palliative care, the following measures should be included: [18;22]

(a) Ensure that the palliative care programme is integrated into the existing health care system.

(b) Ensure that health workers are adequately trained in cancer pain relief and palliative care.

(c) Ensure that adequate support is provided for palliative care programmes, particularly in the home.

(d) Ensure that hospitals are able to offer appropriate specialist back-up and support for home care.

(e) Ensure availability of opioid, non-opioid and adjuvant analgesics, particularly morphine for oral administration.

African countries should aim to improve and progressively extend quality palliative care services to the rural areas where the majority of patients live. The rural hospitals should be empowered to play an important part in providing palliative care for cancer patients through appropriate staff training. Whenever necessary, because of local beliefs, liaison with traditional healers should be encouraged.

***Table 7*: Proposed matrix of activities for palliative care**

Activities	Expected Outputs	Actors	Key Performance Indicators
Develop/adapt standard treatment guidelines for palliative care in the country	Palliative care guidelines applied at different levels of the health system	MoH and hospitals	Palliative care guidelines developed with relevant levels of application
Develop quality assurance mechanisms to oversee proper delivery of palliative care for cancer patients and adherence to ethics	Quality palliative care to cancer patients	MoH	Quality assurance schemes, treatment policies and ethical layouts in place
Ensure the availability of palliative care drugs and adequate delivery infrastructure at PHC level.	Quality palliative care drugs to cancer patients	MoH, institutes, hospitals and traditional healers	Palliative care drugs and adequate delivery infrastructure in place
Incorporate palliative care programmes into the health care system, including home-based care	Symptom control and pain relief for patients with advanced cancers	MoH,traditional healers and spiritual leaders	Functional palliative care programmes with home-based care delivered at all levels of the health system
Identify appropriate referral criteria for patients requiring palliative care	Appropriate referrals for palliative care	MoH, hospitals and traditional healers	Referral criteria for various cancer patients developed and implemented

2.7. Intervention 7: Conduct educational/training programmes for identified target groups

Strategy: Cancer Education/Training

Lack of human resources

In addition to the lack of equipment for cancer management, Africa experiences an acute shortage of cancer experts – i.e. oncologists (to treat cancer patients), pathologists (to diagnose cancer) and oncology nurses who give nursing care. Furthermore, the little expertise that exists is not utilized efficiently. The few experts are assigned multiple duties, which compromises time meant for attending to cancer patients.

Oncology training

Most African countries do not have oncology training programmes. Training in oncology is still regarded as a super specialty in most fields of medicine – such as gynaecological oncology, medical oncology and paediatric oncology- and requires someone to specialize in some other discipline first before specializing in oncology.

The teaching of oncology to medical /nursing/paramedical students in most institutions has been given very few contact hours, hardly six hours for medical students and four hours for nursing/paramedical students. The study of oncological conditions is usually integrated into the normal syllabus and not treated as a field of its own.

There is little or no trickling down of knowledge in oncology to other health providers in the health system. It is recommended that training syllabuses in medical, nursing and paramedical colleges be reviewed to include training in cancer prevention, detection, cure and care.

Table 8: Proposed matrix of activities for cancer education and training

Activities	Expected Outputs	Actors	Key Performance Indicators
Undertake surveys in countries to assess the workforce devoted to cancer prevention and control	Human resources devoted to cancer situation assessed and results used for planning	MoH, hospitals, NGOs and civil society	Situation of human resources working in the field of cancer prevention and control available
Develop health education packages on cancer for the general public	Increased public awareness on various aspects of cancer	MoH, hospitals, NGOs and civil society	Community/public health education packages on cancer available and being applied.
Develop and implement training curriculum for community and PHC workers on cancer prevention, early detection, treatment and palliative care	Training curriculum Community and PHC workers equipped with knowledge on various aspects of cancer	MOH, institutions, academia and partners	Application of training curriculum to community and PHC workers
Expand coverage of cancer subjects with practical work in the training/learning curriculum for students in health training institutions	Graduates from health/medical schools well trained in various aspects of cancer control	MOH, institutions, academia and partners	Revisit training curriculum on cancer-related subjects
Initiate and facilitate local and regional training for candidates interested in the field of oncology	Increased number of staff of various specialties in the field of oncology	MOH, institutions, academia and partners	Increase in trained personnel/graduates in oncology–physicians, nurses, physicists and technicians.

2.8. Intervention 8: Conduct various types of cancer research

Strategy: Cancer Research

Knowledge generation through cancer research must be made an integral part of the public health service. It can be used as an instrument to structure the introduction of new and often resource-consuming technology and drug therapies. Medical knowledge base is made up of scientific studies published in recognized journals that are critically evaluated by a number of independent reviewers before being accepted for publication. So far, Africa has not established its own organizations to monitor the streams of cancer information through cross-disciplinary reviews. This is especially important for the thorough evaluation of new treatment methods that may be very expensive and unaffordable.

The aim of cancer research in Africa is to identify and evaluate the means of reducing cancer morbidity and mortality, as well as improving the quality of life of cancer patients.

The major categories of research are:

(a) Epidemiological.

(b) Clinical.

(c) Psychosocial and behavioural.

(d) Health systems and health policy.

There is a significant lack of experience and interest in conducting cancer research among health professionals. WHO suggested "A Prioritized Research Agenda for Prevention and Control of Noncommunicable Diseases" including cancer.[23] This helps in conducting cancer research. There is little enthusiasm, for example, in research on infection-related cancers like carcinoma of the uterine cervix, Kaposi's sarcoma and Burkitt's lymphoma which are the leading cancers in Africa.

Table 9: Proposed matrix of activities for cancer research

Activities	Expected Outputs	Actors	Key Performance Indicators
Identify research priorities for common cancers in the country	Gaps for common cancers being addressed	MoH, institutions, academia and partners	Research priorities for common cancers identified/documented
Mobilize funds from sustainable sources for funding researches	Funds for researches	MoH, institutions and partners	Fund-raising activities Budget allocation for cancer research
Facilitate capacity building in cancer research at various levels of the health system	Health staff equipped with research techniques	MoH, institutions, academia and partners	Capacity building of cancer researchers conducted
Promote collaboration between various stakeholders involved in cancer research	Collaboration and sharing of information	MoH, institutions and partners	Collaboration system/policies Minutes of meetings
Enhance cancer research capacity in the country	Research agenda document	MoH, institutions and partners	Health professionals empowered for cancer research, and research agenda implemented
Adapt and implement national research agenda based on the WHO prioritized research agenda for NCDs	National data on cancer Epidemiology, Clinical aspects, Psychosocial and behavioural data available. Health systems and health policy assessed regarding cancer prevention and control	MoH, institutions and partners	National research agenda implemented Number of research projects on cancer.

CHAPTER THREE

Efficacy and cost effectiveness of key cancer prevention and control interventions

Several studies have documented the cost effectiveness of various strategies for detecting and treating the conditions that lead to some cancers. Since cervical cancer is the commonest cancer in women in sub-Saharan Africa, this report will use it as a case study /example to help illustrate how decision-makers can choose from a number of options for controlling the disease, given the resources available to them.

3.1. Prevention compared with other health interventions

A number of health care programmes compete for available resources within any country. Where cervical cancer is a serious problem like in Africa, a number of other health problems affecting people are likely to be prevalent as well. These include high rates of maternal and infant deaths, malaria, nutritional deficiencies, HIV and other infectious diseases, as well as a number of chronic diseases such as diabetes and cardiovascular diseases.

A 1993 World Bank study found cervical cancer prevention using Pap's smears to be moderately cost-effective when compared with other health interventions such as malaria treatment or polio vaccination and very cost effective when compared with other cancer control efforts. The study showed that screening for and treating abnormal cervical tissue is far cheaper than hospital-based treatment of advanced cervical cancer. Still, the cost of offering Pap's tests at regular intervals is higher than what many African countries can afford. This, therefore, calls for health programmes to consider the costs and effectiveness of alternative affordable screening and treatment strategies.

3.2. Cost effectiveness of alternative strategies

(a) Screening strategies

The Alliance for Cervical Cancer Prevention (ACCP) research in South Africa looked at the cost effectiveness of different strategies for screening, diagnosis and treatment of cervical abnormalities. Researchers used a model to estimate cancer incidence, life expectancy, lifetime costs, and the costs of three different screening strategies: visual inspection, Pap's tests, and HPV tests. The model showed that a single lifetime screening of women aged 35 to 40 years would reduce the incidence of cervical cancer in South Africa by at least 26 per cent. More frequent screening reduced incidence further.

The cheapest strategy was visual inspection, followed by treatment with cryotherapy for women who were suspected positive. The most effective strategy - in terms of lives saved - was the use of a single lifetime HPV test, followed by cryotherapy for women who tested positive. The model assumed that providers would not use an expensive colposcope to guide the treatment procedure.

Table 10: Outcomes of the model of visual inspection strategy followed by cryotherapy[13]

Type and frequency of screening	Reduction in cervical cancer incidence %	Cost per year of life saved USD
ONE VISIT		
Visual Inspection + Cryotherapy	26	Cost recouped from not having to care for women with invasive cancer
HPV + Cryotherapy	32	14
TWO VISITS		
HPV test	27	39
PAP's smear	19	81
THREE VISITS		
PAP's smear	17	147

Findings from the South African study illustrated that, for the poorest countries, a single lifetime screen with visual inspection, along with immediate treatment, may be an affordable strategy. However, for countries with greater resources, using the HPV test could save even more lives. The cost effectiveness of both of these screening strategies compares favourably with other public health interventions such as childhood immunizations and AIDS prevention programmes.

To reinforce these findings further, ACCP researchers used data from Kenya, Peru, Thailand, South Africa and India to develop a standard set of analyses to compare the costs and benefits of alternative screening strategies. The analysis showed that in all five countries, lifetime cancer risk was reduced by 25 to 35 per cent with a single-lifetime screen (followed by cryotherapy for women who tested positive), using either a one-visit visual inspection or two-visit HPV testing of women aged 35 to 40 years. Although costs varied among countries, researchers identified a single-lifetime screening strategy in each country that would cost less per year of life saved than the country's per capita gross domestic product - an amount considered to be very cost effective.

(b) Elements of a successful prevention programme

A good prevention programme for cancer must reach a significant proportion of individuals at risk of the disease, effectively test these individuals, treat or manage those who test positive, ensure that they are followed up, and monitor and evaluate programme impact. The specific financial and technical inputs needed to start a programme depend on the size of the population to be served, the screening approach used, and the existing health infrastructure. In any setting, however, research and experience show that several key elements contribute to programme success.

(c) Ensuring a minimum level of services

To be effective, a cancer prevention programme must include a package of health education, regular screening and pre-cancer treatment services that reach the majority of individuals at risk of the disease. When resources are not adequate, implementing any one element in the package without the others will still have an impact though not as substantial. It is important to educate the population about the disease and the need for regular screening to motivate individuals to seek screening. The progression of cancer is an important guide for deciding

when to initiate screening, how often to screen, and when to recommend treatment or follow-up evaluation. Since in the African setting cervical cancer is the most likely cancer to be considered first, the questions "when", "how" and "whom" in relation with cervical cancer will be considered in this handbook.

(d) When to initiate screening

Cervical cancer most often develops in women after the age of 40 years. High-grade dysplasia is generally detectable up to 10 years before cervical cancer develops; its incidence peaking at around the age of 35 years. Therefore, where programme resources are limited, screening initially should focus on women in their 30s and 40s.

(e) How often to screen

Screening can take place relatively infrequently and still have a significant impact on disease rates. Once-in-a-lifetime screening between ages 35 and 40 can reduce lifetime cervical cancer risk by 25 to 35 per cent. Adding two more screenings at five-year intervals (for example, at ages 35, 40, and 45) can reduce cancer risks even further. The emphasis of screening programmes, therefore, should be on coverage of high risk women rather than on frequency**.**

(f) Whom to treat and follow up

Since 70% of low-grade precancerous lesions regress on their own or do not progress to cancer, treatment should focus on women with high-grade lesions, with follow-up mechanisms in place for women with lower-grade lesions. About one-third of untreated high-grade lesions will progress to cancer within 10 years. Services should also include palliative care for women with advanced cancer. The most basic programmes must be able to reach women at highest risk of developing cervical lesions with effective health education messages, screen them at least once, and provide appropriate treatment or palliative care to those who need it. As a programme matures, it can be expanded to include women up to the age of 60 years and then to women aged 30 years or less, depending on which age groups are most affected in the area. Ideally, national policies should be put in place to guide appropriate screening and treatment approaches for this type of setting.

(g) Integrating within existing services

Integrating cancer prevention with other primary health care services[21] can help to increase the likelihood for individuals at risk to come for screening and receive the necessary follow-up care. Integration will only succeed, however, if existing services are there and they reach all individuals at risk. For example, in cervical cancer screening, family planning programmes may not be good candidates for integration because these programmes often target younger women. Programmes that provide other maternal and child health services, treatment of hypertension or other outpatient services may be more appropriate and convenient for reaching older women who are at increased risk of getting cervical diseases.

The degree to which cancer prevention can be integrated into existing health services depends on available resources and capacity. If integration results in overworked health-care providers, because of a shortage of trained personnel and resources, the effectiveness of the programme will be compromised. Integrated services work best when provided by a wide range or number of staff, namely nurses and doctors who already provide other health services and who can incorporate cancer prevention into their routine practices. In some cases, services devoted

solely to screening can be offered effectively. These specialized services could be provided in a particular office of a clinic or through mobile outreach services that periodically visit villages or towns that lack access to such services.

CHAPTER FOUR

National cancer prevention and control activities based on resource realities

The cancer prevention and control strategies described in this manual may seem to be far beyond the resources of many African countries. Nevertheless, there is a clear benefit in implementing NCCP, regardless of the fiscal situation in a country because the programme process will ensure that existing resources in the control of cancer are used efficiently.

A small percentage of patients are wealthy and can afford early detection and treatment. These people enjoy a standard of living and health level comparable to those in developed countries. In addition to the social inequalities within a specific country and the fact that African countries do not constitute a homogeneous group, important differences can be encountered with regard to the epidemiological, economic, social and health system development situation. All these differences need to be taken into account when addressing the cancer problem and organizing key cancer prevention and control interventions. In most countries, a stepwise and flexible approach would be most appropriate as situations vary and evolve with time.

The three different scenarios which are proposed in this handbook to help and guide countries in their programme development bearing in mind their limited level of resources took into account the differences mentioned above. As well as being relevant to individual countries, the scenarios can be used to identify specific actions relevant to regions or population groups within the same country.

4.1. Scenario A – Countries with no resources allocated for cancer control

This scenario refers to low-income countries where resources for chronic disease control are completely absent or very limited. A considerable proportion of the population is rural. Infant and adult mortality rates are high. Communicable diseases and malnutrition are major causes of morbidity and mortality, especially among children. Life expectancy is relatively low at about 35-45 years. Cancer is usually not one of the main problems for the health sector. The majority of cancer patients are diagnosed when in advanced stages of disease. In these populations, exposure to cancer risk factors, such as tobacco or environmental carcinogens other than aflatoxins, may be low but almost invariably rising and exposure to infectious causes of cancer, such as HIV, HPV, HBV and sometimes schistosomiasis, will usually be high.

Health care services are often delivered by the informal sector, and alternative medicine is a major component. Infrastructure and human resources for cancer prevention or control are non-existent or very limited in quantity, quality and accessibility. Obvious weaknesses are present in organization, priority setting, resource allocation, and information systems for adequate monitoring and evaluation. Primary prevention and early detection are usually neglected; treatment-oriented approaches without much concern for their cost effectiveness are favoured.

What can be done in such circumstances?

The first action is to establish a basis for prevention of cancer and other chronic diseases by discouraging the adoption of unhealthy lifestyle – tobacco use and the “western diet” – by the local population. The general public and health-care workers should be made aware of the early warning signs of cancer and other chronic diseases. This will ensure that cases are identified,

referred and treated early in the course of disease, before they reach an advanced stage and become incurable.

In general, the primary prevention activities needed in this type of setting are tobacco control measures, reduction of alcohol use, and promotion of healthy diet and physical activity. Special attention should also be paid to carcinogens in the workplace, and to infectious agents such as HBV, HPV and HIV. Promotion of health education on the warning signs of the common cancers should be encouraged. If, as is common in most of Africa, rates of cervical cancer are high, the highest priority for a screening programme should be cervical cancer screening, focusing mainly on covering a high proportion of the women at risk. Mass screening for cancers which are not common should be discouraged. Cancer treatment should focus on cancers that are curable, and clinical trials should be encouraged to evaluate relatively low-cost approaches that can eventually be provided to all patients irrespective of their socioeconomic condition. More sophisticated techniques, such as radiotherapy and chemotherapy, should be introduced step by step in specialized centres. Major efforts should be made to achieve the highest coverage for pain relief and palliative care, using low-cost drugs (oral morphine) and some other interventions.

4.2. Scenario B – Countries with limited resources allocated for cancer services but no NCCP

This scenario is applicable to countries classified as “low-income” countries according to the UNDP index. The majority of the population is rural and life expectancy is between 45-55 years. Cancer is usually not one of the leading causes of morbidity and mortality. Exposure to health education on risk factors, infrastructure and human resources and intervention programmes for cancer prevention and control are weak or inexistent.

What can be done in such circumstances?

In general, the primary prevention activities needed are the same as in Scenario A. For secondary prevention, cervical cancer screening and early diagnosis programmes should be implemented. Cancer treatment should focus on cancers that are curable and major efforts should be made to achieve the highest coverage for effective pain relief and palliative care using low-cost drugs (oral morphine) and other interventions.

4.3. Scenario C – Low-income countries with NCCP but inadequate resources allocated for cancer services

This scenario is appropriate for countries with government-endorsed NCCP. In these countries, life expectancy is above 50 years, and cancer is not a major cause of death for both men and women. Many elements of a cancer control programme are in place, but they are not well integrated into a comprehensive national system. Furthermore, coverage of the population is uneven, with certain groups such as those in the rural areas, indigenous people and refugees having difficulty with getting access to these services.

What can be done in such circumstances?

Reorganization of the system could bring benefits in terms of greater cost effectiveness and improved reach and acceptability of services. Comprehensive health promotion programmes, in schools and at workplaces, should be implemented in collaboration with other sectors. While there should be a concerted effort to promote awareness of the early warning signs of cancer,

national screening programmes should, in general, only be implemented for cervical and breast cancers, as screening for other cancers has not yet been proven to be cost effective. A high priority should be given to the provision of easy access to effective pain relief and palliative care services. Implementation of a comprehensive surveillance system should be undertaken to ensure rapid response to changes in disease patterns and weaknesses in service provision.

Table 11: Recommendations for minimum essential actions by NCCP

Component	Ideal	Scenario A	Scenario B	Scenario C
National cancer control programme	Develop a national cancer control strategic plan/programme to ensure effective, efficient and equitable use of existing resources Establish a core surveillance mechanism to monitor and evaluate outcomes as well as processes Develop education and continuous training for health-care workers	Consider the implementation of one or two key priorities in a demonstration area with a stepwise approach Consider palliative care as an entry point to a more comprehensive approach Use appropriate technologies that are effective and sustainable in this type of setting	Consider initiating or formulating a NCCP Choose a demonstration area and implement comprehensive NCCP using a stepwise approach methodology Use appropriate technologies that are effective and sustainable in this type of setting	Strive to have nationwide implementation of NCCP guaranteeing effectiveness, efficiency and accessibility Implement a comprehensive surveillance system, tracking all programme components and results Provide support to other African countries
Prevention	Implement integrated health promotion and prevention strategies for NCDs that include legislative/regulatory and environmental measures as well as education for the general public, targeted communities and individuals Control tobacco use, and address alcohol abuse, unhealthy diet, physical inactivity and sexual and reproductive factors Promote policy to minimize occupation-related cancers and known environmental carcinogens Promote avoidance of unnecessary exposure to sunlight in high-risk populations	Focus on tobacco control which is an area where there is great need and potential for success. Ensure that priority prevention strategies target those groups that are influential and can spearhead the process (e.g., policy-makers and teachers) Integrate HBV vaccine with other vaccination programmes Integrate HPV vaccine with other vaccination programmes	Develop model community programmes for an integrated approach for tobacco control and prevention of NCDs Develop integrated clinical preventive services for counselling on risk factors reduction in primary health care settings, schools and workplaces Integrate HBV vaccine with other vaccination programmes Integrate HPV vaccine with other vaccination programmes	Strengthen and increase national coverage of comprehensive evidence-based health promotion and prevention programmes and ensure nationwide implementation in collaboration with other sectors Integrate clinical preventive services for counselling on risk factors in primary health care settings, schools and workplaces Integrate HBV vaccine with other vaccination programmes Integrate HPV vaccine with other vaccination programmes
Early diagnosis	Promote early diagnosis by creating increased awareness of early signs and symptoms of detectable and curable tumours that have high prevalence in the community, such as breast and cervical cancers Ensure that proper diagnostic and treatment services are available for all detected cases Provide education and continuous training to	Use low-cost and effective community approaches to promote, in a first phase, early diagnosis of cervical cancer in a pilot area with relatively good access to diagnosis and treatment facilities	Use low-cost and effective community approaches to promote early diagnosis of cervical cancer nationwide	Use comprehensive nationwide promotion strategies for early diagnosis of cervical and breast cancer

	target populations and health-care providers			
Screening	Implement screening for cancers of the breast and the cervix where incidence justifies such action and the necessary resources are available	Train staff and improve infrastructure for cervical cancer screening using Visual Inspection methods Focus on a pilot area where there is great need and potential for success.	Provide high coverage of effective and efficient cervical cancer screening with Visual Inspection with Acetic acid screening for women aged 25 to 59 years once in their lifetime.	Strive to provide national coverage of cervical cancer screening with Visual Inspection methods once in a lifetime or every 10 years for women aged 25 to 59 years
Curative therapy	Ensure availability and accessibility to effective diagnostic and treatment services Promote national minimum essential standards for disease staging and treatment Establish management guidelines for treatment services, essential drugs list, and continuous training Avoid performing curative therapy when cancer is incurable and patients should be offered palliative care instead	Organize diagnosis and treatment services giving priority to cervical cancer	Organize diagnosis and treatment services, giving priority to early stage tumours and to those with high potential of cure	Ensure accessibility to effective diagnostic and treatment services Promote national minimum essential standards for cancer staging and treatment Establish management guidelines for treatment services, essential drugs list, and continuous training Avoid performing curative therapy when cancer is incurable and patients should be offered palliative care instead
Pain relief and palliative care	Implement comprehensive palliative care that provides good pain relief, control of other symptoms and psychosocial and spiritual support Promote national minimum standards for management of pain and palliative care Ensure availability and accessibility of opioids, analgesics, especially oral morphine Provide education and training for health professionals, carers and the public	Ensure that minimum standards for pain relief and palliative care are progressively adopted by all levels of care in targeted areas and that there is high coverage of patients through services provided mainly by home-based care	Ensure that minimum standards for pain relief and palliative care are progressively adopted by all levels of care and that, nationwide, there is rising coverage of patients through services provided by primary health care clinics and home-based care	Ensure that national pain relief and palliative care guidelines are adopted by all levels of care and that, nationwide, there is high coverage of patients through a variety of options, including home-based care

Conclusion

The eight key interventions for cancer prevention and control in the WHO African Region will be most effective if they are integrated into the country's health system. This will allow coordinated action on common risk factors for several diseases as many of the risk factors such as tobacco; alcohol; overweight/obesity, physical inactivity and high fat intake are also risk factors for chronic heart diseases, diabetes mellitus and chronic respiratory diseases. The Ministry of Health should provide leadership in this multisectoral endeavour in collaboration with NGOs interested in cancer services.

A good cancer prevention and control programme must reach a significant proportion of individuals at risk of the disease. It should effectively test these individuals, treat or manage those who test positive, ensure that they are followed up, and carry out monitoring and evaluation to assess programme impact.

A comprehensive cancer programme requires a multisectoral approach that includes the Ministries of Finance, Education, Information, Industry and Agriculture because factors that contribute to the causes of cancer have a broad base in society. Economic planning and production incentives to minimize cancer hazards should be incorporated into agriculture and industry, and any exposure to carcinogens should be identified and standards established and enforced for their control.

It must be emphasized that the successful implementation of cancer prevention and control interventions will require an explicit commitment from all African governments for the provision of resources and the adoption of policy measures required to achieve these objectives. Adequate budget should be allocated for the implementation of the selected key cancer prevention and control interventions. The selection of key interventions should be based on priorities and on what is feasible with the resources available. Decision-makers should also be able to identify specific interventions relevant to their country or to different population groups within their country.

The key messages covered in this handbook include:

(a) Cancer is a growing problem in African countries and is a concern for everybody.

(b) A huge gap exists between current knowledge on cancer and action on cancer control in African countries.

(c) Optimal use of human and financial resources is crucial for the success of cancer prevention and control programmes.

(d) Implementation of the integrated and comprehensive cancer prevention and control strategy in Africa will make a difference.

(e) Select key cancer control interventions can be effectively implemented in a stepwise fashion even in poor African countries.

(f) All African countries can institute or increase cancer prevention through measures such as tobacco control initiatives, HBV and HPV immunization and offer of palliative care.

(g) Effective cancer prevention and control programmes must reach a large proportion of the population.

The role of PHC is crucial for prevention and referral and cancer treatment services are dependent on sound tertiary hospital infrastructure.

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Appendix

Some useful WHO publications and documents related to cancer prevention and control

Title of publication	*Purpose*	*Primary intended audience*
Cancer Control: Knowledge into Action; WHO Guides for Effective Programmes Six Modules: Planning; Prevention; Early detection; Diagnosis & Treatment; Palliative care; Policy & advocacy	This series of six modules provide practical advice to programme managers and policy-makers on how to advocate, plan and implement effective cancer control programmes, particularly in low- and middle-income countries.	Policy-makers in the health and related fields; programme managers
National Cancer Control Programmes, 2nd edition, WHO, 2002	This publication provides a clear policy and managerial framework for establishing and maintaining national cancer control programmes, including national and global actions. It provides an overview on the causes and burden of cancer and a review of the evidence of interventions for prevention, early detection, diagnosis and treatment, pain relief and palliative care. The foreword of the publications states the need for developing a complementary publication in the near future to provide operational models on how to implement the recommendations contained in the monograph.	Policy-makers in the health and related fields
World Cancer Report, IARC/WHO, 2008	This publication gives the scientific evidence on the cancer burden worldwide, the causes of cancer, and the mechanisms of tumour development. It also provides evidence for effective interventions in primary prevention, early detection and treatment in general and for a number of major types of cancer.	Policy-makers (not explicitly stated)
Global Report - Preventing Chronic Diseases: A Vital Investment WHO, 2006	The main objectives of the report are to: – Make the case for urgent national and global action to reduce chronic disease risks and burden – Present a state-of-the-art guide to effective and feasible interventions – Provide practical suggestions on how countries can implement these interventions to respond to the growing NCD epidemic.	MoH, Government officials from non-health sectors, all stakeholders
Stop the Global epidemic of chronic disease: A practical guide to successful advocacy, WHO, 2007	This publication provides guidelines and practical tools for all advocates, regardless of experience. Effective advocacy is needed to convince decision-makers that control of chronic diseases and Health Promotion merit increased investment and decisive action carries substantial, cost-effective benefits.	MoH, individual, consumer or patient groups, journalists, health-care professionals, NGOs, members of Government
Noncommunicable diseases: a strategy for the African Region, WHO/AFRO, 2000	The document aims at strengthening the capacity of African countries to draw up policies and implement programmes for the prevention and control of NCDs using comprehensive multisectoral approaches. Its major thrusts focus on strengthening health care for people with NCDs, supporting integrated disease surveillance, promoting research for community-based interventions, improving the capacity of health personnel and finding ways to reduce premature mortality and disability due to NCDs.	MoH, Government officials from non-health sectors, stakeholders who can influence multisectoral government action, such as the development sector
WHO Framework Convention on Tobacco Control, WHO, 2003	The objective of this Convention and its protocols is to protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke by providing a framework for tobacco control measures to be implemented by	MoH, Government officials from non-health sectors, stakeholders who can influence multisectoral government action, such

	the Parties at the national, regional and international levels in order to reduce continually and substantially the prevalence of tobacco use and exposure to tobacco smoke.	as the development sector
Health Promotion: A strategy for the African Region, WHO/AFRO, 2003	The strategy objectives involve strengthening national capacities for health promotion, supporting priority programmes to achieve set objectives, implementing specific initiatives in order to achieve priority health objectives, increasing the recognition of health promotion as an integral component of socioeconomic development and promoting the involvement of non-health public and private sectors in health development.	MoH, Government officials from non-health sectors, stakeholders who can influence multisectoral government action, such as the development sector
Global Strategy for Diet and Physical Activity and Health, WHO, 2004	DPAS is a comprehensive tool to guide Member States' efforts in the field of chronic diseases prevention, addressing specifically a number of detailed action points to promote a healthy diet and physical activity. The overall goal of the Strategy is to promote and protect health by guiding the development of an enabling environment for sustainable actions at individual, community, national and global levels that, when taken together, will lead to reduced disease and death rates related to unhealthy diet and physical inactivity.	MoH, other government offices and agencies, as well as other stakeholders
WHA Resolution for cancer prevention and control, WHO, 2005	The Resolution of the World Health Assembly provides Member States and the Secretariat with a clear policy and managerial framework for developing, establishing and maintaining national cancer control programmes, including national and global actions. It provides an overview of interventions to be implemented for prevention, early detection, diagnosis and treatment, pain relief and palliative care and for monitoring and evaluation.	MoH, Government officials from non-health sectors, stakeholders who can influence multisectoral government action, such as the development sector
Cancer prevention and control: A strategy for the WHO African Region, WHO/AFRO, 2008	The purpose of the document is to contribute to the reduction of cancer morbidity and mortality by providing a platform for advocacy, framework for development and implementation of policies, capacity building and intersectoral collaboration. The proposed priority interventions include cancer prevention and control policies and legislation; capacity building and health promotion; comprehensive national cancer prevention and control programmes, mobilization and allocation of resources, partnerships and coordination; strategic information, surveillance and research.	MoH, Government officials from non-health sectors, stakeholders who can influence multisectoral government action, such as the development sector
Cancer of the cervix in the African Region: Current situation and way forward, WHO/AFRO, 2010	Priority interventions have been identified in the document entitled Cancer prevention and control: A strategy for the WHO African Region and in the recommendations of the Ouagadougou Regional Consultative Meeting on Cervical Cancer Prevention and Control in Africa. The purpose of this document is to propose specific and targeted actions for cervical cancer control in the African Region.	MoH, Government officials from non-health sectors, all stakeholders interested in cervical cancer prevention and control in Africa
A Prioritized Research Agenda for Prevention and Control of Noncommunicable Diseases, WHO, 2011	Research should not only generate more knowledge but also help to translate knowledge into action through innovative approaches. Key research priority areas have been identified and included as part of a prioritized research agenda for noncommunicable diseases including cancer. The Agenda included in this publication focuses on translational and health system research to expand implementation of proven cost-effective interventions and research to enable affordability of high-cost but effective technologies in the context of various resource settings.	MoH, ministries of research, science and technology, development and donor agencies, research institutions, NCD research alliances, policy-makers, the research community, health professionals, NGOs and civil society entities.