The National Cancer Prevention And Control Strategy For Zimbabwe

2013 - 2017

Foreword

Cancer is a disease that affects large numbers of people from all walks of life. Diagnosis of cancer induces fear both in the individual and in families, being frequently viewed as a death sentence. Its prevention, diagnosis and treatment pose great challenges particularly in resource constrained environments such as ours in Zimbabwe. There is reason for optimism, however, as research indicates possibilities for major strides forward in prevention and cure. Major improvements in the diagnosis and treatment of cancer are being witnessed, particularly in high income countries. However, adoption of new technologies in cancer diagnosis and treatment will place substantial and diverse pressure on the already overburdened and underfunded health delivery system, and therefore requires careful planning and resource mobilisation.

Currently over 5000 new cancer diagnoses (all types) are made in Zimbabwe annually. Experience has, however, shown us that this is just the tip of the iceberg as many cancers are not captured by the routine National Health Information System because the patients do not present for treatment or register deaths. Of those who do report, the majority are already at an advanced stage of disease, with limited access to screening services. The current cancer treatment and palliation services are unable to meet the existing demand. Additionally, and despite great progress in reducing HIV prevalence in recent years, Zimbabwe remains one of the countries most heavily burdened with HIV with an adult prevalence of 15%. The large number of people living with HIV results in an even higher number of people who will develop cancer in Zimbabwe. Meeting this increased demand and ensuring sufficient quality of services will require early and sustained decisions on investment, human resource planning and the reorganisation of health care services.

To address the rising cancer burden, this first National Cancer Prevention and Control Strategy is aligned with the priorities highlighted in the National Health Strategy 2009-2013 and advocates for a comprehensive cancer control policy and programme. Cancer prevention and control requires a population-wide, integrated and cohesive approach to cancer that encompasses prevention, screening, diagnosis, treatment and support, palliative and rehabilitative care. This calls for strong political, technical, and practical leadership as well as significant investment in terms of infrastructure and equipment, human resources, technologies, medicines and vaccines. Appropriate investment will ensure that patients accessing health care services in Zimbabwe are assured of their right to receive quality treatment and care regardless of who and where they are.

This Strategy therefore, focuses on reform and reorganization of the way cancer services are delivered in Zimbabwe, in order to ensure that future services are consistent and associated with good clinical outcomes for all cancer patients and quality care for the patients and their care givers. It is envisaged that this will address the current finding of low cancer survival rates and fragmentation of services for cancer patients which is of major concern to the Ministry. While cancer survival rates have been noted to vary by type of cancer, the major cause of these low survival rates has been identified as lack of access to early detection and early treatment. The strategy therefore seeks to address some of these anomalies.

The Strategy will also seek to ensure that cancer prevention and care across the whole country is equitable and of the highest possible standard, through the establishment of a National Cancer Forum whose mandate will be to monitor performance of the national cancer prevention and control programme and advise the Minister of Health and Child Welfare accordingly.

I wish to thank the National Cancer Prevention and Control Committee for their hard work and the efforts expended in developing this strategy. Their professional dedication is an inspiration to all of us, and will help lead us forward to our goal of a healthy nation.

Dr Henry Madzorera
Minister of Health and Child Welfare

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Acknowledgements

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This Cancer Prevention and Control Strategy is also a result of extensive consultation with international and national cancer control stakeholders including the World Health Organisation (WHO) the United Nations Population Fund (UNFPA), Family Health International 360,Cancer Association of Zimbabwe, the National Cancer Alliance of Zimbabwe, Breast Cancer Alleviation of Zimbabwe, Hospice Association of Zimbabwew (HOSPAZ), Island Hospice Zimbabwe, Scientific and Industrial Research Development Centre (SIRDC), Radiation Protection Authority of Zimbabwe, Africa University Faculty of Health Sciences, University of Zimbabwe College of Health Sciences Departments of Radiology, Obstetrics and Gynaecology, Surgery, Pathology, Paediatrics, Medicine, Opthalmology. The process was also very fortunate to benefit from the direct input and involvement of cancer survivors who added a human face to the Strategy.

Many thanks go to Ministry of Health and Child Welfare officials were also involved and provided excellent support in the development of this Strategy. These include the Radiotherapy Centres at Parirenyatwa Group of Hospitals and Mpilo Central Hospital, the Non-Communicable Diseases Unit, Reproductive Health Unit, AIDS and TB Unit, Directorate of Pharmacy Services, the Rehabilitation Unit and the Oral Health Department. Special thanks to the Division of Policy, Planning and Monitoring & Evaluation in the Ministry for the support and guidance in the initial processes of the development of the Strategy, and for guiding its finalisation.

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Acronyms

AFRO	World Health Organisation Africa Regional Office
CT	Computerized Tomography
CIN	Cervical Intraepithelial Neoplasia
BMI	Body Mass Index
EBRT	External Beam Radiotherapy
FCTC	Framework Convention for Tobacco Control
HIV	Human Immune Deficiency Virus
HOSPAZ	Hospice Association of Zimbabwe
HPV	Human Papilloma Virus
IARC	International Agency for Research on Cancer
IAEA	International Atomic Energy Agency
INCTR	International Network for Cancer Treatment and Research
JRMO	Junior Resident Medical Officer
KS	Kaposi Sarcoma
KIDZCAN	Children Can Survive Cancer Zimbabwe
LEEP	Loop electrosurgical excision procedure
MCAZ	Medicines Control Authority of Zimbabwe
MOHCW	Ministry of Health and Child Welfare
MRI	Magnetic Resonance Imaging
MUGA	Multiple Gated Acquisitions
NCCP	National Cancer Control Programme
NCD	Non Communicable Diseases
NTD	Neglected Tropical Diseases
OI Clinic	Opportunistic Infections clinic
PC	Palliative care
PSA	Prostatic Specific Antigen
PET	Positron Emission Tomography
RT	Radiotherapy
RTPS	Radiotherapy Treatment Planning System
SIRDC	Scientific and Industrial Research Development Centre
SPECT	Single Positron Emission Tomography
SRMO	Senior Resident Medical officer
STI	Sexually Transmitted Infections
UNFPA	United Nations Population Fund
UZ	University of Zimbabwe
UZ-UCSF	University of Zimbabwe and University of California & San Francisco collaboration
VIA	Visual Inspection with Acetic Acid
VIAC	Visual Inspection with Acetic Acid and Cervicography
VILI	Visual Inspection with Lugol's iodine
WHO	World Health Organization
ZNCR	Zimbabwe National Cancer Registry

Executive Summary

Cancer is a major cause of morbidity and mortality in Zimbabwe with over 5000 new diagnoses being made and over 1000 deaths per year. The number of people developing cancer is expected to increase due to an increasing aging population, HIV and AIDS, and unhealthy lifestyle choices in the population. The Ministry of Health and Child Welfare and its partners in cancer control are prioritising cancer policy and implementation of relevant advances, with the vision that Zimbabwe will have a system for cancer control that will reduce cancer incidence, morbidity and mortality rates. The people of Zimbabwe will practice health-promoting and cancer prevention behaviours and have access to early cancer detection. This Strategy ultimately seeks to enhance the range and capacity and quality of cancer services comprising prevention, early detection, diagnosis, treatment, palliative care, rehabilitation and surveillance and research.

Promoting Health and Preventing Cancer:

It is estimated that public health action by governments and promotion of healthy lifestyles could prevent about a third of the cancers worldwide. This Strategy therefore focuses on primary prevention of cancer and recommends the development of Tobacco and Alcohol Control Policies which will facilitate reduction of exposure to tobacco and alcohol. Introduction of the Human Papilloma Virus (HPV) Vaccine for adolescent girls is also provided for in the strategy as well as promotion of Hepatitis B vaccination. Control of Schistosomiasis calls for collaboration with the Neglected Tropical Diseases (NTD) programme.

Early detection of cancer remains the best strategy in reducing cancer deaths, hence this strategy provides for early detection of cancers through development of cancer early diagnosis and management guidelines with associated human resource and infrastructure development. Population–based screening is not recommended but at risk groups should have access to specific screening services. This calls again for significant investment for capacity building at all levels of the system.

HIV and AIDS contributed 60% of cancers in 2005 (Chokunonga et al, 2010). Some cancers are leading in terms of morbidity and mortality, with cervical cancer accounting for 19% (2007) of all cancers. Hence this strategy provides for integration of selected cancer early detection within HIV and AIDS and STI management services.

Managed Cancer Control:

Cancer care will be provided at all levels of the system, private sector and community level: primary, hospital, palliative, rehabilitation, psychological and supportive care should be integrated in these elements. Hospital based cancer services will be expanded to meet the increased demand for cancer services. Hospitals should have cancer multidisciplinary management teams. Each health system level should provide access to comprehensive palliative care, psycho-oncology and supportive services to cancer patients, their families and carers. A more structured partnership between stakeholders / partners and MoHCW will help to enhance supportive care. The two existing cancer treatment facilities (Mpilo and Parirenyatwa) capacity will be

strengthened in order to cope with the increasing demand for treatment. Some functions including diagnosis, chemotherapy and surgery will be also be decentralised to the other three remaining central hospitals, some provincial hospitals and, where possible, to district hospitals.

Thinking Ahead:

This National Cancer Prevention and Control Strategy is the first to be developed, and will lead to the development of a Cancer Control policy action plan.

Planning must address the education, human resources needs, technology trends, and developments, evolution of workplace roles in service delivery models.
There is need to develop national Cancer Control workforce plan to support the operational planning needs for the cancer control programme.

Vision:

Zimbabwe will have comprehensive national cancer prevention and control systems which will reduce national cancer morbidity and mortality.

Mission:

Increase awareness on all cancer related issues and create an enabling environment for adoption and practice of evidence based cancer prevention, early detection, diagnosis, treatment, palliative care, rehabilitation, surveillance and research.

Guiding Principles:

1. **Equity** – fair and non-discriminatory access to cancer services
2. **Effectiveness** – treatment and management that improves the patient's quality of life
3. **Confidentiality** – shared personal information including diagnosis is not revealed to anyone else without the permission of the patient.
4. **Holistic** – cancer services assess and support the physical, emotional, social and spiritual needs of the patients and their families
5. **Accountability** – service providers, organisations and government are held responsible for upholding sound and ethical practice
6. **Dignity** – patients are treated with respect throughout the course of illness including death and dying
7. **Compassion** – cancer services are provided with genuine care and empathy for the patients and their families

Strategy Goals:

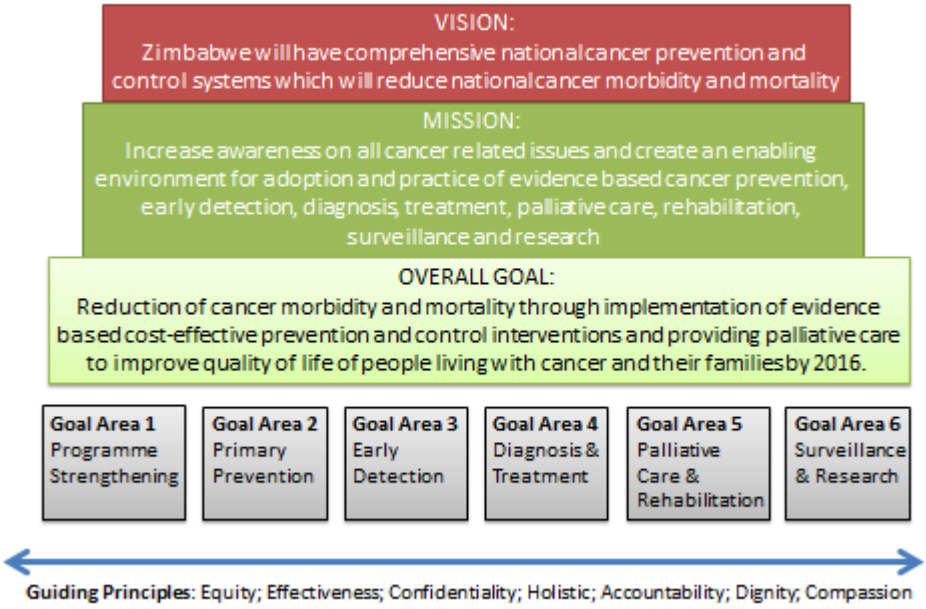
Overall Goal:

Reduction of cancer morbidity and mortality through implementation of evidence based cost-effective prevention and control interventions and providing palliative care to improve quality of life of people living with cancer and their families by 2017.

Goal Areas:

1) **Programme Strengthening:**
   - Standardisation of practice of National Cancer Prevention and Control services in all organisations providing cancer services.
2) **Cancer Primary Prevention:**
   - To promote appropriate behaviours and provide an enabling **e**nvironment for the control and prevention of cancer in 60% of the targeted audience by 2017
3) **Cancer Early Detection:**
   - Reduce late presentation (3^{rd} and 4^{th} stage) of selected cancers (cervical ,breast, prostate and oral in adults; Wilm's tumour, retinoblastoma, KS, leukaemia and non-Hodgkins lymphoma in children) from 80% to 50% by 2017.
4) **Cancer Diagnosis and Treatment**
   - To increase the proportion of people accessing comprehensive cancer diagnostic and therapeutic services in line with Standard National Cancer Management guidelines
5) **Cancer Palliative Care and Rehabilitation.**
   - All cancer patients and their families who require palliative care and rehabilitation have access to these services
6) **Cancer Surveillance and Research.**
   - Ensure nationwide comprehensive cancer surveillance data by 2017:
   - Strengthen evidence based policy development and decision making for cancer prevention and control.

Strategic Framework:


VISION:
Zimbabwe will have comprehensive national cancer prevention and control systems which will reduce national cancer morbidity and mortality
MISSION:
Increase awareness on all cancer related issues and create an enabling environment for adoption and practice of evidence based cancer prevention, early detection, diagnosis, treatment, palliative care, rehabilitation, surveillance and research
OVERALL GOAL:
Reduction of cancer morbidity and mortality through implementation of evidence based cost-effective prevention and control interventions and providing palliative care to improve quality of life of people living with cancer and their families by 2016.
Goal Area 1 Programme Strengthening
Goal Area 2 Primary Prevention
Goal Area 3 Early Detection
Goal Area 4 Diagnosis & Treatment
Goal Area 5 Palliative Care & Rehabilitation
Goal Area 6 Surveillance & Research
Guiding Principles: Equity; Effectiveness; Confidentiality; Holistic; Accountability; Dignity; Compassion

PART ONE: Context for National Cancer Control Strategy

1. Global Cancer Burden

Globally cancer is the third leading cause of death with 12 million new cases and 7.6 million deaths in 2007, projected to increase to 26 million cases and 17 million deaths annually by 2030. The projected increase is due to:

- Growth and aging of populations;
- Entrenchment of modifiable risk factors or behaviours such as: unhealthy diets, physical inactivity, and tobacco use ;and
- Slower decline in cancers related to cancer causing infections: HIV, HPV, HBV among others, particularly in low resource countries.

Developing countries bear the heaviest burden of cancer. In 1975 and 2007 these countries accounted for 51% and 55% of the cancer burden respectively and projected to increase to 61% of the global burden of cancer.

In sub-Saharan Africa cancer is emerging as a public health major concern. In 2008 there were 715,000 new cases and 542,000 cancer deaths. Both the cases and deaths are expected to double in the next twenty years.

2. Cancer Burden In Zimbabwe

The World Health Organization has projected an increase in the disease particularly in developing nations and Zimbabwe is not spared. The total number of new cases of cancer recorded among Zimbabweans in 2007 was 3349, comprising 1431 (42.7%) males and 1918 (57.3%) females.

The five leading causes of cancer among Zimbabwean black men in proportion to all cancers were Kaposi sarcoma (20.4%), prostate cancer (12.8%), non-Hodgkin lymphoma (6.7%), eye cancers (6.6%) and oesophageal cancer (6.1%).

The five commonest cancers in black women were cervical cancer (33.9%), breast cancer (9.7%), Kaposi sarcoma (9.6%), eye (8.7%) and non-Hodgkin lymphoma (4.1%).

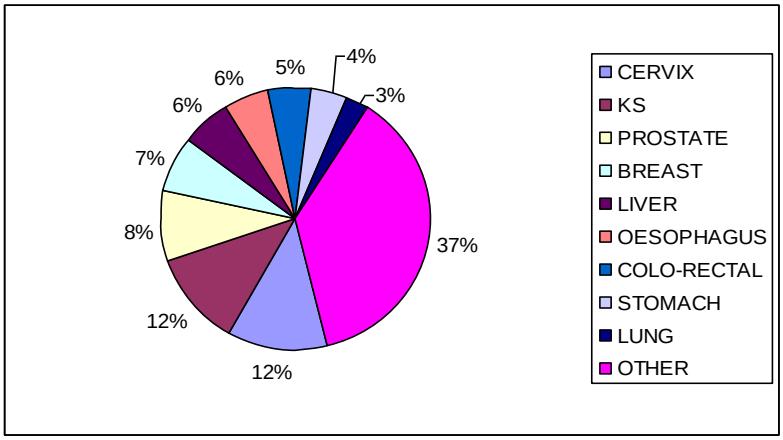
In non-black men the most frequent cancer was non-melanoma of skin (43.8%). This was followed by prostate (11.2%), lung (7.9%), colon (4.5%) and kidney (4.5%). In non-black women the most common cancers were non-melanoma of skin (28.3%), followed by breast (15.0%), lung (8.0%), colon (8.3%) and larynx (3.3%).

158 childhood cancers (age 0-14 years) comprising 106 boys (67%) and 52 girls (33%) were recorded in 2007. The most frequently occurring cancers in boys were Kaposi sarcoma (17.9%), Wilms tumour (16.0%), retinoblastoma (13.2%), non-Hodgkin lymphoma (11.3%) and leukaemia (8.5%). The commonest cancers in girls were Wilms tumour (19.2%), retinoblastoma (19.2%), non-Hodgkin lymphoma

(13.5%) and Kaposi sarcoma (9.6%) (Chokunonga E. et al, 2011). It is worth noting that most paediatric cancers are curable, especially if detected and treated early.

Cancer mortality in Zimbabwe is high mainly due to late presentation of disease, intercurrent disease including HIV and limited access to early detection and treatment services. The main causes of cancer mortality are shown in figure 1 below:

Figure 1: Mortality from specific cancers as proportion of all cancer deaths in Zimbabwe 2007 – Source: Zimbabwe National Cancer Registry, 2007



3. Cancer Programme In Zimbabwe

3.1 National Cancer Control Programme for Zimbabwe (NCCP)

In 1994, Ministry of Health and Child Welfare and other stakeholders developed the National Cancer Control Program for Zimbabwe (NCCP). The overall aim was to formulate, plan and implement a coordinated program for the prevention of cancer in Zimbabwe. However, a number of challenges and gaps related to this plan have been identified, including:

- Many health professionals did not have access to the plan
- The plan was good but it was not fully implemented or adequately monitored
- It did not cover HIV related cancers and childhood cancers in detail.

However the National Health Strategy (2009 – 2013) for Zimbabwe incorporates cancer prevention and control, although many elements remain to be implemented. There is also a draft Non Communicable Diseases (NCDs) policy, but it has not yet been operationalized, and requires to be reviewed by all relevant stakeholders and partners.

3.2 Funding Constraints

In settings where competition for funds is tough, cancer has remained low on the agenda. Diseases like Cholera, HIV and AIDS and Malaria have been major priorities of the government and are receiving significant funding while non-communicable diseases like cancer are left with limited funding. Lack of resources make it difficult to attract and retain health care providers and also results in shortages of essential chemotherapy and pain control drugs, and cancer diagnostic and treatment machines.

While the cancer prevention and control programme is grossly underfunded, as yet few partnerships exist to support the programme with the exception of screening for cancer of the cervix which is supported by United Nations Population Fund (UNFPA), and technical support from the International Atomic Energy Agency (IAEA) for training of human resources and other assistance.

All of these factors combine to increase the morbidity and mortality caused by cancer.

3.3 Integration and coordination of cancer control efforts

Cancer control services are provided by the MoHCW and partners but no mechanism is in place for coordination, resulting in fragmented service provision.

Evidence is available on HIV as a risk factor for cancer: in 2005 the National Cancer Registry report indicated that 60% of cancers in Zimbabwe were HIV associated, and yet no mechanism is in place for integration of the two programmes (HIV and cancer control). Additionally, unsafe sex promotes transmission of HPV contributing significantly (70%) to Cancer of the Cervix and other cancers, but there is no

integration of cancer control with the Sexually Transmitted Infections (STI) programme.

The referral system is not fully functional with either an inadequate number or lack of skilled experts in cancer management at district, provincial and central level, resulting in centralised cancer services. It is therefore difficult for the majority of patients to access cancer services.

The Cancer Prevention and Control Committee was re- established in 2009 and has been the only body advocating for support for cancer issues. The committee successfully lobbied for the introduction of the HPV Vaccine in November 2009, but more partnerships are required.

Although some new programs and services may arise from recommendations of the comprehensive cancer control planning, it is not only about creating new programs and services, but also first and foremost about coordinating and integrating what already exists. Zimbabwe is fortunate in having many resources, workgroups and subcommittees to draw upon in moving implementation of this strategy forward.

3.4 Training

Health care professionals are the critical link in ensuring that people obtain timely cancer screenings and reduce their risks of developing cancer. Currently the University of Zimbabwe offers an undergraduate program for Radiography training and post graduate program on Radiation Oncology. There has been ongoing training of Radiographers for several years at diploma level by the School of Radiography which is an associate college of the University of Zimbabwe. The Radiotherapy Centre is now recognized for internship rotations of newly qualified doctors before deployment to the districts since 2010. Post graduate students in pediatrics do rotations in the paediatric oncology unit as part of the requirements for paediatrics.

There are no facilities in Zimbabwe to train Nuclear Medicine personnel at the moment. The personnel currently available were trained abroad through technical co-operation programs with the International Atomic Energy Agency (IAEA). There is also currently no training of nurses in peadiatric oncology, which would be a critical cadre in the overall management of paediatric cancer cases and running of programmes.

3.5 Standard Treatment Guidelines for Cancer

In order to deliver high quality health care and support services, there should be evidence-based consensus among specialists about the management of specific cancers. Clinical guidelines outline a multidisciplinary approach to cancer treatment and enable some uniformity in the evaluation, treatment and follow-up care of cancer patients. A more detailed approach to patient management includes the development of clinical pathways that define specific medical interventions such as drug doses, chemotherapy regimens, and imaging studies.

The guideline for cancer management “Oncology in Zimbabwe” is long outdated, having been formulated and published in 1992. Therefore management of cancer control is not standardised as there are differeing management protocols/guidelines at

different levels of the service delivery system. There is need for different disciplines to agree upon cancer management protocols, so as to standardize cancer management based on the current available evidence.

3.6 Communications for cancer control

The Cancer Centre provides free health education materials in two languages (English and Shona). In addition to brochures, reference books and videos can also be viewed at the centre. The centre invites community groups and individuals to provide presentations about various health topics, ranging from health issues to disease prevention and overall wellbeing. Traditionally this has been the only centre providing cancer education in Zimbabwe. However this component of the programme must be rapidly scaled up if success is to be achieved. The central strategies include advocacy, social mobilisation and programme communication which will involve mass communication activities (electronic, print and interpersonal). To effect behaviour change, health literacy is an essential strategy.

Advocacy and Social Mobilisation
Advocacy for health refers to a combination of individual and social actions, designed to get positive commitment, policy support, social acceptance and systems support for a particular health goal, programme or intervention. Advocacy may be carried out through lobbying, social marketing, community mobilization and other approaches. Social Mobilisation is a process by which relevant stakeholders and partners of a society are engaged in a dialogue for co-ordinated actions as in the cancer prevention programme, various players including health workers need to be appropriately oriented for cancer control. Both advocacy and social mobilization rely heavily on programme communication. Programme communication seeks to inform and motivate specific groups of people to accept and use unfamiliar ideas and practices to change harmful habits using different communication strategies and approaches.

Health Literacy
Health literacy refers to the people's ability to obtain, interpret and understand basic health information and health services, and to use such information and services in ways that promote their health (TARSC, 2007) no ref. Guided by the Health Literacy/Promotion Taskforce the programme will aim to increase the proportion of Zimbabweans who are cancer literate to 80% by 2017. The strategy will involve education and awareness raising in various communities on cancer prevention. Documented best practices will be adopted and used.

Protection against chronic infections
The strategy to control cancers induced by biological agents will be the combating of the infections concerned. Personal and environmental measures, such as eliminating intermediate hosts of the parasites, will be promoted to reduce human exposure. These measures will augment essential measures including education to minimize the transmission of infection, for instance teaching people to avoid infected water, unsafe sexual behaviour, and injection drug use and sharing of used needles, and urination/defecation in water. Effective vaccines will be the most potent weapons against the viruses estimated to cause up to 15% of all cancers. Vaccination is currently available only against the Hepatitis B virus. HBV vaccination of infants in

areas of high prevalence is being promoted by WHO's Expanded Programme on Immunization as a means of preventing chronic hepatitis. The effect of such vaccination on the incidence of liver cancer should become apparent in about 30 years' time. The strategy will not be complete without the much awaited roll out of the HPV vaccination programme.

3.6 Key Issues

- Lack of standardized cancer management guidelines, NCDs/ Cancer Policy and Action plan results in non-standardised service provision, late diagnosis or delay in taking prompt appropriate action particularly at peripheral health facility level
- Lack of programme coordination mechanisms results in either service duplication or no equity in service provision
- Underfunding of cancer control activities
- No fully functional referral system
- No integration of cancer control services with HIV & AIDS and STI services
- Limited advocacy with parliamentarians and policy makers on importance of prevention and control of chronic infections to improve cancer control.

4. Cancer Prevention in Zimbabwe

4.1 Background to cancer prevention

The development of cancer is generally linked to personal habits, lifestyles, and environmental conditions . The main factors contributing to the increasing incidence of cancer in the African region include infectious agents, increasing tobacco and alcohol use, unhealthy diet, physical inactivity and environmental pollution. (WHO AFRO 2008).

To a lesser extent inherited genetic factors also increase the risk of cancer (5-10%). Social and economic factors are also major determinants of increased cancer risk. Cancer risk factors are highest in groups with the least education and lower socio-economic classes (WHO 2002). Knowledge of many of these factors can serve as the basis of cancer control.

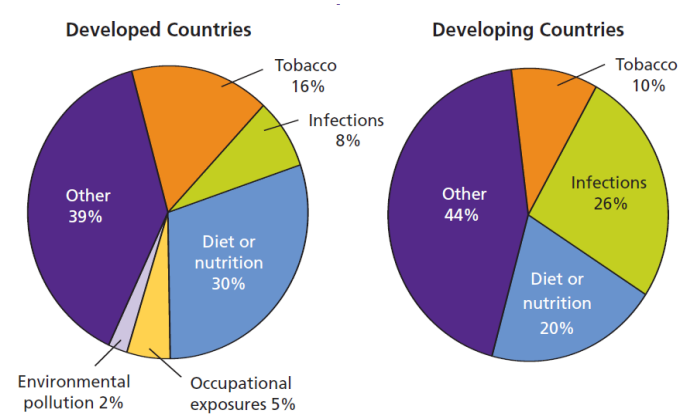
Prevention means eliminating or minimizing exposure to the causes of cancer, and includes reducing individual susceptibility to the effect of such causes. Prevention not only focuses on the risks associated with a particular illness or problem but also on protective factors. Vaccination against human Papilloma virus and Hepatitis B, for instance, can protect against cervical and liver cancers respectively. This approach offers the greatest public health potential and the most cost-effective long-term method of cancer control. The World Cancer Report (WHO, 2003) provides clear evidence that public health actions by governments and the promotion of healthy lifestyles could prevent as many as a third of cancers worldwide.

Cancer prevention is a key element in the national cancer prevention and control programme. However, Zimbabwe has not yet fully formulated a national cancer prevention strategy. Awareness programmes championed by the Cancer Association of Zimbabwe (CAZ) have been conducted in a few isolated places, mainly in the cities of Harare and Bulawayo. There is an urgent need for the introduction of comprehensive educational programmes that address areas such as control of cancer-causing infections, harmful substance abuse, nutritional and physical education issues.

4.2 Risk Factors

Major risk factors for cancer vary according to the level of economic development. In Zimbabwe the major risk factors include infections**,** nutrition and tobacco use.

Proportion of Cancer Causes by Major Risk Factors and Level of Economic Development



Source: Cancer Atlas, 2006.[4]

4.2.1 Infections

While cancer is not itself infectious, there are a number of infections that either directly cause cancer, or increase the risk of cancer. In fact according to WHO estimates almost 22% of cancer deaths in the developing world and 6% in industrialized countries are caused by chronic infections.

Major infectious agents in Zimbabwe include human immunodeficiency virus (HIV), human Papilloma virus (HPV), hepatitis B and hepatitis C viruses, schistosomiasis, Epstein-Barr virus and Helicobacter pylori. Interventions such as immunization, treatment of infections and behavioural change can reduce exposure to specific risk factors.Vaccines for prevention of hepatitis B and HPV infections now exist and will be discussed further.

Human Immunodeficieny Virus (HIV)

According to the Zimbabwe National Cancer Registry 2005 Annual Report, 60% of cancers are associated with HIV infections. The impact of HIV is reflected in the high incidence rates of Kaposi sarcoma and other HIV associated cancers which include cervical cancer, squamous cell carcinoma of the conjunctiva and non-Hodgkin's lymphoma (Parkin et al, 2006) .

Controlling HIV prevalence will have a big impact on the epidemiology of cancer in Zimbabwe; therefore more focus should be directed at controlling this epidemic. The principal objective in HIV and AIDS control is reduction in HIV transmission through promotion of general behavior change, condom use, access to treatment and prevention of mother-to-child transmission using antiretroviral drugs and safer infant feeding practices.

Human Papilloma Virus (HPV)

The sexually transmitted human papilloma virus is now recognized as the principal cause of cancer of the uterine cervix, especially subtypes 16 and 18 (IARC, 1995). Infection with these viruses is prevalent in young women, but the factors that cause these infections to persist and in some cases result in the development of invasive cancer are still under research.

Worldwide, HPV-16 and 18 contribute to over 70% of all cervical cancer cases, between 41 and 67% of high-grade cervical lesions and 16-32% of low-grade cervical lesions. Zimbabwe has a population of 3.96 million women aged 15 years and older who are at risk of developing cervical cancer. Cervical cancer ranks as the most common cancer in women in Zimbabwe, and the 2nd most common cancer among women between 15 and 44 years of age. About 35% of women in the general population are estimated to harbor cervical HPV infection at a given time, and 79.6% of invasive cervical cancers in Zimbabwe are attributed to HPVs 16 or 18. Both the bivalent and quadrivalent HPV vaccines are effective against about 70% of cervical cancer. In Zimbabwe, HPV vaccination was approved in 2009. Zimbabwe will implement HPV vaccine demonstration projects to fulfil GAVI requirements for vaccine application, then launch and roll out the vaccine.

Hepatitis B and C

Chronic infection with hepatitis B or C virus (HBV or HCV) is the main risk factor for cancer of the liver (IARC, 1995). Incidence is particularly high in sub-Saharan Africa and Eastern Asia where viral hepatitis (HBV) is transmitted at the time of birth or during early childhood. Research in Zimbabwe has confirmed that the majority of infections are acquired between the ages of 6 months and 5 years. MoHCW introduced Hepatitis B Vaccine targeting children under five years of age**.** Since 2007 it has been administered in combination with Diphtheria, Pertussis,Tetanus and Heamophylus Type B Influenza (Pentavalent Vaccine - 5 Vaccines). The 2010 coverage of the vaccine was 87**%.**

Schistosomiasis and other parasitic infections

Schistosomiasis is one of the most widespread human parasitic infections. The causative organism, Schistosoma, spends part of its life cycle in snails that inhabit shallow waters and is then released into the water, infecting humans by penetrating the skin. Passing of urine or faeces into the water by infected people promotes spread of Schistosomiasis, thereby sustaining the life cycle. There are still areas in Zimbabwe where the prevalence of Schistosomiasis is very high. Patients who are chronically infected with Schistosomiasis have an increased risk of developing bladder cancer. Controlling this disease will therefore also have an impact on the incidence of bladder cancer in Zimbabwe.

Bacterial infections

Infection of the stomach lining by a bacterium, Helicobacter pylori, known to be a cause of peptic ulcer disease and gastritis, is also a cause of stomach cancer. (IARC, 1994), Infection with this bacterium can be eradicated with antibiotic therapy, and it

is possible that some of the reduction in stomach cancer in most countries during the 20th century was a result of such therapy.

4.2.2 Tobacco

Worldwide, tobacco use is the single largest causative factor for cancer, accounting for 30% of all cancer deaths in developed countries. Tobacco smoke contains approximately 4 000 chemical substances, of which at least 438 can produce cancer. The most dangerous substances in tobacco are nicotine, tobacco tar, and carbon monoxide which contain the carcinogenic polyaromatic hydrocarbon and nitroso compounds. In addition to lung cancer, tobacco consumption causes cancers of the larynx, pancreas, kidneys, bladder, oral cavity and esophagus. Lung cancer risk is determined by the amount of daily consumption of tobacco, duration of smoking and depth of inhalation. For regular smokers, the relative risk for development of lung cancer is more than 20 times higher than that of non-smokers. Environmental tobacco smoke (passive smoking) is also carcinogenic but the risk is much less (1.15-1.2). Cessation of smoking significantly reduces the risk of lung and other tobacco associated cancers even after many years of addiction. However, even ten or more years after stopping , the risk is somewhat greater than that of those who never smoked. Tobacco smoking is also responsible for a large amount of chronic lung disease and contributes heavily to cardiovascular disease (WHO Cancer Report, 2003).

In Zimbabwe, tobacco is smoked or chewed in various forms. Tobacco is also consumed frequently as a mixture with other substances. Cigarette smoking is however, the most common form of tobacco use. Evidence suggests that people in Zimbabwe start smoking at a younger age, increasing the risk of developing cancer over the years. Young people usually encounter the practice among their peers and may then take up the habit themselves. Typically, tobacco use begins through social contacts, but the habit is reinforced by the development of psychological dependence derived from the nicotine content of tobacco. A study in Zimbabwe showed that tobacco consumption was 6 times more prevalent in males than females . Unfortunately, there is no enforcement on people to smoke in designated areas. This exposes the general population to passive smoking and its adverse consequences. The percentage of youths who are exposed to second hand smoke in Zimbabwe is 24.7% (Tobacco Atlas).

Action against tobacco

The Government economic policy towards tobacco is directed towards individual and mass education against tobacco use. The powerful commercial interests involved in production and distribution of tobacco products exploit people's dependence on tobacco in order to maintain sales. Government action regarding land use, subsidies, taxes, and other leverage on prices has a profound influence on the spread of tobacco use. Although the International Framework Convention for Tobacco Control (FCTC) will outlive its lifespan in 2012, it remains a blueprint for effective control of tobacco, outlining articles on protecting populations from exposure to tobacco smoke; implementing graphic warning labels on tobacco packaging; passing comprehensive bans on tobacco advertising, promotion, and sponsorship; and promoting cessation, among other issues. It will thus remain a reference document for this strategy.

It should be noted that:

- Zimbabwe has not yet ratified Framework Convention for Tobacco Control
- Tobacco is a major cash crop in Zimbabwe
- Legislation on tobacco use exists in Zimbabwe but implementation is still an issue.

A holistic approach under the Health literacy framework will be adopted to reduce population exposure to tobacco. The strategy will advocate for enabling legislation, promotion of 'sin' taxes and an environment that promotes tobacco cessation. This will reduce the economic and social acceptability of tobacco use in line with the WHO recommended strategies (WHO, 2003).

4.2.3 Alcohol consumption

Heavy consumption of alcoholic beverages increases the risk of cancers of the oral cavity, pharynx, larynx, oesophagus and liver, and may increase the risk of breast and colorectal cancers. The risk is linearly related to the mean daily consumption. Apart from the increased risk of cancer, alcohol consumption also causes alcoholism (addiction), alcohol psychosis, chronic pancreatitis, liver cirrhosis, hypertension, hemorrahagic stroke and low birth weight to babies born to alcoholic mothers. Furthermore, inebriation associated with alcohol drinking is responsible for a high proportion of accidents and injuries (15-40%) including road traffic accidents.

The Zimbabwe STEPwise survey (2005) revealed that current alcohol consumption is very high especially among males. The survey noted that current alcohol consumption was 58% in males and 13.5% in females in the study population. The unrecorded alcohol consumption in Zimbabwe is estimated to be 9.0 litres pure alcohol per capita for population older than 15 years for the years after 1995 (estimated by a group of key alcohol experts). The likelihood of under-reporting of alcohol consumption by females is probably greater due to cultural factors.

The carcinogenic effect of alcohol in relation to oral, pharyngeal, laryngeal and oesophageal cancer is exacerbated by tobacco use (IARC, 1988).

Controlling alcohol consumption

Control of alcohol will therefore require taking into account the wide range of social forces that affect alcohol use. Efforts to reduce population exposure to alcohol will reflect concern about a range of diseases, as well as the domestic, social, and industrial problems that arise from alcohol use. Practical obstacles to the use of alcohol are required. The most effective action a government can take to reduce individual alcohol consumption is to raise prices of alcohol through taxation. Other measures that have been tried with varying degrees of success include limiting the places and times at which alcohol is available, raising the minimum legal age at which alcohol may be purchased, and creating a government monopoly on alcohol sales. All these efforts will complement the health literacy strategy.

4.2.4 Nutrition, Obesity and Physical Activity

Up to 30% of cancers are probably related to diet and nutrition. Excess salt intake causes arterial hypertension and an elevated risk of stomach cancer. However, due to modern methods of food preservation, the incidence of stomach cancer is declining worldwide. A western diet (highly caloric food, rich in animal fat and protein) often combined with sedentary lifestyle and hence energy imbalance, increase the risk of colon, breast, prostate, endometrial and other cancers. Physical activity, avoidance of obesity and frequent daily intake of fresh fruit and vegetables reduce the risk of oral cavity, lung, cervix uteri and other cancers (WHO, 2003).

The eating patterns in developing countries like Zimbabwe are shifting towards the Western lifestyles especially in urban areas, a situation that is termed the Nutrition Transition. There has been a noted decrease in staple foods rich in starch and dietary fiber, plant protein sources.Also an increase in foods from animal origin which are rich in total fat and saturated fatty acids, and energy-dense snack foods, carbonated sweetened beverages, and commercially available alcoholic beverages has also been noted. Red meat intake, especially of processed meats, has also been associated with certain cancers like prostate cancers.

Body mass is most usefully measured as Body Mass Index (BMI), calculated by dividing the body mass in kilogrammes by the height in metres squared. Obesity is epidemic in many developed countries, and is increasingly becoming a concern in many developing countries such as Zimbabwe.
Studies have shown varying degrees of consistency that excess body mass is associated with an increased risk of cancer. There are links between obesity and the risk of breast cancer (in older women), endometrial cancer and cancers of the kidney, colon, and esophagus. Not being physically active increases the risk of colorectal cancer. Together physical inactivity and obesity are linked to 30% of colon, endometrial, kidney and esophagus cancers as well as 30% of breast cancers in older women. Losing weight and exercising (at least 30 minutes a day most of the days of the week) help reduce the risk of the development of cancer.

4.2.5 Occupational and environmental exposure

Historically, exposure of chimney sweeps to soot and of other workers to certain types of mineral oil were found to cause cancer of the scrotum; metal mining gave rise to lung cancer, and chemicals used in dye works to bladder cancer. Identification of occupational factors in cancer etiology is hindered by the fact that as many as 20–30 years may elapse between exposure and disease. However, the concentration of exposure among relatively few workers has made it possible to pinpoint several occupational situations responsible for a variety of cancers. Risk is generally apparent from the age of about 50 years, but maximum risk may not be seen until the post-retirement years due to the long latent period for induction of many occupationally-induced cancers. Health protection measures include monitoring the use of potentially carcinogenic materials and processes in industry, providing public

education, and enacting appropriate legislation to minimise occupational and environmental exposure to carcinogenic agents.

There is existing legislation on exposure to occupational carcinogens in Zimbabwe:

- Pneumoconiosis Act to minimize dust exposure to employees
- Radiation Protection Act to minimize radiation exposure to workers
- Environmental Management Act

Control of Occupational Exposure to Carcinogens

Minimising occupational and environmental exposure to carcinogenic agents calls for the identification and assessment of existing or potential hazards. Zimbabwe has an excellent opportunity to learn from the experience of the industrialised countries, and to take steps to avoid the emergence or importation of cancer hazards in industry. Wherever occupational cancer hazards are found to exist (for instance among illegal gold panners), exposure standards must be set that will minimise the risk to workers. This typically requires the appropriate government, scientific, industrial, and labour organizations to review and discuss relevant data and then to agree on controls. Once a quantitative standard is set, industrial processes must be modified to ensure that the agreed maximum exposure level is not exceeded. This may involve the mechanical redesign of a process, substitution of materials, or other significant adaptations. Personnel protective clothing can also be utilized but it cannot always be relied upon as workers are not always compliant. However, surveillance of workers wherever possible, should be carried out.

4.2.6 Radiation

Ultraviolet radiation which comes from natural sunlight, sunlamps and other sources can lead to skin cancers (melanoma, squamous cancers and basal cell cancers) which occur more commonly in individuals who lack/have little melanin pigment such as albinos and white skinned races. While some sun exposure is healthy, excessive exposure particularly during childhood /repeated exposure in adults seems to increase the risk of skin cancer. Preventive measures include: avoiding sun exposure during times of peak intensity eg. between 10:00hrs and 16:00hrs, use of sunscreen, wearing protective clothing and avoiding use of artificial UV exposure. Other sources of radiation such as medical sources, natural sources and nuclear fallout should be paid attention to (health promotion) and regulatory measures put in place.

4.3 Key Issues

- **Need to focus on prevention as 30-40% of cancers are preventable**
- **Prevention is the most cost-effective intervention especially in resource limited settings such as Zimbabwe**
- **There is need to integrate Cancer and chronic infections control as most cancers in Zimbabwe are associated with infections**
- **A comprehensive Cancer Communication Strategy focusing on cancer prevention should be formulated and implemented as a matter of urgency**

5. Early Detection of Cancer

5.1 Background to early detection of cancer

The majority of cancer patients (80%) in Zimbabwe present late (3^{rd} and 4^{th} stage), resulting in increased premature deaths from cancer. Diagnosis of cancer at earlier stages of disease can enhance chances of successful treatment outcomes and greatly increases chances of a successful cure. Major components of early detection include education of the population to promote early diagnosis and screening. Increased awareness of possible warning signs and symptoms of cancer among health professionals (nurses, doctors), other health care providers and the general public will result in prompt action leading to early diagnosis and possible cure.

Screening programs and early diagnosis can be effective in improving the success rate of treatment, and many cancers have the best chance of cure when they are detected at an early stage. They can save years of life and improve quality of life, while reducing the need for and costs of treatment of advanced disease. However, national cancer screening programmes in Zimbabwe are at an early stage.

5.2 Availability of screening services for early detection of cancer

Screening services for most cancers, including cervical cancer, breast cancer using pap smears, mamogram and ultrasound scanning, are available in private institutions but the cost is prohibitive for the majority. Even among those who can afford screening, there has been insufficient awareness campaigns to encourage people to be screened for cancers, and these services are generally centralized and not available to the rural population. Most of the Medical Aid Societies do not provide cover for screening services, and with those that do cover there is co-sharing of the cost with client. PSMAS provides screening for prostate cancer using Ultra Sound Scanning (USS).

Most government institutions do not offer screening for prostate, breast, cervical or colon cancers, as the key health professionals lack adequate information and skills to provide the services, coupled with lack of basic equipment. However, the Ministry of Health and Child Welfare has several sites screening for cervical cancer (Mpilo, United Bulawayo HHospital, Masvingo,) providing cervical cancer screening services using VIAC. Zimbabwe National Family Planning Council, Spilhaus and Newlands clinic (HIV and AIDS service organisation) also provide screening services. However, all of these services are centralized in urban areas. Additionally, screening programmes for paediatric cancers are not yet in place. Simple clinical screening tests (e.g. looking for white reflex in eye for retinoblastoma, palpation of abdomen for masses) should be integrated into basic primary health care services including growth monitoring of under-5s.

Several nongovernmental organisations including but not limited to the Cancer Association of Zimbabwe, KIDZCAN, National Cancer Alliance of Zimbabwe, Brain Tumour Association and Breast Cancer Alleviation of Zimbabwe are currently complementing government efforts in cancer prevention and early detection through their advocacy and health promotion efforts with the community. KIDZCAN also

supports children with cancer financially by paying for investigations, improving early diagnosis and facilitating early treatment. Unfortunately, currently most of the children present with advanced stage disease.

Local research institutions have carried out studies on cervical cancer screening. VIA was pioneered by a team of researchers from the Department of Obstetrics and Gynecology, University of Zimbabwe, in collaboration with researchers from Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO) and published material (Chirenje ZM et al, 1999). UZ researchers demonstrated that cryotherapy was a reasonable option to treat cervical intraepithelial neoplasia (CIN) compared to Loop excision (LEEP) in randomized control trial (Chirenje et al 2001).

Zimbabwe MOHCW demonstration projects with VIA and treatment cryotherapy were successfully launched by UZ researchers in Mutoko, Gwanda and Chiredzi. The VIA/cryotherapy screening and treatment programs were based on the "see and treat" principle with high retention of screen positive cases who are immediately treated with cryotherapy. The Mutoko and Gwanda programs stopped screening due to trained staff shortages that occurred across MOHCW at the height of the economic crisis. The Chiredzi program continued however.

5.3 Key Issues

- Lack of access to early detection (screening and diagnosis) facilities
- Advanced stage presentation of patients with cancers, increasing the cost of management and leading to avoidable premature deaths
- Inadequate resources (human, equipment and technology) negatively impact on cancer early diagnosis
- Lack of information on need for regular cancer screening and where services are available reduced utilization of those services that are available both in the public and private sector
- Prohibitive costs of screening services
- An effective national mechanism, such as a national cancer screening committee, is needed to motivate for, organize and co-ordinate cancer screening activities
- Provision of cancer early detection services (early diagnosis and screening) is necessary at all levels, accompanied by a sound referral system (referral centres with capacity to take up the referral case)
- There is need to conduct a formal assessment of the reasons for delays in early detection of cancers, focusing on who is affected and why
- Programmes to encourage earlier presentation of disease need to be developed, including training of primary care workers on cancer prevention, early diagnosis, early recognition of symptoms and signs of cancer (early warnings) and taking appropriate action – referral to next level for further management.

6. Diagnosis and Treatment

6.1 Background to diagnosis and treatment of cancer

There has not been any reliable or consistent documentation of most of the elements of cancer diagnosis and treatment in Zimbabwe. This is a reflection of the low priority that cancer has so far been given.

The diagnostic infrastructure for cancer in the country is limited. Important early diagnostic facilities like pathology are available only in Harare and Bulawayo. The performance of diagnostic tests and sending of specimens from patients from the district hospitals may take three or more weeks on average to complete when available. The three major modalities of cancer treatment namely surgery, radiotherapy and chemotherapy are also inadequate in the country, in terms of personnel, drugs and equipment. This has led to some people who can afford it to seek treatment outside the country.

There are two Radiotherapy treatment centres, one in Harare and the other in Bulawayo. To reach such facilities patients must spend huge amounts of money, frequently beyond their reach. Such constraints leave an unestimated number of cancer cases in the population either without diagnosis or treatment. The location of the treatment centres in the country make the stark reality of inequitable access obvious.

The availability of diagnositic and treatment services for cancer in Zimbabwe can be summarized as follows:

- Plain X-rays can be taken at district, provincial and central hospitals
- Biopsy is done at Provincial and Central hospitals and few mission hospitals
- Cytology is very limited but offered by private laboratories at a cost
- Computerised Tomography (CT) scanning is available in Harare and Bulawayo. The private sector offers a reasonable service at a cost. Public facilities for CT scanning are inadequate and non-functional most of the time.
- Mammography is available in private institutions and recently one machine has been installed and commissioned in the government sector at Parirenyatwa Hospital
- Magnetic Resonance Imaging is also available in private institutions but is very expensive
- Brachytherapy equipment for gynaecological cancers is available at Mpilo Hospital. New brachytherapy equipment capable of treating a number of cancers has recently been procured by Parirenyatwa Hospital.
- Parirenyatwa and Mpilo Hospitals have their own pharmacies, although chemotherapy drugs are expensive and are not always available there. Patients who are prescribed such medications must try to obtain them at private pharmacies. In paediatrics, chemotherapy drugs are mainly supplied by Kidzcan.

6.2 Diagnostic radiology

General radiology is the basic fundamental imaging modality. Whilst this facility should be available at district, provincial and central hospitals most of these institutions are currently unable to provide this service. This is due to non-functional old equipment and a serious human resource shortage.

Computerised Tomography (CT) scanning was, in the past, available in the public sector in Harare and Bulawayo. Public facilities for CT are inadequate and have been non-functional for several years.

One Mammography unit has been recently installed and commissioned in the public sector at Parirenyatwa Hospital.

Magnetic Resonance Imaging (MRI) has not been available for several years due to equipment breakdown.

The private sector offers a reasonable service that covers all the above imaging modalities at a cost. There are a number of these centres in the major towns of the country, which somewhat relieves the pressure on the barely functional public sector.

6.3 Pathology

Basic laboratory services are available in the District Hospitals, Mission Hospitals and some small private centres. Histopathology services are however centralized to the towns of Harare and Bulawayo in both the private and public sectors.

Pathology services are generally seriously affected by skilled staff shortages at all levels. There are five pathologists for the whole country, four in Harare and one in Bulawayo. The ideal number of pathologists is 1 for every 250,000 of the population. Hence Zimbabwe would ideally need 48 pathologists. This major human resource gap has to be rectified for any successful cancer control effort.

6.4 Nuclear Medicine

Nuclear Medicine plays a pivotal role in the management of cancer patients, both diagnostic and therapeutic. The role of this modality is in staging of cancer by screening for the presence or absence of skeletal metastatic disease especially in cancers such as breast and prostate cancer. The most sensitive and cost-effective method of screening for skeletal metastatic disease is whole body bone scanning. The other role is in the monitoring of cardiac function for those patients on chemotherapy medicines that are cardiotoxic. Such patients require measurement of cardiac ejection fraction for which the gold standard is radionuclide Multiple Gated Acquisitions (MUGA).

Sentinel Lymph node mapping and intra-operative use of a gamma probe have been used in localizing sentinel lymph nodes with success in malignant melanoma and breast cancer, enabling oncologists to make well-informed decisions in planning therapy for patients.

Therapeutic applications of nuclear medicine techniques include, but are not limited to, bone pain palliation, Meta-Iodo-Benzyl-Guanidine (MIBG) therapy for neuroendocrine tumours and Zevalin therapy for refractory or recurrent non-Hodgkin's Lymphoma.

Equipment

There are two State-owned nuclear medicine facilities in Zimbabwe, one at Parirenyatwa group of hospitals (with one non-functional Siemens E-cam gamma camera installed in 2003) and another at Mpilo Central Hospital (with one obsolete Sophy Gamma camera installed in the '90s). Until late 2010 when the gamma camera broke down, some nuclear medicine studies were available at Parirenyatwa Group of Hospitals while at Mpilo, the facility has been non-functional since early 2003. This implies that for a long time cancer patients (as well as other non-cancer patients) have not been receiving the optimal care due to non-availability of functioning nuclear medicine facilities.

The ideal equipment would comprise:

- Two Dual-Head SPECT-CT gamma cameras at each Centre (Total four)
- One PET-CT scanner at each centre (Total two)
- Two Dose calibrators at each centre (Total four)
- One Well counter at each centre (Total two)
- One Laminar flow unit at each centre (Total two)
- Two Gamma probes at each centre (Total four)

Staffing

There is currently only one Nuclear Medicine Physician serving in Government attending to both Parirenyatwa and Mpilo Hospitals. There are two Nuclear medicine technologists, one at Parirenyatwa and the other at Mpilo Central Hospital with the latter having been recalled from retirement. There are no medical physicists at the two nuclear medicine facilities, which is in contravention to recommendations from the (IAEA) as medical physicists are responsible for radiation protection matters.

There are no facilities in Zimbabwe to train Nuclear Medicine personnel at the moment. The personnel currently available were trained abroad through technical co-operation programs with the IAEA.

The ideal staffing complement would comprise:

- Three Nuclear Medicine Physicians at each Nuclear Medicine Centre (Total six)
- Six Nuclear Medicine radiographers/technologists at each centre (Total 12)
- Two Medical Physicists at each centre (Total four)
- Three Nuclear Medicine Nurses at each centre (Total six)

6.5 Radiotherapy

The two National Radiotherapy Centres are located at Parirenyatwa Group of Hospitals in Harare and Mpilo Central Hospital in Bulawayo. All of the cancers are treated at the centres except for some Kaposi's sarcoma (KS) patients that are seen at the KS clinic at Parirenyatwa Hospital. Much like a community health centre, no cancer patient is denied service. The patients pay USD10 for consultation; this fee does not cover chemotherapy and radiotherapy. The centres themselves provide treatment services on an outpatient basis. Whilst on treatment the patient may have to leave his or her family for several weeks in order to receive treatment. There are two oncology wards, one for adults and one for children to accommodate the very sick patients. The hostel (Tariro Hostel) that used to house people who were waiting to be treated but not sick enough for admission at the Harare centre is not currently functional.

Equipment

Brachytherapy equipment for gynaecological cancers is available at Mpilo Hospital. New brachytherapy equipment capable of treating a number of cancers has been recently procured by Parirenyatwa Hospital.

For about a decade now only one radiotherapy machine has been sub-optimally functional and serving the whole nation. The Mpilo radiotherapy facility has not offered any services since 2003. The IAEA recommends a minimum of 1 machine for every 1 million of the population, the ideal being 1 machine for every 500,000 of the population. Zimbabwe therefore needs 12-24 radiotherapy machines.

The current equipment available for radiotherapy can be summarised as follows:

- Linear accelerators (two in Harare, one in Bulawayo). Old and in need of replacement,
- Radiotherapy Treatment Planning System (RTPS)
- Two Brachytherapy units (Bulawayo one old and needing replacement, Harare unit awaiting commissioning)
- Two Simulators both needing replacement
- Dosimetry Equipment

The ideal equipment would comprise

- At least 1 External Bean Radiotherapy Treatment (EBRT)machine per 1 million population
- 3-Dimensional conformal Radiotherapy
- Special accessories for children for the linear accelerators
- Chemotherapy drugs at reasonable cost or no charge to the patient
- Regular supply of strong pain medications such as morphine

Staffing

Currently the radiotherapy departments have seven qualified Radiation Oncologists (6 are in Harare), 4 Physicists, 16 Radiographers and 6 Nurses. There are no trained oncology nurses in the departments. The IAEA recommends that there should be one

oncologist for every 500,000 people in a population. The current staff complement is well below this recommended ratio.

Currently the University Of Zimbabwe College Of Health Sciences offers an undergraduate Bachelor of Radiography program for radiography training and a postgraduate Masters in Radiotherapy and Oncology program for Radiation Oncology. There has been ongoing training of Radiographers at diploma level by the School of Radiography that is an Associate College of the University of Zimbabwe College of Health Sciences.

There is still need to train more professionals in the above fields. Training of oncology nurses is long overdue.

The Radiotherapy Centre is now recognized for internship rotations of newly qualified doctors (JRMOs and SHOs) before deployment to the districts.

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6.6 Chemotherapy

Chemotherapy is given at Parirenyatwa and Mpilo Hospitals and three other private institutions namely St Anne's Hospital, Avenues Clinic and Mater Dei Hospital.
There is chronic unavailability of chemotherapy drugs in the public sector. Most patients in these institutions have to purchase chemotherapy drugs from the private pharmacies. The cost of these drugs is prohibitive. Even in the private sector there are commonly chemotherapy drug shortages, resulting in disruption to patients' treatment. Most of these drugs are not registered with Medicines Control Authority of Zimbabwe (MCAZ) due to issues around cost of registration.

Analgesia is an important component of cancer care, particularly in an environment like Zimbabwe where patients tend to present with advanced stage disease. Shortage of opioid analgesia is very common leaving patients with uncontrolled pain.

Parirenyatwa Hospital has its own pharmacy, but chemotherapy medicines are expensive and are often not available there. Patients who are prescribed such medications must try to obtain them at private pharmacies.

Mpilo Central Hospital pharmacy offers very minimum chemotherapy medicines. Patients that need chemotherapy medicines get them from private pharmacies at a very high cost. Many patients cannot afford the medicines resulting in patients receiving the chemotherapy inconsistently or not finishing the course. This, coupled with late presentation of disease, makes outcomes achieved from this department very poor. Support medicines like antiemetics and colony stimulating factors are scarce at the Mpilo Central Hospital Pharmacy, which worsens the plight of patients. Morphine which is an essential medicine in management of cancer pain has not been in stock at Mpilo for several years now. Funding is a major hindrance in the stocking of Mpilo Central Hospital Pharmacy.

6.7 Surgery

Biopsies can be perfomed at Provincial, Mission and Central hospitals. There is however a lack of standardization of procedures carried out for the various cancers. There are no stand-alone surgical oncology units even at the tertiary level. This limits the uniformity of surgical cancer treatment across the board.

Surgery is one of the most well-staffed and older disciplines in the country. Sub-specialization has been well achieved in that field. It only remains for evidence based cancer surgery to be promoted and for surgical oncology units to be formed. This is likely to be achieved through multidisciplinary meetings and the availability of national treatment guidelines for cancer.

6.8 Paediatric Oncology Unit

The paediatric Oncology Unit is situated at Parirenyatwa Hospital in Harare and is intended to cater for all children in the country. Drugs are sourced and supported by KIDZCAN. The peadiatric surgical unit is located at Harare Hospital, and the separation of the two services can sometimes cause challenges accessing timely surgery. Children and their parents often travel very long distances to come to Harare, and have challenges with bus fares to keep returning for treatment. This can result in high defaulting rates.

6.9 Key Issues

- Lack of current cancer treatment guidelines and resulting lack of standardization of cancer management across institutions.
- Increasing incidence of common cancers and anticipated further rise in incidence with the introduction of effective surveillance, early detection and screening measures
- Few functional diagnostic and treatment facilities
- Centralization of diagnostic and treatment facilities/few centres.
- Most health workers have no basic training in cancer management and care
- Funding for cancer related activities is given a low priority.
- Most cancer patients present with late stage disease
- Shortage of and need for rehabilitation of essential diagnostic and treatment equipment and consumables
- There are limited human resources and lack of retention incentives of skilled staff in cancer diagnosis and treatment
- There is poor availability of cancer medicines, notably chemotherapy and opioid analgesics
- Clinical research is very limited, hence the limited availability of a local evidence base
- Paediatric cancer diagnosis and treatment needs to be improved

7. Palliative Care and Rehabilitation

7.1 Background to palliative care and rehabilitation

Palliative care and rehabilitation are essential elements in the continuum of care for cancer patients.

The World Health Organisation (2002), defines Palliative Care as "an approach that improves the quality of life of patients and their families facing problems associated with life-threatening illness, through the prevention and relief of suffering, the early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual".

Palliative Care Principles:

- Provides relief from pain and other distressing symptoms
- Will enhance the quality of life, and will also positively influence the course of illness
- Integrates the psychological and spiritual aspects of patient care
- Offers a support system to help patients live as actively as possible until death
- Offers a support system to help the family cope during the patient's illness and in their bereavement
- Uses a team approach to address the needs of patients and their families, including bereavement counselling, if indicated
- Affirms life and regards dying as a normal process
- Intends neither to hasten nor postpone death
- Is applicable early in the course of illness, in conjunction with other therapies that are implemented to prolong life, such as chemotherapy or radiation therapy, and includes those investigations needed to better understand and manage distressing clinical complications.

Palliative care for children represents a special, albeit closely related field to adult palliative care. WHO definition of palliative care appropriate for children and their families, is as follows (the principles apply to other paediatric chronic disorders):

"Palliative care for children is the active total care of the child's body, mind and spirit, and also involves giving support to the family. It begins when illness is diagnosed, and continues regardless of whether a child receives treatment directed at the disease. Health providers must evaluate and alleviate a child's physical, psychological and social distress. Effective palliative care requires a broad multidisciplinary approach that includes the family and makes use of available community resources; it can be successfully implemented even if resources are limited. It can be provided in tertiary care facilities, in community health centres, and even in children's homes. (the child's own home, community home or institution)."

While some elements of both have been implemented as part of medical and household interventions for patients, palliative care was formally introduced in 1979 by Island Hospice Service in Zimbabwe.

The goal of palliative care is to improve quality of life for patients and family members facing the diagnosis of life-threatening or life-limiting illness. Palliative care provides the right of access to adequate pain control medication and health care which improves their quality of life. Palliative care is not limited to specific diseases and the palliative care approach and palliative care principles apply to any life-threatening illness and for children the principles apply to paediatric chronic disorders.

Embedded in the WHO principles of palliative care is the emphasis on active living with statements of "quality of life", "affirms life", "to help patients live as actively as possible".

Many health care professionals and people who could benefit from palliative care view palliative care as care of the dying. This restricts referral and access to palliative care for many people who could receive significant benefit from this care.

7.2 Palliative Care in Zimbabwe

Zimbabwe has a long history of providing palliative care, with Island Hospice Service being one of the first hospice organizations to provide hospice and palliative care not only in Zimbabwe but in Africa since 1979. By 1997, 17 regional branches had been formed throughout the country and about 13 organizations were providing palliative care by 2004 .

This growth in palliative care provision has been a result of several initiatives and factors that have necessitated and facilitated the provision of palliative care in Zimbabwe. Initially palliative care services were generally accessed by a small minority population and the disease focus was cancer. However with the growth of the disease burden due to HIV and AIDS, palliative care provision has widened to include those living with and experiencing HIV and AIDS and other chronic illnesses. The result was growth of community based services throughout the country provided by both hospice organizations and community home based care organizations. The community and home based care program national review of 2006 noted that there was at least one community and home based care program in each of the 62 districts of Zimbabwe

Notable initiatives have facilitated palliative care service provision in the country. In 1992 the Ministry of Health and Child Welfare formed the Prevention and Control of Cancer Committee in Zimbabwe that comprised relevant stakeholders and professionals. The committee oversaw the development of a ten year plan on National Cancer Control Programme for Zimbabwe (1994-2004) with the overall aim to formulate, plan and implement a coordinated and cost effective programme for the prevention and control of cancer in Zimbabwe. In this plan aspects of palliative care policy were incorporated.

Within this period the post of a Programme Officer for Cancer and Palliative Care was filled in 1994, funded by WHO. This showed commitment from government. Palliative care training was established in the eight provinces and the two cities of Harare and Bulawayo during the same period. However due to lack of funds coupled with the economic challenges the program was not sustained and the post of program

officer for Cancer and Palliative Care still exists but is not occupied. In 1999 a national Hospice and Palliative Care Association of Zimbabwe (HOSPAZ) was registered to support and promote palliative care services in collaboration with the MOHCW.

Through a pilot project in five African countries which included Zimbabwe, in 2004 WHO estimated that a total of 208 600 people were dying from HIV and AIDS or cancer annually in Zimbabwe. The proportion of people needing palliative care was estimated at 1 in 60. Those dying from HIV and AIDS or cancer and suffering pain were estimated at 56 900 .The report notes that the number actually needing palliative care is much higher because it should also include those suffering from serious illnesses but not dying the same year as well as those suffering from other diseases other than cancer or HIV and AIDS. In addition palliative care is provided not only at the end of life and hence the estimate is actually higher than indicated. In light of these considerations WHO estimated that at least 1% of the population of a country will need palliative care. The WHO report noted the long tradition in provision of palliative care in Zimbabwe but noted the low level of palliative integration into the health system. In-country training at various levels was being provided by Island Hospice.

The review of Hospice and Palliative Care In Africa (Wright et.al, 2006) done in 2001 noted that Zimbabwe had 13 hospice and palliative care organizations, 6 of which were branches of Island hospice, 2 provided inpatient provision at a hospice organization and 6 at a hospital setting. All the 13 organizations were making outpatient service provisions while 4 had day care or clinics. In a review by African Palliative Care Association(APCA) in 2010 service provision had reduced to nine organisations offering palliative care services: 3 hospices and 6 home based care organisations that have integrated palliative care and various Mission Hospitals.

During this review Zimbabwe was put in category 4 in terms of palliative care services provision. In this category countries were providing hospice and palliative services and were approaching wider integration with the public health system. The main characteristics of this category were:

- Availability of a critical mass of activists' country wide,
- A range of providers and service types,
- Broad awareness of palliative care,
- Some measure of integration with main stream service providers,
- Established education centres,
- Research being undertaken and
- A national association in existence.

There are currently Palliative Care Standards for Zimbabwe (2009), a national training curriculum, "Providing Pediatric Palliative Care" and a National Palliative Care Policy under development to be completed in 2012. Palliative care is included in the National Health Strategy and is part of the Nurses and Medical Doctors Curriculum.

7.4 Rehabilitation and cancer

Rehabilitation management for cancer patients includes mainly teaching and advising on activities of daily living and pain management. Rehabilitation intervention is provided through all the therapies – physiotherapy, occupational therapy, prosthetic services, counseling , home based care and support depending on the client's needs.

Occupational Therapy has a key role in rehabilitation. Occupational therapists aim to improve quality of life, so that peoples' lives will be as comfortable, productive and independent as possible. This applies even if life expectancy is short because people with cancer can experience very rapid changes in their illness and care setting. Occupational therapists working with these people need to be particularly responsive to changing needs, responding quickly and planning forward carefully to take account of deterioration.

Occupational therapists have a role to play at all stages of the cancer pathway from diagnosis to palliative and terminal care. Occupational therapists promote the well – being and independence of people with cancer in various settings:

- in their home
- in hospital (acute or community)
- in nursing and residential homes
- in day care hospices
- in in-patient hospices

As people move between home, hospitals and specialist care they should have access to occupational therapy services at any stage and in all sectors. An occupational therapist's starting point is always the experiences of the people they are working with (persons with cancer and their family/carers). Their choices and priorities drive any interventions that take place. Partnership with people with cancer, helps them find new options to improve the quality of life of the patients and carers.

7.5 Key issues

- Guidelines to assess and address the psychosocial and cultural needs of all people with cancer need to be developed and implemented
- Opiod availability should be ensured
- Need to improve access and effectiveness of palliative care through training, research, essential palliative care medicines and integrated team work
- Palliative care providers at all levels, including the family, need to be supported with emotional and social support, information, adequate equipment, medicines and supplies to minimize burn-out
- Communities and employers need to become part of the system of support for cancer patients, including rehabilitation and palliative care services.

8. Cancer Surveillance and Research

8.1 The Zimbabwe National Cancer Registry

Zimbabwe has a well-established and productive population-based cancer registry, one of few such centres in Africa. It is currently providing technical support to other registries in the region on behalf of the International Agency for Research on Cancer (IARC), WHO/AFRO and the International Network for Cancer Treatment and Research (INCTR).

The Zimbabwe National Cancer Registry (ZNCR) was established in 1985 and achieved adequate population coverage for the population of Harare City by 1990. The history, surveillance methods, data quality and completeness of registration have been described in detail elsewhere(Chokunonga et al, 1990-2007). Briefly, the registry performs active and passive case finding, based on public and private hospital in- and out-patient records, public and private histology reports, radiotherapy records and death certificates. Results from the Registry have been extensively published in medical journals and other scientific publications. The registry has provided data to important international publications including three successive volumes of the 'Cancer Incidence in Five Continents' series (Volumes VII, VIII and IX) (Basset et al, 1997; Chokunonga et al, 2002; Chokunonga et al, 2007), published by the International Agency for Research on Cancer and the International Association of Cancer Registries, the 'International Incidence of Childhood Cancer' (Volume II) (Chokunonga et al, 1998) published by the IARC, 'Cancer in Africa, Epidemiology and Prevention' published by the IARC (Chokunonga et al,1998) and 'Cancer Survival in Africa, Asia, the Caribbean and Central America' published by the IARC (Chokunonga et al ,2011).

Bulawayo had the first Cancer Registry established in Zimbabwe in 1963 which was very active and data was successfully collected over the years (1963-1977). The Registry was closed in 1977 during the war of independence. It was revived in the 1990s and provided data to the ZNCR until 2006 when operations were suspended due to ecomomic challenges facing the country. The registry has lost experienced staff over the years. This has impacted negatively on the operations of ZNCR. Efforts are at an advanced stage to revive the historic Bulawayo Cancer Registry, a development which will help to improve national coverage and ascertain the true burden of cancer in the country.

8.2 Research Needs

Of the 16 million cases of cancers predicted to occur annually by 2020, 70% of these will be in developing countries. In sub-Saharan Africa, research has been dedicated to agriculture and infectious diseases as well as HIV and AIDS at the expense of non communicable diseases such as cancer; hence the need to address this gap in research and answer many questions for the Zimbabwean setting.

Suggested Research Priority Areas:

- New drugs and prevention measures

- Vaccine introduction, e.g. there might be a need to generate validation data for HPV strains endemic to local populations.
- Effective ways to improve access to quality cancer health care services
    - e.g. ways to decrease the healthcare costs associated with cancer prevention and treatment
    - e.g. feasibility of introducing a cancer levy
- Effectiveness of medicinal plants and traditional treatments and ways of integrating them into the conventional health system
    - e.g. *Spirulina*: A blue-green microalgae (that contains phytochemicals) is one of the most concentrated sources of nutrition that has been found to have anti-cancer properties (Zhang *et. al*, 2009) no ref. It enhances cell nucleus enzyme activity, as well as DNA repair and synthesis including the ability to generate new blood cells. This boosts immunity.
- e.g. potential to develop treatment regimes that include the use of microbes (such as *Chlorella* - a unicellular green algae) and indigenous herbs.
- Effective ways of servicing, expanding and maintaining the existing cancer registry
    - Most of the data available is hospital based and might not capture all cases
- Effectiveness (impact assessment) of the awareness campaigns for prevention and treatment of cancers.
- Develop innovations for:
    - e.g. screening of cancers especially in marginalized women (Manchak, 2006) no ref such has been successfully implemented in South Africa.
    - Early diagnosis
    - Treatment

8.3 Key Issues

- Lack of manpower (and expertise) to expand cancer registry services to all provinces due to brain drain and limited funding to train personnel
- Inadequate funding for cancer research due to low investment in research (low priority for for cancer research as resources are channeled towards communicable diseases)
- Sub–optimal collaboration between the relevant stakeholders involved in cancer research (results in fragmented research efforts)
- Absence of up to date cancer registries

PART TWO: National Cancer Prevention And Control Strategic Approach

Vision

Zimbabwe will have comprehensive national cancer prevention and control systems which will reduce national cancer morbidity and mortality by 2017.

Mission

Increase awareness on all cancer related issues and create an enabling environment for adoption and practice of evidence based cancer prevention, early detection, diagnosis, treatment, palliative care, rehabilitation, surveillance and research.

Guiding Principles

1. **Equity** – fair and non-discriminatory access to cancer services
2. **Effectiveness** – treatment and management that improves the patient's quality of life
3. **Confidentiality** – shared personal information including diagnosis is not revealed to anyone else without the permission of the patient.
4. **Holistic** – cancer services assess and support the physical, emotional, social and spiritual needs of the patients and their families
5. **Accountability** – service providers, organizations and government are held responsible for upholding sound and ethical practice
6. **Dignity** – patients are treated with respect throughout the course of illness including death and dying
7. **Compassion** – cancer services are provided with genuine care and empathy for the patients and their families

Strategy Goals

Overall Goal:

Reduction of cancer morbidity and mortality through implementation of evidence based cost-effective prevention and control interventions and providing palliative care to improve quality of life of people living with cancer and their families by 2017.

Goal Areas:

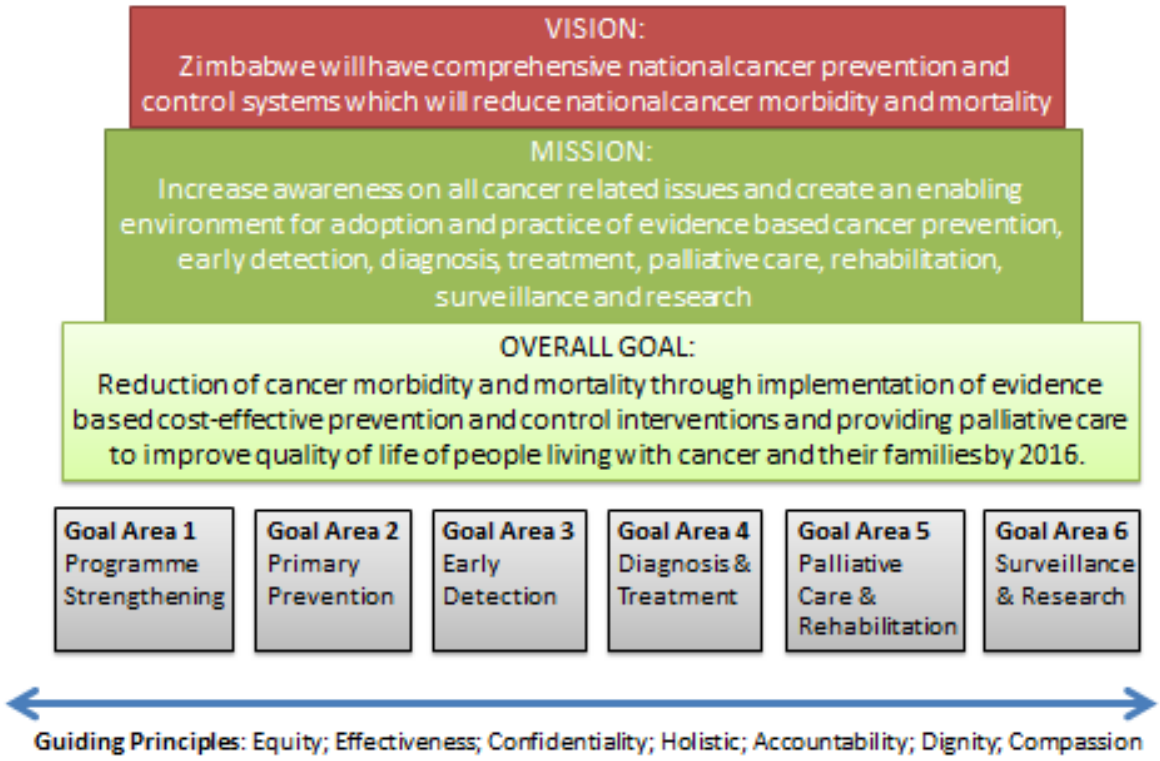
1. **Programme Strengthening:**
   - Standardisation of practice of National Cancer Prevention and Control service in all organisations providing cancer services.
2. **Cancer Primary Prevention:**
   - Promote appropriate behaviours and provide an enabling environment for the control and prevention of cancer in 60% of the targeted population by 2017
3. **Cancer Early Detection:**
   - Reduce late presentation (3rd and 4th stage) of selected cancers (cervical ,breast, prostate and oral in adults; Wilm's tumour,

retinoblastoma, KS, leukaemia and non-Hodgkins lymphoma in children) from 80% to 50% by 2017.

4. **Cancer Diagnosis and Treatment**
   - Increase the proportion of people accessing comprehensive cancer diagnostic and therapeutic services in line with Standard National Cancer Management guidelines
5. **Cancer Palliative Care and Rehabilitation**
   - All cancer patients and their families who require palliative care and rehabilitation have access to these services
6. **Cancer Surveillance and Research.**
   - Ensure nationwide comprehensive cancer surveillance data by 2017:
   - Strengthen evidence based policy development and decision making for cancer prevention and control.

Strategic Framework

The strategic approach is summarized in the diagram below.



1. Programme Strengthening

Goal 1: Standardise practice of National Cancer Prevention and Control service in all organisations providing cancer services.		
Objective:	**Strategy:**	**Indicators:**
1.1 To strengthen cancer prevention and Control programme by 2016.	Development of comprehensive NCDs Policy and National Cancer Control Three Year Rolling Plan.	Comprehensive National NCDs Policy and Cancer Control Three Year Rolling Plans in place.
1.2 To provide leadership for cancer control.	Establishment of National Cancer Prevention and control Forum	National Cancer Forum in place. (***appointment by the Minister)***
1.3 To mobilise Resources for Cancer prevention and Control -on-going.	Partnership development both locally and international. Advocacy and communication for resources mobilisation	Number of Partnerships developed. Increased financial allocation
1.4 To provide standardised cancer detection and management guidelines for all levels of the system by 2013.	Development of guidelines	Guidelines in place.
	Integration of Cancer early detection with HIV and AIDS and STI programme	Functional Integration in place.
	Strengthen referral system	Functional referral systems at all levels.
	Establishment of Cancer Database	Cancer Data Base in place.
1.5 To improve partner / stakeholder coordination in cancer prevention and control.	Development of coordination mechanisms.	Coordination Mechanisms in place

2. Cancer Prevention in Zimbabwe

Goal 2: To promote appropriate behaviours and provide an enabling environment for the control and prevention of cancer in 60% of the targeted audience by 2016		
Objective:	**Strategy:**	**Indicators:**
2.1 To increase the proportion of Zimbabweans who are cancer literate to 80% by 2017	Mass media communication	Communication strategy Monthly radio programs on cancer Annual magazine 5 Songs on cancer A TV drama centred on cancer
	Lobby for the review and strengthening of cancer education in the school curriculum	Improved cancer education in the schools curriculum by 2017
	Integration of cancer education into workplace wellness programs	100 company- clinics implementing cancer wellness programs by 2017 50 percent of registered companies implementing annual cancer prevention programs by 2017
	Community based awareness programs	1000 community based focal persons trained in cancer education
	Healthy lifestyles (including safer sex) promotion campaigns	1 national launch 10 provincial campaigns
2.2 To provide protection against chronic infections (HPV, hepatitis B, schistosomiasis	Introduction of HPV vaccination for the girl child aged 9-12 years	85 % vaccination coverage
	Maintaining high HB vaccination coverage in the under 1 year olds	85 % vaccination coverage
	Strengthening schistosomiasis control measures in all endemic districts	70 % coverage in endemic districts 100% case management 80% vector control
2.3 To reduce population exposure to tobacco	Limit access through raising taxation	Proportion of people who stop smoking by 2017
	Enforcing of existing tobacco legislation	Adherence levels between 2013 and 2017
	Creating an enabling environment for tobacco cessation	Number of facilities providing tobacco cessation programs
	Lobby for the ratification of the framework convention on tobacco	Accession of the FCTC

Goal 2: To promote appropriate behaviours and provide an enabling environment for the control and prevention of cancer in 60% of the targeted audience by 2016		
Objective:	**Strategy:**	**Indicators:**
	control (FCTC)	
2.4 To reduce population exposure to alcohol	Limit access through raising taxation	Proportion of people who stop drinking by 2017
	Enforcing of existing alcohol use legislation	Adherence levels between 2012 and 2017
	Finalisation of the alcohol control policy	Policy in place by 2013
	Creating an enabling environment for alcohol cessation	Number of facilities providing alcohol cessation programs
	To reduce harmful use of alcohol	Number of psycho-social support groups in place by 2017
2.5 To minimise occupational and environmental exposure to carcinogenic agents	Lobby for increased personnel radiation exposure monitoring	Proportion of institutions monitored Commitment statement from stakeholders concerned
	Lobby for licensing and inspection of institutions dealing with known carcinogenic substances	Proportion of institutions registered Proportion of institutions complying Commitment statement from stakeholders concerned
	Education and enforcement of legal framework	Proportion of institutions complying Proportion of employees reporting awareness
	Lobby for consistent environmental assessment and monitoring for carcinogenic substances	Monitoring system in place Monitoring coverage Commitment statement from stakeholders concerned
	Lobby for provision of protection against UV rays for at risk groups – eg albinos, whites	Proportion of risk group reached Protective measures in place Consistent reporting on the UV index Commitment statement from stakeholders concerned
2.6 To monitor and evaluate the implementation of cancer prevention and control activities at all levels by 2017	Collect baseline epidemiological data by 2013	Baseline epidemiological report by 2014
	To strengthen cancer registration and surveillance systems' reporting on key cancer risk factors	Report on key risk factors by 2017
	Training health personnel in integrated disease	1 training per district by 2017 Proportion of health workers

Goal 2: To promote appropriate behaviours and provide an enabling environment for the control and prevention of cancer in 60% of the targeted audience by 2016		
Objective:	**Strategy:**	**Indicators:**
	surveillance and response	trained
	Institute basic and operational research in cancer to generate evidence for decision making	Number of basic and operational researches undertaken

All the trainings to be integrated into comprehensive training of health workers

Surveillance should be broader to encompass risk factors in order to inform programming

3. Cancer Early Detection (Early Diagnosis and Screening)

Goal 3: Reduce late presentation (3rd and 4th stage) of selected cancers (cervical, breast, prostate and oral in adults; Wilm's tumour, retinoblastoma, KS, leukaemia and non-Hodgkins lymphoma in children) from 80% to 50% by 2017		
Objectives:	**Strategies**	**Indicator:**
3.1 To equip primary health facilities, district, provincial and central hospitals staff with skills in cancer early detection by 2017.	Development of early detection and referral (early warning signs) guidelines.	Protocols in place All levels of the system providing early detection services.
	Strengthen institutional (District and Provincial hospitals) capacity for cancer early (biopsy and laboratory) Diagnosis.	All district, Provincial and Central hospitals providing early detection services.
	Integration of selected cancers routine screening with HIV and AIDS and STI.	All OI Clinics providing screening services.
3.2 To roll out cervical cancer screening (VIAC) to district and provincial hospitals by 2015 and all primary health care facilities by 2016.	Institutional capacity building for Integrated cancer screening, HIV and STI screening.	All health facilities providing cervical, HIV and STI screening.
3.3 To establish selected cancers(cervix, breast, prostate, oral) screening services at Central, Provincial and District hospitals by 2017	Capacity building for routine screening for selected cancers (oral,breast and prostate, cervical) at provincial and district hospitals	62 district, 8 provincial and 5 central hospitals including private sector providing routine screening services
	Strengthen referral system	Functional referral system in place
	Promotion of utilization of early detection services.	Proportion of people utilizing the services.
	Strengthen the School Health programmes for cancer early detection.	Number of schools with functional school health programme by District.

4. Cancer Diagnosis and Treatment

Goal 4: Increase the proportion of people accessing comprehensive cancer diagnostic and therapeutic services in line with Standard National Cancer Management Guidelines.		
Objectives:	**Strategies:**	**Indicator:**
4.1 To increase the proportion of patients that have timeous access to standardised cancer diagnostic and therapeutic services by 30% and 50% respectively by 2017	Development of National Cancer Management Guidelines.	National cancer Management guidelines available and disseminated.
	Train 50% of health workers (all levels) on new cancer management guidelines.	Number of health workers trained and available.
	Increase the number of centres that offer cancer diagnostic and treatment services by 50% at appropriate levels.	Increased number of centres offering cancer diagnostic and treatment services
	Rehabilitate cancer therapy services at Mpilo Central Hospital and Parirenyatwa Group of Hospitals.	Radiotherapy Centres at Mpilo Central Hospital and Parirenyatwa Group of Hospitals functional.
	Increase and retain human resource base for cancer control.	Availability of adequate and motivated human resources for cancer control.
	Increase availability of functional medical equipment and technology for diagnosis and treatment at all levels of the health delivery system.	Increased number of centres with functional diagnostic and therapeutic cancer control equipment.
	Increase cancer medicine availability in all treatment facilities (10% essential to 80%) in line with National Medicines Policy.	80% availability of essential cancer management medicines.
	Lobby for availability of essential cancer medicine at NatPharm to reduce cost of medicines to the patient.	NatPharm supplying affordable essential cancer medicines

4.2 To promote utilisation of evidence-based methods in cancer management.	Promote clinical research in cancer diagnosis and treatment.	Increased number of clinical research projects funded and completed
	Mobilise funding for clinical cancer research	

5. Cancer Palliative Care and Rehabilitation

GOAL 5: All cancer patients and their families who require palliative care and rehabilitation have access to these services		
Objectives:	**Strategies**	**Indicator:**
5.1 To increase availability of essential pain medication as per WHO recommendations by 40% as measured by amount of reports of morphine used (3 step analgesic ladder) to all patients in pain by 2017	Lobbying to allow all palliative care trained nurses to initiate opioid prescription.	PC trained nurses able to prescribe opioids.
	Strengthen the supply chain of all pain medication in the country by engaging Natpharm as per WHO recommendations.	Morphine availability 100% Morphine use increased by 40% appropriately.
5.2 To provide holistic care (spiritual , emotional , social and physical) to all cancer patients and families by 2017	Develop multidisciplinary teams at all levels of health delivery system (institutional and community) and referral system	20% of all institutions have PC multidisciplinary teams
5.3 Develop and implement long term and short in-service and formal oncology and palliative care training programmes for all levels of health workers by 2017	Develop relevant national curricula in oncology and palliative care for all health workers (Trainingof Trainers, Certificates, Diplomas, Degrees)	20% of health care workers trained in palliative care and oncology
5.4 Increase rehabilitation access for cancer patients, survivors and their families by 2017	Advocate on behalf of cancer patients through legal action, education and lobbying of colleagues, employers and human resource practitioners.	Employers exercise fair practice with cancer patients and survivors.
	Supply district hospitals with resources and equipment for cancer rehabilitation (prosthesis and assistive devices)	Well equipped rehabilitation at district hospitals
5.5 Increase support services for cancer patients, survivors and their families by 2017	Increase awareness of rehabilitation services to cancer patients in communities and health providers..	40% increase in the number of cancer patients referrals.
	Establishment of support	Number of cancer patients,

GOAL 5: All cancer patients and their families who require palliative care and rehabilitation have access to these services		
Objectives:	**Strategies**	**Indicator:**
	groups and counselling services by MOHCW and other cooperating partners/stakeholders	survivors and their families that have access to support groups and counselling services.
	Development of supportive material for cancer rehabilitation in the appropriate language.	Number of appropriate IEC materials produced
5.6 To facilitate evidence based palliative care and rehabilitation practices by 2017	Utilize, disseminate and practice palliative care according to National Palliative Care Standards (2009).	100% health care providers practice palliative care according to National Palliative Care Standards (2009)
	Develop and strengthen on-going monitoring and annual evaluation of rehabilitation and palliative care services shared with stakeholders.	A National monitoring and evaluation system in place
	Gather and utilise research, regional, national and international reports to guide services in an evidence based manner.	Number of researches/surveys conducted
	Develop National Rehabilitation Standards or Guidelines.	National Rehabilitation Standards or Guidelines in place
5.7 To empower patients to exercise their legal rights by 2017	Educate patients, family members and the public on existing laws that protect their legal rights through, Ministry of Labour, NSSA and other stakeholders	Feedback from families and patients and various institutions.
		Number /register of court cases won or lost on patients exercising their rights.

6. Cancer Surveillance and research

Goal 6: Ensure nationwide comprehensive cancer surveillance data by 2017		
Objective	**Strategies**	**Indicator**
Expand Cancer Registry services to all provinces by 2017.	Strengthen National Cancer Registry	Cancer Registry in all provinces.
Include private health sector in relation to Cancer and other health problems National Health Surveillance System	Development of a binding agreement with private sector in relation to cancer and other health problems surveillance.	Data from Private health sector available.
Provide evidence based data on cancer control and prevention programme performance by 2015.	Conducting an evaluation of the cancer prevention and control programme.	Evaluation report availability.
Strengthen evidence based policy development and decision making for cancer prevention and control.	Promotion and support of operational research on cancer related issues at all levels.	
	Strengthen collaboration with National Institute of Health research.	

Annexe 1: Contributors to Strategy development

- **National Stakeholders Meeting**

Integrated missions of Programme of Action for Cancer Therapy (imPACT) also identified the lack of a strategy as a gap.

- **National Cancer Prevention and Control Strategy Development Committee**

Following on from the stakeholders meeting, a National Cancer Prevention and Control Strategy Development Committee was formed, chaired by Dr N Ndlovu and facilitated by Ms C Bakasa, Mrs L Muchena and Mr L Nkala.

Sub-Committees were established to work on specific sections of the strategy as follows:

<u>Group 1: Cancer Prevention</u>

- Dr. AM. Nyakabau (team leader)
- Mr. T. Chigariro (team leader)
- Dr. B. I. Nyareyegona
- Mr. S. Tsoka
- Mr. D. Maurukira
- Mr. T. Chitsike
- Dr. A. Chimusoro
- Dr. N. Ngwaru
- Dr. N. Tsikai

<u>Group 2: Early Detection (Screening and Diagnosis)</u>

- Ms.C. Bakasa (team leader)
- Dr. W. Mandere (team leader)
- Dr. W. Kadzatsa (team leader)
- Ms. A. Machiha
- Ms. S. Madondo
- Ms. Chimedza

<u>Group 3: Diagnosis and Treatment:</u>

- Dr. N. Ndlovu (team leader)
- Mr. S. Moyo (team leader)
- Dr. S. Vuma
- Mrs. L. Muchena
- Miss. Y. Mupfurutsa
- Dr.X.Ndlovu
- Ms. N. Myedziwa

- Mrs. H. Watyoka
- Mr J Chipuru
- Mr. G. Chingarande

Group 4: Palliative Care and Rehabilitation
- Miss. Eunice Garanganga (team leader)
- Miss. Carla Horne (team leader)
- Mrs. C. Nleya
- Mr. D. Chifamba
- Professor AuxiliaChideme- Munodawafa (team leader• Miss. N Choto (team leader)
- Mr. L Nkala (team leader)

Group 5: Surveillance and Research
- Mr. E. Chokunonga (team leader)
- Mr. E. Sibanda (team leader)
- Mr. J. Katiyo
- Dr. T. Shuro

Group 6: Programme Strengthening
- Ms. C. Bakasa (team leader)
- Mr.T. Kadzere (team leader)
- Dr. N. Ndlovu
- Dr. AM. Nyakabau

Additional persons chose not to be assigned to a particular group but were still involved in the discussions.

- **National Cancer Prevention and Control Strategy Final Editing/Review Committee**

Dr Anna Miller was contracted to edit the document at no charge to the ministry. She worked with a committee chaired by the current National Cancer Control co-ordinator Dr Anna Mary Nyakabau

The following members served on the review committee

- Ms. C. Bakasa
- Mr.T. Kadzere
- Mr S. Moyo
- Mrs L Muchena

- Dr. N. Ndlovu
- Mr L Nkala
- Dr. AM. Nyakabau (Chairperson)
- Mr E. Sibanda

- **National Cancer Prevention and Control Strategy Funding stakeholders**

- Savanna Pharmaceuticals paid for the printing and launching of the strategy

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