Lecture Title:

AFRICA AND CANCER: PREPARING FOR THE NEXT EPIDEMIC

QUARTERLY PUBLIC LECTURE

Delivered by

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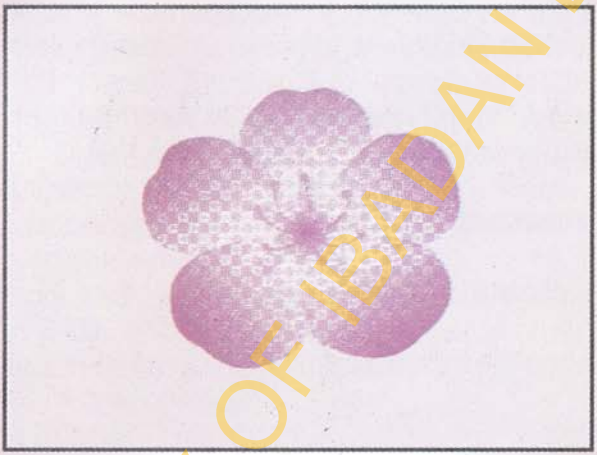
AFRICA AND CANCER: PREPARING FOR THE NEXT EPIDEMIC



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AFRICA AND CANCER: PREPARING FOR THE NEXT EPIDEMIC

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1. INTRODUCTION

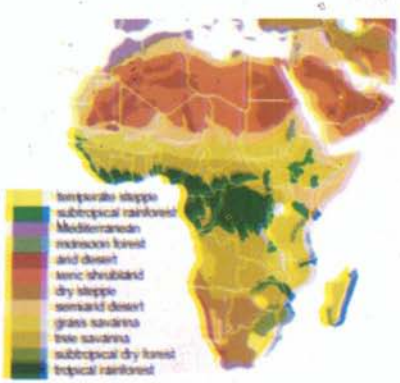
1.1 A Big Honour

It is my singular honour to deliver this guest lecture to a distinguished audience under the auspices of the Nigerian Academy of Science (NAS). Essentially tagged first quarter lecture in 2012, it can be likened to a state of the Union Address to the nation through NAS. I am proud to be a fellow of the Nigerian Academy of Science (NAS), the foremost scientific organization in Nigeria with the aim of promoting the growth, acquisition, and dissemination of scientific knowledge and to facilitate its use in solving of major problems of national interest .I am also aware that our President is likely, Dr. Goodluck Jonathan, GCFR, to assume office as the next Chair of the African Union and have taken the liberty as President of the African Organisation for Research and Training in Cancer (AORTIC) to deliver a sermon on Cancer to Africa on this occasion. I thank the President, Prof Oye Ibidapo-Obe FAS,and the entire fellows of the Academy for the honour bestowed on me. I also thank my Chairman, Chief Wole Olanipekun SAN, who graciously accepted to chair this occasion at such notice despite his busy schedule.

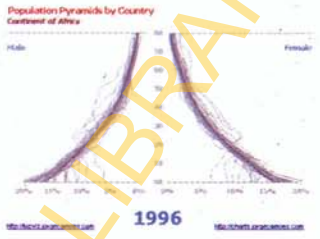
1.2 Africa in brief:

Africa is the world's second largest and second most populous continent, after Asia. Africa with a landmass of about 30.2 million km² (11.7 million sq mi) including adjacent islands, covers 6% of the Earth's total surface area and 20.4% of the total land area.

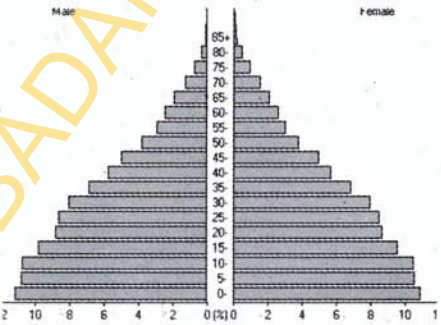
With 1.0 billion people in 65 territories (including 54 recognized states), it accounts for about 14.72% of the world's human population. The continent is surrounded by the Mediterranean to the north, both the Suez Canal and the Red Sea along the Sinai Peninsula to the northeast, the Indian Ocean to the southeast, and the Atlantic Ocean to the west.



Africa straddles the equator and encompasses numerous climate areas; it is the only continent to stretch from the northern temperate to southern temperate zone.

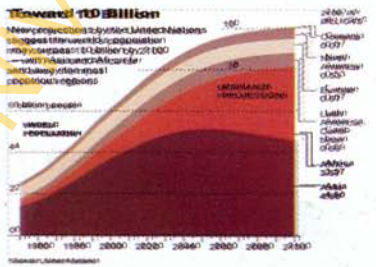


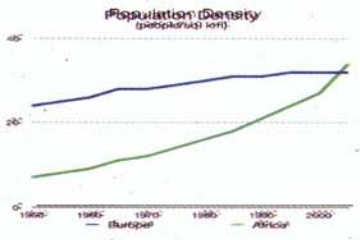
Africa's population is relatively young but has rapidly increased over the last 40 years. In some African states, half or more of the population is under 25 years of age. The total number of people in Africa grew from 221 million in 1950 to 1 billion in 2009.



According to the UN report, the population of Africa has grown exponentially over the past century, and consequently shows a large youth bulge, further reinforced by a low life expectancy of below 50 years in most African countries. The population doubled in the period 1982–2009 and quadrupled from 1955–2009. Africa's population, growing by 2.5% a year, will exceed 1.2 billion people by 2025 (UN 2001). It is projected that there will be considerable differences by region. Growth will be slightly faster in Central Africa (3.0%), West Africa (2.9%), and East Africa (2.6%) but slower in North Africa (2.1%) and Southern Africa (1.0%). The explosive growth in population is putting pressure on the continent's natural resources (UN Report, 2004).

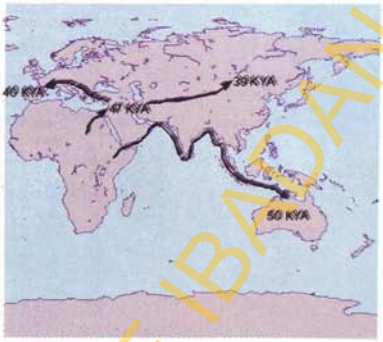
Map showing population projections for Africa





Africa, particularly central Eastern Africa, is widely regarded within the scientific community to be the origin of humans and the *Hominidae clade* (great apes), as evidenced by the discovery of the earliest hominids and their ancestors, as well as later ones that have been dated to around seven million years ago – including *Sahelanthropus tchadensis*, *Australopithecus africanus*, *A. afarensis*,*Homo erectus*, *H. habilis* and *H. ergaster* – with the earliest *Homo sapiens* (modern human) found in Ethiopia being dated to circa 200,000 years ago.

Map showing the Archeaological evidence for route of migration of Homosapien



Picture of one of the oldest skull (Ethiopia)

Toumai Chad (Brunet et al 2002, Nature, 418: 145-151 Reported about 7 million ago.

Today, Africa contains 54 sovereign countries, most of which still have the borders drawn during the era of European colonialism. UNESCO has estimated that around two thousand languages are spoken in Africa. Most are of African origin, though some are of European or Asian origin. Africa is the most multilingual continent in the world, and it is not rare for individuals to fluently speak not only multiple African languages, but one or more European ones

as well. There are six major language families represented in Africa, of which four is indigenous.(Wikipedia…Languages of Africa)

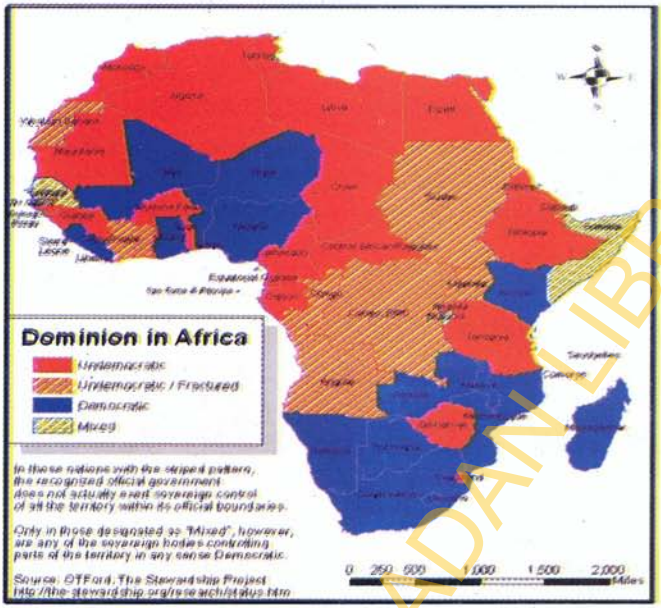
These are:

- Afro-Asiatic spread throughout the Middle East, North Africa, the Horn of Africa, and parts of the Sahel
- Nilo-Saharan is centered on Sudan and Chad (disputed validity)
- Niger–Congo covers West, Central, and Southeast Africa
- Khoe is concentrated in the deserts of Namibia and Botswana
- Austronesian on Madagascar.
- Indo-European on the southern tip of the continent

Map showing Africa major families languages

Since colonialism, African states have frequently been hampered by instability, corruption, violence, and authoritarianism. The vast majority of African states are republics that operate under some form of the presidential system of rule. However, few of them have been able to sustain democratic governments on a permanent basis, and many have instead cycled through a series of coups, producing military dictatorships.

Map showing distribution pattern of type of Governance in Africa



Great instability was mainly the result of marginalization of ethnic groups, and graft under these leaders. For political gain, many leaders fanned ethnic conflicts that had been exacerbated, or even created, by colonial rule. In many countries, the military was perceived as being the only group that could effectively maintain order, and it ruled many nations in Africa during the 1970s and early 1980s. During the period from the early 1960s to the late 1980s, Africa had more than 70 coups and 13 presidential assassinations.

Africa leaps out as the place where the most people fear for their next meal, while the rich world has more to fear from obesity.

In 2005, Sahel had one of the worst experiences of famine in history with very large causalities in Niger and over six million people were living without food for months in the country. This resultant effect led to the death of over 300 000 children which were attributable to malnutrition by the end of that year. In 2006, 11 million people were said to be facing starvation. These numbers comprise of 2.5 million people in Kenya, 1.4 million in Somalia, 1.5

million in Ethiopia, and 60 000 in Djibouti. About 2 million children were said to be surviving on one poor meal a day. The affected countries already had high rates of malnutrition and morbidity before the crisis as a result of endemic drought since the 1980s. Families lost crucial sources of nutrients as livestock, from which they got meat and milk, perished due to incessant droughts. While the much-publicized crises came, went, and returned, the problem of poor food quality has remained constant over several decades.

Effects of Famine in Africa on both family and livestock

In several countries in Africa, there is a symbiotic relationship between food insecurity and conflict. These twin challenges have contributed to the pattern of public health issues in Africa.

Contrary to popular belief, Africa's civil wars are not due to its ethnic and religious diversity. Using recently developed models of the overall prevalence of civil wars in 161 countries between 1960-1999, the outcome shows that the relatively higher prevalence of war in Africa is not due to the ethno-linguistic fragmentation of its countries, but rather to high levels of poverty, failed political institutions, and economic dependence on natural resources. Evidence revealed that political development is much more effective than economic factors in reducing the risk of violent conflict. Moreover, the spillovers from the globalization process may imply that the pace of political reforms toward an improved political right could be accelerated. In addition, improvements in the political front are prerequisites for stable economic growth and

other developmental policies.

1.2 Economic situation in Africa:

Although, it has abundant natural resources, Africa remains the world's poorest and most underdeveloped continent, the result of a variety of causes that may include the spread of deadly diseases and viruses (notably HIV/AIDS) and corrupt government that have often committed serious human right violations, failed central planning, high levels of illiteracy, lack of access to foreign capital, and frequent tribal and military conflict (ranging from guerrilla warfare and genocide). Africa's expected economic growth rate was at about 5.0% for 2010 and 5.5% in 2011. According to the UN Human Development report in 2003, the bottom 25 ranked nations (151st to 175th) were all African.

Figure showing Human Development Index Report *(An HDI below 0.5 is considered to represent low development and an HDI 0.8 or more is considered to represent high development)*

Poverty, Illiteracy, malnutrition, and inadequate water supply and sanitation, as well as poor health, affect a large proportion of the people who reside in the African continent. In August 2008, the World Bank announced revised global poverty estimates based on a new international poverty line of $1.25 per day (versus the previous measure of $1.00). About 81% of the Sub-Saharan Africa population was living on less than $2.50 (PPP) a day in 2005, compared with 85.7% for India. Recent figures confirm that sub-Saharan Africa has been the least successful region of the world in reducing poverty ($1.25 per day); some 50% of the population living in poverty in 1981 (200 million people), a figure that rose to 58% in 1996 before dropping to 50% in 2005 (380 million people). In 2011, Democratic Republic of Congo, Niger and Burundi were at

the bottom of the ladder(2011 UN HDR).

2. EPIDEMICS IN AFRICA

Africa shoulders the world's largest burden of disease. Disease outbreaks are the most common news in Africa after conflict and political instability. It is the epicenter of the global resurgence of infectious epidemics and pandemics. Africans remain troubled by diseases like malaria, diarrhoea, measles, cholera, HIV/AIDS and tuberculosis that have long been overcome elsewhere with the help of modern medicine and efficient public health systems. Notwithstanding the fact that the correlation between political economy and health was established in the 1970s, the twin challenge persists unabated in most of Africa.

Africa's share of the global burden of ill health is as disproportionately huge as its share of global poverty. In spite of many conference resolutions, innovative global plans and other laudable undertakings, the state of health in Africa remains appalling. Health reports indicate that all health conditions are worse in Africa than in any part of the world. Until recently, we thought infectious diseases had been overcome and the focus was to shift to lifestyle diseases like cancer, diabetes, hypertension, heart diseases, depression, and so forth.

While communicable diseases are an occasional occurrence in the developed world, they are Africa's daily bane.

While globally the number of deaths due to communicable diseases and nutritional conditions was 30% of total deaths in 2004, in Africa, these conditions accounted for 69% of natural deaths. These amounted to almost eight million deaths in Africa out of an estimated 17 million deaths caused by communicable diseases, maternal, perinatal and nutritional conditions globally.

Table showing Death by cause estimate

CAUSE	WORLD		AFRICA	
Population (000)	6 436 826		737 536	
	(000)	% total	(000)	% total
Total deaths	58 772	100.0	11 248	100.0
I. Communicable diseases	17 971	30.6	7 682	68.2
Infectious and parasitic diseases	9 519	16.2	4 849	43.1

Source: WHO, *Burden of Disease Statistics*, Geneva: WHO, 2

2.1 Infectious epidemics in Africa.

It is axiomatic that infectious diseases do not respect national borders. But this simple truth does not convey the degree to which pathogens migrate great distances to pose health hazards everywhere. The effect is worse in Africa compared to other countries. Human beings congregate and travel, live in close proximity to animals, pollute the environment, and rely on overtaxed health systems. This constant cycle of congregation, consumption, and movement allows infectious diseases to mutate and spread across populations and boundaries. The complacency of several countries in Africa makes them vulnerable and that is why they carried the highest burden of many infectious diseases. In addition, the lack of health priority, poor living standard and epileptic health financing are contributory to these recurrent infectious epidemics.

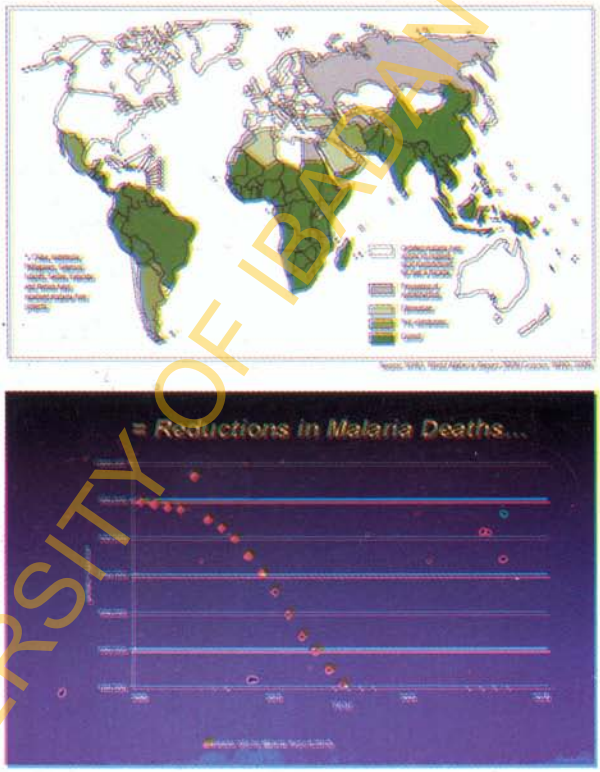
Significant impacts of the high burden of infectious disease especially in low and middle-income countries include social, economic deprivation, potential for rapid spread and human security concerns.

2.1.1. Malaria

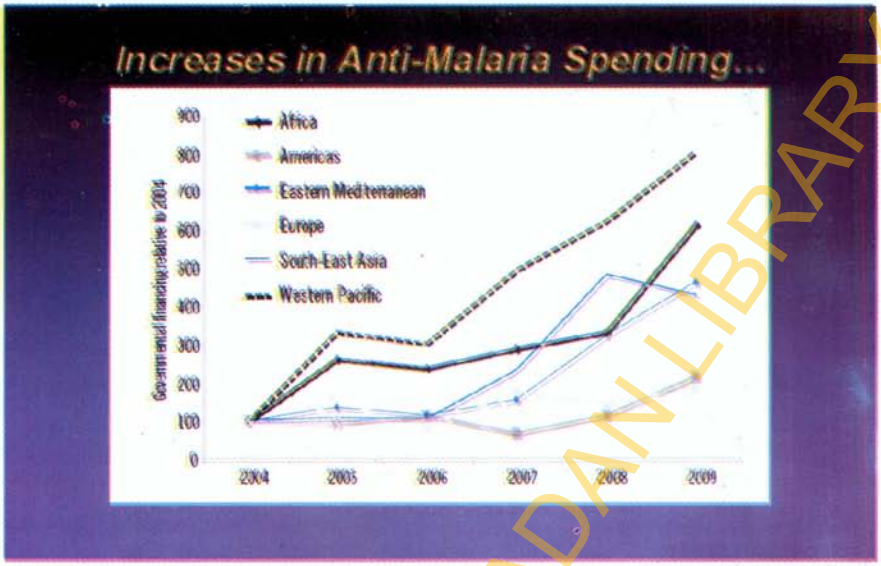
Malaria is a grave health threat globally, with nearly half of the world's population living in areas where malaria is endemic. Some 109 countries are classified by the WHO as 'malarious.' Fifty of 109 malarious countries are in Africa. Forty-six countries are in control mode, meaning they are battling the disease using normal control measures such as the supply of insecticide-treated bed nets, indoor spraying of homes and conducting targeted diagnostic

tests and administration of curatives. Malaria is responsible for the death of 397 000 people in Africa, which is 45% of total malaria related deaths. Some 203 000 cases of malaria were detected in Africa alone in 2005, out of a total of 241 000. This means that Africa accounts for 84% of total global incidence of malaria. Malaria accounts for around 100 000 infant deaths and is responsible for 18% of deaths among children under the age of five.

Some African countries have recorded success in malaria eradication programme and they have been placed on elimination phase.



This also means a resurgence of malaria incidence is deemed unlikely. What we have been able to document is that the entire world has demonstrated increased spending on anti-malaria programs.



The successes registered in these countries are generally ascribed to effective use of control measures. This indicates that the rollback malaria campaign is having an impact in some countries and lessons are being learned for application in the rest of the malaria-prone countries.

2.1.2. Cholera

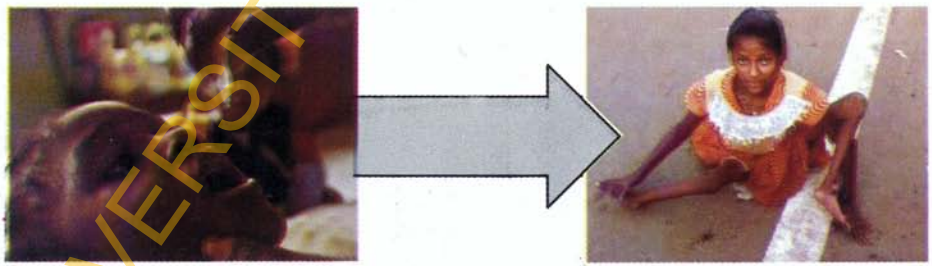
The most common cause of death, which falls into the category of secretory diarrhea, is cholera. Cholera is caused by enterotoxin-producing strains of the bacterium called vibrio cholera. It is transmitted between humans through eating food or drinking water contaminated with the bacterium passed from other sufferers. While cholera is no longer a major public health issue in most of the world due to improved sanitary conditions, the disease has re-emerged as a grave threat in Africa since 2005. A total of 125 082 cases were recorded in Africa in that year, 31% higher than ûgures for 2004 and accounting for 95% of global outbreaks. Some countries such as Sierra Leone, Liberia and Zimbabwe still have huge burden from Cholera especially in their suburbs.

2.1.3. Tuberculosis

TB is one of the oldest health challenges in Africa. The incidence of TB has been rising in Africa at alarming levels since the mid-1990s as the prevalence of HIV and AIDS also increased. The dramatic explosion of the HIV and AIDS epidemic in Africa, making the continent its epicenter, diminished immune resistance of many to this infectious disease. In some cases, HIV infection accounts for as much as a 60% rise in the incidence of TB. About 30% of AIDS-related deaths are caused by TB in Africa.

2.1.4. Poliomyelitis

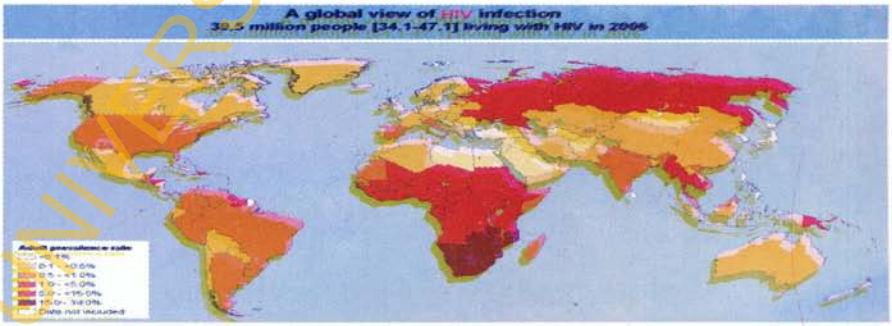
The global rate of polio infection declined in recent decades to the point where the disease was almost eradicated. This year, the disease has experienced resurgence, as basic health care collapsed in large parts of Africa and in other poor countries around the world. The Global Polio Eradication Initiative, a mass immunisation programme started in 1988, cut the number of cases from 350,000 cases per year in 125 countries when the programme started to 783 cases in 6 countries in 2003. The "Kick polio out of Africa" campaign run by the World Health Organisation (WHO) cut the rate of polio infection in Africa from 205 cases a day in 1996 to just 1 case a day in 2003. Some countries are still recording cases of Polio, but generally, the epidemic is over.



2.1.5. HIV/AIDS

HIV/AIDS is one of the most devastating conditions of the 21st century. Globally, an estimated 34 million [31.6 million–35.2 million] people worldwide were living with HIV at the end of 2010. There were 2.7 million [2.4 million–2.9 million] new HIV infections in 2010, down 21% from the peak of the global epidemic in 1997. HIV incidence has fallen in 33 countries, 22 of them in sub-Saharan Africa, the region most affected by the AIDS epidemic in 2005. An estimated 6.6 million people in low- and middle-income countries were receiving HIV treatment at he end of 2010 – an increase of more than 1.35 million over 2009 and nearly half of those eligible. As a consequence of expanded treatment, AIDS-related deaths are decreasing, and growing numbers of people with HIV are living longer and productive lives. The number of people dying from AIDS-related causes fell to 1.8 million [1.6 million–1.9 million] in 2010, down from a peak of 2.2 million [2.1 million–2.5 millions] in the mid 2000s. A total of 2.5 million AIDS-related deaths have been averted since 1995 due to antiretroviral therapy being introduced. (UNAIDS Data tables, 2011). The world has moved from a mother to child transmission of HIV of 20-40% to almost zero. We have changed our battle code from prevention of mother to child transmission (PMTCT) of HIV to eradication of mother to child transmission (e MTCT) of HIV.

Generally, the burden of HIV though is still very high compared to other parts of the world but there has been a remarkable progress in the area of prevention and treatment due to increased political commitment, donor support and mobilization of the populace.



3. CANCER IN AFRICA: DOCUMENTING THE COMMON CANCERS AND TREND

Africa's health crisis starkly illustrates current complex global public health challenges such as rapidly widening health inequalities, and unprecedented emergencies such as the pandemic of HIV/AIDS, Tuberculosis, Malaria and other communicable diseases. Several low-income countries including Africa are experiencing emerging epidemics of chronic diseases and injuries both earlier thought to be mainly confined to middle-class and urban population due to rapid westernization of habits and lifestyles.

Burden of Cancer in Africa

2002

There were 650 000 new cases of cancer, and 506 000 people died from the disease.

- **CFR-78%**

2030

The figures will rise to 1.60 million new cases with 1.23 million deaths.

- **CFR-77%**

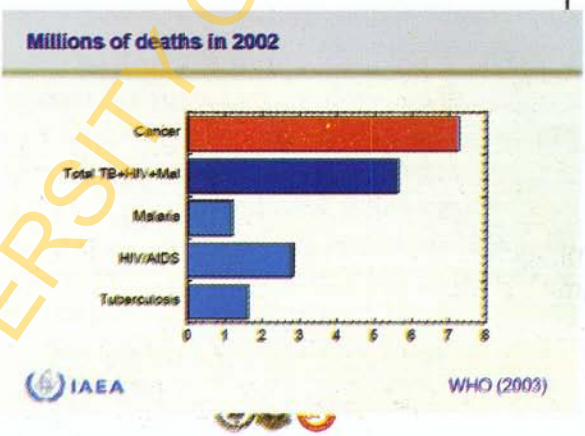
Cancer is now the third leading cause of death worldwide, with 12 million new cases and 7.6 million cancer deaths estimated to have occurred in 2007. By 2030, it is projected that there will be 26 million new cancer cases and 17 million cancer deaths per year. Africa, our dear and own continent, is projected to record a disproportionately higher rate of increase than Europe and United States of America.

Increase in Deaths Due to Cancer
(Globocan 2008)

	European Union	United States	Africa
2010	1,274,607	587,675	460,030
2030	1,687,733	927,539	819,422
% Increase	32%	58%	78%

Globally, it is estimated that cancer killed more persons than HIV,TB and malaria combined.

Comparison of Mortality due to Cancer vs. Infectious Diseases



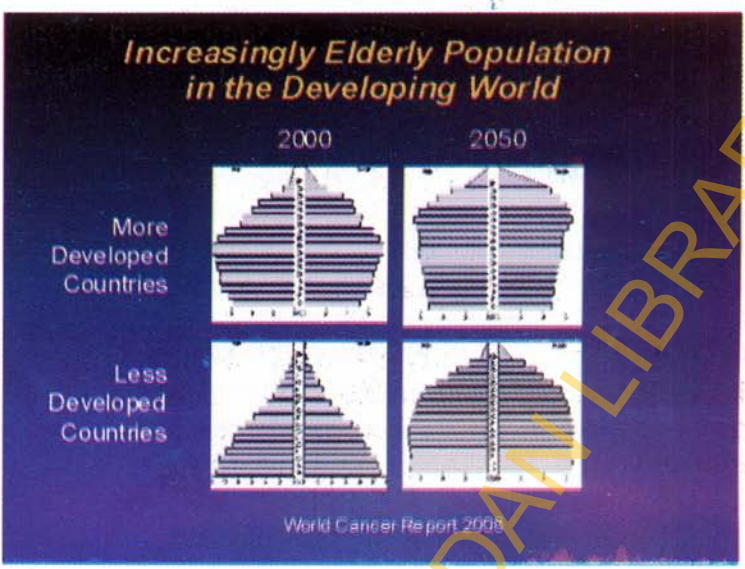
Although, the proportion of cancer related deaths is currently low in Africa, several factors point to worsening scenarios if urgent and concrete steps are not taken to stem the tide.

	World (n=57 million deaths)	Africa (n=10 million deaths)
Infectious and parasitic diseases, %	19·1	52·7
Tuberculosis, %	2·8	3·3
HIV and AIDS, %	4·9	19·6
Malaria, %	2·2	10·7
Respiratory infections, %	6·9	10·5
Maternal and perinatal conditions, %	5·2	7·4
Cancer, %	12·5	3·8
Cardiovascular disease, %	29·3	9·7
Injuries or violence, %	9·1	7·0
Other causes, %	17·9	8·9

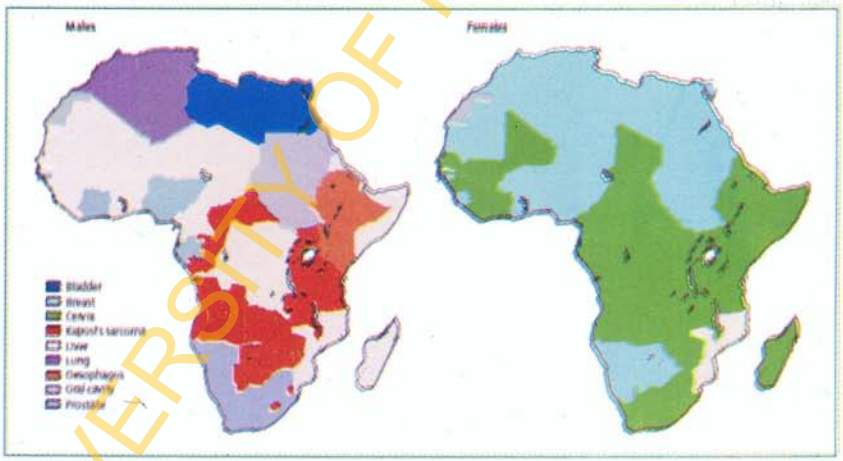
Table 1: **Estimated worldwide and African mortality by cause in 2002[1]**

Moreover, the global distribution of cancer and types of cancer that predominate continues to change, especially in economically developing countries. Low- and middle-income countries accounted for about half (51%) of all cancers worldwide in 1975; this proportion increased to 55% in 2007 and is projected to reach 61% by 2050.

This global increase in the cancer burden and its disproportionate impact on economically developing countries is being propelled by both demographic changes in the populations at risk and by temporal and geographic shifts in the distribution of major risk factors. These changes have also been shown to be responsible for the on-going increasing prevalence of cancer in Africa. The three most important factors that contribute to these trends are: the aging population as evidenced by improvement in life expectancy, the preponderance of modifiable risk factors (particularly cigarette smoking, Western diet, physical inactivity, and increased sexual liberty) in developing countries and the slower decline in cancers related to infectious etiologies in low-resource countries than in high-resource countries.



The map showing the prevalence pattern of cancers in Africa in male and females



Furthermore, demographic transition refers to a change from a period of high fertility and mortality to one of low fertility and mortality which occurs as a result of an increase in income, education and employment, while the epidemiological transition refers to a change from a period of high prevalence of infectious

disease associated with poor sanitation, famine and malnutrition, to a period of high prevalence of chronic and degenerative diseases.

Community studies from South Africa have found that underweight and stunting coexist with overweight and obesity. In a study by Garrett and Ruel, using demographic and health survey (DHS) data from several developing countries, the relationship between stunted children and overweight and obese mothers was confirmed. In SSA, the percentage of stunted children with overweight mothers ranged from 0.6% in Mozambique to 8.2% in Namibia. Countries in SSA are currently experiencing changes associated with the advancing nutrition transition, while at the same time struggling to eradicate the high prevalence of infant and child mortality prevalent in developing countries.

In a multi-country analysis of relationship between diet and pattern of mortality, the report revealed that the prevalence of overweight and obesity is as high as 54 percent in South Africa. In Nigeria, the prevalence is about 22 %.

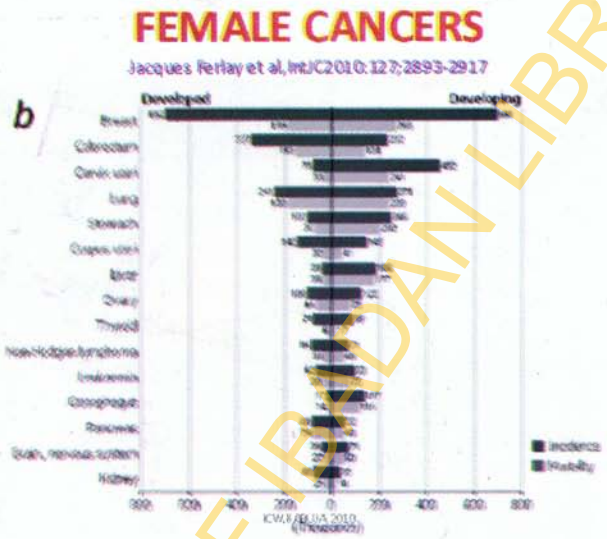
Table showing the prevalence of overweight/obesity in different countries in Africa (Abrahams et al BMC Public Health 2011, 11:801)

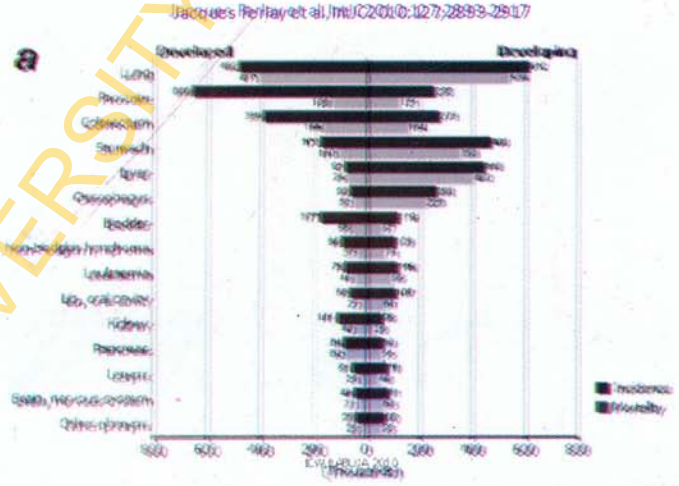
Country	Infant Mortality Rate	Stunting (%)	Underweight-for-Age (%)	Low birth weight (%)	Exclusively Breastfed (%)	NCD Mortality Rate	Under weight (%)	Normal Weight (%)	Overweight/ Obese (%)
Angola*	130	50.8	27.5	12	11.1	1071	n/a	n/a	n/a
Benin	76	44.7	20.2	15	43.1	835	9.2	71.8	19
Burkina Faso	92	44.5	37.4	16	6.8	924	20.8	69.9	9.3
Burundi*	102	63.1	38.9	11	44.7	919	n/a	n/a	n/a
Cameroon	82	36.4	16.6	11	21.2	840	6.7	64.6	49.3
Cape Verde*	24	21.4	11.8	6	59.6	591	n/a	n/a	n/a
Central African Republic* (CAR)	115	44.6	21.8	13	23.1	868	n/a	n/a	n/a
Chad	124	44.8	33.9	22	2.1	910	20.3	72	9.6
Comoros	75	46.9	25.0	25	21.3	713	9.8	67.5	18.4
Congo Brazzaville*	80	31.2	11.8	13	19.1	716	n/a	n/a	n/a
Cote d'Ivoire*	81	40.1	16.7	17	4.3	946	n/a	n/a	n/a
Democratic Republic of Congo (DRC)	126	45.8	28.2	12	36.1	921	18.4	71.3	11.3
Eritrea*	41	43.7	34.5	14	52	686	37.3	53.8	8.9
Ethiopia	69	50.7	34.6	20	49	817	25.6	69.1	4.4
Gabon	57	26.3	8.8	14	5.2	716	6.6	64	29.5
Gambia*	80	27.6	15.8	20	40.8	830	n/a	n/a	n/a
Ghana	51	28.6	14.3	9	62.8	699	8.6	61.4	30
Guinea	90	40.0	20.8	12	48.1	844	13.2	72.5	14.3
Guinea-Bissau*	117	28.1	17.2	24	27.9	925	n/a	n/a	n/a
Kenya	81	35.8	16.5	10	n/a	729	12.3	62.6	25.1
Lesotho	63	45.2	16.6	13	36.4	581	5.7	52	42.3
Liberia	100	39.4	20.4	14	29.1	931	10	69.4	20.5
Madagascar	68	52.8	36.8	17	n/a	799	26.7	67	6.3
Malawi	65	53.2	15.5	13	56.7	796	9.2	77.1	13.6
Mali	102	38.5	27.9	19	37.8	967	13.5	68.9	17.6
Mozambique*	90	47	21.2	15	30	777	n/a	n/a	n/a
Namibia*	31	29.6	17.5	16	23.9	513	15.9	56	28.1
Niger	79	54.8	39.9	27	n/a	1080	19.2	67.9	22.7
Nigeria	96	41.0	26.7	14	13.1	909	12.2	65.7	22.1
Rwanda	72	51.7	18.0	6	88.4	878	9.8	78.7	11.5
Sao Tome and Principe*	64	35.2	10.1	8	n/a	788	7.7	58.7	33.7
Senegal*	57	20.1	14.5	19	34.1	852	n/a	n/a	n/a
Sierra Leone	123	37.4	21.3	24	11.2	1083	11.2	59.1	29.7
South Africa (RSA)	48	24.5[16]	17.0[16]	15	7.2	867	6.2	38.9	54.9
Swaziland	59	29.5	6.1	9	32.3	707	3.2	46.2	50.6
Tanzania	67	44.4	16.7	14	60.1	851	10.4	71.8	17.7
Togo	64	26.9	20.5	10	41.3	818	10.9	77.8	11.4
Uganda	84	38.7	16.4	12	48	786	12.1	71.3	16.5
Zambia	92	45.8	14.9	11	60.7	833	9.6	71.2	19.2
Zimbabwe*	62	35.8	14.0	11	22.2	816	9.2	65.8	25
Mean	79.5	39.7	21.1	14.8	33.6	826.8	13.1	65.5	22.4
Standard Deviation	25.5	10.0	8.7	5.1	20.2	121.8	7.3	9.1	13.2
Minimum-Maximum	24-130	20.1-63.1	6.1-39.9	6-27	2.1-88.4	513-1071	3.2-37.3	38.9-78.7	4.4-54.9

* Indicates countries with missing data

n/a indicates a missing data value

The competing demands for resources on key sector of economy, low level of awareness, poor health seeking behaviour and weak health care system have negatively affected cancer management and prevention in Africa.





4. PRIORITY CANCERS IN AFRICA

These are

- Lung
- Breast
- Hepatocellular
- Cervix
- Prostate
- AIDS Associated
- Childhood

I will illustrate the challenges of preventing and managing cancer in Africa by using my experience in cervical cancer and breast cancer morbidity and mortality.

4.1 Lung Cancer in Africa

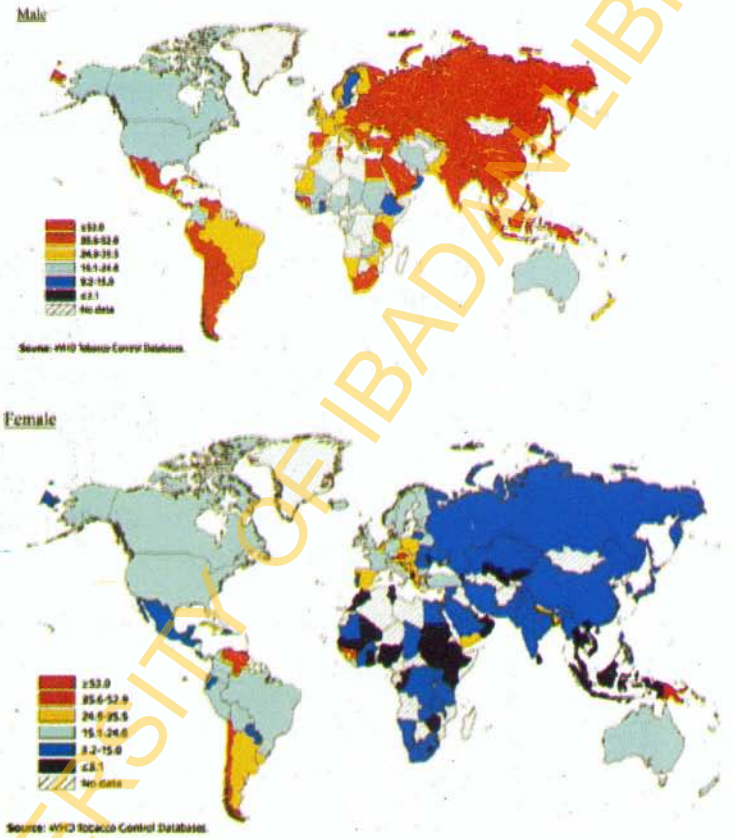
Lung cancer is most commonly attributed to smoking; 80-90% of lung cancer cases are attributed to smoking and a smaller proportion (10-20%) is attributed to occupational exposure to agents such as uranium, ionizing radiation, asbestos, silica, arsenic, beryllium, chloromethyl, nickel chromates, indoor emissions from burning fuels, and polycyclic aromatic hydrocarbons (PAHs) from industries. The acquired immunodeficiency syndrome (HIV/AIDS) has also recently been associated with the development of lung cancer.

Sources of smoking (individual or industrial smoke)

Recent evidence suggests an increase in smoking in the region, especially among young people. Further, decreasing markets for the tobacco industry in the developed world will cause the industry to seek new markets, such as in sub-Saharan Africa, where it sees

enormous potential for growth. Use of chewed tobacco is high in some African countries, especially in villages in rural areas. Efforts must be made to control this more traditional use of tobacco in order to avert cancers of the mouth and throat.

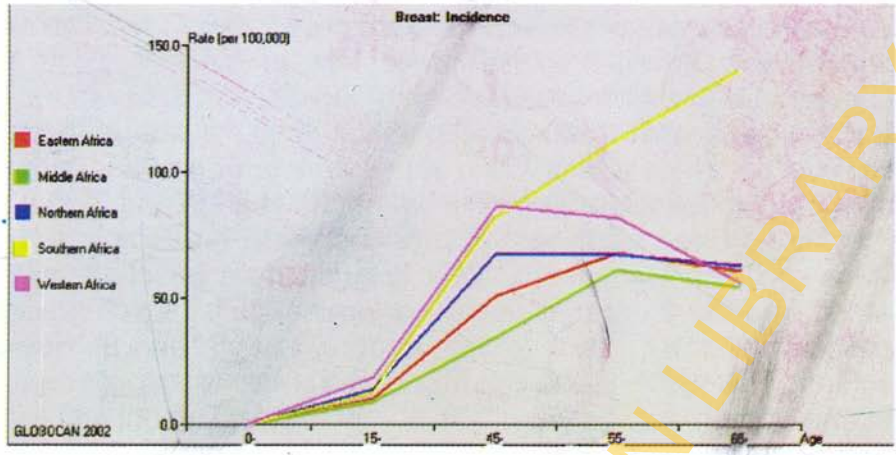
Map showing the Africa's contribution towards Lung Cancer (Male and Female Population)



4.2 Breast Cancer in Africa

Breast cancer is the commonest female cancer in Nigeria and the second commonest in Africa and the incidence is rising. However, most present very late to warrant curative treatment. Studies reveal dramatic difference between breast cancers in US and Africa. Preliminary finding from a study comparing, for the first

time, breast cancers from Nigeria, Senegal and North America has found that women of African ancestry are more likely to be diagnosed with a more virulent form of the disease than women of European ancestry. Other researchers studied the pattern of gene expression - a measure of which genes were turned on and active - in breast cancer tissue from 378 women in Nigeria and Senegal. They found three significant differences: First, breast cancers in African women were more likely to arise from basal-like cells, rather than the inner milk-secreting luminal cells, which are the most common source of breast cancers for U.S. and European women. This type of basal-like breast cancer is also observed among women with inherited BRCA1 mutations. Tumors that arise from basal cells have a worse prognosis, regardless of race. Second, African breast cancers often lacked estrogen receptors. Although 80 percent of breast cancers in Caucasian women have estrogen receptors, only 23 percent of African tumors did. These tumors do not depend on estrogen and thus will not respond to drugs, such as tamoxifen, that prevent estrogen from reaching the cancer cells. Third, cancers from African women were slightly less likely to express the cell-surface marker HER2. HER2 is the target for the drug Herceptin, which was recently approved for metastatic breast cancer. It is over-expressed in about 23 percent of Caucasians and 19 percent of Africans. Public-health campaigns should encourage breastfeeding unless there are good reasons not to (eg, HIV infected mothers, where milk powder and sterile water are freely available). In addition, self breast examination is still a useful preventive strategy that can been done by all at no cost. Although population screening (at age 45 years and above) by mammography is the only preventive intervention proven to be capable of decreasing breast-cancer mortality, the cost of implementation is too high for countries with restricted health-care resources.



4.3 Cervical cancer in Africa

Cancer of the cervix is the most common cancer among women in sub-Saharan Africa (SSA). Of the approximately half a million women that develop cervical cancer each year, developing countries account for the highest number. Nearly 80% of cervical cancer deaths occur in developing countries, and by 2020 this proportion is expected to increase to 90% if no serious intervention is implemented.

Africa accounts for the majority of cervical cancer morbidities and mortalities. In 2008 alone, about 78% of those diagnosed with cancers died from the disease. In his evaluation of 341,658 all of cancer survival all over the world, Sankaranarayanan et al found that the 5-year survival was lowest among Africans. Moreover, access to cutting edge cancer management (anti-cancer therapies) are very limited in almost all African countries with only 22% of African countries with access to anti-cancer drugs, compared to 91% in Europe. Furthermore, there is shortage of cancer management experts in most African countries. HIV/AIDS epidemics in Africa have also added to the burden of the disease. Inspite of this heavy burden, most African countries are yet to declare cervical cancer as a health priority. Although, preventive strategies have recently involved use of Human Papilloma Virus Vaccine which has revolutionized the intervention especially in developed world, but this can not be said for many African

countries. The beauty of the immunization is that it is safe, effective and has a prolonged period of effectiveness.

Predicted number of cervical cancer cases in 2020 by world area and age

	2002	2020* (% CHANGE)	2020* (% BURDEN)
WORLD	**493,000**	**702,500 (42%)**	**100%**
Women aged <65	396,500	549,000 (38%)	78%
Women aged ≥65	96,500	153,500 (59%)	22%
LESS DEV. AREAS	**409,000**	**639,500 (56%)**	**83%**
Women aged <65	336,000	507,500 (51%)	79%
Women aged ≥65	73,000	132,000 (80%)	21%
MORE DEV. AREAS	**83,000**	**92,500 (11%)**	**17%**
Women aged <65	60,000	62,500 (30%)	67%
Women aged ≥65	23,000	30,000 (31%)	33%

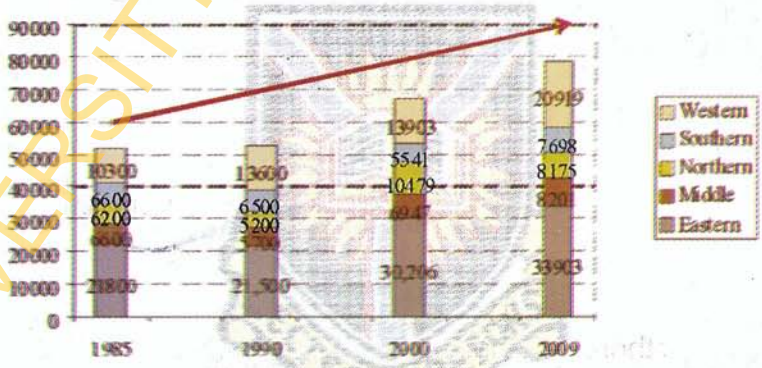
*Projections assume that rates estimated for 2002 continue into the future

SSA CCWG

AFROX 2009

Parkin M & Bray. Vaccine 2006

Cervical cancer is a growing concern

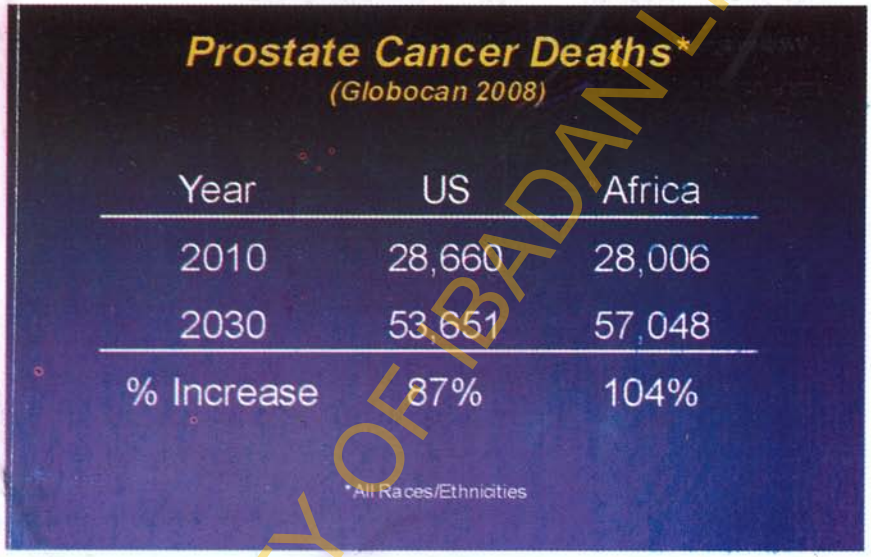


The number of cervical cancer cases reported in Africa is increasing

WHO-ICO- OCTOBER, 2009

4.4 Prostate Cancer in Africa

Prostate cancer incidence and mortality rates vary widely among populations, with the highest documented rates among American and Caribbean men of African descent and the lowest rates in Asian populations. It is likely that these differences can be attributed to variation in genetics, environmental exposures, access to health care, screening patterns, and treatment patterns; however, the reasons for these differences have not been fully elucidated.



5. CANCER CONTROL IN AFRICA

Out of the 53 countries in Africa, only two have cancer control plans. These two programmes, are not well funded or supported adequately. (Cape Town Declaration on Cancer Control in Africa-2006). Only 25 have functional radiotherapy facilities. The number of teletherapy machines per million populations is less than 0.2 machines/million populations. (The number for Europe is 5.0). As of November, 2011, little or no progress have been made .Nigeria, Tanzania, Senegal, Cameroun, Uganda, South Africa now have plans, but there are challenges.

5.1 The Challenges of Cancer Control in Africa: These include

- Poverty
- Plagued by absence of prevention effort
- Poor health infrastructure
- Human resource deficits
- Promoted by lack of awareness
- Poor health seeking behaviour

The 3 Most Significant Features of Cancer in Africa

Implications of Late Presentation:
.....Modified slide by JM Dangou

1. Late Presentation	▪ Lower cure rates ▪ More suffering and death due to cancer
2. Late Presentation	▪ More pronounced need for increased emphasis on palliative care
3. Late Presentation	▪ More of a need for education health care workers and the public
..	▪ Drain on available resources ▪ Loss of confidence in HCS

5.2 Cape Town Declaration on Cancer Control in Africa-2006
The declaration calls for recognition of cancer as a critical public health problem alongside HIV AIDS, malaria, and TB in the Africa region and one which should be placed as a priority on the public health agenda of relevant agencies, including New Partnership for Africa's Development (NEPAD) and the African Union (AU) Commission.

It also expressed the commitment of African Nations to the development, implementation and adequate funding of comprehensive national cancer control plans and programmes led by Ministries and National Departments of Health through an active national steering committee; In addition, it called for the Performance of comprehensive needs assessment at national levels utilising mechanisms such as PACT partnership; and agree to meet periodically to review progress made.

5.3. WHAT IS NEEDED:

Africa requires the following if we are to prepare ourselves against the impending cancer **epidemic**:

- National Cancer Control Plan
- A Cancer Control Department
- Cancer Control Committee
- Prioritization
- Registration & Surveillance
- Prevention
- Treatment
- Palliative care

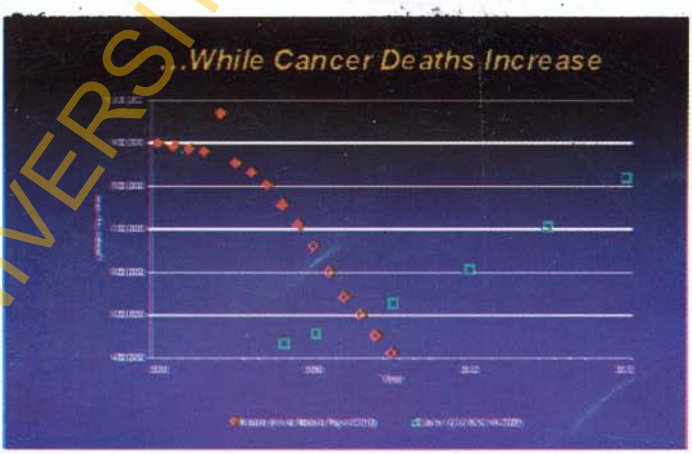
5.4 ELEMENTS OF CANCER CONTROL

The following are critical components of cancer control:

- Awareness creation (Behavioural Change Communication)
  - Cancer Intelligence Unit
  - Tobacco Control
- Life style modification – Diet and sexual habits
- Early diagnosis and Prevention
- Cure the curable
- Training and Education
- Palliative Care

6. PREVENTING THE NEXT EPIDEMIC

The world stands to gain a lot from the anti-malaria campaign that has recorded remarkable success globally.



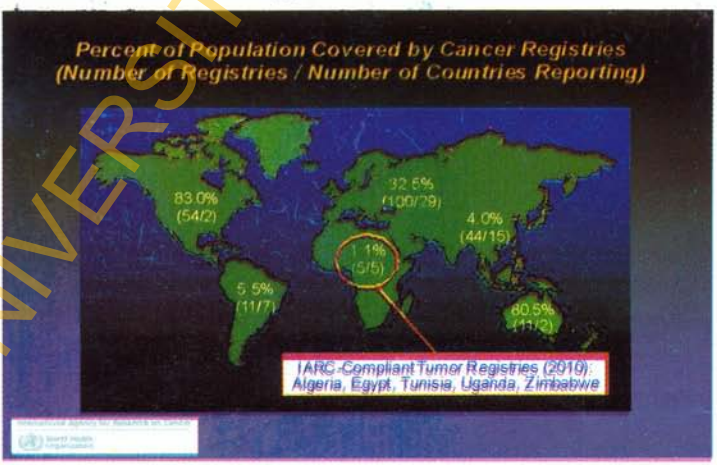
British America Tobacco Factory, Ibadan (Nigerian Youths are exposed)

6.3 Imperatives

We need to strategise and implement fully the African regions strategy for cancer control. The objective of this is to contribute to the reduction of morbidity and mortality due to cancer in the African Region. The areas of priority interventions are:

1. Cancer prevention and control policies, legislation and regulations
2. Comprehensive national cancer control programmes
3. Advocacy, resource mobilization and appropriate allocation
4. Mobilization and coordination of partners' interventions
5. Capacity development
6. Cancer Primary, Secondary and Tertiary Preventions
7. Strategic information, surveillance and research

6.4 Establish Cancer Registries

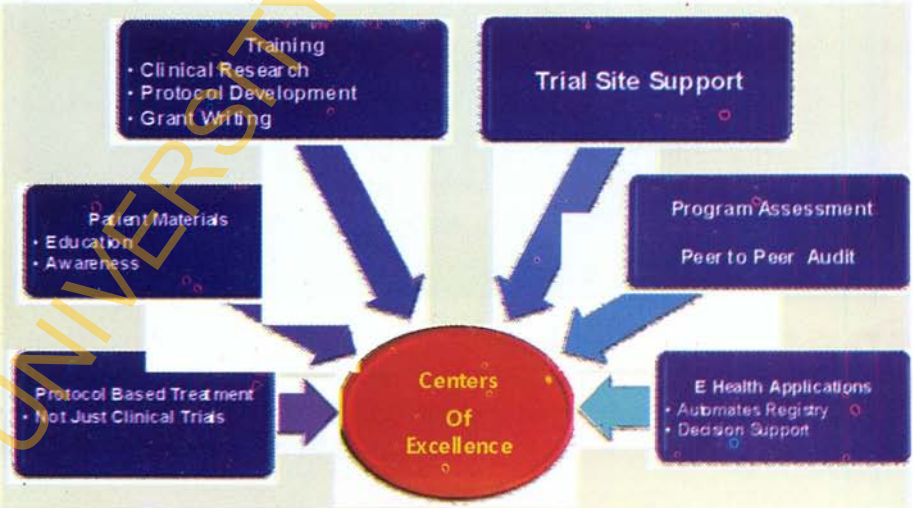


6.5 Establishment of centres of Excellence

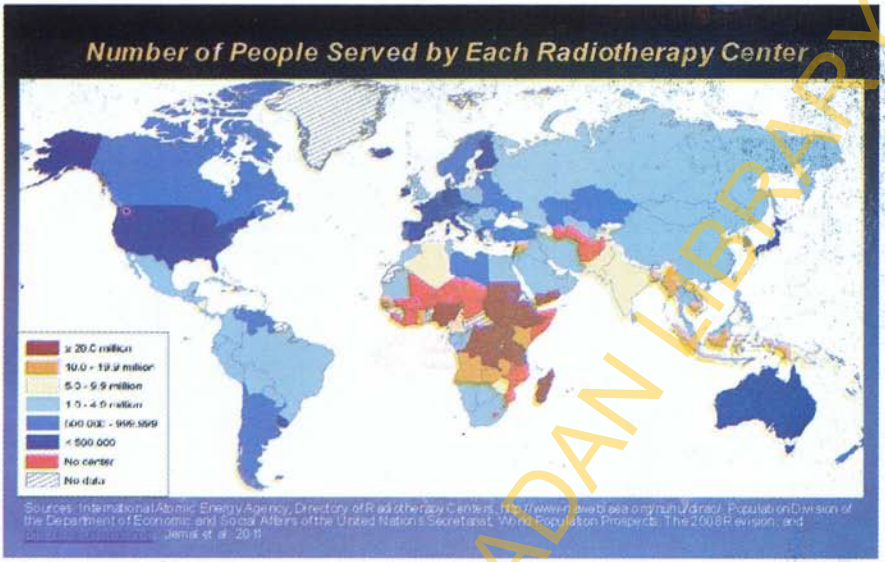
MADCaP - Africa

- **Establish Centers to:**
  - Create knowledge about cancer in Africa.
  - Translate this knowledge to improved prevention, detection, and treatment of cancer in Africa.
- **These Centers will:**
  - Offer high quality facilities for training, research and advocacy.
  - Help to implement national cancer plans.
  - Reduce dependence on foreign institutions for training and service and minimize brain drain.

Concept of African Centers of Excellence in cancer



6.6 Invest in Radiotherapy Centres



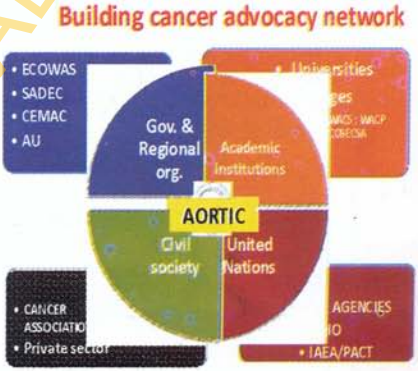
6.7 THE LANCET Challenge

Lancet Editorial in a rare display of courage titled the revolution has begun (....www.thelancet.com **Vol 376 October 2, 2010**) alerted the global community of the need to do be proactive. In a

piece titled ***Expansion of cancer care and control in countries of low and middle income: a call to action***....in the same issue, Paul Farmer and colleagues challenged the public health community's assumption that cancers will remain untreated in poor countries, and noted the analogy to similarly unfounded arguments from more than a decade ago against provision of HIV treatment. (*Paul Farmer et al Lancet 2010; 376: 1186–93)*

7. ROLE OF PROFESSIONAL ORGANISATIONS-AORTIC

It is our dream that AORTIC will provide leadership in cancer care, control, training and research in Africa. We have developed a strategic plan designed to place cancer on the continental agenda for health. It is our plan to network with all stakeholders interested and or working to cage cancer in our continent.



Developing Partnerships

Work with:

- ❖Leaders-Politics, Business, Religious
- ❖Policy people
- ❖Wives of key Government Leaders
- ❖Professional Associations
- ❖Women Associations
- ❖Community Groups
- ❖Media

New Initiatives

- Mother and Daughter Initiatives
- African Women Initiatives
- Eradicate CC in Africa
- Create a Sense of Urgency
- African Cancer Eradication programme
- Africa Against Cancer

Wanted...Cancer Research Policy

- Goal...
- To provide an enabling framework for the development of an effective national Cancer Research System that will facilitate the generation and use of nationally-relevant, high-quality, culturally appropriate and ethically-sound evidence to drive the national agenda.

Research Priorities

- Basic sciences
- Clinical sciences,
- Public health;
- Social and behavioural sciences;
- Economics, operations research, and health systems
- Natural substances
- Human rights and access to care

Research priorities

- Surveillance
- Pathogenesis
- Clinical Trials
- Quality of care/Quality of Life/Survivals
- HIV and cancer
- Cost effectiveness
- Health seeking behaviour
- Service utilisation
- Palliation

Building Human Resources for Ca

- Map Resources
- Document gap in HR needs
- Promote Task shifting
- Improve cancer care skills
- Develop sub-specialisation in cancer care
- Develop twinning programmes
- Develop specialised treatment centres
- Promote Increased resource allocation

What can be done to surmount obstacles

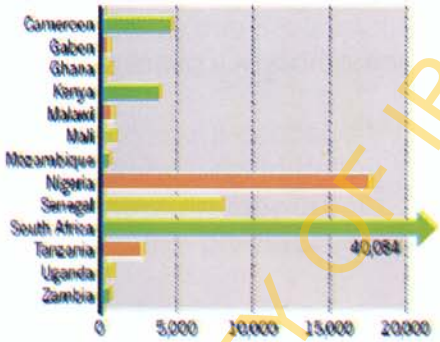
- Build research training capacity regionally
- Create Regional Centers of Excellence
- Provide central services where economy of scales exist for clinical research
- Develop joint projects
- Build community engagement, advocacy
- Build awareness by media and governments

STRATEGIES

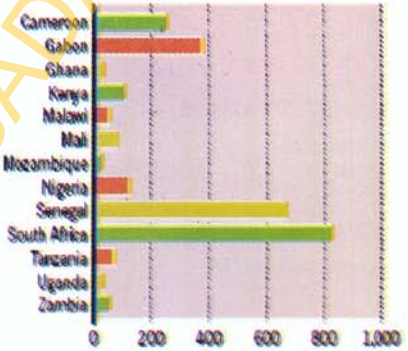
- Development of cancer registries
- Prevention
- Early Detection & Screening
- Effective Treatment at the doorstep
- Easy Access to Palliative Care

The view from the frontline.
Vivienne Irikefe et al...Nature 2011;474:556-9

NUMBER OF RESEARCHERS



RESEARCHERS PER MILLION INHABITANTS



FOSTER AND SUPPORT COLLABORATION AND PARTNERSHIP

- National governments / Regional organizations
- Academic institutions
- International agencies
- Non-Government Organizations (NGOs)
- Institutions, foundations
- Public and Private stakeholders

-- research, training, cancer care management, and educational activities directed toward the cancer control in Africa

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-- research, training, cancer care management, and educational activities directed toward the cancer control in Africa

FUTURE GOAL: AFRICAN CENTERS OF EXCELLENCE IN CANCER

- An ultimate goal is to promote the establishment of national Centers of Excellence in Cancer throughout the continent
- These Centers will :
  - offer high quality facilities for training, research and service
  - reduce dependence on foreign institutions for training and service and promote brain sharing

Concept of African Centers of Excellence in cancer

Working Together

Learning from the scripture

Security Forces

Collectively we achieve MORE

Together each achieve more-TEAM

Keep cancer under LOCK

CANCER BUSINESS

- AORTIC can mobilise and move Africa

"The chance for a cure, the chance to live, should not be an accident of geography."

.....HRH Princess Dina Mired of Jordan

...In...Closing the Cancer Divide

8. CONCLUSION

A powerful advocacy is key to cancer prioritization, prevention and management in Africa. Advocacy for cancer control is needed in any resource setting in order to influence policy and to urge decision-makers to create an environment conducive to improving the way cancer control knowledge is put into practice.

The key messages for people involved in advocating for comprehensive cancer control planning and implementation are as follows:

- Advocacy for cancer control is most likely to be successful if it is synchronized with advocacy for non-communicable diseases and other cancer-related problems. By combining their voices to deliver the powerful message that comprehensive and integrated cancer control is more effective than fragmented or isolated approaches, advocates can make a real difference.

- Successful cancer control greatly depends on the ability of stakeholders to define the value of a comprehensive cancer control framework to policy-makers and other potential resource providers whose sustained support is crucial.

- The lifeblood of advocacy is good strategic communication, which educates people about a need and mobilizes them to meet that need in a collaborative way. Participants in the advocacy process need to interact and freely share information regarding cancer control, and other chronic diseases and related issues.

- Good communication skills in those advocating for cancer control are vital. These include being able to speak clearly and concisely, and an ability to convey complex information in an organized and easy-to understand manner.

Advocacy will yield good dividends and provide roadmap for effective and functional cancer care strategy. This is our minimum demand.

"Change does not roll in on the wheels of inevitability, but comes through continuous struggle".

Dr. Martin Luther King Jr. (1929-1968)

Distinguished Colleagues, Ladies and Gentlemen, I thank you for listening to my sermon.

Thank you and God bless!

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BIO-DATA

Professor Isaac F. Adewole

Professor Isaac Folorunso Adewole is the current Vice-Chancellor of University of Ibadan, the first and best University in Nigeria. A Professor at the College of Medicine of the University of Ibadan, Nigeria since 1997, Isaac Adewole is currently a Consultant Obstetrician and Gynaecologist at the University College Hospital (UCH) in Ibadan. He is also an adjunct Professor at Northwestern University, Chicago, Illinois, USA.

Born on 05 May, 1954, Prof. Adewole attended Ilesa Grammar School from 1966 – 1972 where he obtained Grade I with distinction in 1970 and the Higher School Certificate in 1972 in the same school where he made AAC in the three Science subjects he offered. He enrolled as a National Award Scholar at the University of Ibadan in 1973 and obtained his MB BS degree from the University in 1978 with the Glaxo Allenbury prize for the best performance in Paediatrics.. He joined the services of the Department of Obstetrics and Gynaecology as a Senior House Officer in 1981 and underwent further medical training to become a Senior Registrar in the Department in 1984. He then travelled to the UK for a Research Fellowship in the Department of Medical Oncology at Charring Cross Hospital in London. Professor Adewole was appointed Lecturer I at the College of Medicine in the University of Ibadan in 1989.He was promoted Senior Lecturer in 1992 and Professor in 1997. He was Dean of

the Faculty of Clinical Sciences & Dentistry (2000 – 2002), before becoming a Provost of the College of Medicine from 2002 to 2006.

During his tenure as the Provost of the College of Medicine, University of Ibadan, he devoted a lot of energy to the improvement of the finances of the College, building of infrastructure and improving on the teaching and learning environment. Professor Adewole has also served the University of Ibadan in many administrative capacities. He was a member MacArthur Grant Implementation Committee; Member of Senate; chairman, University Campus Committee on AIDS; member, Committee on the Review of guidelines for Promotion of Academic Staff; Chair, Committee on Assessment of Academic Staff by Students, Project Director, UNFPA Assisted Programme on Sexual and Reproductive Health and HIV Prevention as well as a member of the Organizing Committee and chairman of the Medical sub-Committee of NUGA in 2002.

A progressive unionist, Prof. Adewole was Secretary General and President, Association of Resident Doctors, UCH Branch as well as Secretary-General and National President of the National Association of Resident Doctors of Nigeria (NARD). He was also Deputy Secretary General and Secretary General, Nigerian Medical Association (NMA); Secretary General, Confederation of African Medical Associations and Societies (CAMAS) and Chairman, Nigerian Medical Association, Oyo State.

Professor Adewole is a co-Principal Investigator of the Medical Education Partnership Initiative in Nigeria (MEPIN) and Principal Investigator of the Harvard US President's Emergency Plan for AIDS Relief (PEPFAR) (APIN Plus) programme and was Chairman of the Prevention of Mother to Child Transmission of HIV (PMTCT) National Task Team Subcommittee on antiretroviral for the PMTCT of HIV. He is also the country's Principal Investigator for 'Operation Stop Cervical

Cancer' in Nigeria.. Professor Adewole holds the membership of many learned societies, such as the Society of Gynaecology & Obstetrics of Nigeria; International Federation of Gynaecology and Obstetrics (FIGO); International AIDS Society (IAS); the European Research Organization on Genital Infection and Neoplasia (EUROGIN); the International Gynaecological Cancer Society (IGCS) and the African Organization for Research and Training In Cancer (AORTIC).

Professor Adewole is a leading advocate of nationwide access to cervical screening and has extensive management experience at both national and international levels. He is actively involved in research and advocacy work. His research interests includes evaluating novel ideas for promoting cervical cancer screening in developing countries, a multi-country study on HPV in cervical cancer among African women and evaluating attitudes of HIV positive pregnant women to contraception and couple counseling. He has been an external examiner in Obstetrics and Gynaecology to seven Nigerian Universities, the National Postgraduate Medical College as well as the West African College of surgeons.

He has delivered many guest lectures, numerous communications at scientific conferences, abstracts and post presentations and has published over 150 articles in peer-reviewed journals and books on gynaecological oncology, abortion, HIV/AIDS and perinatal medicine. A widely travelled man, he has attended over 100 national and international scientific conferences and workshops. He was Chair, National Task Team on Prevention of Mother to Child Transmission of HIV and the Guttmacher Institute's 2008 Bixby Leadership Fellow in Reproductive Health. He is the current President of African Organization for Research and Training in Cancer (AORTIC) and Chair of the sub-Saharan African Cervical Cancer Working Group (CCWG). He is a Patron of the Boys Brigade of Nigeria and is happily married with children and has a grandchild.