

Cancer Research in Africa: Underpinning a sustainable course for action

Isaac F. Adewole, FAS

President,

African Organisations for Research and Training in Cancer (AORTIC)

Department of Obstetrics & Gynaecology,

Faculty of Clinical Sciences, College of Medicine, University of Ibadan, Ibadan, Oyo State, Nigeria.

Email: ifadewole@yahoo.co.uk or if.adewole@mail.ui.edu.ng

Background



- Over the years, cancer remains a public health challenge worldwide, and its fast rising nature amongst other non-communicable disorders in Africa is occasioned by the changing demographic and environmental characteristics.
- The epidemic is further propelled by the complimentary role of HIV/AIDS burden, poverty and ignorance within the continent.

Estimated Number of New Cancer Cases

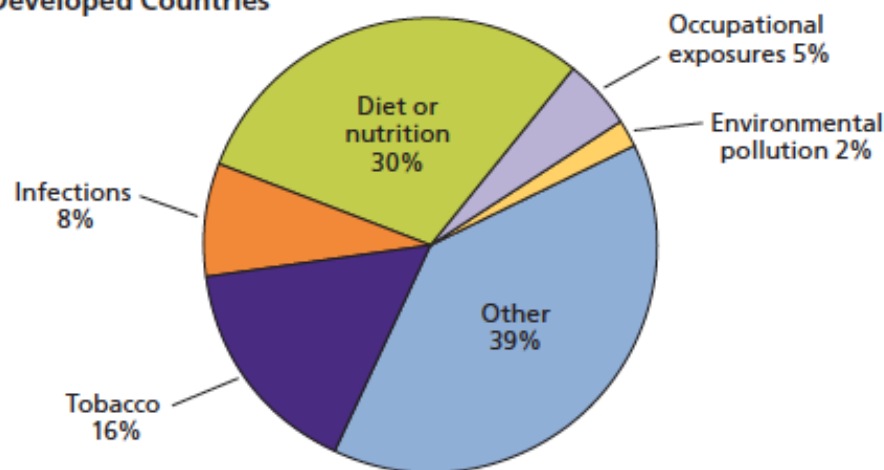
	Cases			Deaths		
	Male	Female	Overall	Male	Female	Overall
Eastern Africa	100,800	120,200	221,100	85,400	88,300	173,700
Middle Africa	29,500	37,400	66,900	25,600	27,600	53,200
Northern Africa	81,500	82,900	164,400	65,400	55,400	120,800
Southern Africa	40,600	38,600	79,200	29,300	25,500	54,800
Western Africa	72,500	111,600	184,100	61,300	78,000	139,300
Eastern Asia	2,135,300	1,585,400	3,720,700	1,511,800	928,600	2,440,400
South-Central Asia	651,100	772,000	1,423,100	496,800	483,200	979,900
South-Eastern Asia	336,700	388,800	725,600	258,600	242,400	501,000
Western Asia	118,500	104,800	223,300	86,700	64,400	151,200
Caribbean	42,800	36,500	79,300	26,300	21,500	47,800
Central America	84,000	92,600	176,600	52,500	55,800	108,300
Northern America	831,800	772,100	1,603,900	332,500	305,900	638,300
South America	318,000	332,100	650,100	200,600	185,300	385,900
Central and Eastern Europe	494,600	490,600	985,200	351,700	283,000	634,800
Northern Europe	248,400	231,800	480,200	126,400	116,300	242,700
Southern Europe	398,800	315,000	713,900	225,000	155,500	380,500
Western Europe	569,600	464,700	1,034,300	258,900	204,900	463,800
Australia/New Zealand	70,300	56,700	127,000	27,600	21,400	49,100
Melanesia	3,300	3,700	7,000	2,600	2,500	5,100
Micronesia	300	400	700	200	200	400
Polynesia	600	600	1,100	300	200	600

* Excludes nonmelanoma skin cancer.

Source: GLOBOCAN 2008.

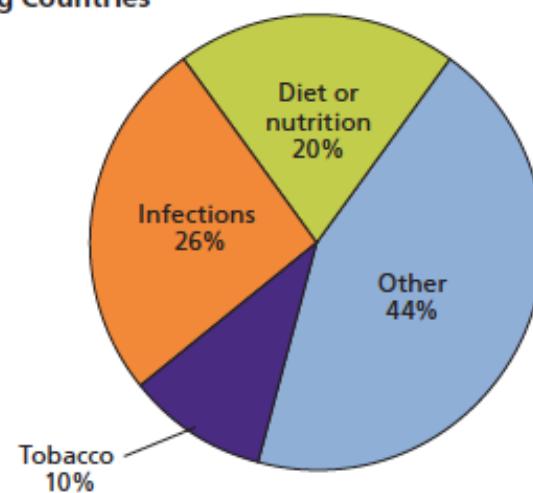
Proportion of Cancer causes

Developed Countries




Source: Cancer Atlas, 2006.

Developing Countries

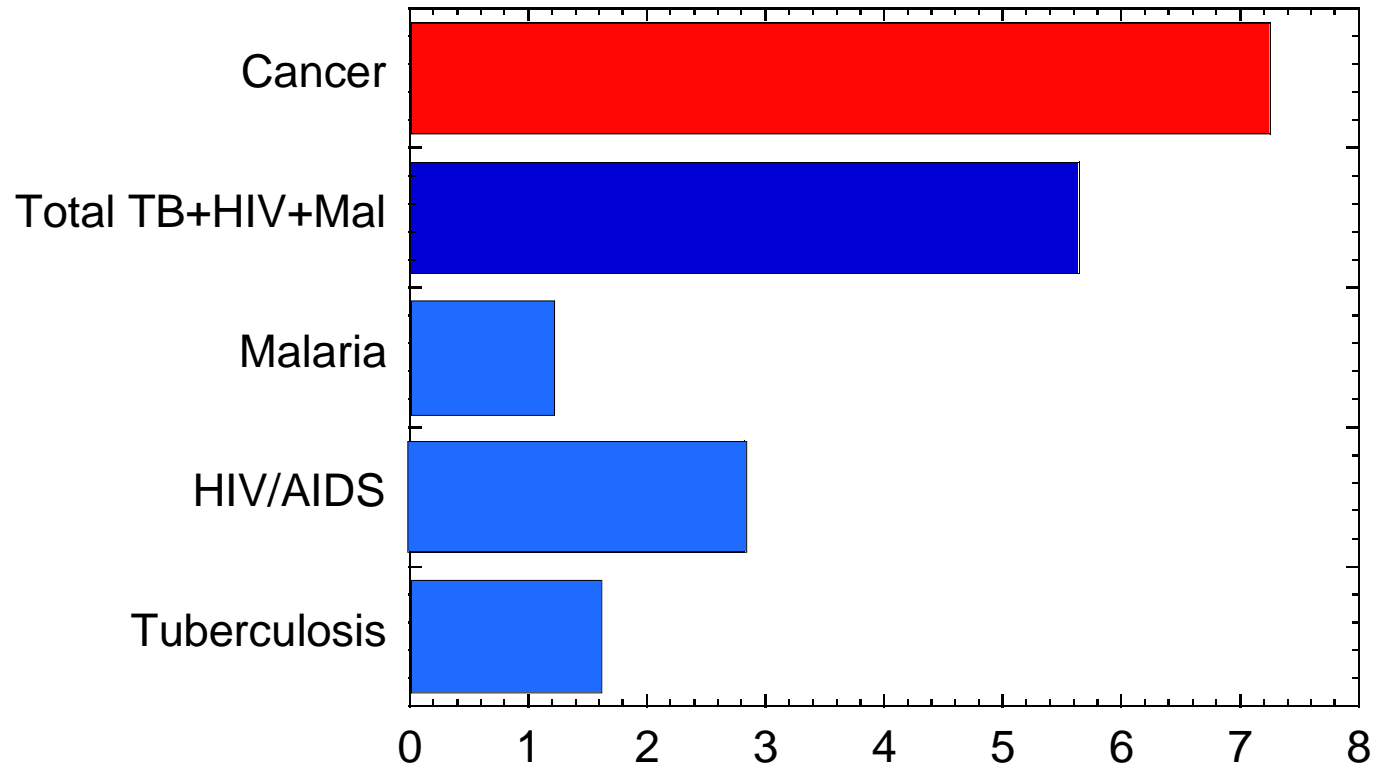




African Peculiarities on Cancer

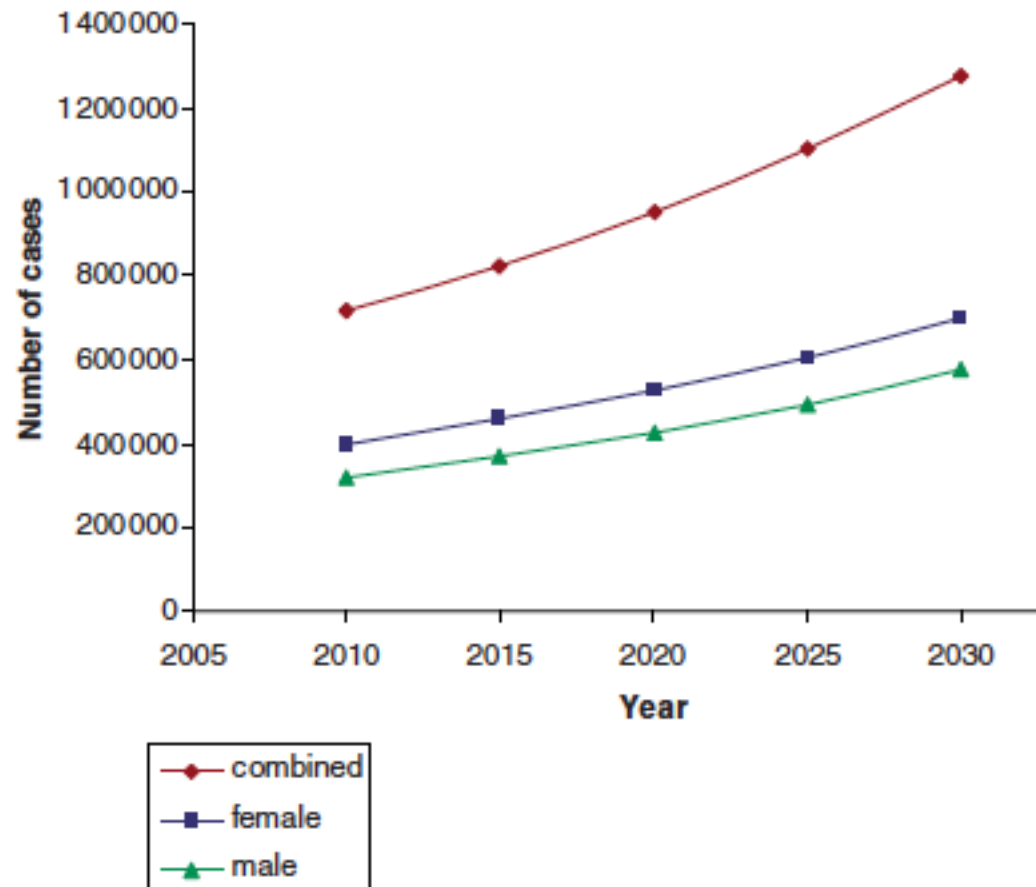
- 
- In the developing world, the number of new cancer cases will increase significantly over the next ten years.
 - By 2030, it is projected that cancer alone will account for about 1.27 million new cases and about a million death per annum in Africa solely from population growth and aging alone.
 - This worrisome projection suggests that the current weak health system and infrastructure cannot cope with the burden.
 - Our policy makers are oblivious of the emerging data suggesting a cancer epidemic affecting us most.

Millions of deaths are cancer related!



WHO (2003)

The projected Cancer burden in Africa



	Africa			Sub-Saharan Africa ^a			Northern Africa ^a			Worldwide		
	Rank	Deaths	%	Rank	Deaths	%	Rank	Deaths	%	Rank	Deaths	%
HIV/AIDS	1	1,678	13.3	1	1,676	14.3		2	0.2	8	2,040	3.5
Lower respiratory infections	2	1,511	12.0	2	1,456	12.5	5	55	5.9	4	4,177	7.1
Diarrhoeal diseases	3	1,063	8.4	3	1,036	8.9	7	27	2.9	7	2,163	3.7
Perinatal conditions ^b	4	1,061	8.4	4	1,005	8.6	4	56	6.0	5	3,180	5.4
Malaria	5	843	6.7	5	842	7.2		1	0.1	12	889	1.5
Heart diseases	6	766	6.1	6	531	4.5	1	235	25.3	1	8,923	15.1
Malignant neoplasms	7	573	4.5	7	494	4.2	2	79	8.5	2	7,424	12.6
Cerebrovascular diseases	8	505	4.0	8	434	3.7	3	71	7.7	3	5,712	9.7
Chronic obstructive pulmonary disease	9	459	3.6	8	434	3.7	9	25	2.6	6	3,025	5.1
Tuberculosis	10	435	3.4	9	429	3.7		6	0.6	9	1,464	2.5
Road traffic accidents		242	1.9		219	1.9	10	23	2.5	10	1,275	2.2
Diabetes mellitus		194	1.5		174	1.5		20	2.1	11	1,141	1.9
Nephritis and nephrosis		127	1.0		95	0.8	6	32	3.4	15	739	1.3
Cirrhosis of the liver		64	0.5		38	0.3	8	26	2.8	14	772	1.3
Suicide		58	0.5		54	0.5		4	0.4	13	844	1.4
All causes		12,609	100.0		11,683	100.0		926	100.0		58,772	100.0

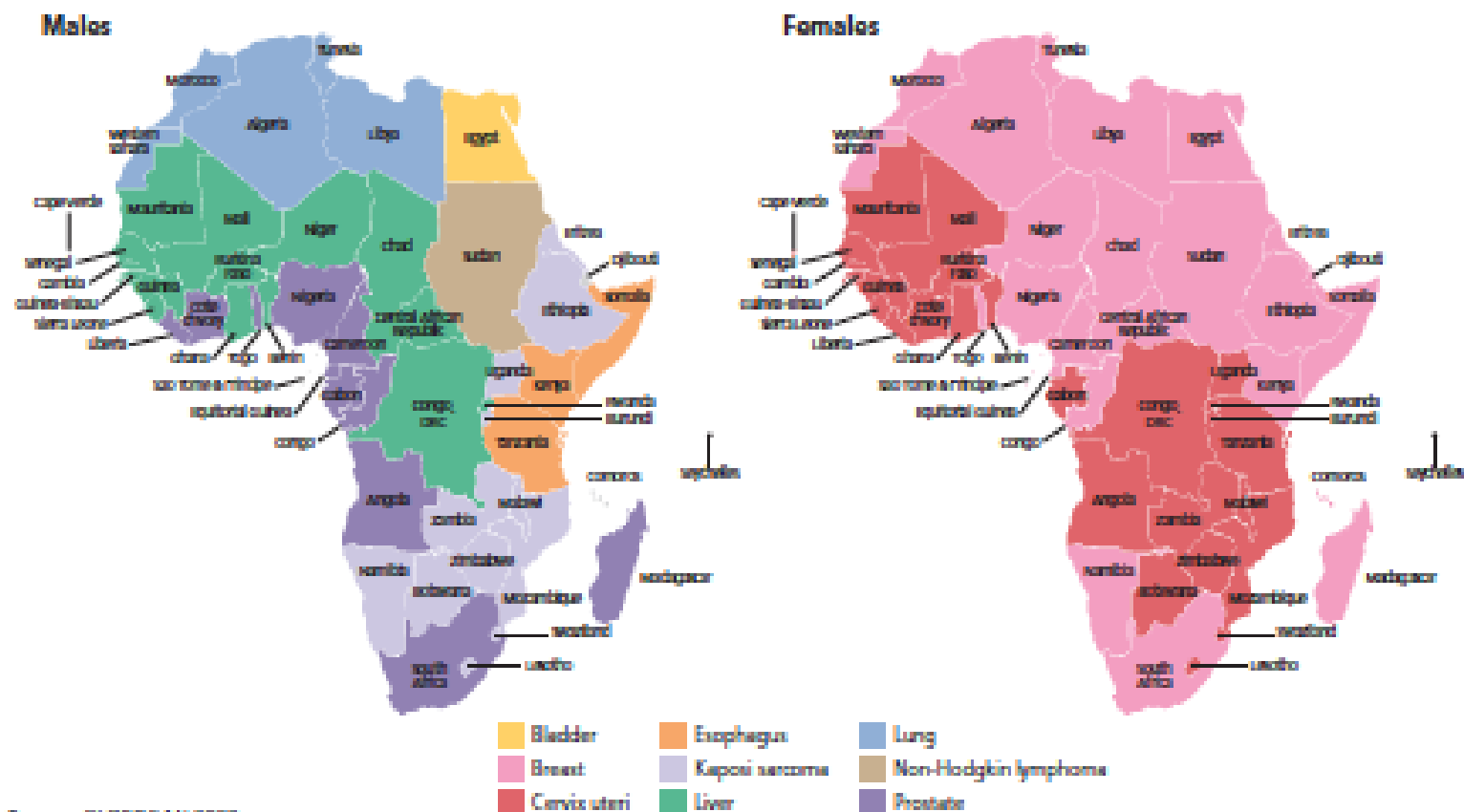
^aCountries are grouped according to the regional groupings used by the United Nations for reporting progress toward the Millennium Development Goals (MDG); see <http://mdg.un.org/unsd/mdg/Host.aspx?Content=Data/RegionalGroupings>.

^bIncludes "causes arising in the perinatal period" as defined in the International Classification of Diseases, principally low birthweight, prematurity, birth asphyxia, and birth trauma, and does not include all causes of deaths occurring in the perinatal period.

Source: World Health Organization, The global burden of disease: 2004 update.

NOTE: Maternal conditions is the 10th ranked cause of death in sub-Saharan Africa.

Both sex share in Cancer Burden in Africa



Source: GLOBOCAN 2008.

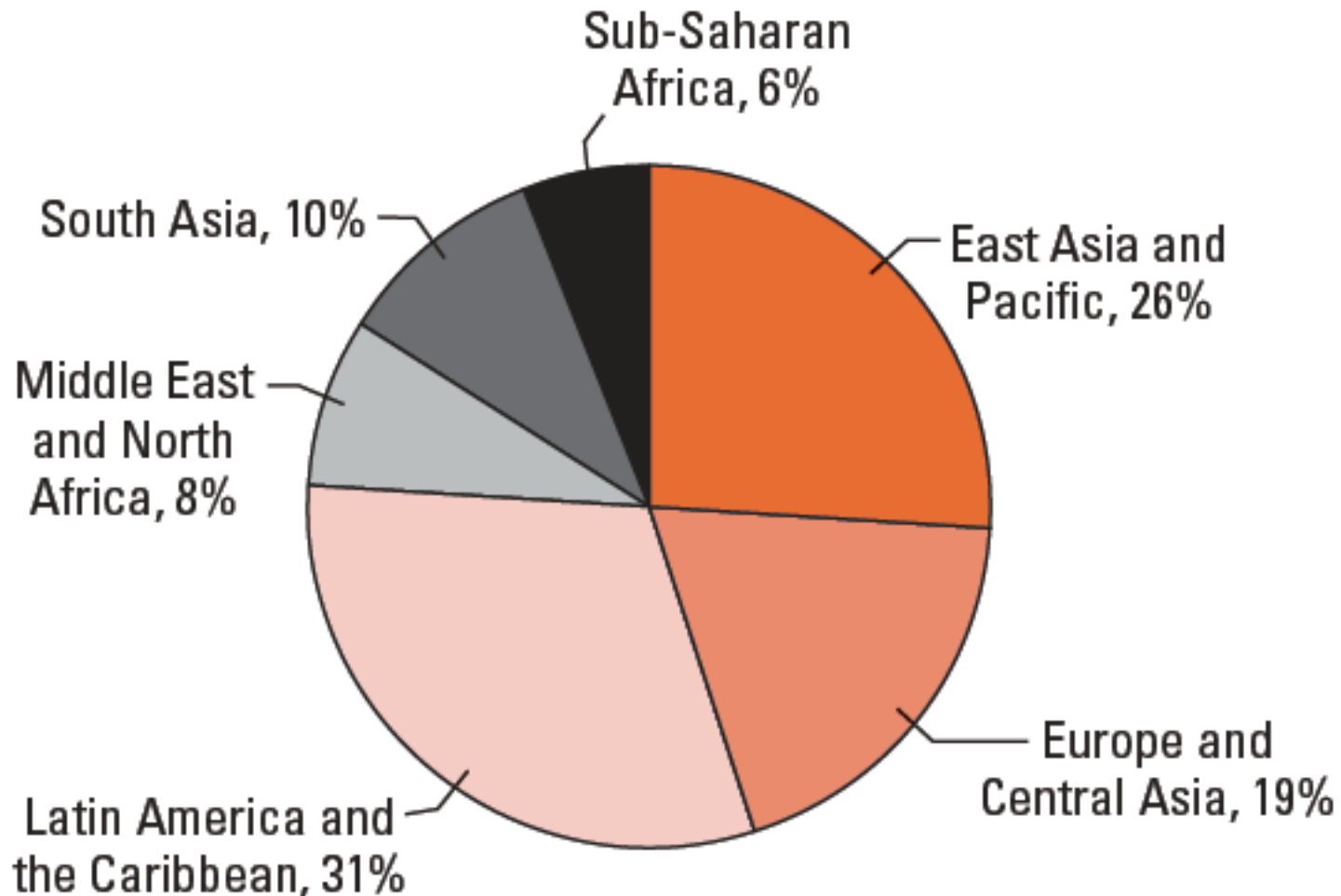
Africa lags behind health investment & Research



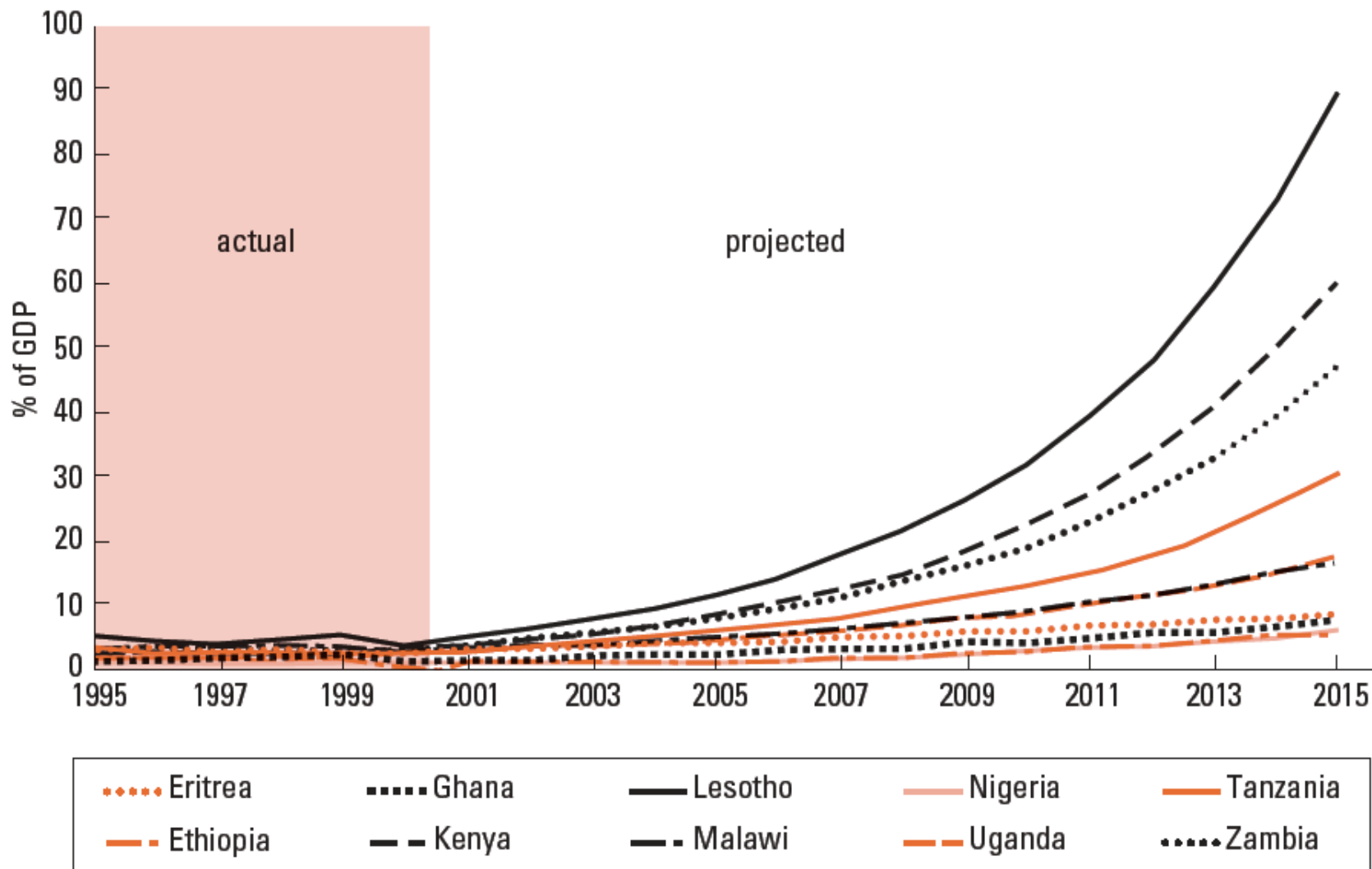
- Disease prioritization is often a product of cutting edge research, and it is also a driver for follow-up implementations of action to either design a preventive or curative treatment protocols.
- The differential opportunities for sound translational research between several developed countries and Africa is one of the key causal factors responsible for disease outcome between the two settings.

Health spending in developing countries (World bank Report)

Total GDP in developing countries = \$6,319 billion (20% global total)




Health Spending in Africa is poor



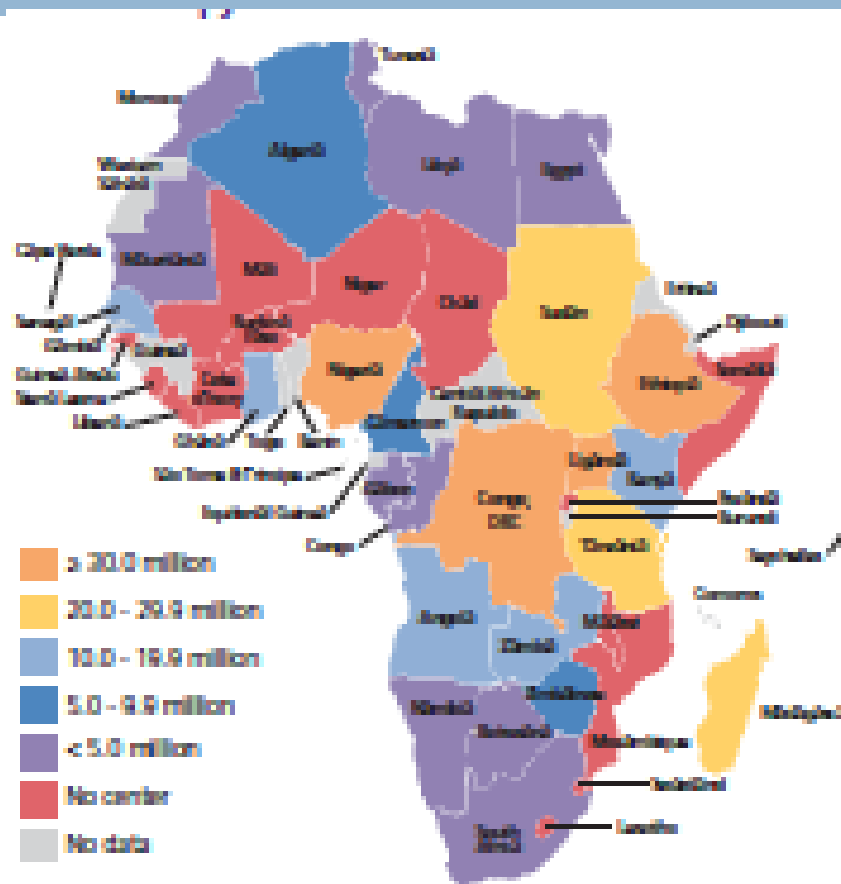
Source: World Bank staff estimates.

The State of Africa Cancer Research

- At moment, the quality of cancer research is yet to offer the much-needed platform to generate a momentum for cancer prioritization in Africa.
- Unlike what obtains in developed countries, a typical cancer research from Africa are mostly
 - ▣ donor funded
 - ▣ lacks depth of contextual framework – sociocultural
 - ▣ minimal multi-national outlook
 - ▣ lean basic science component
 - ▣ low translational potential

- 
- ❑ Other challenges include poor research friendly environment (laboratory, incentives and recognition);
 - ❑ lack of mentoring programs, public funding comparable to NIH is non-existence
 - ❑ lack of robust cancer registry with necessary resources,
 - ❑ poor political will and support.

Poor Infrastructure: Radiotherapy centers in Africa as an example



Sources: International Atomic Energy Agency, Directory of Radiotherapy Centres, <http://www.naweb.iaea.org/rtr/abstract/>.


Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2008 Revision, <http://esa.un.org/unpp/>.


Africa Scorecard in Multi-disciplinary Research

- Africa has a noble culture of collaboration with their counterparts in the developed world to implement first-class research projects.
- The story of Burkitt's lymphoma is a classic example of this type of rich collaboration.
- The relationship between Aflatoxin and hepatocellular carcinoma is a product of similar collaboration.
- The story of HIV and AIDS is incomplete without the reports of first-class collaborative research between African researchers and their European and American collaborators

key necessities for Genuine African cancer Research

- A critical need is for research that can address cancer on a global scale among African populations, based on the following principles:
 - ▣ An understanding of global patterns and differences in cancer distribution and etiology in Africa may assist our ability to improve cancer prevention and control worldwide.
 - ▣ It is likely that the African setting can inform cancer etiology, risk, prevention, and treatment, but only if the work achieves a level of rigor that will be recognized as valid by the global scientific community.
 - ▣ Studies should address problems that will specifically address local clinical and public health needs AND be able to influence policy and practice in Africa.

- 
- Research should be translated into clinical and public health practice
 - The research should be transportable, so that it can be translated to health systems across Africa.
 - The research should be led by African researchers, and infrastructure AND technical skill should be developed to allow local investigators to achieve ongoing research and translational studies.
 - The research that is developed should be sustainable.

- 
- As such, capacity building activities should be a hallmark of all research development that is undertaken in Africa.
 - It should be disseminated scientifically in peer-reviewed journals and through presentations at national and international conferences.
 - In addition, attempts should be made to disseminate research results publicly, especially in study communities to foster the adoption of evidence-based cancer prevention and control practices.

Examples of On-going African Cancer Researches

1. The MADCaP consortium currently includes multiple centers representing populations in West Africa (Senegal, Ghana, Nigeria), East Africa (Sudan, Uganda), and southern Africa (Botswana, South Africa)
2. The Women of African Ancestry Breast Cancer Consortium spans several African countries including Nigeria, Ghana, Cameroon, Uganda, and Senegal
3. The Prostate Cancer Transatlantic Consortium (CaPTC)
4. Operation Stop Cervical Cancer Nigeria
5. The African Caribbean Cancer Consortium (AC3)

AORTIC Response

- The African Organisation for Research and Training in Cancer (AORTIC) has the vision of transforming the orientation of cancer researchers within the continent through
 - ▣ provision of capacity building research opportunities
 - ▣ generation of a critical mass of cancer researchers that will form the core of the network
 - ▣ leading advocacy for local funding of cancer research in Africa
 - ▣ promotion of center of excellence in cancer research at national and sub-regional level.

Concluding Remarks

- For Africa to make a meaningful impact on cancer research, the gaps needs to be solved through a well-coordinated and multi-prong approach that will be sensitive to the peculiar needs of African researchers.
- It is imperative that cancer research in Africa charts a course that is visionary, pragmatic, multidisciplinary and sustainable.
- A holistic approach to cancer research that will use both inductive and deductive reasoning philosophy is hereby advocated.