



# Cancer in Africa Where does our knowledge come from ?

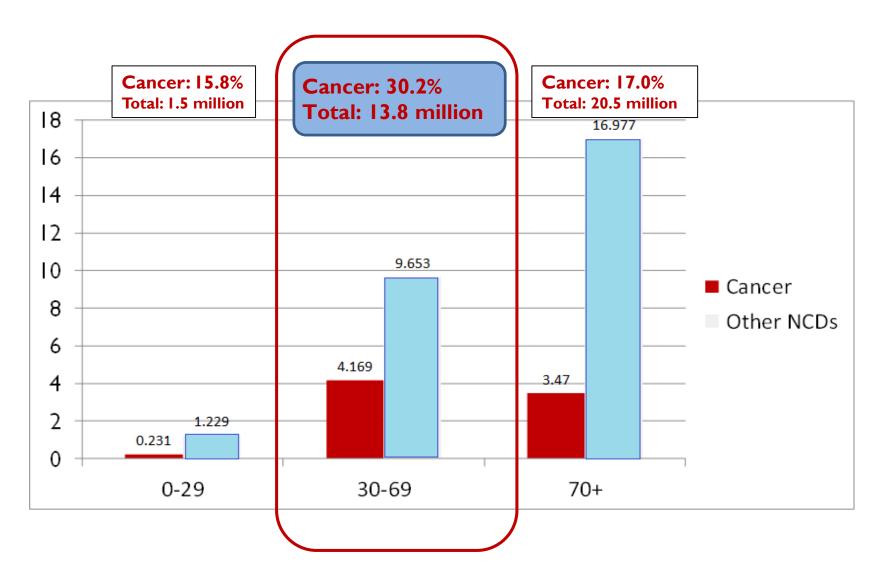
**D. Maxwell Parkin** 

Nuffield Department of Population Health University of Oxford

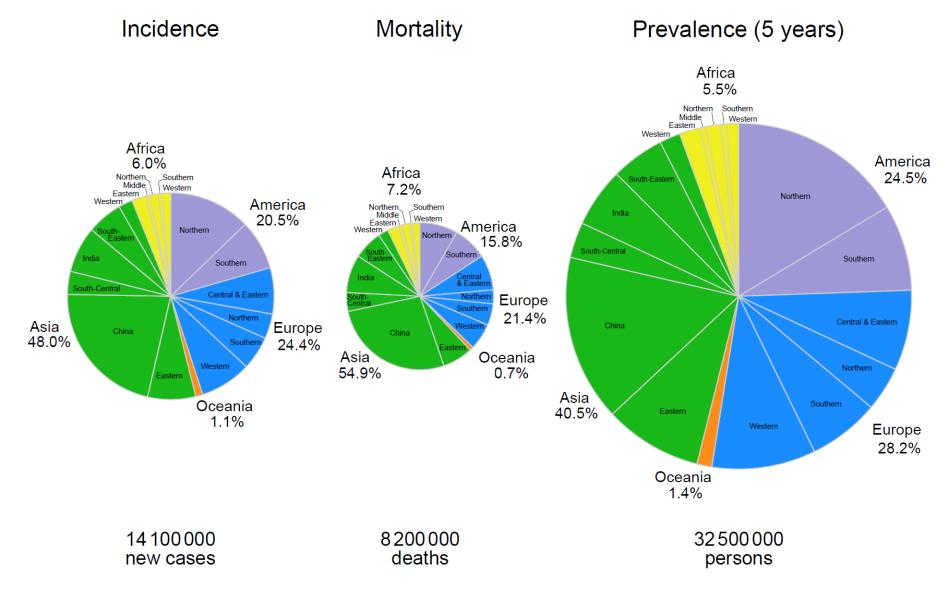
## The changing world: transitions

- Epidemiologic transition
  - Age of 'degenerative & man-made diseases'
    - → Increasing prominence of NCDs
- Demographic transition
  - Changes in fertility and life expectancy
    - → Population ageing and growth
- Cancer transition
  - Displacement of infection-related cancers with those more associated with 'risky' behaviour<sup>2</sup>
  - Lowering rates of some NCDs

## Premature deaths (30 to 69 yrs) from cancer and other noncommunicable diseases, 2011



Global causes of death 2011. Source: WHO Global Health Observatory Data Repository



57% of cancer cases and 65% of cancer deaths occur in less developed regions of the world

Source: GLOBOCAN 2012 http://globocan.iarc.fr

# Cancer is a major cause of disease everywhere The cancer burden is increasing everywhere

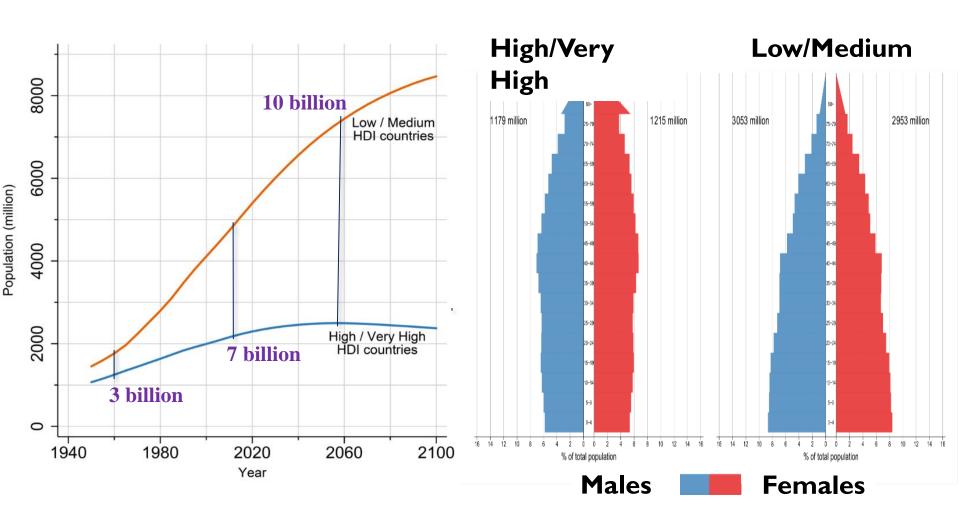
Developmental transition

The scale of cancer incidence 2012 and 2030

- Increasing number of cases linked to demographic change
- Changing risk linked to socioeconomic and lifestyle change

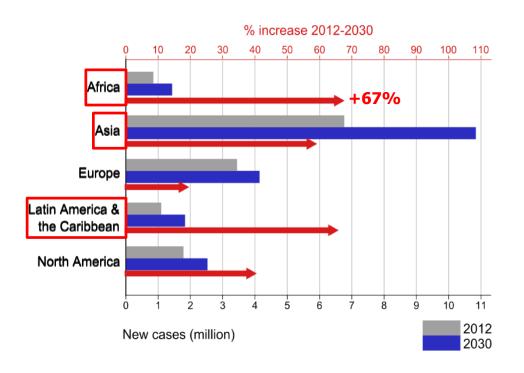
## Population growth and ageing by HDI 1950-2100

**Source: UNPD** 



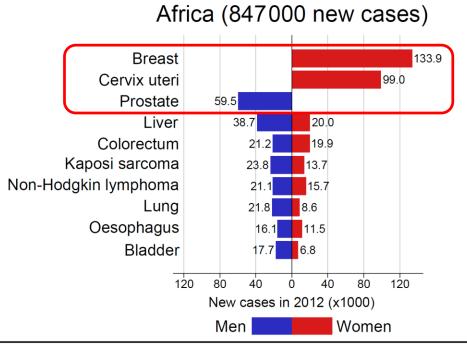
## 14 million new cases in 2012

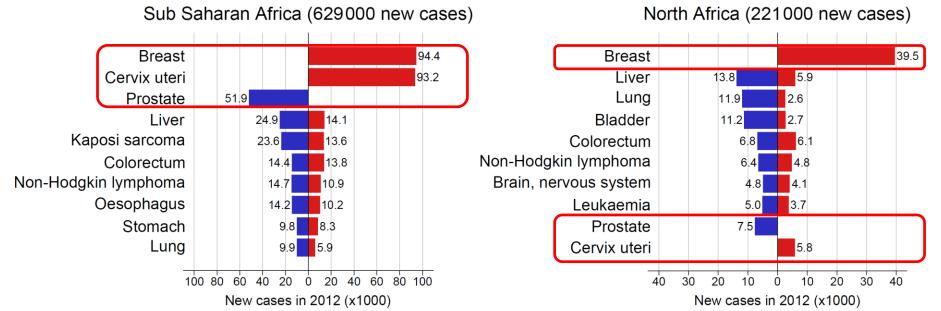
# % increase 2012-2030 by region



### 22 million new cases by 2030

Contribution of different cancers to the total burden of incidence 2012

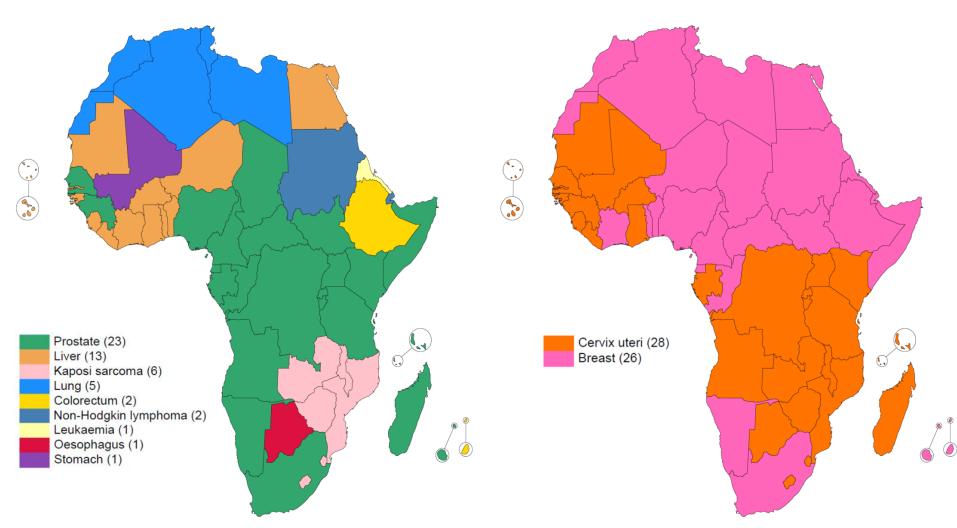


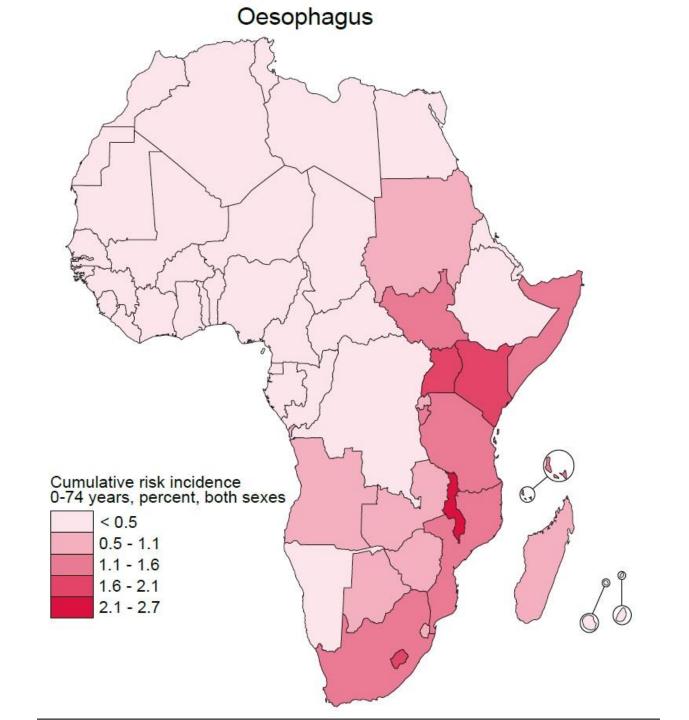


#### Most frequent cancer, men

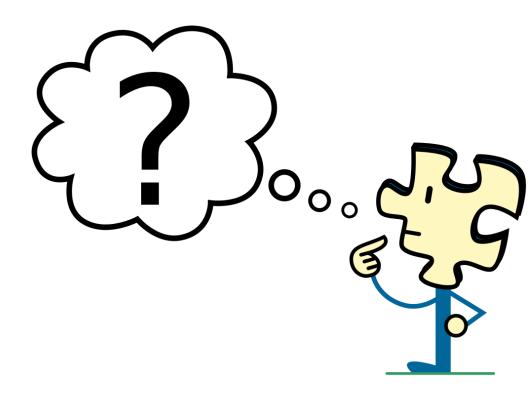
#### Most frequent cancer, women

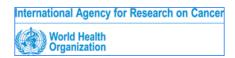
2012





#### Where does all this information come from?





# GLOBOCAN 2012

# **Estimates of INCIDENCE, MORTALITY and PREVALENCE**

of 27 types of cancer

http://globocan.iarc.fr

#### **CANCER INCIDENCE**

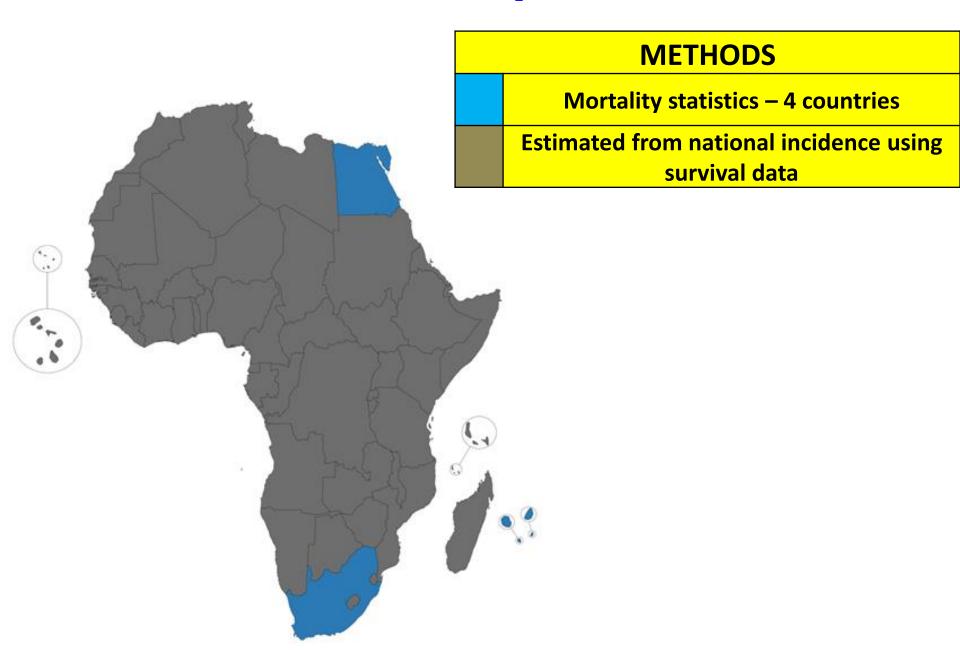


54 countries (>100,000 population)

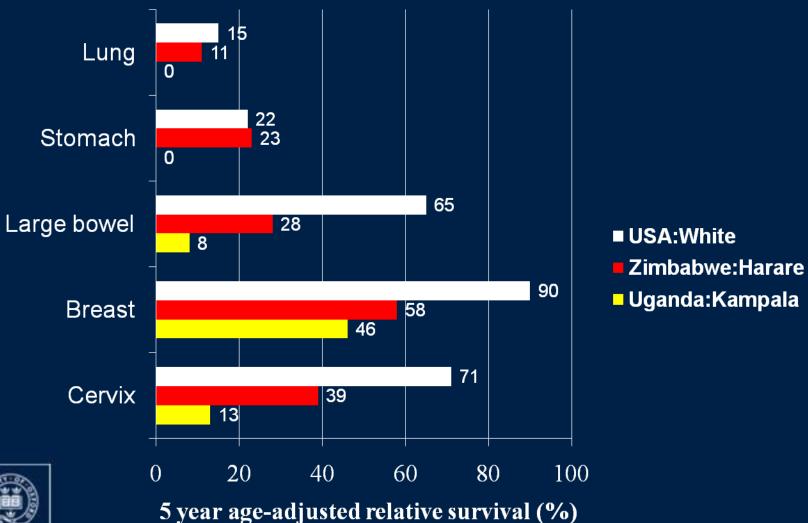
**Estimated for 20** 

DATA FROM CANCER REGISTRIES – 34

## **Mortality**



### **Survival statistics in African populations**





#### Modelling survival

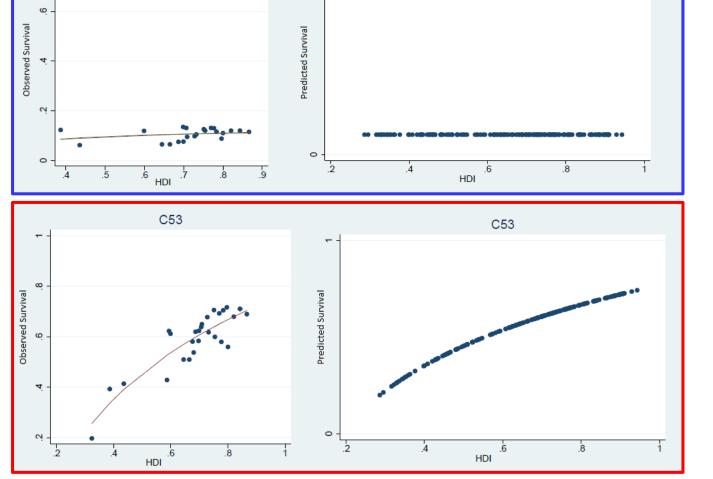
C33-34

#### Data:

historic survival data from Europe, and some recent results from lowand middle-income countries

C33-34

"Human Development Index" for country and year



LUNG

**BREAST** 

### HISTORY OF AFRICAN CANCER DATA

**1900 – 1950** Case reports

1950's Case series (hospitals, pathology)



TABLE IV .- Cancer Sites. Mengo Hospital

IABLE	14	Cance	7 Sites	3. IVIC	igo H	ospitui	
Site	1897- 1906	1907- 16	1917- 26	1927- 36	1937- 46	1947- 56	Total
Lip	1	7	5	3	0	0	16
Tongue	ī	0	0	0		Ö	ĩ
Salivary gland	4	5	4		2	3	24
Floor of mouth	0	5	ī	Ŏ	ī	3	3
Oesophagus	0	4	ī	3	2	5	15
Stomach	Ŏ	3	ī	6 0 3 7	0 2 1 2 14	17	42
Colon	1	1	1 1 2 2	6	12	20	42
Rectum	l i l	õ	2	ĭ	4	2	10
Anus	l ō i	ŏ	ī	ō	3	ō	4
Liver and gall bladder,			-	•	_	•	- 1
primary	1	9	12	5	6	18	51
Liver, secondary, and	1 - 1	_		-			
unspecified abdominal	0	0	0	1	12	12	25
Pancreas	ŏ	2	ĭ	7	-3	4	17
Nose	ŏ	2	î	l ó l	ī	2	4
Larynx	ŏ	ŏ	ō	0 0 2 3 8 1 3	ō	2 2 4	2
Lung	0 0 3 3 0 4	ŏ	3	2	1	4	10 55
Breast	3	6	14	3	12	17	55
Cervix uterus	3	13	îî	8	28	50	113
Body uterus	Õ	ō	0	ĭ	-2	2	5
Ovary	4	6	8	3	12 28 2 12	24	57
Female genital	ō	ĭ	3	ő	4	3	ii
Testis	Ŏ	õ	ĭ	i	ī	Ŏ	3
Penis	2	13	27	11	4	13	70
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Skin, squamous	lŏ	ì	10	3	3	5	1 22 15
Kaposi	lŏ	l ī	2	ō	4	8	15
melanoma	l i	5	7	Ŏ	2	6	21
Eye/orbit	0 1 2 0 0	9	1 10 2 7 12 0 2 25 3 23	4	5	105865224979	37
Intracranial	Ιō	ΙÓ	-ō	0 0	Ιŏ	2	2
Thyroid	lo	li	2	Ò	3	1 2	8
Bone	li	3	25	8	l i	4	42
Soft tissue	١ī	6	3	4	5	9	28
Lymph nodes	3	8	23	20	7	7	68
Leukaemia	1 2	ì	1	3	6	9	22
Jaw	1 8	17	26	14	8	10	83
Spleen	1 1 3 2 8 0	l ō	ĩ	1	ŏ	0	2
Palate	ŏ	١ŏ	Ō	l ī	Ŏ	2	3
Lymph nodes, second-	-	-	1	_	1	-	-
ary	0	1 0	0	0	4	2	6
Total	39	127	212	130	178	279	965
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unity, 1897—1956 tal, Kampala, Uganda: Part 1

t',† m.d., m.r.c.p. ; L. A. R. MTIMAVALYB† SHAPER†

#### HISTORY OF AFRICAN CANCER DATA

**1900 – 1950** Case reports

1950's Case series (hospitals, pathology)

1960's Comparative studies- frequencies in different hospitals/laboratories

#### BRITISH JOURNAL OF CANCER

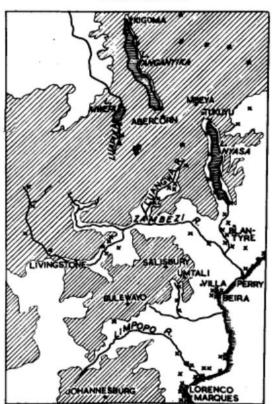
VOL. XVI

SEPTEMBER, 1962

NO. 3

#### A "TUMOUR SAFARI" IN EAST AND CENTRAL AFRICA

DENIS BURKITT

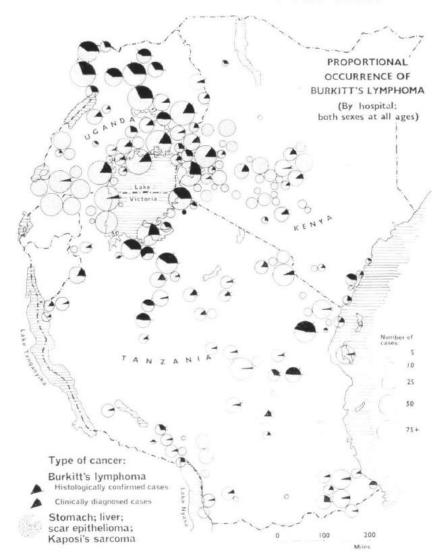


Map of East and Central Africa. All areas above 3000 ft. are shaded. The crosses indicate areas from which tumour patients have been observed.

#### CANCER IN AFRICA

PAULA J. COOK M.A. B.Litt.
D. P. BURKITT M.D. D.Sc. F.R.C.S.E.

Br. med, Bull, 1971

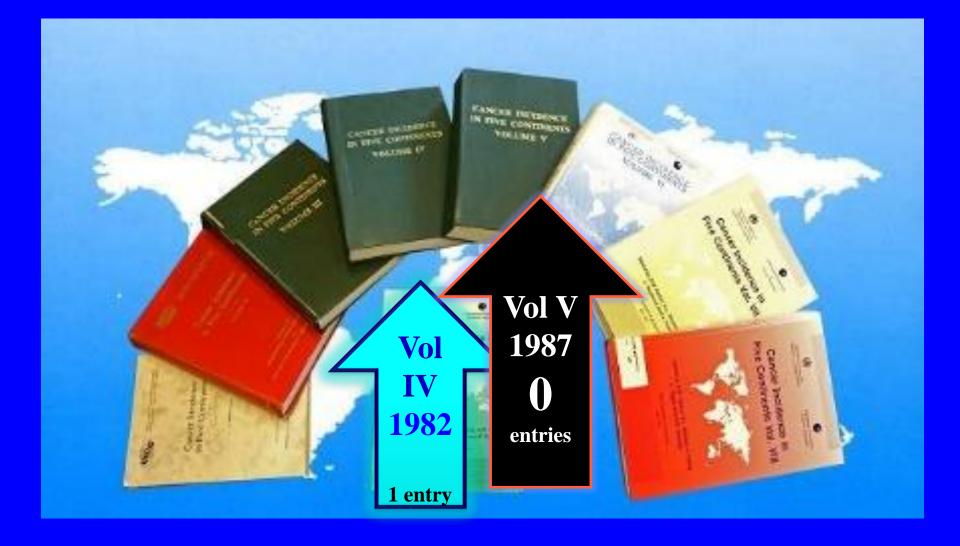


### HISTORY OF AFRICAN CANCER DATA

The first true cancer registries:
Cancer Incidence in Five Continents
Volumes I-III



	UNION INTERNATIONALE CONTRE LE CANCER INTERNATIONAL UNION AGAINST CANCER	UNION INTERNATIONALE CONTRE LE CANCIL INTERNATIONAL UNION AGAINST CANCIL	INTERNATIONAL AGENCY INTERNATIONAL ASSOCIATION	
	Cancer Incidence in Five Continents  A Technical Report Distributed for six  INTERNATIONAL UNION AGAINST CANCER by SPEINGER-VERLAG BERLIN- HEIDELBERG-NITH YORK	Cancer Incidence in Five Continents  Volume II  Distributed for the INTERNATIONAL UNION AGAINST CANCER  SPRINGER-VERLAG BERLIN-REIDELBERG-NEW YORK	CANCER INCIDENCE IN FIVE CONTINENTS VOLUME III  SITIOS S. WATERBOUSE C. METE P. CORREA P. LOUBELL THERBORN THROW FOR LANCE W. BAYES  BASE SCIENTIFIC PUBLICATIONS NA 15 DISTERNATIONAL REENEY FOR RESPERSENT ON CANCER 1500-1604	
Johannesburg (Higginson & Oettle)	1953-55			
Capetown (Muir Grieve)		1956-59		
Durban (Natal) (Schonland and Bradshaw)		1964-66		
Kampala (Davis, Templeton)	1954-60			
Lourenco Marques (Maputo) (Prates)	1956-60			
Ibadan (Edington)	1960-62	1960-65	1960-69	
Bulawayo (Skinner)		1963-67	1968-72	



#### 1980's Renaissance

#### 1986: Cancer Registry of Mali (Bamako)



1989 Cancer Registry of Setif (Algeria)

#### **The Gambia (1986)**

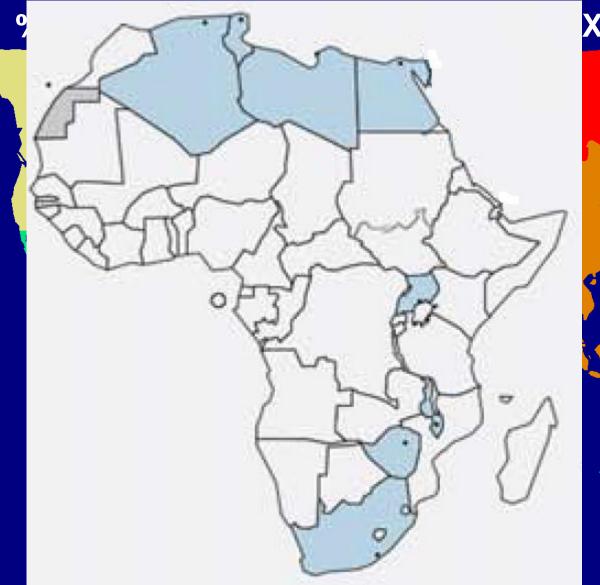
Gambia Hepatitis Intervention Study (GHIS)

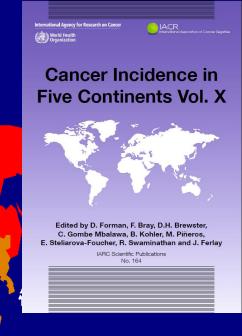
( IARC, MRC, Gambia MOH)





## **Incidence data**















IN CTR

nternational

for Cancer Treatment and Research











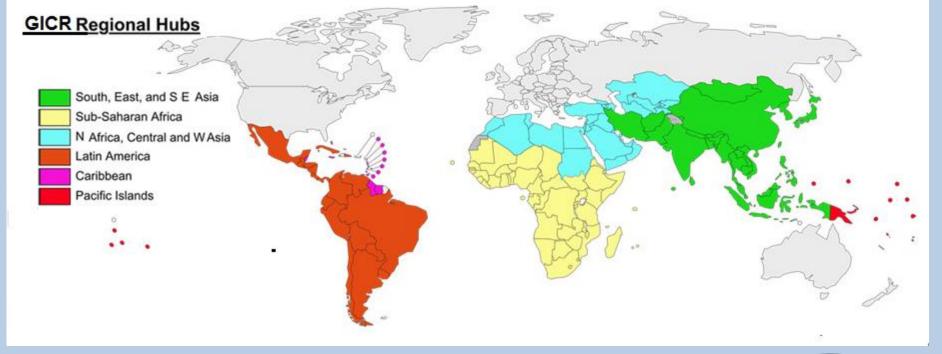




and other national and international







## African Cancer Registry Network (AFCRN)

www.afcrn.org



AFCRN is a consortium of population-based cancer registries that provides the activities of a Regional Hub role with respect to cancer registry support in sub Saharan Africa

## **AFCRN Membership Criteria**



- ➤ Membership is by invitation following a consultant visit of evaluation
- >Two existing members may propose new members for evaluation
- Registries in the countries of Sub-Saharan Africa (the WHO-AFRO region, minus Algeria) are eligible for membership

# ➤ The registry must be POPULATION BASED, and achieving at least 70% coverage of the target population\*

- ➤ Members must accept participation in joint AFCRN projects:
  - ■as approved at the AFCRN Annual Meeting
  - ■and approved by the AFCRN Research Committee
- ➤ Members must adhere to the policy (as agreed at the AFCRN Annual Meeting ) on International Collaborative Research
- Members must maintain an up to date Web Page on the Network website
- ➤ Member registries should contribute data to the African Cancer Registry Database
- > Representatives from member registries should not be absent at two consecutive annual meetings

\*Probationary period of 3 years permitted with coverage 50-70%.

**AFCRN** membership on April 1st 2017

#### List of countries:

Benin

Botswana

Congo (Republic of)

Cote d'Ivoire

Ethiopia

Gambia

Ghana

Guinea

Kenya

Malawi

Mali

Mauritius

Mozambique

Namibia

Niger

Nigeria

Reunion

Seychelles

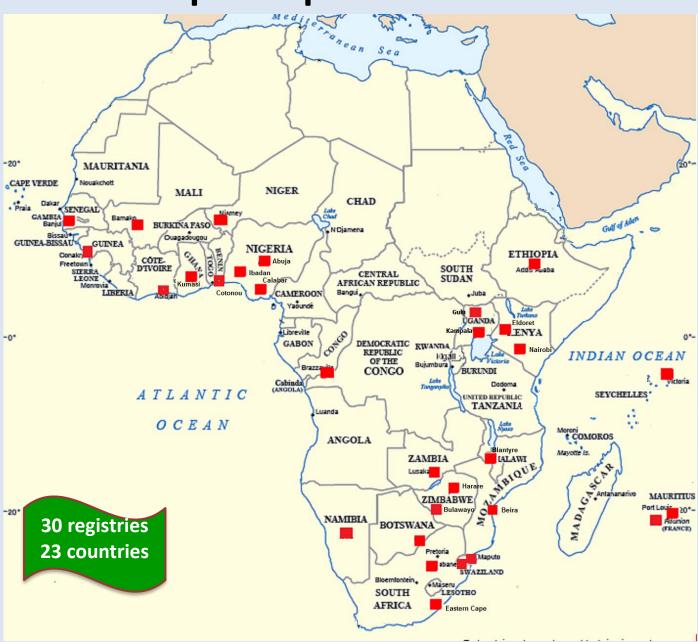
Swaziland

South Africa

Uganda

Zambia

Zimbabwe









#### The role of a regional hub is in:

- providing technical and scientific support to countries;
- delivering tailored training in population-based cancer registration and use of data;
- advocating the cause of cancer registration in the region and facilitating setting up associations and networks of cancer registries; and
- coordinating international research projects and disseminating findings.

### Regional Hub function 1: Providing technical and scientific support to countries

Memoranda of Understanding

Provide funding to resolve identified problems

- equipment, temporary staff, travel...



- > Technical assistance by AFCRN Research Fellows
- ➤ Installation and training in CanReg



## Technical consultancies in 2016

- Brazzaville (Congo)
- Mwanza & Kilimanjaro (Tanzania)
- Beira & Maputo (Mozambique)
- Zambia











#### **Region Hub function 2:**

# Training in Population-based Cancer Registration, CanReg and Use of Data





Basic course, Accra, Ghana June 2016



Advanced course on CanReg, Kampala, Uganda, October 2016



Second IAEA/WHO/AFCRN Workshop on Cancer Registration and Cancer Control, Accra, Dec 2016

Region Hub function 3: Advocating the cause of cancer registration in the region and facilitating setting up associations and networks of cancer registries

In last 4 years, AFCRN consultants had held talks with representatives from Ministry of Health and/or NCD departments of countries e.g.

Rwanda, Senegal, Burkina Faso, Mauritania, Botswana, Liberia, Benin, Togo, Cameroon, Zambia, Nigeria, and Seychelles.

As well as attending world class conferences and organising annual meeting.

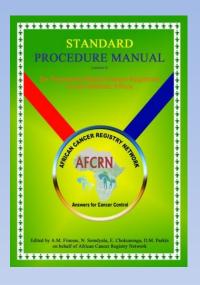




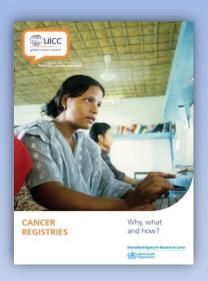




## **TECHNICAL PUBLICATIONS**









#### **CANCER of CHILDHOOD in AFRICA**

I. INCIDENCE



Cristina Stefan, Freddie Bray, Jacques Ferlay, Biying Liu, D Maxwell Parkin

#### The website: www.afcrn.org



## **AFCRN**

The African Cancer Registry Network (AFCRN) was formally inaugurated on 1st March, 2012. It is supported via the Cancer Registry Programme of the International Network for Cancer Treatment and Research (INCTR). AFCRN has succeeded and expanded the activities of the East African Cancer Registry Network (EARN), which was established in January 2011, thanks to the support of the Doris Duke Charitable Foundation (USA). The aim of the project was to improve the effectiveness of cancer surveillance in five east African countries by providing expert evaluation of current problems and technical support to remedy identified barriers, with long-term goals of strengthening health systems and creating research platforms for the identification of problems, priorities, and targets for intervention. The success of the EARN project has attracted further support, as a grant from the pharmaceutical company GlaxoSmithKline (GSK) - Oncology division. This has permitted expansion of activities to the whole of sub-Saharan Africa. These financial contributions to the work of cancer registration in Africa are a recognition of the increasing burden of non-communicable diseases, and especially cancer, in the continent, and the need for adequate surveillance as a fundamental part of any rational programme for cancer control. In

CONTACT US

For all enquiries about AFCRN, including training and research collaboration enquiries, please contact the AFCRN secretariat:

INCTR. African Cancer Registry Programme, Prama House. 267 Banbury Road, Oxford, OX2 7HT























#### Regional Hub function 4:

Coordinating international research projects and disseminating findings



# **AFCRN**AFRICAN CANCER REGISTRY NETWORK



A cancer registry is only making a valuable contribution when its data are being used for surveillance, health care planning and evaluation and research into cancer cause, prevention, and care. Member registries welcome the opportunity to collaborate in programmes of evaluation and research

## Research Projects within AFCRN

	Leading PI	No. of centres	2012	2013	2014	2015	2016	Status
Breast Cancer size and stage	ACS	10	х	х	х			completed
Costing study	CDC	4-6	х	х	x	Х	х	on-going
Survival of four cancers (C15, 50, 53, 61)	AFCRN	5	х	х	х			Not yet fully analised
Oesophagus from East Africa	Uni of California	4	х	х	x			completed
Childhood survival study	SA MRC	4		х	x	Х	х	on-going
Breast cancer bio study	Uni of Halle	8		х	х	Х	х	final stage
AFCRN Database	AFCRN	all		х	x	Х	х	on-going
Cancer in Africa (monograph)	ACS/IARC	all			х	Х	х	final stage
Questionnaire survey: Use of Data	AFCRN	all			x			completed
Procedure Manual	AFCRN	N			х	х	х	2nd version
Oesophagus by sex and geography	IARC	??					х	on-going ??
Essential TNM pilot study	UICC	3				Х	х	Phrase I completed
Childhood incidence study	SA MRC	16				Х	х	final stage
Treatment and follow-up	Uni of Halle	6					х	on-going
SurvCan 3	IARC	12					х	on-going
Nutrition	IARC	all					х	on-going ??

## Outcome: Papers / Résultat: article

- 1. Msyamboza KP, Dzamalala C, Mdokwe C, Kamiza S, Lemerani M, Dzowela T, Kathyola D. Burden of cancer in Malawi; common types, incidence and trends: national population-based cancer registry. BMC Res Notes. 2012 Mar 16;5:149
- 2. Chokunonga E, Borok MZ, Chirenje ZM, Nyakabau AM, Parkin DM. Trends in the incidence of cancer in the black population of Harare, Zimbabwe 1991-2010. Int J Cancer. 2013 Aug 1;133(3):721-9.
- 3. Nsondé Malanda J, Nkoua Mbon JB, Bambara AT, Ibara G, Minga B, Nkoua Epala B, Gombé Mbalawa C. [Twelve years of working of Brazzaville cancer registry]. Bull Cancer. 2013 Feb 1;100(2):135-9.
- 4. Wabinga HR, Nambooze S, Amulen PM, Okello C, Mbus L, Parkin DM. Trends in the incidence of cancer in Kampala, Uganda 1991-2010. Int J Cancer. 2014 Jul 15;135(2):432-9.
- 5. Korir A, Mauti N, Moats P, Gurka MJ, Mutuma G, Metheny C, Mwamba PM, Oyiro PO, Fisher M, Ayers LW, Rochford R, Mwanda WO, Remick SC. Developing clinical strength-of-evidence approach to define HIV-associated malignancies for cancer registration in Kenya. PLoS One. 2014 Jan 23;9(1):e85881
- 6. Parkin DM, Bray F, Ferlay J, Jemal A. Cancer in Africa 2012. Cancer EpidemiolBiomarkers Prev. 2014 Jun;23(6):953-66.
- Adewole I, Martin DN, Williams MJ, Adebamowo C, Bhatia K, Berling C, Casper C, Elshamy K, Elzawawy A, Lawlor RT, Legood R, Mbulaiteye SM, Odedina FT, Olopade OI, Olopade CO, Parkin DM, Rebbeck TR, Ross H, Santini LA, Torode J, Trimble EL, Wild CP, Young AM, Kerr DJ. Building capacity for sustainable research programmes for cancer in Africa. Nat Rev Clin Oncol. 2014 May;11(5):251-9.
- 8. Cheng ML, Zhang L, Borok M, Chokunonga E, Dzamamala C, Korir A, Wabinga HR, Hiatt RA, Parkin DM, Van Loon K. The incidence of oesophageal cancer in Eastern Africa: identification of a new geographic hot spot? Cancer Epidemiol. 2015;39:143-9.
- 9. Somdyala NI, Parkin DM, Sithole N, Bradshaw D. Trends in cancer incidence in rural Eastern Cape Province; South Africa, 1998-2012. Int J Cancer. 2015 Mar1;136(5):E470-4.
- Gakunga R, Parkin DM; African Cancer Registry Network. Cancer registries in Africa 2014: A survey of operational features and uses in cancer control planning. Int J Cancer. 2015 Nov 1;137(9):2045-52.
- 11. Islami F, Lortet-Tieulent J, Okello C, Adoubi I, Mbalawa CG, Ward EM, Parkin DM, Jemal A. Tumor size and stage of breast cancer in Côte d'Ivoire and Republic of Congo Results from population-based cancer registries. Breast. 2015;24(6):713-7.
- 12. Korir A, Okerosi N, Ronoh V, Mutuma G, Parkin M. Incidence of cancer in Nairobi, Kenya (2004-2008). Int J Cancer. 2015 Nov 1;137(9):2053-9.
- 13. Chokunonga E, Windridge P, Sasieni P, Borok M, Parkin DM. Black-white differences in cancer risk in Harare, Zimbabwe, during 1991-2010. Int J Cancer.2016 138(6):1416-21
- 14. Ekanem IO, Parkin DM. Five year cancer incidence in Calabar, Nigeria (2009-2013). Cancer Epidemiol. 2016 Jun; 42:167-72.
- 15. Wabinga H, Subramanian S, Nambooze S, Amulen PM, Edwards P, Joseph R, Ogwang M, Okongo F, Parkin DM, Tangka F. Uganda experience-Using cost assessment of an established registry to project resources required to expand cancer registration. Cancer Epidemiol.
- 16. Korir A, Gakunga R, Subramanian S, Okerosi N, Chesumbai G, Edwards P, Tangka F, Joseph R, Buziba N, Rono V, Parkin DM, Saraiya M. Economic analysis of the Nairobi Cancer Registry: Implications for expanding and enhancing cancer registration in Kenya. Cancer Epidemiol.
- 17. Tangka FK, Subramanian S, Edwards P, Cole-Beebe M, Parkin DM, Bray F, Joseph R, Mery L, Saraiya M; Cancer registration economic evaluation participants..

  Resource requirements for cancer registration in areas with limited resources: Analysis of cost data from four low- and middle-income countries. Cancer Epidemiol
- 18. Korir A, Yu Wang E, Sasieni P, Okerosi N, Ronoh V, Maxwell Parkin D. Cancer risks in Nairobi (2000-2014) by ethnic group. Int J Cancer. 2016 Nov 3.



Annual Review Meeting of AFCRN, Kumasi, December 2016

### **Problems of cancer registration in Africa**

#### 1. Structural

- 1. Lack of institutional framework
- 2. No legal provision for cancer registration

#### 2. Technical

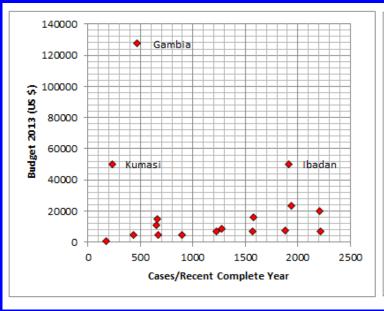
- 1. Some patients may never attend medical facilities (never diagnosed)
- 2. Difficulties in case finding and abstracting
- 3. "Place of residence" is difficult to define, and to collect
- 4. Regular population estimates not be available, or in insufficient detail.
- 5. Follow up studies (survival) very difficult
- 6. Recruiting, training and retaining good quality registry staff is difficult

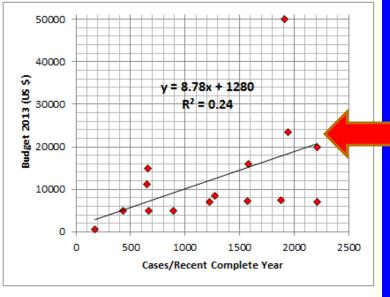
#### 3 Financial

Local funding is difficult to obtain and maintain

#### **HOW MUCH DOES IT COST?**

(left): Survey of 17 AFCRN member registries' budgets by number of cases registered (right)(excluding Gambia & Kumasi).





About \$9 per case

## **FUTURE DIRECTIONS FOR AFRICA**



- Increase the registry network
- Improve quality (completeness & validity)
- Expand dataset
  - •Stage (?Essential TNM)
  - Outcome (survival)
  - Treatment
- ► Automation linkage of files
  - Speed and simplify data collection
  - Expand range of activities
    - **Surveillance of disease**
    - oresearch

### **African Cancer Registry Network (AFCRN)**

www.afcrn.org



#### Our supporters (with thanks for their contributions)







International Agency for Research on Cancer



#### Other significant partners











International Association of Cancer Registries









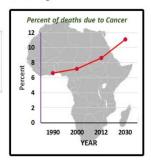
#### Network of Population-Based Cancer Registries in Sub Saharan Africa

#### African Cancer Registry Network

#### KNOWLEDGE is key to NATIONAL CANCER CONTROL PLANNING in SUB SAHARAN AFRICA

In the fight against CANCER, knowledge of the problem to be confronted is just as important as knowing the solutions. Cancer has never been rare in Africa. As populations age and become urbanised, cancer is emerging as a major challenge to health and wellbeing.





#### MUST KNOW:

Patterns of cancer Change of burden Affected population Available treatments Patients' choices Treatment outcomes

#### TO PLAN:

Prevention Early detection Treatment Palliative care Budgeting; marketing Health education

#### POPULATION-BASED CANCER REGISTRIES (PBCR) is



#### WHO WE ARE

Network of Population-Based Cancer Registries, International Organisations and Research Institutes.

We aim to cover all PBCRs in Sub Saharan Africa. So far, 30 PBCR in 22 countries are members: Benin; Botswana; Cote d'Ivoire; Congo Rep; Ethiopia; Gambia; Ghana; Guinea; Kenya (2); Malawi; Mali; Mauritius; Mozambique; Namibia; Niger; Nigeria (4); Reunion; Seychelles; South Africa (3); Uganda (2); Zambia; Zimbabwe (2).

Significant Partners: University of Halle, South African Medical Research Council, Union for International Cancer Control, American Cancer Society, etc.

www.afcrn.org | +44 (0)1865 743663 | Prama House, 267 Banburay Road, Oxford OX2 7HT, United Kingdom

#### WHO BENEFITS

- \* Hospital staff in Africa: 100+ cancer registrars trained; 9 training instructors;
- \* Cancer registries: general funding support; research grants; fellowship;
- \* African researchers: 10+ international joint publications:
- \* Policy makers (local government and international organisations e.g. WHO); by improving data quality and making information avaiable;
- \* Countries in SSA: more effective and efficient cancer control planning and evaluation possible.

Through the support of AFCRN we have provided essential information to researchers, the Ministry of Health and other stakeholders for use in prioritizing cancer prevention and control programmes. In Kenya, cancer registration is now well recognized as the best surveillance method that can provide accurate data on cancer incidence and mortality.

As a leader in cancer registration I am often consulted by Ministers of Health to help develop registries in other regions of Kenya.

AFCRN is like a family that share common goals, values and aspirations. We learn from each other... ...the Network gives us guidance and courage to do much more.

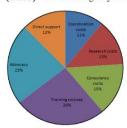
-- Anne Korir

Director, Kenya National Cancer Registry



#### WHAT WE DO

We aim to provide mentoring and advice, staff training, to foster research on cancer cause and prevention, and to advocate for policies for cancer control. The expertise for these tasks is provided by the AFCRN members, guided by a coordinating centre, which works closely with the International Agency for Research on Cancer (IARC) - the cancer agency of World Health Organisation (WHO).













#### Join the mission:

\$100,000 Mission support Acknowledged in all activities; invites to annual meeting.

Acknowledged on all course materials.

Registry development:

\$3,000-5,000 per year registry sponsorship \$5,000 individual fellowship Acknowledged on all publications.

£40,000 per annual - Oxford DPhid student \$20,000 per research project Acknowledged on all publications.

We have many more ongoing projects concerning different areas, countries and studies. For more

#### admin@afcrn.org

AFCRN relies entirely on donations to support its work. Donations may be for specific activities, and/or for limited periods. The AFCRN is funded through The INCTR Challenge Fund (registered charity in England and Wales. Charity number: 1079181). Its account is audited annually. UK company may receive tax relief by making a donation to a registered charity.

