

AFRICA'S NEGLECTED EPIDEMIC:

MULTIDISCIPLINARY
RESEARCH,
INTERVENTION AND
POLICY FOR CHRONIC
DISEASES

CONFERENCE REPORT MAY 2010



BRITISH
ACADEMY



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	Acronyms	
BMI	Body-mass index	
DFID	UK Department for International Development	
DP	Development Partners	
EBV	Epstein-Barr Virus	
HIV	Human Immuno-Deficiency Virus	
HMIS	Health Management Information System	
HPV	Human Papilloma Virus	
IARC	International Agency for Research on Cancer	
IDF	International Diabetes Federation	
IGT	Impaired glucose tolerance	
MDG	Millennium Development Goal	
NCD	Non-communicable diseases	
NGOs	Non-Governmental Organizations	
THE	Total Health Expenditure	
UNAIDS	United States Agency for International Development	
UNFPA	United Nations Population Fund	
WHO	World Health Organization	
WHO-AFRO	World Health Organization - Africa Region	

FOREWORD

This report provides a synthesis of key insights from an international conference organised by The British Academy, The Royal Society and the Ghana Academy of Arts and Sciences on 16–17 February 2009 at the British Council in Accra. Titled ‘Africa’s Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease’ the conference aimed to:

- discuss Africa’s chronic disease burden from multidisciplinary and multi-institutional perspectives
- highlight challenges and good practices in research, practice and policy; and
- formulate a new set of policy recommendations.

The conference began with an introductory panel convened by Professor Reginald Amonoo, President of the Ghana Academy of Arts and Sciences, Professor Duncan Gallie, Foreign Secretary of the British Academy and Professor Lorna Casselton, Foreign Secretary of the Royal Society. Professor Sir Magdi Yacoub, Fellow of the Royal Society and Professor of Cardiothoracic Surgery at Imperial College, London, gave a keynote address titled “Advancing biomedical research in Africa as a priority”.

The conference was organised around six themed panels:

- Africa’s Disease Burden: medical and policy responses
- Millennium Development Goals: Achievements and Challenges in Health
- Influencing chronic disease policy through evidence-based research
- Emerging issues in public health
- Medical pluralism and traditional medicine
- Building human resources capacity through postgraduate training and support

Presentations were given by twelve key experts from academia, international health and development agencies: Dr Anthony Seddoh (World Health Organisation, Africa Region (WHO-Afro)); Professor Pascale Allotey (Brunel University); Dr Charles Agyemang (University of Amsterdam); Dr Marius de Jong (Royal Netherlands Embassy/DFID); Professor Nigel Unwin

(University of Newcastle); Dr Paul Amuna (University of Greenwich); Professor Marian Addy, FGA, President, Anglican University College; Professor Kodjo Senah (Dept of Sociology, UG); Professor Naana Jane Opoku-Agyemang, FGA, VC, University of Cape Coast; Professor Paul Nyame (Ghana College of Physicians and Surgeons). Dr Ama de-Graft Aikins (University of Cambridge) and Dr Daniel Arhinful (University of Ghana) presented on their British Academy Partnership Award Research titled “Africa’s neglected epidemic: developing a multidisciplinary research and intervention model for chronic disease”.

The panels were chaired by eight senior Ghanaian academics, health experts and policymakers: Professor Fred T. Sai, (Fellow of the Ghana Academy of Arts and Sciences (FGA)); Dr Elias Sory, (Director General, Ghana Health Service); Professor Alexander Nyarko (Director, Noguchi Memorial Institute for Medical Research (NMIMR)); Professor Kwadwo Koram (Deputy Director, NMIMR); Professor Fred Binka (Dean, School of Public Health, University of Ghana); Professor Ivan Addae-Mensah (FGA); Professor Yaa Ntiamoah-Baidu (FGA); and Professor Lawrence Boadi (Vice President, GAAS).

The conference was attended by 105 delegates representing academia, government ministries, development agencies, healthcare services, industry and the mass media. A full programme and a delegate list are presented in Annexes 1 and 2. All presentations can be accessed at the website of the UK–Africa Academic Partnership on Chronic Disease: www.psych.lse.ac.uk/chronicdiseaseafrica.

This report synthesises four key issues that emerged from the presentations and plenary sessions over the two-day event:

- The scale and nature of the burden of chronic disease in Africa;
- The socio-cultural and socio-economic context of chronic disease;
- The structural and developmental context of chronic disease; and
- Key priorities for developing effective chronic disease research, practice and policy.

The issues are placed within the context of a literature review of published research on Africa's chronic disease burden.

The report is intended for researchers, research funders, development agencies, policymakers, healthcare providers and other stakeholders with an interest in Africa's double burden of disease.

INTRODUCTION

Sub-Saharan Africa is experiencing a serious chronic disease burden¹. While infectious diseases account for at least 69% of deaths, age specific mortality rates from chronic diseases as a whole are higher in sub-Saharan Africa than in virtually all other regions of the world, in both men and women². Over the next ten years, Africa is predicted to experience the largest increase in death rates from cardiovascular disease, cancer, respiratory disease and diabetes³.

Africa's chronic disease burden is attributed to a complex of factors including urbanisation, globalisation, poverty, poor lifestyle practices, weak health systems and a lack of political will. In many countries prevalence rates of the major chronic diseases – diabetes, hypertension, stroke and cancers – have accelerated over the last twenty years. In some countries prevalence and death rates from chronic diseases like diabetes, hypertension and stroke, exceed prevalence and death rates from infectious diseases. Infections and infectious diseases are themselves important determining factors for chronic diseases like some cancers (stomach, liver, Burkitt lymphoma, Kaposi sarcoma and Non-Hodgkin lymphoma), cardiovascular diseases (rheumatic heart disease, endomyocardial fibrosis) and diabetes. While cross-country and in-country differences exist key commonalities have been identified⁴.

- Six risk factors, in isolation or in combination, are implicated in the major chronic diseases: poor diets (low in fruit and vegetables and high in saturated fats and salt),

physical inactivity, obesity, high blood pressure, cigarette smoking and excessive alcohol consumption.

- Urban populations experience higher risk and greater prevalence compared to rural populations.
- There is a reciprocal relationship between chronic disease and poverty. On the one hand poverty, in both rural and urban settings, exacerbates risk, disability and premature death; on the other hand, the high cost of managing chronic diseases pushes individuals and families into poverty.
- Health systems are unable to address their burden of chronic disease because of the continued threat and expense of infectious diseases like malaria, tuberculosis and HIV/AIDS. High rates of avoidable chronic disease complications, disability and deaths are linked to poor detection, diagnosis, treatment and management.
- Chronic diseases affect the most economically productive age group and thus have implications for quality of life, economic growth and development.
- Chronic diseases are costly for national health budgets.

The current recommendation for addressing the global burden of chronic disease is to develop 'multifaceted multi-institutional' interventions that simultaneously address structural, community and individual dimensions of the problem⁵. For Africa, experts advocate a three-prong approach

¹ Chronic diseases are often referred to as 'non communicable diseases' to distinguish them from communicable diseases and as 'diseases of lifestyle' to distinguish them from diseases with environmental causes. These terms ignore the similarities between the categories: some non communicable diseases have infectious elements; diseases of lifestyle also have causal elements in the environment. In this report the WHO (2005) definition of 'chronic diseases' is adopted. This refers to a set of conditions with "important shared features" including: (1) "chronic disease epidemics take decades to become fully established – they have their origins at young ages"; and (2) given their long duration, there are many opportunities for prevention; and (3) they require a long-term and systematic approach to treatment" (p.35) (WHO (2005). Preventing Chronic Disease. A vital investment. Geneva: WHO).

² Young F, Critchley JA., Johnstone LK., and Unwin NC.: A review of co-morbidity between infectious and chronic disease in Sub Saharan Africa: TB and Diabetes Mellitus, HIV and Metabolic Syndrome, and the impact of globalization. *Globalization and Health*, 2009, 5:9; de-Graft Aikins, A., Unwin, N., Agyemang, C. Allotey, P., Campbell, C and Arhinful, D.K. (2010) Tackling Africa's Chronic Disease Burden: from the local to the global. *Globalization and Health*, 6:5

³ WHO (2005), *ibid*.

⁴ WHO (2005).*ibid*; Mensah, G.A. (2008). Epidemiology of stroke and high blood pressure in Africa. *Heart* 2008; 94:697-705; Suhrcke, M., Nugent, R.A., Stuckler, D. and Rocco, L. (2006). *Chronic Disease: An Economic Perspective* London: Oxford Health Alliance; Epping-Jordan, J.E., Galea, G., Tukuitonga, C., and Beaglehole, R. (2005). Preventing chronic diseases: taking stepwise action. *Lancet*; 366: 1667–71.

⁵ WHO (2005), *ibid*; Suhrcke, M., Nugent, R.A., Stuckler, D. and Rocco, L. (2006), *ibid*.

encompassing epidemiological surveillance, primary prevention (preventing disease in healthy populations) and secondary prevention (preventing complications and improving quality of life in affected communities)⁶. At present the medical sciences dominate chronic disease research, practice and policy. The role of the social sciences in addressing primary and secondary prevention and shaping patient-centred policy is recognised by international experts. There has been a growing call for developing a multidisciplinary chronic disease research framework that incorporates the social sciences more explicitly⁷. The importance of understanding and managing the political economy of policymaking in Africa for effective chronic disease research and practice is also stressed.

implications of Africa's chronic disease burden; and (3) the urgent need for policy development and implementation for timely and appropriate interventions.

This report is presented in four chapters. Drawing on insights from the conference and a literature review of published research, Chapter 1 focuses on the scale and nature of the chronic disease burden, Chapter 2 on the socio-cultural and socio-economic context, and Chapter 3 on the structural and developmental context. Conference speakers identified five priority areas for developing effective chronic disease research, practice and policy. Chapter 4 presents recommendations for these priority areas and provides examples of best practices in Africa as a guide. To conclude, the key themes presented in the report are summarised and three core messages are reiterated: (1) the importance of developing multidisciplinary research; (2) emphasising the economic and developmental

⁶ Unwin, N., Setel, P., Rashid, S., Mugusi, F., Mbanya, J., Kitange, H., Hayes, L., Edwards, R., Aspray, T. and Alberti, K.G.M.M. (2001). Noncommunicable diseases in sub-Saharan Africa: where do they feature in the health research agenda? *Bulletin of the World Health Organisation*, 79(10), 947-953.

⁷ Setel, P. W. (2003). Non-communicable diseases, political economy, and culture in Africa: Anthropological applications in an emerging pandemic. *Ethnicity and Disease*, 13(2 Suppl. 2), S149-S157; de-Graft Aikins, A., Unwin, N., Agyemang, C., Allotey, P., Campbell, C and Arhinful, D.K. (2010) *ibid*.

1.1. PREVALENCE RATES OF MAJOR CONDITIONS

Cardiovascular diseases, cancers, diabetes, genetic diseases (including sickle cell anaemia) and chronic obstructive pulmonary disease (including asthma) have been identified as conditions of public health significance in the region⁸. Prevalence rates of these major chronic diseases and their risk factors vary across countries.

1.1.1. CARDIOVASCULAR DISEASES AND STROKE

Cardiovascular diseases (CVD) are the leading cause of death, globally. In 1999 CVD was the second cause of death in many African countries, after infectious diseases⁹. CVD constitutes a cluster of vascular diseases including stroke (or cerebrovascular accidents, CVAs), coronary heart disease and rheumatic heart disease. Prevalence of stroke varies between countries and is estimated at an age-standardised rate of 114–315 per 100 000 for women and 154–281 per 100 000 for men¹⁰. These wide variations in prevalence may reflect both difference in stroke risks and in the duration of symptoms, the latter being linked to availability of treatment and survival. Across countries stroke rates are higher in women compared to men, with the exception of Cape Verde (where rates are equal) and Mauritius (where male mortality is higher than female mortality). At country level prevalence rates are lowest in the Seychelles; highest in countries like Angola, Mauritius, Sierra Leone; and are at average rates of around 120 per 100,000 in countries like the Congo, Ghana and

Kenya. These rates are less than half that found in high income regions. However the prevalence of disabling stroke is as high as rates in high income countries. Limited hospital based studies on stroke subtypes show that 26% to 33% of strokes are due to cerebral haemorrhage and that prevalence of haemorrhagic stroke is higher in Africa compared to rich western countries¹¹.

Established risk factors for stroke and other CVDs include hypertension, diabetes, abnormal lipids, low consumption of fruit and vegetable, obesity, alcohol intake, smoking, physical inactivity and psychosocial stress. However, hypertension, or high blood pressure (BP), has been identified as “the most powerful, highly prevalent, independent, modifiable risk factor at the population level” for stroke¹². Hypertension, often referred to as ‘the silent killer’, because it often has no early detection symptoms, is also a major risk factor for heart disease and renal disease.

1.1.2. HYPERTENSION

The regional prevalence of hypertension ranges between 5% and 20%. Data from Egypt, Ghana, Nigeria, South Africa and Tanzania show rural-urban differences in prevalence. Rural prevalence rates range between 20%¹³ and 25%, while urban and semi-urban rates exceed 30%. Further distinctions are made within urban populations, with higher prevalence rates recorded for salaried urban workers (e.g civil servants) compared to low-income informal sector workers¹⁴. Limited longitudinal studies suggest that hypertension prevalence rates have increased significantly over the last twenty years. In Tanzania a longitudinal study on hypertension based on the WHO CARDIAC Study protocol identified an almost

⁸ WHO-AFRO: <http://www.afro.who.int/>

⁹ Mbewu, A. and Mbanya, J.-C. (2006). Cardiovascular disease. In Jamison, D.T., Feachem, R.G., Makgoba, M.W., Bos, E.R., Baingana, F.K., Hofman, K.J. and Rogo, K.O. (Eds). *Disease and Mortality in Sub-Saharan Africa*. (2nd Ed) Washington DC: The World Bank. pp. 305-3

¹⁰ Paper presented by Dr Charles Agyemang, at The British Academy, Royal Society and the Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*

¹¹ Mensah (2008), *ibid*.

¹² Mensah (2008), *ibid*, p.700

¹³ Mensah (2008).

¹⁴ Mensah (2008) *ibid*; Addo J, Smeeth L, Leon DA. Hypertension in sub-saharan Africa: a systematic review. *Hypertension*. 2007;50:1012-1018.

¹⁵ Njelekela M, Negishi H, Nara Y, Tomohiro M, Kuga S, Noguchi T, Kanda T, Yamori M, Mashalla Y, Jian Liu L, et al: Cardiovascular risk factors in Tanzania: a revisit. *Acta Trop* 2001, 79:231-239; Njelekela M, Sato T, Nara Y, Miki T, Kuga S, Noguchi T, Kanda T, Yamori M, Ntongwisangu J, Masesa Z: Nutritional variation and cardiovascular risk factors in Tanzania-rural-urban difference. *S Afr Med J* 2003, 93:295-299.

two-fold increase in prevalence rates between 1987 and 1998 for rural, urban and semi-nomadic communities. Prevalence rates in men increased from 25.4% to 41.1%; prevalence rates in women increased from 27.2% to 38.7%¹⁵. The major risk factors of hypertension in these countries are similar to risk factors identified in western countries and include family history of hypertension, alcohol intake, obesity, salt intake, physical inactivity, and advancing age.

1.1.3. DIABETES

Two principal forms of diabetes are distinguished. Type 1 (also known as insulin-dependent) occurs when the pancreas fails to produce insulin and affects predominantly children and adolescents. Type 2 (also known as non-insulin-dependent) results from irregular physiological responses to insulin production, affects predominantly adults and is the most common type of diabetes on the continent. Other identified types of diabetes include gestational diabetes, Maturity Onset Diabetes of the Young (MODY) and diabetes due to genetic disorders and infections. The average prevalence rate of type 2 diabetes in the region is 2.8%¹⁷. Across and within country differences have been recorded. Diabetes prevalence is low in rural Africa (0–2.8%) and high in urban Africa (1.3% – 6.3%). There are also regional and ethnic differences. West Africa records lowest levels of diabetes, Central Africa has moderate rates, Southern and Eastern African countries have slightly high rates and highest rates are recorded in Northern Africa. In countries with mixed ethnicities – Africans, Asians, Europeans – higher diabetes prevalence has been recorded among South Asian origin populations¹⁸. The profile of

type 2 diabetes in Africa is unique due to higher rates of impaired glucose tolerance in many countries. Impaired glucose tolerance (IGT) is confirmed by an elevated level of blood glucose after an oral glucose test. IGT is asymptomatic but constitutes an important transitional stage in the development of type 2 diabetes. IGT prevalence is double the diabetes prevalence in countries like Botswana, Mozambique and South Africa. In countries like Cameroon, Ghana and Uganda IGT prevalence rates are four times higher than diabetes prevalence rates. Key risk factors of type 2 diabetes in Africa are obesity (measured as body mass index (BMI) and waist-to-hip (WTH) ratio), decreased physical activity, family history of diabetes, advancing age and ethnicity. Type 1 diabetes is rarer than Type 2 diabetes. Limited studies on school children have recorded prevalence rates of between 0.3 per 1000 in Nigeria and 0.95 per 1000 in the Sudan. Type 1 diabetes affects more females than males. There are differences across countries in peak age at onset of type 1: peak age at onset is much later in Ethiopia and South Africa. In South Africa 13 is the peak age of onset for white groups; 23 is the peak age for black groups. Collectively the peak age of onset of type 1 in Africa is a decade later than in the West. Growing evidence of Type 2 diabetes occurring at younger ages may confound diagnoses of Type 1 diabetes.

1.1.4. CANCERS

Cancers are assuming public health significance in many African countries. Estimates of cancer incidence produced by the International Agency for Research on Cancer (IARC) in 2002 showed that 530,000 new cases of cancer occurred every year in the sub-Saharan African region¹⁹. Rising

¹⁶ IDF (International Diabetes Federation) (2003). *Diabetes Atlas*. 2nd ed. Brussels: IDF.

¹⁷ Mbanya and Ramiya (2006). *Diabetes Mellitus*. In Jamison, D.T., Feachem, R.G., Makgoba, M.W., Bos, E.R., Baingana, F.K., Hofman, K.J. and Rogo, K.O. (Eds). *Disease and Mortality in Sub-Saharan Africa*. (2nd Ed) Washington DC: The World Bank. (pp.267-287).

¹⁸ Mbanya and Ramiya (2006), *ibid*.

¹⁹ Sitas, F., Parkin, M., Chirenje, Z., Stein, L., Mqoqi, N and Wabinga, H. (2006). *Cancers*. In Jamison, D.T., Feachem, R.G., Makgoba, M.W., Bos, E.R., Baingana, F.K., Hofman, K.J. and Rogo, K.O. (Eds). *Disease and Mortality in Sub-Saharan Africa*. (2nd Ed) Washington DC: The World Bank. pp. 288-304

prevalence rates are due in part to the rise in HIV/AIDS prevalence and its links to some forms of cancer such as Kaposi sarcoma. In the 2002 estimates female cases (279,000) outnumbered male cases (251,000). But there are gendered and regional differences in terms of cancer types (see Table 1). Some cancers affect women predominantly, for example breast cancers. Some cancers affect men predominantly, for example tobacco related cancers. Other cancers occur in both male and female populations, with male prevalence rates exceeding female rates; for example Kaposi sarcoma and liver cancer. Southern and Central Africa record the highest prevalence rates for major cancers like cervical, breast and prostate cancers. Poor diets (low consumption of fruit and vegetables) are major risk factors for the majority of cancers; early sexual activity and sexually transmitted infections are implicated in cervical cancer and the HIV-related cancers such as Kaposi sarcoma. New evidence on the role of urbanization and poverty on cancer incidence links e-waste to rising cases of cancer in poor urban neighbourhoods²⁰. E-waste – a collective name for electronic devices dumped as waste – consists of toxic materials like plastics, lead, aluminium and silica that are implicated in serious conditions like cancer of the lymph system, central nervous system damage, asthma and silicosis, respectively. This threat has been strongly associated with the negative technological and environmental impact of globalization, with a significant proportion of e-waste traced to Europe and the United States.

²⁰ BAN (2005). The Digital Dump: Exporting Re-Use and Abuse to Africa. Basel Action Network. www.ban.org; Brigden, K., Labunska, I., and Santillo, D. (2008). Chemical contamination at electrical and electronic waste recycling and disposal sites in Accra and Koforidua, Ghana. Greenpeace Research Laboratories Technical Note 10/2008.

Table 1.
Prevalence of cancers affecting women, men and children in Africa and their risk factors

Cancer type	Regional differences in prevalence rates	Risk factors
Affecting women Cervix (25.4% of total cancer burden)	Higher rates in Eastern and Southern Africa (30 to 60 per 100,000), compared to the rest of the region (20 to 35 per 100,000).	Early age at initiation of sexual activity; increasing number of sexual partners of females or of their sexual partners; increasing number of pregnancies; exposure to oral contraceptives; smoking; and poor diets. Human Papilloma Virus (HPV) is a major cause, against which vaccination programmes are increasingly thought to be useful.
Breast (17.4%)	Incidence rates higher in southern Africa compared to Central, West and East Africa. Higher incidence in urban, higher social class, among white women, compared to rural, low social class and black women.	Menstrual and reproductive factors; high body mass index (BMI); family history; genetic mutations (e.g BRCA1/2); high alcohol consumption; contraceptive use; use of certain hormone replacement therapies (HRTs).
Affecting men Prostate (10.7%)	Highest rates in southern Africa (where rates for white men are higher than rates for black men (40.1 per 100,000 vs 14 per 100,000 in SA). low rates in West Africa (24.5 per 100,000).	High consumption of fat, red meat and eggs; low consumption of vegetables.
Affecting men and women Kaposi sarcoma (15.9% for men; 6.2% for women)	Most common in central and East Africa; rare in northern and southern Africa.	Prevalence of human herpes virus-8. HHV8 associated with increasing age, low educational status, increasing numbers of sexual partners. HIV and Aids

Table 1. *continued*

Prevalence of cancers affecting women, men and children in Africa and their risk factors

Cancer type	Regional differences in prevalence rates	Risk factors
Non-Hodgkin lymphoma	Frequency is above world average in North and sub-Saharan Africa. 14,500 male cases (5.8% of all cancers) and 10,600 female cases (3.8% of all female cancers) were estimated for 2002.	Association between HIV and non-Hodgkin lymphoma ranges between 2.3 and 12.3.
Liver (13.3% for men; 5.5% for women)	Highest incidence in West Africa (30 to 50 per 100,000 in men, 12 to 20 per 100,000 in women in The Gambia, Guinea and Senegal). High in central Africa (15.4 per 100,000 for men, 8.9 per 100,000 for women in Rwanda and Republic of Congo)	Chronic carriage of HBV or hepatitis C (HCV) (latter via blood transfusion, unsterile medical and dental procedures and traditional practices such as scarification). Liver carcinogens, in particular Aflatoxin B1 (AFB1) (via poor storage of grains; groundnuts and corn). Iron overload (food and drink preparation in iron vessels)
Stomach (4.5% for men; 3.8% for women)	Highest in central Africa (13.4 per 100,000), followed by southern (8.2), eastern (7.4) and western (3.4).	Helicobacter pylori infection; smoking; diets low in fruit and vegetables and vitamin C and high in salt.
Tobacco-related cancers (lung, bladder, cervix, larynx, oesophagus and oral)	Tobacco-attributable cancers highest in southern Africa (85% of cases in males) and northern Africa (68% of cases in males). In mixed race populations of South Africa, 40–50% prevalence of smoking among women; 48% of deaths due to lung cancer.	Relative risk of lung cancer from smoking 15 cigarettes or more per day ranges from 13 to 20% in parts of South Africa. Other risk factors include: occupational exposures; environmental tobacco smoke; air pollution and radon gas exposure.
Affecting children Burkitt lymphoma	Accounts for 25% to 50% of childhood cancers in eastern Africa, central Africa and tropical West Africa. Less frequent in other parts of the continent.	Associated with the Epstein-Barr Virus (EBV) infections and malaria. Other potential causes include low socio-economic status, family clustering and proximity to the plant species <i>Euphorbia tirucalli</i> .

1.1.5.

Prevalence rates of major chronic diseases among populations of African descent in Europe

Populations of African descent in Europe – and the United States – bear a higher burden of chronic diseases compared to populations on the continent and to majority populations in their adopted countries²¹. A recent review of cardiovascular disease, diabetes and established risk factors among this population in Europe highlighted the following. Hypertension prevalence was 3 to 4 times higher in Africans in the United Kingdom compared to the majority white population. Diabetes prevalence was 17% among African Caribbeans compared to 3% in the general population²². Obesity rates among African women (38.5%) and African-Caribbean women (32.1%) were higher than rates among white women (23.2%). Studies comparing obesity rates among African migrants in Europe with obesity rates among populations in their home countries, show increasing rates of obesity from rural populations to urban populations in the home country to migrant populations in Europe. For example, a study by Agyemang and colleagues comparing Ghanaian migrants in the Netherlands to their rural and urban counterparts in Ghana found Ghanaian migrants to have the highest prevalence of obesity (men 69.1%, women 79.5%) than their urban (men 22.0%, women 50.0%) and rural (men 10.3%, women 19.0%) counterparts in Ghana²³. The high burden of disease among populations of African descent in Europe has been attributed to a combination of genetics, socio-economic inequalities and cultural factors²⁴.

1.2.

CHRONIC DISEASE MORBIDITY AND MORTALITY

1.2.1.

CHRONIC DISEASE RELATED COMPLICATIONS AND DISABILITY

Rates of chronic disease complications and chronic disease related disability are high in Africa. Clinical studies since the late 1980s show that in some countries like Cameroon and South Africa, up to 50% of people with diabetes develop chronic complications²⁵. Rates of chronic diabetes complications on the continent and among African populations in Europe far exceed complication rates recorded in rich western countries. In Africa, it is estimated that 21% to 25% of type 2 diabetes patients have retinopathy at point of diagnosis. Erectile dysfunction constitutes 49% of neuropathic complications. One-third of patients on dialysis in Africa are diabetic, with nephropathy complications. In Tanzania, where a morbidity and mortality surveillance system has been implemented diabetes complications include: stroke (4.4% at point of diagnosis for type 2 diabetes); coronary heart disease (affecting 5 to 8% of diabetic patients); and cardiomyopathy (affecting up to 50% of all patients).

In the UK, African and African-Caribbean groups are particularly susceptible to the cardiovascular and renal complications of diabetes. Rates for renal replacement therapy are higher in both groups and the shortage of organ donors amongst ethnic minority communities leads to a disproportionate dependence on dialysis for patients with end-stage

²¹ Paper presented by Dr Charles Agyemang, *ibid*; Agyemang, C., Addo, J., Bhopal, R., de-Graft Aikins, A., and Stronks, K. (2009). Cardiovascular disease, diabetes and established risks factors among populations of sub-Saharan African descent in Europe: a literature review. *Globalization and Health*, 5: 7.

²² In the 1990s research showed that diabetes was more common within African-Caribbean, South Asian and African populations compared to the general population, with the risk of diabetes raised between two- to six-fold within both young and mature adult group (see for example Cappuccio, FP, Cook D.G., Atkinson, R.W., and Strazzullo, P. (1997). Prevalence, detection, and management of cardiovascular risk factors in different ethnic groups in south London. *Heart*, 78(6): 555-563; and Raleigh, V. (1997). Diabetes and hypertension in Britain's ethnic minorities: implication for the future of renal services. *British Medical Journal*, 314 (7075): 209-218)

²³ Agyemang, C. Owusu-Dabo, E., de Jonge A., Martins, D., Ogedegbe, G., Stronks K (2009). Overweight and obesity among Ghanaian residents in The Netherlands: how do they weigh against their urban and rural counterparts in Ghana? *Public Health Nutrition*, 12: 909-16.

²⁴ Paper presented by Dr Charles Agyemang, *ibid*; Agyemang, C., Addo, J., Bhopal, R., de-Graft Aikins, A., and Stronks, K. (2009), *ibid*.

²⁵ Mbanya and Ramiya (2006). *ibid*

²⁶ Roderick, P. and Armitage, A (2002). Renal services for people with diabetes in the UK. [*Diabet Med*], 19 (Suppl 4), 56-60.

²⁷ Department of Health (2002). National Service Framework for Diabetes: Standards. London: Department of Health; Clark, T.J., Richards, N.T., Adu, D. and Michael, J. (1993). Increased prevalence of dialysis-dependent renal failure in ethnic minorities in the west Midlands. *Nephrology Dialysis Transplantation*, 8(2): 146-148.

renal failure (ESRF)²⁶. In the 1990s, mortality from ESRF was between three and six times higher within African and African-Caribbean groups compared to Asian and white groups²⁷.

Box 1. Prevalence of diabetes complications in African countries compared to France

Diabetes Complication	African countries	France
Retinopathy	13% (Ethiopia, 1993) to 55% (South Africa, 1997);	29.7% (France, 1998)
Nephropathy	25% (Burkina Faso, 1996) to 46% (Cameroon, 1999)	21.8% (France, 1998)
Neuropathy	28% (South Africa, 1997) to 42% (South Africa, 1995);	11.7% (France, 1998)

Source: Mbanya, J-C. and Ramiaya, K. (2006). Diabetes Mellitus. In Jamison, D.T., Feachem, R.G., Makgoba, M.W., Bos, E.R., Baingana, F.K., Hofman, K.J. and Rogo, K.O. (Eds). Disease and Mortality in Sub-Saharan Africa. (2nd Ed) Washington DC: The World Bank. (pp. 267-288); Mbanya, J-C and Sobngwi, E. (2002). J Cardiovasc Risk

1.2.2. CHRONIC DISEASE RELATED DEATHS

Death rates due to chronic diseases are high and account for a significant proportion of the overall disease burden in the region²⁸. In 2002, chronic diseases (cancers and cardiovascular disease) were the third cause of death, after infectious and parasitic diseases, and HIV/AIDS (see Figure 1). In some countries death rates due to some chronic diseases exceed death rates due to infectious and parasitic diseases and HIV/AIDS. In Ghana, in 2003, stroke was a top ten cause of death across ten regional hospital sentinel sites; in one region – the Volta region – strokes were the number one cause of deaths, ahead of malaria²⁹. In the same country, hypertension is a major cause of maternal mortality (causing 19% of all deaths) ahead of bleeding (17%), anaemia (12%) and infections (10%)³⁰.

In sub-Saharan Africa infectious diseases still account for at least 69% of deaths³¹. However age specific mortality rates from chronic diseases as a whole are higher in sub Saharan Africa than in virtually all other regions of the world, in both men and women³². Important evidence has been gathered from diabetes and stroke research. Deaths due to diabetes complications are higher than rates recorded in western countries (see Box 2).³³ Research shows that stroke deaths in adults aged 30–69 years in Nigeria and Tanzania are significantly higher than rates in Canada, the United Kingdom, Brazil, Pakistan, India and China (see Box 2). The death rates in Africa are exceeded only by Russia's high stroke death rates. High blood pressure is a major risk factor for stroke in Africa. Given the high prevalence rates of hypertension in many countries, and the low levels of hypertension detection, treatment and management, the burden of stroke morbidity and mortality is set to rise to epidemic proportions in the future³⁴.

²⁸ Strong K, Mathers C, Bonita R. Preventing stroke: saving lives around the world. *Lancet Neurol* 2007;6:182–7.; Walker RW, McLarty DG, Kitange HM, et al. Stroke mortality in urban and rural Tanzania. Adult Morbidity and Mortality Project. *Lancet* 2000; 355:1684–7.

²⁹ Paper presented by Dr Ama de-Graft Aikins and Dr Daniel Arhinful at The British Academy, Royal Society and Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*.

³⁰ Kumi-Aboagye, P. (2008). Status of MDG 5 - evidence from the field. Paper presented at the Maternal Mortality Consultative Meeting, Accra, July 7th -8th 2008.

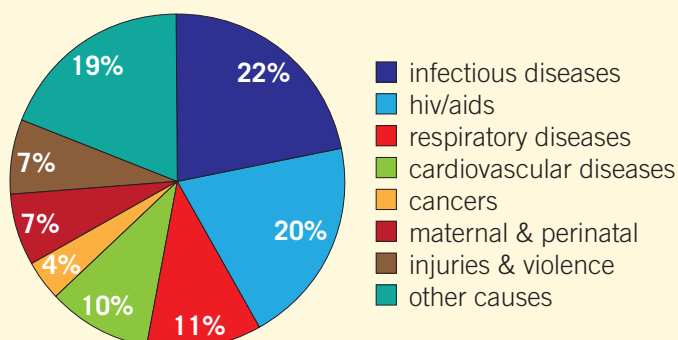
³¹ Young F, Critchley JA., Johnstone LK., and Unwin NC.(2009). *ibid*.

³² de-Graft Aikins A., Unwin N., Agyemang, C., Allotey, P., Campbell, C. and Arhinful, D. (2010), *ibid*.

³³ Strong K, Mathers C, Bonita R. Preventing stroke: saving lives around the world. *Lancet Neurol* 2007;6:182–7; Walker RW, McLarty DG, Kitange HM, et al. Stroke mortality in urban and rural Tanzania. Adult Morbidity and Mortality Project. *Lancet* 2000;355:1684–7.

³⁴ Mensah, G. (2008), *ibid*.

Figure 1.
Estimated percentages of death
in Africa, by causes, 2002



Box 2. Death rates due to diabetes complications and stroke in Tanzania and the UK

Condition	Tanzania	UK
Diabetes	40% of diabetics on insulin die five years from diagnosis	40% of similar patients on insulin survive more than 40 years
Stroke	118 per 100,000 deaths	18 per 100,000 deaths

Source: Diabetes data from Mbanya, J-C. and Ramiaya, K. (2006); Stroke data from Strong et al (2000).

Chronic disease morbidity and mortality are compounded by the continued dominance of infectious agents and infectious diseases like tuberculosis (TB) and HIV/AIDS (see Box 3)³⁵. There is established evidence on the relationship between infections and some cancers and cardiovascular diseases and emerging evidence on the relationship between diabetes, TB and HIV/AIDS treatment. The relationship between infections and some cancers, for example stomach and liver cancers and Burkitt's lymphoma, is well established (see Table 1). Some cardiovascular diseases are caused by bacterial and viral infections. Rheumatic disease, which affects children and young people predominantly, is caused by group A beta-hemolytic streptococci. Streptococcal infection is linked to conditions of poverty including poor overcrowded housing, and undernutrition.

The relationship between tuberculosis and diabetes was identified in 1950s Britain³⁶. This led to the establishment of TB and diabetes clinics to treat co-morbid infections. Current studies in India show that TB incidence is attributable to diabetes in adults aged 25 years and above and diabetes leads to greater TB mortality and to an increase in relapse rates. These strong associations have implications in Africa where there are 4.2 million prevalent cases of TB, where 2.8 million new cases of TB are reported each year per year, where 22% of people with TB are HIV positive and the prevalence of diabetes is rising in urban areas. With the exception of new research in Cameroon, few African studies exist on the relationship between diabetes and tuberculosis. A relationship has been established between antiretroviral therapy (ART) and risk of diabetes and cardiovascular disease.³⁷

³⁵ Unwin and Alberti, (2005); Paper presented by Professor Nigel Unwin at The British Academy, Royal Society and Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*.

³⁶ Paper presented by Professor Nigel Unwin, *ibid*; Some authors note that the relationship between diabetes and tuberculosis has deeper historical roots with early observations recorded in 1000 AD Europe (Young, Critchley, Johnstone and Unwin (2009). A review of co-morbidity between infectious and chronic disease in Sub-Saharan Africa: TB and Diabetes Mellitus, HIV and Metabolic Syndrome, and the impact of globalization. *Globalization and Health*, 5:9)

³⁷ Paper presented by Professor Nigel Unwin, *ibid*; Pao, V., Lee, G.A. and Grunfeld, C (2008) HIV therapy, metabolic syndrome, and cardiovascular risk. *Current Atherosclerosis Reports*, 10: 61-70

Finally, antiretroviral therapy (ART) can lead to changes in body fat distribution, resistance to the action of insulin and lower insulin secretion, increased levels of unhealthy fat (hypertriglyceridaemia and low HDL cholesterol), and increased glucose, all of which increase the risk of type 2 diabetes and cardiovascular disease.

Box 3. Toxins, Infections, Infectious diseases and Chronic Diseases

Toxins and chronic diseases

- Aflatoxins and liver cancers
- *Fusarium moliniforme* (a fungal contaminant of poorly stored corn) and cancer of the oesophagus
- Toxins and dilated cardiomyopathy (results in congestive cardiac failure)

Infections and chronic diseases

- Epstein-Barr virus and Burkitt lymphoma (childhood cancer)
- Streptococcal infection and rheumatic heart disease
- Malaria, filariasis and endomyocardial fibrosis

Infectious diseases and chronic diseases

- Malaria and Burkitt lymphoma (childhood cancer)
- Tuberculosis and diabetes
- HIV/AIDS and Kaposi sarcoma, non-Hodgkin lymphoma, conjunctival cancers, HIV-related cardiomyopathy
- HIV/AIDS (ART) treatment and increased diabetes and cardiovascular risk

The increasing prevalence rates of chronic diseases and their risk factors are attributed to Africa's rapid demographic, epidemiological and nutrition transitions. These structural processes are in turn associated with socio-cultural and socio-economic factors.

2.1. AFRICA'S DEMOGRAPHIC, EPIDEMIOLOGICAL AND NUTRITION TRANSITIONS

The demographic transition is described as the transition from young, rural, poor populations with high fertility to urbanised ageing populations with increased education and income and lower fertility rates. In 2000 the urban population in Africa was 34%, compared to 74% in Europe. Between 1995 and 2000 Africa experienced an urban growth rate of 4.3% compared to 0.5% in Europe. It is estimated that by 2025 over 70% of Africa's population will be living in urban areas, many in crowded slums and settlements³⁸. Urban poverty transforms the epidemiology of chronic diseases because poverty and poverty-related stresses are risk factors for chronic diseases. Fertility rates are declining in a number of African countries. At the same time African populations are ageing. The WHO (2004) observes that the number of older adults aged 60 years and above will grow rapidly in African, Asian and Latin American countries more than anywhere else in the world.³⁹ It is estimated that by 2020 the number of adults aged 45–59 years will increase by 140% and about 700 million of older people aged 60+ years will be living in developing countries.⁴⁰ Prevalence rates of age-related chronic and degenerative diseases are increasing in these areas.

The epidemiology transition model developed by

Omran (1971) focuses on the complex changes in patterns of health and disease, the interactions between these patterns, and their demographic, economic and sociological determinants and consequences.⁴¹ In its original form, the model proposed sequential stages of epidemiological transition from high death rates due to infectious diseases to death rates due to chronic and degenerative diseases of ageing. In Africa, Asia and Latin America the Protracted Polarised Model has been proposed to describe the co-existence of infectious and chronic and degenerative diseases of ageing as major causes of morbidity and mortality.⁴² The model has two elements. The “prolonged or protracted” element describes partial changes in morbidity and mortality patterns which result in the co-existence of traditional and new infectious diseases and chronic non-communicable diseases. The “epidemiological polarized” element describes the relationship between socio-economic status and disease risk, whereby “the richer sections of the population may develop more or less ‘modern’ health and disease profiles whilst some poorer sectors may experience the double jeopardy of infectious and chronic/degenerative ailments”.⁴³

The nutrition transition is characterised by the co-existence of over-nutrition (diets high in energy, saturated fat, cholesterol, and sodium, but low in fiber) and under-nutrition (diets low in either energy or various specific nutrients including niacin, riboflavin, vitamin C, zinc, calcium and magnesium). The nutrition transition is evident in many countries. Over-nutrition which is linked to urbanisation, food market globalisation and changing lifestyle practices, is predominantly implicated in rising levels of overweight and obesity. However under-nutrition also has implications for chronic diseases.⁴⁴ Under-nutrition

³⁸ UNFPA (United Nations Population Fund) (2000). *State of World Population*. New York: United Nations

³⁹ WHO (2004). *World Health Report*. WHO, Geneva, Switzerland

⁴⁰ Murray, C.J.L. and Lopez, A.D. (1997). Mortality by cause for eight regions of the world: Global Burden of Disease Study. *Lancet*, 349:1269-76.

⁴¹ Omran, A.R. (1971). The epidemiological transition theory: a theory of the epidemiology of population change. *Milbank Memorial Fund Quarterly*, 49: 6-47.

⁴² Frenk et al. (1989). Health Transition in middle-income countries: new challenges for health care. *Health Policy and Planning* 4 (1): 29-39.

⁴³ Smallman-Raynor, M and Phillips, D. (1999). Late stages of epidemiological transition: health status in the developed world. *Health and Place*, 5, 209-222. (p. 211)

⁴⁴ Paper presented by Dr Paul Amuna at The British Academy, Royal Society and Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*

and malnutrition are associated with the prevalence of atypical diabetes, some cancers (oesophageal, stomach) and some cardiovascular diseases (rheumatic heart disease and dilated cardiomyopathy leading to congestive cardiac failure. Undernutrition among children has been linked with an increased risk of adult obesity.⁴⁵ Research suggests that overnutrition and undernutrition often co-exist in some poor urban households.⁴⁶

The nutrition transition is also affected by challenges in food production, storage and quality.⁴⁷ The WHO/FAO (2003:28) report on diet, nutrition and the prevention of chronic diseases identified a range of factors that compromise food quality and safety and have implications on public health.⁴⁸ These included: 'intensive production systems such as use of nitrite in vegetables, heavy metals in irrigation water and manure, pesticide use'; 'the effects of longer food chains, in particular of longer storage and transport routes, such as the higher risk of deterioration...and the use and misuse of conserving agents and contaminants'. In this report cancer researchers made strong links between these factors and selected cancers and urged immediate multi-faceted investigation (see also Box 3).

2.2.

PREVALENCE OF MODIFIABLE CHRONIC DISEASE RISK FACTORS

Chronic diseases have non-modifiable and modifiable risks. The non-modifiable risks or 'inherent factors' are age and genetics. The modifiable risks include poor diets (lacking fruit and vegetables and high in saturated fats and salt), physical inactivity, obesity, high blood pressure and lifestyle practices such as cigarette smoking and high alcohol consumption. In many African countries the prevalence rates of these modifiable risk factors are high.

A series of WHO surveys have been conducted in African countries to examine the prevalence of risk factors of the major chronic diseases.⁴⁹ These surveys show that physical activity is high in rural populations and low in urbanised populations in countries like Cameroon, Gambia, Ghana, Senegal and South Africa.⁵⁰ Poor diets, low in fruits and vegetables and high in saturated fats, are more prevalent in urban settings.⁵¹ Salt intake – a risk factor for hypertension – is high in both rural and urban populations in many countries.⁵² Obesity rates are high and there are clear gender and urban-rural differences in this area. Abubakari and colleagues conducted a meta-analysis of obesity among West African populations, and found obesity prevalence of 10.0%; women were more likely to

⁴⁵ Some studies suggest a relationship between *in utero* undernutrition and an increased risk of adult obesity (Paper presented by Dr Paul Amuna). However these findings are controversial, especially in British epidemiology (Lucy Carpenter, personal communication, March 2010)

⁴⁶ Levine, C.E., Ruel, M.T., Morris, S.S., Maxwell, D.G., Armar-Klemesu, M., and Ahiadeke, C. (1999). Working women in an urban setting: Traders, Vendors and Food security in Accra. *World Development*, 27 (11), 1977-1991.

⁴⁷ Paper presented by Dr Paul Amuna, *ibid*.

⁴⁸ WHO/FAO (2003). *Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation*. Geneva: WHO.

⁴⁹ Surveys include STEP Wise Surveys for NCD risk factor surveillance, Global Youth Tobacco Surveys, Global School Health Surveys, World Health Surveys and the Study of Global Ageing and Adult Health (SAGE).

⁵⁰ Amoah, A.G.B. (2003). Sociodemographic variations in obesity among Ghanaian adults. *Public Health Nutrition*, 6(8): 751-775; Steyn, K. and Damasceno, A. (2006). Lifestyle and Related risk factors for chronic disease. In Jamison, D.T., Feachem, R.G., Makgoba, M.W., Bos, E.R., Baingana, F.K., Hofman, K.J. and Rogo, K.O. (Eds). *Disease and Mortality in Sub-Saharan Africa*. (2nd Ed) Washington DC: The World Bank. (pp.247-265)

⁵¹ Steyn, K. and Damasceno, A. (2006), *ibid*.

⁵² Cappuccio, F.P., Plange-Rhule, Phillips, R.O. and J.B. Eastwood. (2000). Prevention of Hypertension and Stroke in Africa. *Lancet* 356:677-78.; Cappuccio FP, Kerry SM, Micah FB, Plange-Rhule J, Eastwood JB. A community programme to reduce salt intake and blood pressure in Ghana. *BMC Public Health*. 2006;6:13.

obese compared to men and urban populations had higher obesity rates than rural.⁵³ Available data from Demographic and Health Surveys conducted in selected African countries, shows accelerated increase in obesity prevalence among women over the last twenty years. In Ghana for example obesity rates among women have tripled over 15 years: from 10% in 1993 to 30.5% in 2008 (GSS et al, 2004, 2009).⁵⁴

Smoking and alcohol intake rates vary across countries and are higher among male populations. Cigarette smoking is highest in South Africa and Northern Africa; South Africa and northern African countries also record the highest rates of tobacco-related cancers.⁵⁵ Countries like Ghana record low smoking rates, although there is an emerging trend of high smoking rates among the rural poor.⁵⁶

Adult per capita alcohol consumption is measured by dividing the sum of alcohol production and imports by alcohol exports by adult population aged 55 years and older.⁵⁷ Using this definition, alcohol consumption is reported to have increased in many African countries. Of the 13 countries with the highest recorded increase in global alcohol consumption between 1970 and 1996, five were African: Lesotho ranked 1st (with 1,817% increase), Nigeria ranked 5th (196% increase), Rwanda 10th, (129% increase) Burkina Faso, 12th (116% increase) and Sudan, 13th (108% increase). It is important to note that many African countries produce and

consume home brews and spirits which are not taxable. This masks the true rate of alcohol consumption. However similar profiles are found across countries: men drink more than women, the educated drink more than the uneducated, and there is a pattern of men drinking more frequently and binge drinking. In Namibia, Zimbabwe and Lesotho, there is increasing alcohol consumption among young people, below the age of 14 and as young as 5.

⁵³ Abubakari A, Lauder W, Agyemang C, Jones M, Kirk A, Bhopal RS: Prevalence and time trends in obesity among adult West African populations: a meta-analysis. *Obes Rev* 2008, 9:297-311.

⁵⁴ Ghana Statistical Service (GSS), Noguchi Memorial Institute for Medical Research (NMIMR), and ORC Macro (2004). *Ghana Demographic and Health Survey 2003*. Calverton, Maryland: GSS, NMIMR, and ORC Macro; Ghana Statistical Service (GSS), Noguchi Memorial Institute for Medical Research (NMIMR), and ORC Macro (2009). *Ghana Demographic and Health Survey 2008*. Calverton, Maryland: GSS, NMIMR, and ORC Macro.

⁵⁵ Parkin, D.M. and Sasco, A.J. (1993). Lung cancer: worldwide variation in occurrence and proportion attributable to tobacco use. *Lung Cancer*, 9: 1-16.

⁵⁶ Owusu-Dabo, E., Lewis, S.A., McNeill, A., Gilmore, A.B., and Britton, J. (2009) Smoking uptake and prevalence in Ghana. *Tobacco Control* published online 5 Jul 2009. (accessed 27th August, 2009).

⁵⁷ Baingana, F.K., Alem, A., and Jenkins, R. (2006). Mental health and the abuse of alcohol and controlled substances. In Jamison, D.T., Feachem, R.G., Makgoba, M.W., Bos, E.R., Baingana, F.K., Hofman, K.J. and Rogo, K.O. (Eds). *Disease and Mortality in Sub-Saharan Africa*. (2nd Ed) Washington DC: The World Bank. (pp.329-350)

2.3.

THE SOCIO-CULTURAL AND SOCIO-ECONOMIC CONTEXT OF AFRICA'S CHRONIC DISEASE BURDEN

2.3.1.

THE SOCIO-CULTURAL CONTEXT OF MODIFIABLE CHRONIC DISEASE RISKS

There is increasing recognition that the socio-cultural context is an important mediating factor for chronic disease risks.⁵⁸ Diet and food practices are major risk factors for the broad range of chronic diseases. Some traditional diets and traditional cooking and food preservation methods (e.g curing fish and meat with salt) contribute to the risk burden. However, the increased consumption of poor diets high in fat and processed nutrients in countries like Cameroon, The Gambia, Ghana, Kenya, Senegal and Tanzania is more strongly associated with globalization, urbanization and westernisation. In West Africa food consumption patterns have changed from traditional diets high in locally produced coarse grains such as millet and sorghum to modern diets high in imported wheat and rice.⁵⁹ This change has been attributed to the aggressive marketing of processed foods by multinational food companies in the region. The interplay between structural and cultural factors must be understood to address the role of food practices in chronic disease risk.

Obesity has been highlighted as a cultural issue.

High obesity rates among African women have been attributed to the associations many African societies draw between fat, beauty, wealth and health.⁶⁰ These associations have been reinforced by HIV/AIDS. Thinness is often associated with poverty and illness – and increasingly rapid and sustained weight loss is linked with HIV and AIDS in many countries.⁶¹ Thus being plump or overweight is seen as a sign of being AIDS free. Prentice (2006), argues that while western countries stigmatise fat, this “psychological break” is missing in African countries. However the evidence is mixed. While a study in Senegal showed that women preferred overweight BMI to normal BMI⁶², and a South African study suggested that black women did not perceive being overweight or obese as a health risk⁶³, a study in Ghana suggests that “interest in healthy living outweighs presumed cultural norms for obesity”⁶⁴. Research in Ghana links female obesity to multiple child births and the obesogenic period of breastfeeding, when women face – and attempt to resist – cultural pressure to eat fatty foods and avoid strenuous activity, including exercise⁶⁵.

Concepts of exercise differ across cultures and societies. In Africa daily physical activity is often linked to type of occupation. Rural farmers engage in strenuous physical activity as part of their work. Similarly in urban areas, there is high daily physical activity within the informal work sector (e.g mechanics, street hawkers, domestic servants). Thus the available data on physical exercise makes rural-urban distinctions as well as distinctions between high physical activity among informal sector workers and low physical activity among salaried sedentary workers in urban areas⁶⁶. The association

⁵⁸ BeLue R, Okoror TA, Iwelunmor J, Taylor KD, Degboe AN, Agyemang C, Ogedegbe O. (2009). An overview of cardiovascular risk factor burden in sub-Saharan African countries: a socio-cultural perspective. *Globalization and Health*, 5:10; Mensah, (2008), *ibid*.

⁵⁹ Teklu, T. (1996). Food demands studies in sub-Saharan Africa: A survey of empirical evidence. *Food policy*, 21: 479-96.

⁶⁰ Prentice (2006) *ibid*; Steyn and Damasceno (2006), *ibid*.

⁶¹ Treloar, C., Porteous, J., Hassan, F., Kasniyah, N., Lakshmanudu, M., Sama, M., Sja'bani, M. and Heller, R.F. (1999). The Cross Cultural Context of Obesity: An INCLEN Multicentre Collaborative Study. *Health and Place*, 5:279-86; Kruger HS, Puoane T, Senekal M, van der Merwe MT. (2005) Obesity in South Africa: challenges for government and health professionals. *Public Health Nutrition*, 8:491–500; de-Graft Aikins, A. (2006). Reframing applied disease stigma research: a multilevel analysis of diabetes stigma in Ghana. *Journal of Community and Applied Social Psychology*, 16(6), 426-441.

⁶² Holdsworth M, Gartner A, Landais E, Maire B, Delpuech F. (2004). Perceptions of healthy and desirable body size in urban Senegalese women. *International Journal of Obesity*, 28(12):1561-1568.

⁶³ Ndovlo, P.P. and Roos, S.D. (1999). Perceptions of Black Women of Obesity as a Health Risk. *Curationis*, 22 (2): 47-55.

⁶⁴ Duda, R.B., Jumah, N.A., Hill, A.G., Seffah, J., and Biritwum, R. (2006). Interest in healthy living outweighs presumed cultural norms for obesity for Ghanaian women. *Health and Quality of Life Outcomes* 2006, 4:44

⁶⁵ de-Graft Aikins, A (in press) Culture, diet and the maternal body: Ghanaian women's perspectives on food, fat and childbearing. In Maya Unnithan-Kumar and Soraya Tremayne (Eds). *Fatness and the Maternal Body: Women's experiences of corporeality and the shaping of social policy*. Oxford: Berghahn Books

⁶⁶ Steyn, K. and Damasceno, A. (2006), *ibid*.

between sports (such as football) or physical education in schools and high physical activity has not been explored in the literature on chronic disease risk factors. Research in this area is difficult due to the challenge of developing reliable and valid epidemiological methods that match self-reports of physical activity to objective measures across different countries⁶⁷.

Smoking and alcohol overconsumption have been identified as predominantly male problems and problems rooted in poverty. Culturally, many African societies frown on women smoking and drinking⁶⁸; thus female smoking and drinking may occur in secret. Poverty and poverty-related stresses (depression, anxiety, etc) have physical and psychological health implications including the adoption of addictive behaviours like smoking, alcohol consumption and sexual promiscuity. Research on masculinity in South Africa shows that these addictive behaviours confer a strong sense of masculinity, power and agency for men⁶⁹.

2.3.2. SOCIO-CULTURAL KNOWLEDGE OF CHRONIC DISEASES

Research on hypertension, diabetes, stroke and cancers in Ghana, Cameroon and Tanzania highlight poor awareness and knowledge of the medical profile of these conditions⁷⁰. Late reporting of conditions like diabetes and cancers is common, although this might be a product of lay misdiagnosis as well as a lack of access to quality medical services. Late reporting compounds the rising prevalence of risk factors and of disease complications. For instance 21 to 25% of type 2 diabetes patients have retinopathy at point of

diagnosis. Men and women with cancers report late for medical care, often at stages 3 and 4; their survival rate is poor.⁷¹ Cultural beliefs of the causes and consequences of chronic diseases have been implicated in poor illness practices. Anthropological research suggests that African societies subscribe to a tripartite model of disease. Illnesses can be naturally caused, socially caused, and/or spiritually and supernaturally caused⁷². Rare or unnatural events such as the death of a child or young adult, or chronic illnesses or illnesses which cause sudden death in otherwise healthy adults are often attributed to social or supernatural forces.

Studies on diabetes in Cameroon and Ghana show that lay communities and people with diabetes attribute diabetes to social and spiritual/supernatural causes, such as witchcraft.⁷³ This leads some people with diabetes to healership within ethnomedical and faith healing systems. Spiritual causal theories are also implicated in the stigmatisation of people with diabetes and other serious chronic conditions, such as epilepsy⁷⁴. However cultural representations of health and disease are complex and research suggests that there are important dimensions of socio-cultural knowledge of chronic illness that can inform the development of effective primary and secondary interventions. First, research suggests that spiritual causal theories of chronic diseases are not universally dominant, nor do they lead to traditional medical practices in a linear way. Research on social representations of diabetes in Ghana suggests that while people with diabetes may subscribe to spiritual causal theories, these theories co-exist with biomedical and psychological theories; this multi-level attribution

⁶⁷ Sobgnwi, E., Mbanya, J.C., Unwin, N.C., Terrence, J.A., and Alberti, K.G.M.M. (2001). Development and validation of a questionnaire for the assessment of physical activity in epidemiological studies in sub-Saharan Africa. *International Journal of Epidemiology*, 30:1361-68.

⁶⁸ Belue et al (2009), *ibid*.

⁶⁹ Campbell, C (2003). *Letting them die: Why HIV/AIDS prevention programmes fail*. Oxford: James Curry.

⁷⁰ Awah, P.K, Unwin, N. and Phillimore, P. (2008) Cure or control: complying with biomedical regime of diabetes in Cameroon BMC Health Services Research, 8,43; de-Graft Aikins, A (2005). Healer-shopping in Africa: new evidence from a rural-urban qualitative study of Ghanaian diabetes experiences. *British Medical Journal*, 331, 737; Mensah, 2008, *ibid*.

⁷¹ Clegg-Lamptey, J.N.A., and Hodasi, W.M. (2007). A study of breast cancer in Korle Bu Teaching Hospital: assessing the impact of health education. *Ghana Medical Journal*, 41(2), 72-77; Sitas, F., Parkin, M., Chirenje, Z., Stein, L., Mqoqi, N. and Wabinga, H. (2006). Cancers. In Jamison, D.T., Feachem, R.G., Makgoba, M.W., Bos, E.R., Baingana, F.K., Hofman, K.J. and Rogo, K.O. (Eds). *Disease and Mortality in Sub-Saharan Africa*. (2nd Ed) Washington DC: The World Bank. (pp. 289-304)

⁷² Paper presented by Prof Kodjo Senah at The British Academy, Royal Society and Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*.

⁷³ Awah et al, 2008, *ibid*; de-Graft Aikins, 2005, *ibid*;

⁷⁴ de-Graft Aikins, A. (2006). *ibid*; Allotey, P. and Reidpath, D. (2007). Epilepsy, Culture, Identity and Wellbeing A Study of the Social, Cultural and Environmental Context of Epilepsy in Cameroon. *Journal of Health Psychology*, 12(3) 431-443.

process shapes complex illness practices within and across biomedical, ethnomedical and faith healing systems⁷⁵. Secondly there is evidence that lay individuals possess some practical knowledge of major chronic diseases such as hypertension, diabetes and stroke⁷⁶. This knowledge is drawn from a variety of medical and non-medical sources, including the mass media and churches. Ghanaian youth with Type 1 diabetes and their families, for example, identify the internet as an important source of information for disease management⁷⁷. Finally, there are important cultural and ethnic variations in concepts of illness chronicity and incurability which may influence illness action strategies. In Ghana, some ethnic groups such as the Akan accommodate chronicity and have a term ‘*koa nkoro*’ (literal translation ‘difficult to fight’) for this; other ethnic groups like the Ga do not⁷⁸. The term ‘social logic’ was coined by health psychologists to describe the way chronically ill individuals make sense of their illness and management routines by drawing on a broad repertoire of knowledge systems and material resources, including subjective and inter-subjective experiences, socio-cultural traditions and knowledge, social support and financial resources⁷⁹. Social logic enables the lay person to deal with the medical, psychological, spiritual, social and financial aspects of their condition. In contrast, health experts draw on ‘medical logic’ which is informed by a disease centred approach to illness and focuses on a restricted repertoire of practical routines aimed at addressing the physiological dimension of the illness. Health promotion experts emphasise the

importance of placing the complex and dynamic nature of social logic at the forefront of primary and secondary interventions.

2.3.3. SOCIO-ECONOMIC CONTEXT OF CHRONIC DISEASES: THE ROLE OF POVERTY

The ‘protracted polarised’ process of epidemiological transition is evident in African countries with available data⁸⁰. While chronic disease prevalence is higher among the urban wealthy in these countries, poor communities experience a ‘double jeopardy’ of chronic and infectious diseases. Firstly, environmental pollution and degradation associated with poor rural and urban conditions of living are directly linked to chronic diseases such as chronic respiratory disease (air pollution) and cancers (e-waste). Poverty and poor living conditions– e.g. overcrowding, poor access to quality water – are also linked indirectly to chronic diseases, as the increased risk of infections and infectious diseases increases the risk of co-morbid relationships between infectious and chronic diseases (e.g tuberculosis and diabetes, malaria and Burkitt Lymphoma). Secondly, poor communities experience high levels of under-nutrition and malnutrition. Some studies show a relationship between maternal under-nutrition, low birth weight and later obesity and chronic disease risk for major conditions like atypical diabetes, cancers (stomach and oesophageal) and CVDs (rheumatic heart disease and dilated cardiomyopathy cardiovascular diseases)⁸¹. Poor childhood nutrition, such as excessive consumption

⁷⁵ de-Graft Aikins, 2005, *ibid*.

⁷⁶ Awah et al, 2008, *ibid*; de-Graft Aikins, 2005, *ibid*; Kagee, A., Le Roux, M., and Dick, J. (2007) Treatment Adherence among Primary Care Patients in a Historically Disadvantaged Community in South Africa. A Qualitative Study. *Journal of Health Psychology*, 12 (3), 444-460.

⁷⁷ Kratzer, J. (in press). Structural Barriers to coping with Type 1 Diabetes Mellitus in Ghana: experiences of diabetic youth and their families. *Ghana Medical Journal*.

⁷⁸ de-Graft Aikins, A, Boynton, P. and Atanga, L.L. (2010). Developing Effective Chronic Disease Prevention in Africa: practical and theoretical insights from Ghana and Cameroon. *Globalization and Health*.

⁷⁹ Paper presented by Dr Ama de-Graft Aikins and Dr Daniel Arhinful, *ibid*

⁸⁰ Kahn, K., Garenne, M.L., Collinson, M.A., Tollman, S.M. (2007). Mortality trends in a new South Africa: Hard to make a fresh start.

Scandinavian Journal of Public Health, 35 (S69), 26-34; Agyei-Mensah, S. and de-Graft Aikins, A. (in press). Epidemiological transition and the double burden of disease in Accra, Ghana. *Journal of Urban Health*.

⁸¹ Paper presented by Dr Paul Amuna, *ibid*.

of sugar, heightens the risk of Type 1 and Type 2 diabetes. Thirdly, economic and psychosocial stresses associated with conditions of poverty are implicated in modifiable chronic disease risk factors such as smoking, excessive alcohol intake and unsafe sex. Finally poor communities have poor access to healthcare: this has been categorised in terms of geographical (especially for poor rural communities), financial (travel costs and the high costs of medical consultation, drugs and new diets) and cultural (class and language barriers to effective health worker-client communication and relationships).

From the opposite end the high cost of treating and managing chronic disease has a significant financial impact for individuals, families and households. The WHO (2005) observes that ‘chronic diseases can cause poverty in individuals and families, and draw them into a downward spiral of worsening disease and poverty’ (p. 61). In Tanzania, in the 1990s, the cost of insulin (then \$156 for a one-month supply) was beyond the means of the majority of Tanzanians⁸² and the cost of diabetes care within the private health sector was 25% of the minimum wage⁸³. ‘Catastrophic expenditures’ for health care or ‘impoverishing medical expenditures’ constitute medical expenses that “endanger a household’s ability to maintain its customary standard of living”⁸⁴. A recent study in Burkina Faso demonstrated that the probability of catastrophic consequences increased by 3.3 to 7.8 times when a household member had a chronic illness⁸⁵.

In 2005, 388.03 million Africans – just over half of the continent’s population – lived below the absolute poverty line of US\$1.25 a day. The majority of Africa’s extreme poor lives in urban slum communities. Emerging research in urban slums shows high rates of chronic diseases and their complications⁸⁶. The relationship between rapid urbanization, extreme poverty and national chronic disease burdens should be a major issue for health policymakers and governments.

⁸² Chale, S., Swai, A., Mujinja, P. and MacLarty, D. (1992). Must diabetes be a fatal disease in Africa? Study of cost of treatment, 304:1215-1218.

⁸³ Neuhaan HF, C Warter-Neuhaan, I Lyaruu and L Msuya, 2001. ‘Diabetes care in Kilimanjaro region: clinical presentation and problems of patients of the diabetes clinic at the regional referral hospital – an inventory before structured intervention’, *Diabetic Medicine* 19: 509–513.

⁸⁴ Suhrcke, M., Nugent, R.A., Stuckler, D. and Rocco, L. (2006), *ibid*.

⁸⁵ Tin Su T, B Kouyaté and S Flessa, 2006. ‘Catastrophic household expenditures for health care in a low income society: a study from Nouna district, Burkina Faso’, *Bulletin of the World Health Organization* 84: 21–27.

⁸⁶ Kyobutungi, C., Ziraba, A.K., Ezech, A., and Ye, Y. (2008). The burden of disease profiles of residents in Nairobi slums: Results from a demographic surveillance system. *Population Health Metrics*, Vol 6, 1.

3.1. CHRONIC DISEASE, DECREASED QUALITY OF LIFE AND DECREASED PRODUCTIVITY

Chronic diseases affect the most economically productive age in many countries. In Tanzania, the estimated onset of diabetes was estimated at 44 years and the average age at death was estimated at 46 years⁸⁷. With a population life expectancy of 53 years, diabetes was estimated to reduce the life expectancy of Tanzanians by 7 years. Furthermore Tanzanians with diabetes lost 4,100 healthy life days (HLDs), with 69% of days lost attributed to premature mortality. The estimated HLDs lost per capita was 820 person days per 1,000 people per year. In Ghana, average age at onset of diabetes was estimated at 40 years and average age at death was estimated at 55. The estimated HLDs lost per capita was 217 person days per 1,000 people per year, with 52% of the loss attributed to premature mortality.

Because rates of chronic complications, disability and death are high, the chronic disease burden has significant implications on quality of life for sufferers and their families and the productivity of sufferers and their primary caregivers. This has further implications for health systems, economic growth and national development.

3.2. HEALTH SYSTEMS DEFICIENCIES AND CHRONIC DISEASES

The WHO (2007) has identified six 'building blocks' of health systems: (1) service delivery; (2) information and evidence; (3) medical products and technologies; (4) health workforce; (5) health financing; and (6) leadership and governance. Most African health systems are weak across some or all of these basic building blocks. The chronic disease burden constitutes a further threat to these weak health systems.

3.2.1. SERVICE DELIVERY AND CHRONIC DISEASES

Although healthcare in most African countries is decentralised, health systems struggle to achieve equity in access, financing and quality of care, particularly for the rural and urban poor. Chronic disease care is affected by these challenges, with the majority of care provided by secondary and tertiary institutions, such as regional and teaching hospitals, which are often located in urban areas and major cities. Primary healthcare facilities – the core service providers at community level – often lack trained health workers, medical products and technologies to detect, treat and manage common chronic diseases.

In many African countries biomedical services compete with a dynamic pluralistic healthcare system comprising of private medical practice, not-for-profit organizations (e.g faith-based health associations), indigenous health systems (herbalists, shrine priests, diviners) and faith healing offered by Pentecostal Christian churches. These pluralistic health services play a significant role in the lives of the chronically ill⁸⁸. For example, indigenous

⁸⁷ Mbanya and Ramiya (2006), *ibid*. It is important to note that there is a problem with making precise statements about age at onset of diseases. Birth dates may not be accurately known in countries which lack (or have lacked) routinely collected records about births. Poor records of causes of death in many countries also compound the problem (see section 3.2.2).

⁸⁸ Awah, Unwin and Phillimore (2008) *ibid*; de-Graft Aikins (2005) *ibid*.

healers are accessed because they may be cheaper and because they may offer psychological and spiritual support that is lacking in formal biomedical care. However regulation and coordination of services are often poor and chronically ill individuals may place themselves at risk of complications and premature death through healer-shopping between biomedical, complementary and alternative health services.

3.2.2. HEALTH INFORMATION SYSTEMS AND CHRONIC DISEASES

Health information systems are poor. The common problems identified include poor record keeping at hospitals and health facilities and the lack of disease specific registers, for example for cancers⁸⁹. Other important issues include an overreliance on institutional records when critical events (complications, deaths) occur in the community and are often not formally reported. For instance, it is estimated that accurate death registration systems cover only about 0.25% of the Sub-Saharan African population⁹⁰.

Research evidence for chronic disease care and policy is limited. Africa produces an estimated 0.6% of scientific publications addressing health topics from different regions.⁹¹ A significant proportion of this output focuses on communicable diseases.⁹² A range of WHO surveys – for example the STEP Wise Surveys for NCD risk factor surveillance, Global Youth Tobacco Surveys and the Study of Global Ageing and Adult Health (SAGE) – have provided epidemiological data on chronic diseases in some countries. However for many countries there is either no data or existing data is drawn from cross-sectional studies on limited localised

populations. The lack of robust regional research evidence undermines the development of primary and secondary interventions.

3.2.3. MEDICAL PRODUCTS, MEDICAL TECHNOLOGIES AND CHRONIC DISEASES

Many countries have essential drug lists. However medicines supply is often irregular and poorly managed by public institutions. The vacuum created in the public sector is filled by the private pharmaceutical sector, which drives up the cost of prescribed drugs. Research on diabetes, stroke and cancers highlight the problematic lack of diagnostic and treatment facilities for screening and treating these conditions.⁹³ A 2003 IDF survey showed that the cost of insulin was higher in sub-Saharan Africa compared to other parts of the world and that 80% of people with diabetes could not afford to buy insulin and insulin syringes. Furthermore, 75% of people with diabetes could not self-monitor their blood glucose levels because testing supplies were not available in their countries (70% of countries surveyed) or the cost of testing supplies was high (90% of countries surveyed). Second, health systems lack basic and sophisticated medical equipment and technologies necessary for chronic disease diagnosis, treatment and rehabilitation. A combination of a lack of appropriate technologies and health workers' lack of chronic disease knowledge has been implicated in poor diagnosis and treatment⁹⁴. Finally there are important problems that require attention under this health system block, such as the problem of counterfeit drugs and the challenges of polypharmacy for individuals living with multiple chronic conditions or with co-morbid chronic and infectious diseases.

⁸⁹ Paper presented by Prof Nyame and Closing remarks by Prof Kwadwo Koram at The British Academy, Royal Society and Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*;

⁹⁰ Mbewu and Mbanya, 2006, *ibid*.

⁹¹ WHO (2006). World Report on Knowledge for better health. Strengthening health systems. Geneva: WHO.

⁹² WHO Regional Office for Africa (WHO-Afro) (2006). *The work of the WHO in the African Region: 2004-2005. Biennial Report of the Regional Director*. Brazzaville: WHO-Afro.

⁹³ Mbanya and Ramiya (2006), *ibid*; Mensah, (2008), *ibid*; Sitas, F., Parkin, M., Chirenje, Z., Stein, L., Mqoqi, N., and Wabinga, H. (2006). Cancers. In Jamison, D.T., Feachem, R.G., Makgoba, M.W., Bos, E.R., Baingana, F.K., Hofman, K.J. and Rogo, K.O. (Eds). *Disease and Mortality in Sub-Saharan Africa*. (2nd Ed) Washington DC: The World Bank. (pp.289-304)

⁹⁴ de-Graft Aikins, A, Boynton, P. and Atanga, L.L. (in press) Developing Effective Chronic Disease Prevention in Africa: insights from Ghana and Cameroon. *Globalization and Health*.

3.2.4.

HEALTH WORKFORCE AND CHRONIC DISEASES

The WHO (2006) observes that Africa carries 24% of the global disease burden, devotes the lowest percentage of mean gross domestic product (GDP) to health, and has access to only 3% of the health workforce. A threshold for density of physicians, nurses, and midwives of 2.5 per 1,000 population was set by the Joint Learning Initiative (2004, cited by HS 20/20) to achieve 80% coverage for skilled birth attendance and measles immunization. The density of physicians, nurses and midwives in many African countries does not reach this threshold. The lack of adequate numbers of health workers is compounded by inequitable distribution of the health workforce. In many countries the majority of healthcare workers are based in urban areas, leaving rural and remote areas without skilled health workers.⁹⁵ Furthermore there is a lack of adequate training, both initial and continuous. Specialist training for chronic disease is limited. A WHO survey conducted in 2001 showed that the average number of chronic disease specialists per 100,000 population in the Africa region was less than 1 across the categories of cardiology (0.4), radiology (0.4), and oncology (0.1).⁹⁶ The average number of specialists per 100,000 population in the European region across these categories was significantly higher: cardiology (6), radiology (8), and oncology (3). The existing specialists in Africa practice, predominantly, in tertiary and secondary facilities located in capital and major cities. Thus chronic disease knowledge among health workers is limited and detection, diagnosis, treatment and management of chronic diseases are poor. In Ghana, research shows that health workers lack knowledge on diabetes (doctors, nurses, dieticians), cancers (doctors, nurses) and asthma (junior doctors)⁹⁷. Individuals with these conditions are often

misdiagnosed, are given wrong or mixed information about treatment and management, and suffer complications as a result of their engagement with poorly trained and poorly equipped health workers.

3.2.5.

HEALTH FINANCING AND CHRONIC DISEASES

Africa devotes the lowest percentage of mean gross domestic product (GDP) to health despite its significant disease burden (WHO, 2006). The WHO estimates that a minimum per capita Total Health Expenditure (THE) of US\$ 38 (2008 figures) is needed to cover essential health services (HS 20/20, 2009)⁹⁸. The average THE as a percentage of GDP in sub-Saharan Africa is 5.3%, which translates to an average minimum per capita THE of US\$53 (2006–2007 figures). There are two challenges in this area. First, many countries fall far short of this average regional THE of US\$53. If essential health services are not fully funded, it is unlikely that funding will be allocated to public health and specialist services. Secondly, for the majority of countries, contributions to THE is drawn from donors, out-of-pocket expenditure and public funds. When out-of-pocket spending represents a large share of health spending, this affects access to healthcare and threatens the financial status of households, by pushing them into poverty (HS 20/20, 2009; WHO, 2005). Out-of-pocket expenditure contributions to THE constitute at least 50% in countries like Ghana (50.04%), Senegal (61.86%) and Nigeria (63.19%). As chronic diseases require long-term engagement with healthcare, and as there is a lack of chronic disease financing, out-of-pocket expenditure and catastrophic health expenditure are likely to be high in many countries (see Chapter 2, Section 2.3.3).

⁹⁵ WHO (2006), *ibid.*

⁹⁶ Alwan, A., Maclean, D. and Mandil, A. (2001). *Assessment of National Capacity for Noncommunicable Disease Prevention and Control*. Geneva: WHO.

⁹⁷ de-Graft Aikins, Boynton and Atanga (2010), *ibid.*

⁹⁸ HS 20/20 (2009). *Health Systems Factsheets*. (<http://healthsystems2020.healthsystemsdatabase.org/reports/>; accessed 13th December 2009)

3.2.6. LEADERSHIP, GOVERNANCE AND CHRONIC DISEASES

Leadership and governance are weak with respect to chronic disease research, practice and policy. African health ministries acknowledge the presence and impact of a chronic disease burden, but few countries have chronic disease plans or policies. The lack of political will and action with respect to the growing epidemic of chronic diseases has been attributed to internal and external factors. On the one hand, poor governance has implications on health policy and systems. WHO (2008) links the lack of progress on health to the effects of political, social instability and economic instability⁹⁹. Almost half the continent has had a history of war and conflict in the post-independence era leading to mass death and displacement.

On the other hand, the power of development partners to set the terms of health research, practice and policy in the developing world is well documented.¹⁰⁰ The current health research and policy funding emphasis in Africa and Asia is on the health MDGs and in particular malaria, tuberculosis and HIV/AIDS. HIV/AIDS, malaria and tuberculosis receive high levels of targeted funding through global health initiatives such as the Global Fund and the Bill and Melinda Gates Foundation. Targeted funding usually places restrictions on local policymakers and administrators and undermines their ability to make bold and creative funding decisions about local health problems. Regional policymakers' lack of action on chronic disease has been attributed to competing interests and pressures arising from the continued threat of infectious disease and the political economy of health financing/aid in a new era of the MDGs.¹⁰¹

3.3. CHRONIC DISEASE AND GOVERNMENT BUDGETS

There are few studies on the economic cost of chronic diseases in Africa.¹⁰² But the available data on the costs for diabetes care suggests that chronic disease care is costly for governments.¹⁰³ A study in Tanzania showed that in 1989/90 the government spent approximately US\$138 per diabetic patient per year. This translated to 8.1% of the total budgeted health expenditure for the year and exceeded the allocated US\$2 per capita health expenditure for that year. Similarly in Cameroon, the direct medical cost of treating a diabetic patient in 2001/2002 was US\$489, which represented 3.5% of the national budget for that year. In the 1990s the World Bank established the Heavily Indebted Poor Countries Initiative (HIPC). Out of the 40 HIPC countries, 33 were African¹⁰⁴. HIPC countries share similar economic and fiscal profiles. Their average per capita income is US\$310 per year. Their health spending is approximately US\$8 per person per year and their pharmaceutical spending is between US\$2 and US\$3 per person per year. The documented costs of diabetes care suggest that the cumulative cost of chronic disease care is likely to cripple many government budgets. This calls for greater effort in addressing the challenges in leadership and governance that undermine health sector investments.

⁹⁹ WHO (2008). *The world health report 2008: primary health care now more than ever*. Geneva: WHO

¹⁰⁰ WHO (2007). *Sound Choices: enhancing capacity for evidence-informed health policy* edited by Andrew Green and Sara Bennett. Geneva: WHO.

¹⁰¹ Paper presented by Dr Anthony Seddoh The British Academy, Royal Society and Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*.

¹⁰² Suhrcke, M., Nugent, R.A., Stuckler, D. and Rocco, L. (2006). *Chronic Disease: An Economic Perspective* London: Oxford Health Alliance

¹⁰³ Mbanya and Ramiya, 2006, *ibid*.

¹⁰⁴ The African HIPC countries are Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Comoros, Côte d'Ivoire, Democratic Republic of Congo, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Madagascar, Mali, Malawi, Mauritania, Mozambique, Niger, Republic of Congo, Rwanda, São Tomé and Príncipe, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Uganda, Zambia. (Source: World Bank (2006). *Debt relief for the poorest. An evaluation update of the HIPC initiative*. Washington DC: The World Bank)

4

PRIORITY AREAS FOR CHRONIC DISEASE RESEARCH, PRACTICE AND POLICY

Most African countries recognise their chronic disease burden but are yet to develop the right policies that can reduce the risk, disability and deaths associated with the major chronic conditions.

Five priority areas were identified at the conference:

1. Strengthening research on epidemiological prevalence, prevention and treatment
2. Developing multidisciplinary/interdisciplinary collaborations to conduct research
3. Engaging in multi-country research
4. Developing multi-institutional collaborations between researchers, healthcare providers, policymakers, NGOs, and lay communities
5. Investing in postgraduate training to ensure a new generation of multidisciplinary chronic disease researchers

These priority areas were strongly aligned with the current international position on developing multifaceted and multi-institutional interventions that harness existing human and material resources.

4.1.

PRIORITY AREA 1:

STRENGTHEN RESEARCH ON EPIDEMIOLOGICAL SURVEILLANCE, PREVENTION AND TREATMENT

- Strengthening chronic disease surveillance. Various WHO surveys have been used to gather epidemiological data on chronic diseases in a number of countries. However the quality and regional reach of epidemiological research is far

from ideal. Some countries lack data on chronic diseases; others have only cross-sectional data on limited populations. The first important step is to gain access to existing chronic disease survey data (from the various multi-country WHO study sites) and to conduct secondary analyses to highlight trends in prevalence, morbidity and mortality¹⁰⁵. The second step is to develop methods of gathering better and more robust data, especially at the level of institutions (hospitals, clinics) and within communities¹⁰⁶. Longitudinal and follow up studies are particularly needed to track quality and continuity of care and the impact of this on chronic disease outcomes.

- Prevention: For primary prevention develop public health education strategies appropriate to the social, cultural and economic conditions of populations. For secondary prevention foreground social logic in the development of treatment and management strategies¹⁰⁷.
- Treatment: improve the effectiveness and efficiency of treatment by investing in evidence-based practice. Examples of evidence-based practice include developing clinical centres of excellence (for example the Heart Research Centre in Addis Ababa, Ethiopia¹⁰⁸) and exploring the potential for plant medicines in chronic disease treatment (e.g the Centre for Scientific Research into Plant Medicine and the work of Noguchi Memorial Institute for Medical Research in Ghana¹⁰⁹).

¹⁰⁵ Paper presented by Dr Charles Agyemang at The British Academy, Royal Society and Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*

¹⁰⁶ Paper presented by Prof Nigel Unwin at The British Academy, The Royal Society and the Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*; Closing remarks by Prof Kwadwo Koram at The British Academy, Royal Society and Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*

4.2.

PRIORITY AREA 2:

DEVELOP MULTIDISCIPLINARY/INTERDISCIPLINARY RESEARCH COLLABORATIONS

- The roots (urbanisation, poverty, globalisation, changing socio-cultural practices, weak health systems, poor governance) and consequences (prolonged ill health, disability, family disruption, poverty) of chronic diseases are complex and require complex theoretical, methodological and analytical models.
- Develop multidisciplinary and intra-disciplinary collaborations to address the identified research and practice challenges.¹¹⁰
- Specific disciplines need greater investment (material and human resource capacity): basic sciences, plant medicine, social sciences (anthropology, sociology, psychology, health economics), and the humanities (in particular history).
- Emerging academic/research partnerships on chronic disease in Africa offer important lessons in this area. These include country level partnerships such as Cameroon's CAMBoD project (see Box 5) and on North-South multi-country partnerships between US and African institutions (e.g the National Heart, Lung, and Blood Institute's (NHLBI) collaborative global network of centres of excellence (COEs) for chronic diseases) and UK and African institutions (e.g. the UK-Africa Academic Partnership on Chronic Disease).

4.3.

PRIORITY AREA 3:

ENGAGE IN MULTI-COUNTRY RESEARCH

- Existing research shows that there is wide diversity in chronic disease prevalence, morbidity and mortality across and within countries. 'Culture, religion, dietary practices, socio-economic development, risk behaviour, geographical locations, genes' are important determinants of health and might contribute to differences in health and chronic disease outcomes within and across African countries¹¹¹. However health research and policy often ignores diversity in these health determinants.
- Cross-country research will be crucial to understand diversity in prevalence, morbidity and mortality and to identify what countries can learn from each other particularly in terms of primary and secondary prevention.
- There are existing models in Europe to instruct cross-country research in Africa. For instance an international collaborative project on CVD among ethnic minority populations was initiated by researchers from Europe (the Netherlands, Norway and the UK) and North America (Canada and USA)¹¹². The initial analyses were based on standardised datasets from the UK (i.e. Health Survey for England 1999, 2004 and the Newcastle Heart Project) and the Netherlands (i.e. the SUNSET study). Important differences in health outcomes were found between African descent populations as well as between European descent populations living in the Netherlands and the UK. These

¹⁰⁷ Papers presented by Dr Ama de-Graft Aikins and Dr Daniel Arhinful and by Prof Kodjo Senah at The British Academy, Royal Society and Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*.

¹⁰⁸ Keynote address by Prof Sir Magdi Yacoub The British Academy, The Royal Society and the Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*

¹⁰⁹ Paper presented by Prof Marian Addy at The British Academy, The Royal Society and the Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*

¹¹⁰ Papers presented by Prof Pascale Allotey and by Dr Ama de-Graft Aikins and Dr Daniel Arhinful at The British Academy, The Royal Society and the Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*

¹¹¹ Paper presented by Dr Charles Agyemang, *ibid.*

¹¹² Paper presented by Dr Charles Agyemang, *ibid.*

differences underscored the importance of the residing countries' environmental context on ethnic inequalities on health and offered insights for developing future CVD interventions and prevention among ethnic minority groups in Western countries¹¹³.

4.4.

PRIORITY AREA 4:

DEVELOP MULTI-INSTITUTIONAL COLLABORATIONS

- Current knowledge suggests that the success of developing and implementing chronic disease plans and policies depends on forging active collaborations between different stakeholders¹¹⁴: researchers, policymakers, healthcare providers, industry, mass media, civil society (e.g health NGOs, patient advocacy groups) and lay communities.
- For these collaborations to be forged critical attention must be paid to the problem of differential power resources between governments and development partners (e.g for setting local priorities for health research, practice and policy), political leaders and policymakers (e.g for implementation and sustainability of health policies), and policymakers and researchers (e.g for prioritising evidence-based practice and policy).
- Some countries, like Cameroon and South Africa, have developed and implemented chronic disease policies and/or interventions through multi-stakeholder collaboration and offer lessons for the region (see Boxes 4,5 and 6)

4.5.

PRIORITY AREA 5:

INVEST IN POSTGRADUATE TRAINING IN CHRONIC DISEASE RESEARCH

- Invest in the next generation of health/chronic disease researchers from medicine, health sciences, social sciences, and the humanities¹¹⁵ to produce the next generation of multidisciplinary chronic disease researchers
- The key research concerns of the future include epidemiological surveys, longitudinal studies, mapping social and cultural representations of chronic diseases, public health education and communication strategies, intervention studies and health financing.
- Some academic chronic disease partnerships – e.g. the NHLBI's collaborative global network of centres of excellence (COEs) for chronic diseases – prioritise postgraduate training and support. If these partnerships are sustained in the long-term they will play an instrumental role in restructuring the African research environment to generate interest and commitment from young career academics and researchers for chronic disease research.

Best practices exist in some countries to inform the adoption and adaptation of priority areas for countries with no chronic disease policies or plans. Four case studies of best practices are presented in Boxes 4 to 7.

¹¹³ See also Agyemang C., Addo J, Bhopal R, de-Graft Aikins A, Stronks K (2009), *ibid*.

¹¹⁴ Epping-Jordan, Galea, Tukuitonga, and Beaglehole, (2005), *ibid*; Suhrcke, Nugent, Stuckler, and Rocco (2006), *ibid*.

¹¹⁵ Papers presented by Prof Marian Addy, Prof Pascale Allotey, Prof Naana Opoku-Agyemang and Prof Paul Nyame at The British Academy, Royal Society and Ghana Academy of Arts and Sciences Conference, *Africa's Neglected Epidemic: Multidisciplinary Research, Intervention and Policy for Chronic Disease*

Box 4: The Coronary Risk Factor Study (CORIS) in South Africa

South Africa has a long history of community based CVD prevention. The Coronary Risk Factor Study (CORIS) applied an experimental approach to community based CVD intervention in two communities, with a third control community. The interventions included public health messages via the mass media and home mailings, and community activities (including organised walks, free screening for blood pressure, small-group personal interventions, encouragement of food substitution in stores and restaurants and collaboration with community-based organisations). CORIS focused on white communities which limits generalisation to the broader multicultural South African population. However the study demonstrated that community-based information and behaviour-change interventions were very effective in reducing overall chronic disease risk factors in the experimental communities at low cost.

Sources: Suhrcke, M., Nugent, R.A., Stuckler, D. and Rocco, L. (2006), *ibid*; Rossouw J, P Jooste, D Chalton, E Jordaan, A Swanepoel and L Rossoew, 1993. 'Community-based intervention: the Coronary Risk Factor Study (CORIS)', *International Journal of Epidemiology* 22: 428–438.

Box 5: Developing community-based and structural chronic disease interventions in Mauritius

In the late 1980s Mauritius participated in the WHO Interhealth Programme. The Programme aimed to implement an integrated programme of chronic disease prevention and control in selected countries in all regions of the world at different stages of the demographic and epidemiological transition. Mauritius launched a large scale community programme to tackle the burden of hypertension, diabetes and obesity. This programme involved collaborating with the food industry to improve the nutritional content of processed foods including, in particular, reducing the fatty acid composition of cooking oil. Evaluation after five years of the intervention programme showed considerable reduction of diet and serum cholesterol levels at population level. This was linked directly to the combination of nutrition policy and educational interventions. However rates of obesity and diabetes increased. Mauritius has followed up this early intervention programme with a strong commitment to address its chronic disease burden. The country belongs to a list of nine countries (others are Czech Republic, Poland, Slovakia, Thailand, Hungary, Indonesia, Jordan and Lithuania) that have adapted MDG6 (Combat HIV/AIDS, malaria and other diseases) to include fighting the burden of chronic disease. Mauritius aims to “have halted by 2015, and begun to reverse, the incidence of noncommunicable diseases such as diabetes, hypertension, high cholesterol, and cancer” (WHO, 2005).

Sources: Uusitalo U et al. Fall in total cholesterol concentration over five years in association with changes in fatty acid composition of cooking oil in Mauritius: cross-sectional survey. *British Medical Journal*, 1996, 313: 1044–1046; Dowse G et al. Changes in population cholesterol concentrations and other cardiovascular risk factor levels after five years of the non-communicable disease intervention programme in Mauritius. *British Medical Journal*, 1995, 311: 1255–1259.

Box 6: Developing and implementing a diabetes policy in Cameroon

Cameroon is one of the few African countries that has developed a diabetes policy. This policy shift was a product of the Cameroon Burden of Diabetes (CAMBoD) project which was developed through multi-institutional collaboration between The Health of Populations in Transit (HoPiT) team, a team of chronic disease researchers in the Yaoundé University Teaching Hospital and the University of Newcastle, the UK Department for International Development (DFID), the World Diabetes Foundation and the Cameroon Ministry of Public Health (MoPH). The HoPiT team carried out initial district level diabetes research that led to funded larger scale research on intervention, practice, advocacy and policy with buy in and increasing support from the MoPH. The CAMBoD project has achieved a number of important outcomes. The MoPH has prioritised the surveillance, prevention and control of diabetes. The HoPiT team has organised training workshops for health personnel, carried out STEPwise surveys and provided disease monitoring services. Diabetes clinics have been established across the country. There are at least 18 diabetes clinics in the major cities of Bamenda, Yaoundé and Douala and at least one clinic in each of the regions. By creating formal links with manufacturers of blood glucose testing metres and reagent strips and other diabetes care products, the MoPH has been able to reduce the prices of insulin and diabetes related products such as testing kits across the country. For instance insulin was reduced from £15 to £3. The CAMBoD project has faced challenges, for example in monitoring and evaluation. However it is a good example of the multi-institutional collaboration approach to chronic disease research, practice and policy.

Source: Awah P., Kengne, A.P, Sobngwi, E., Fezue, L, Unwin, N. and Mbanya, J-C. (2007) Putting diabetes into the policy agenda of low income countries: the example of Cameroon. *Diabetes International*.

Box 7: Developing plant medicine for chronic disease treatment in Ghana

Traditional medicine is an important aspect of healthcare in many African countries, but there are few scientific research institutions devoted to the study of indigenous plants and herbs for medical purposes. Ghana's Centre for Scientific Research into Plant Medicine (CSRPM) was established in the late 1970s with four aims: (1) to conduct and promote scientific research on plant medicine; (2) to collaborate with medical research institutions and herbalist associations; (3) to collate information on indigenous knowledge on herbal remedies and (4) to establish botanical gardens to cultivate medicinal plants. At present the Centre conducts research in the areas of phytochemistry, microbiology, pharmacology and toxicology. It runs a clinic that attends to 100 patients a day, prescribes and monitors the use of a mix of herbal and pharmaceutical medications, conducts clinical evaluation of herbal medicines, and offers clinical laboratory services. The Centre has a herbarium with over 900 voucher specimens, has established 750 acre arboreta in 4 localities and developed propagation techniques for selected medicinal plants. Finally, herbal medicines for chronic diseases have been identified, tested for safety and used for patient care. The conditions treated with herbal medicines at the centre include asthma, arthritis, diabetes, hypertension, and sickle cell anaemia.

There is an enabling structural context in Ghana for developing the scientific study and use of herbal medicines for chronic disease treatment. The Ministry of Health supports the work of CSRPM and the Noguchi Memorial Institute for Medical Research (NMIMR), which collaborates on pharmacological and toxicological research with CSRPM. A progressive traditional medicines policy (established through the 2000 Traditional Practice Act (Act 575)) regulates the practices of registered herbal medicine practitioners and prioritizes and supports collaboration between biomedical and ethnomedical professionals and faith healing centres that incorporate the use of herbal medications. Recently a new BSc programme in Herbal Medicine was established at the Kwame Nkrumah University of Science and Technology. However, there are identified policy challenges that need to be addressed in the future: for instance managing intellectual property matters for traditional medicine practitioners, managing mistrust between traditional medicine practitioners and biomedical professionals, and identifying the appropriate institutional placements for graduates of the Herbal Medicine programme.

Source: Sittie, A (2007). *Traditional medicine and treatment of non-communicable diseases: the role of Centre for Scientific Research into Plant Medicine*. Paper presented at the 1st Annual Workshop, British Academy UK-Africa Academic Partnership on Chronic Disease in Africa, Noguchi Memorial Institute for Medical Research. (11th April 2007); Addy and Nyarko (1988). Management of Type II Diabetes using *I. arrecta* aqueous extract. *Phytother Res.* 2(4); Hylands, P. Kuma and Osei (1997). Management of Pain associated with Osteoarthritis Using *C. erythrocarpos* compressed tablets; Paper presented by Prof Marian Addy, *ibid*.

SUMMARY AND CONCLUSIONS

The evidence on the nature and scale of Africa's chronic disease burden, the socio-cultural and socio-economic context, and the challenges to developing research, practice and policy can be summarised in five key points.

1. Chronic diseases are becoming major causes of disability and death in Africa. Africa's chronic disease burden constitutes a significant proportion of the global chronic disease burden. Age specific mortality rates from chronic diseases as a whole are higher than in virtually all other regions of the world, in both men and women.
2. The chronic disease burden has complex causes. Urbanisation, globalisation, rapidly ageing populations, poverty, poor lifestyle practices, weak health systems and weak leadership and governance are implicated in rising prevalence rates and in high rates of complications, disability and death. The challenges of poverty – overcrowded and unsanitary environments, malnutrition, bacterial and viral infections, TB and HIV/AIDS, psychosocial stress – are deeply implicated in the rising prevalence of chronic diseases in poor rural and urban communities.
3. Reducing the chronic disease burden requires complex solutions. Current evidence suggests the development of multifaceted multi-institutional interventions that address individual, community and structural dimensions of the burden. Collaborations between multidisciplinary researchers, practitioners, health policymakers, industry, development and international partners, the mass media, civil societies and patient advocacy groups are crucial to this process.
4. Five priority areas for addressing chronic disease research, practice and policy are identified: (1) strengthen research on epidemiological surveillance, primary and secondary prevention; (2) develop multidisciplinary collaborations to conduct research and inform practice; (3) engage in multi-country research; (4) develop multi-institutional collaborations between researchers, healthcare providers, policymakers, NGOs, and lay communities to bridge the gap

- between research, practice and policy; (5) Invest in postgraduate training in chronic disease research to produce the next generation of multidisciplinary chronic disease researchers.
5. There are existing best practices in Africa that can inform research, practice and policy. Important initiatives include Cameroon's development of diabetes policy and nationwide diabetes care through multidisciplinary, multi-institutional and international collaborations, Mauritius' multi-institutional approach to addressing CVD and diabetes risk which included public-private partnerships and South Africa's fiscal approach to reducing tobacco use and its investment in community based CVD interventions programmes.

Three core themes ran through the conference. The first theme was the importance of prioritising multidisciplinary research to address the complex dimensions of Africa's chronic disease burden. The strength of the conference was its ability to bring together established researchers in the medical and social sciences and the humanities as well as policymakers and development partners to subject the complex causes and consequences of chronic diseases to critical analysis. This process highlighted important Africa-specific insights such as the critical role poverty and conditions of poverty (malnutrition, low birth weight, infectious diseases) play in chronic disease prevalence, morbidity and mortality.

The second theme was the importance of generating political will and international commitment to addressing Africa's chronic disease burden. While research and data on chronic diseases are limited in many African countries, available evidence suggests that burden of chronic disease in Africa is substantial. The WHO projects that over the next ten years Africa will experience the largest increase in death rates from cardiovascular disease, cancer, respiratory disease and diabetes. The relationships between rapid urbanization, rapid increase in ageing populations, extreme poverty, malnutrition, infectious disease and chronic diseases make Africa's chronic disease

burden an urgent developmental problem. Political and policy inaction will have devastating costs in terms of life and welfare. Strong political commitment is needed to promote the relevant policy and environmental changes to support adequate public health education and prevention programmes such as the provision of cardiovascular and cancer units with appropriate medical facilities and trained personnel. There is an urgent need for the establishment of national guidelines for prevention, detection, treatment, and control of chronic diseases.

Part of the challenge of developing and implementing policies to support the prevention and care of chronic diseases is to understand the processes and political economies of policy making in Africa. The third theme focused on the need to understand these processes. Available evidence suggests the economic impact of chronic diseases on some government budgets is immense and unsustainable. Without the development and implementation of policies the rising burden of chronic diseases will cripple health systems, reverse the gains made on the MDGs (especially MDG1, MDG5 and MDG6¹¹⁶), and create significant challenges for governance and development. Robust research is needed to measure the current economic impact of chronic disease regionally and to forecast the implications for public health, development and governance. The relationships between national policy making and international economic and political pressures must be better understood. Research is required to examine the extent to which the health MDGs and the new aid architecture support a chronic disease agenda for Africa and the role of policymakers in pushing such an agenda. These dynamics have a significant impact on the risk of chronic diseases and the ability of countries to respond to them.

¹¹⁶ MDG1 (eradicate extreme poverty and hunger), MDG5 (improve maternal health MDG6 (combat HIV/AIDS, malaria and other diseases).

ANNEXE 1: CONFERENCE PROGRAMME

(All conference papers are available at www.psych.lse.ac.uk/chronicdiseaseafrica)

Africa's Neglected Epidemic: multidisciplinary research, intervention and policy for chronic diseases **Monday 16 February and Tuesday 17 February 2009**

Day One: Monday 16 February 2009

8.30 – 9.20	Registration
9.25 – 11.00	Welcome
9.25	Chair: Minister of Health
9.30	Prof. Reginald F. Amonoo, FGA, President GAAS: Welcome Address and Introduction
9.40	Professor Duncan Gallie, FBA, Foreign Secretary, British Academy
9.50	Professor Lorna Casselton, FRS, Foreign Secretary, Royal Society
10.00	Professor Sir Magdi Yacoub, FRS: Keynote Address: Advancing biomedical research in Africa as a priority
10.30 – 11.00	Tea break
11.00 – 12.30	Panel 1: Africa's Disease Burden: Medical and Policy Responses
11.00	Chair: Professor Fred T. Sai, FGA, Fmr Presidential Advisor on Reproductive Health and HIV/AIDS
11.05	Professor Megan Vaughan, FBA (University of Cambridge): History of Public Health in Africa.
12.05	Plenary with Professor Vaughan and Professor Sir Magdi Yacoub, FRS
12.30 – 13.30	Lunch
13.30 – 15.00	Panel 2: Millennium Development Goals (MDGs): Achievements and Challenges in Health
13.30	Chair: Dr Elias Sory, Director General, Ghana Health Service
13.35	Dr Anthony Seddoh (World Health Organisation, Africa Region (WHO-Afro)): Prospects for achieving the health MDGs in Africa
14.05	Professor Pascale Allotey (Brunel University): Health MDGs and diseases of poverty in Africa
14.35	Plenary
15.00 – 15.30	Tea Break
15.30 – 17.15	Panel 3: Influencing Chronic Disease Policy through Evidence-Based Research
15.30	Chair: Professor Alexander Nyarko, Director, Noguchi Memorial Institute for Medical Research (NMIMR)
15.35	Dr Ama de-Graft Aikins (University of Cambridge) and Dr Daniel Arhinful (NMIMR): Chronic Disease Intervention in Africa: bridging the gaps between theory, practice and policy. British Academy Partnership Award Research
16.00	Dr Charles Agyemang (University of Amsterdam): Collaborative research on chronic disease among African populations in Europe: insights for evidence-based research in Africa
16.25	Dr Marius de Jong (Royal Netherlands Embassy/DFID): Local challenges for funding collaborative research
16.50	Plenary
17.15	Professor Kwadwo Koram (NMIMR): Closing Remarks
6.00 – 8.00	Evening Reception: Residence of the Director of British Council, Accra

Day TWO: Tuesday 17 February 2009

8.30 – 9.15	Registration, Tea & Coffee.
9.15	Deputy Minister for Health: Opening Remarks
9.30 – 11.00	Panel 4: Emerging Issues in Public Health
9.30	Chair: Professor Fred Binka, Dean, School of Public Health, University of Ghana, Legon
9.35	Professor Nigel Unwin (University of Newcastle): Tackling the epidemic of chronic non-communicable disease in sub Saharan Africa: established priorities and new concerns
10.05	Dr Paul Amuna (University of Greenwich): The nutrition transition and Africa's chronic disease burden.
10.35	Plenary
11.00 – 11.30	Tea break
11.30 – 13.00	Panel 5: Medical Pluralism and Traditional Medicine
11.30	Chair: Professor Ivan Addae-Mensah, FGA, Former Vice-Chancellor, University of Ghana.
11.35	Professor Marian Addy, FGA, President, Anglican University College: Scientific aspects of plant medicine
12.05	Professor Kodjo Senah (Dept of Sociology, UG): Lay community uses of pluralistic medical systems
12.35	Plenary
13.00 – 14.30	Tea break
14.00 – 15.30	Panel 6: Building Human Resources Capacity through Postgraduate Training and Support
14.00	Chairs: Professor Yaa Ntiama-Baidu, FGA and Professor Lawrence Boadi, FGA
14.05	Professor Naana Jane Opoku-Agyemang, FGA, VC, University of Cape Coast: Leadership and training for the social sciences and humanities in Africa
14.35	Professor Paul Nyame (Ghana College of Physicians and Surgeons): Post-graduate training for medical and health personnel in Africa
15.05	Plenary
15.30 – 16.00	Tea break
16.00 – 17.15	Summary of the Event and Announcement of Findings and Recommendations
16.00	Dr Ama de-Graft Aikins (University of Cambridge) and Dr Daniel Arhinful (Noguchi Memorial Institute): Summary of the Event and Announcement of Findings and Recommendations
16.45	Professor Lawrence Boadi, FGA, Vice President, Arts, GAAS: Thanks and closing remarks
	Conference Ends

ANNEX 2: DELEGATE LIST

Basny Adam, Public Agenda Newspaper
Dr Juliet Addo, London School of Hygiene and Tropical Medicine (LSHTM)
Dr. G. O. Adjei, University of Ghana Medical School (UGMS)
Dr Sam Adjei, Director, Centre for Health and Social Services (CHeSS)
Mr Samuel Afram, Programme Manager, Millennium Villages Project.
Dr. Prince Agbenohevi, 37 Military Hospital, Accra.
Mr Edward Adiibokah, Research Assistant, Mental Health and Poverty Project (Ghana), Kintampo
Dr. Erasmus E. A. Agoogo, Ghana Health Service
Prof. Ahenkorah, Fellow, Ghana Academy of Arts and Sciences (FGA/GAAS)
Edward H. K Akoho, Ghana Atomic Energy Commission
Mr Bernard Akoi-Jackson, Artist, Nubuke Foundation
Prof. A. G. B. Amoah, UGMS
Mrs. Anna Amoako-Mensah, College of Health Sciences (CHS)
Dr. J. A. Ampofo, CSIR/WR
Mr Moses Anibaba, Director, British Council, Accra
Samuel Annor, Ada Radio
Doris Antwi, Ghanaian Times
W. K. Antwi, School of Allied Health Sciences (SAHS), University of Ghana.
Mrs. Mercy Asamoah, Cocoa Research Institute of Ghana (CRIG), Tafo
Mr Ebenezer Asante, MTN
Dr. Matilda Asante, SAHS – Korle Bu
Prof Nana S. K. B. Asante, GAAS
Samuel Asiamah Amoako, Ghanaian Times
Richard Asmah, SAHS University of Ghana
Hanna Asomaning, Ghana News Agency (GNA)
Dr Lem Atanga, University of Dschang, Cameroon
Ms Deborah Atobrah, PhD Candidate, Institute of African Studies, UG
Mr Kojo Ayernor, MPhil Student, Regional Institute for Population Studies, UG
Dr Delali Badasu, Regional Institute for Population Studies (RIPS), UG
Ebenezer K. N. Baiden-Amoah, Writer / IT specialist
Prof. D. A. Bekoe, GAAS
Ms Fatric Bewong, Artist, Nubuke Foundation
S.Y. Bimpong, GAAS
Rev. Samuel O. Boadi, Wisdom Keys Ministry
Elsie Boakye, University of Ghana
Mr Yaw Boohene, Polar Power Engineering Services
Dr William Bosu, Programme Manager, Non-communicable Disease Control Programme, Ghana Health Service and School of Public Health, University of Ghana
Ms Elizabeth Brobbey, Ghana News Agency
F.S Codjoe, School of Allied Health Sciences (SAHS)
F. G. Dakpallah, Ministry of Health, Ghana
Prof. K. A. Danso, School of Medical Sciences, KNUST
DSP Daniel Darko, Police Hospital
Mr Lord Dartey, UNAIDS, Nigeria
Dr Eugenia Date-Bah, GAAS
S.K. Date-Bah, GAAS
Dr. George Duker-Eshun, Center for Scientific Research Into Plant Medicine (CRPM)
Ms Fatu Dukuly, Buduburam Liberian Refugee Camp
Dr Anna Puklo-Dzadey, Psychiatric Director, Pantang Psychiatric Hospital
Prof Yanney Ewusie, GAAS
Mrs Ruth Ewusie, Independent Delegate
Samuel Fiashide, T-Net Solution
E. H. Frimpong, Kwame Nkrumah University of Science and Technology (KNUST)
K. Frimpong-Boateng, GAAS
Prof. Gadzekpo, Fellow, GAAS
Mrs Martine Gallie, Independent Delegate

ANNEX 2: DELEGATE LIST *CONTINUED*

Mrs Martha Gyansa-Lutterodt, Ghana National Drugs Programme
Mrs. Freda Intiful, CHS, SAHS, UG
Dr Yosef Kwamie, Canada Psychiatric Association
Prof Kwapong, Fellow, GAAS
Prof E. Laing, Fellow, GAAS
I. S. K. Q. Lutterodt, E.C.D
Benjamin Y. Manu, British Council, Accra
Doris Mensah, Information Services Department (ISD)
Samuel Mensah, UG
John Mensah Yeyie, Padan Herbal Clinic
Rachel Dede Narh, ISD
Prof Francis Nkrumah, GAAS
Gifty Nyante, SAHS, KBTH
Edward O. Nyarko, 37 Military Hospital
Dr. Kofi M. Nyarko, SPH, UG
Mr Anthony Victor Obeng, Independent Development Analyst (formerly FAO)
Helen Odamtten, The Language Centre UG, Legon
Prof S. Ofosu-Amaah, Ghana College of Physicians and Surgeons (GCPS)
Dr. Francis Oppong, CRIG
Enid Owusu, SAHS, UG
Prof. S. K. Owusu, University of Ghana Medical School (UGMS)
Dr. Frances Owusu-Daaku, College of Health Science, KNUST
Dr Emma Pitchforth, Senior Research Fellow, LSE Health, LSE.
Yeinyai Q., Representative, Buduburam Liberian Refugee Camp
Prof. Isabella Quakyi, School of Public Health (SPH)
Dr Gloria Quansah Asare, Ghana Health Service
Pepertual Quaye, Radio Universe
Ms Ursula Read, PhD Candidate, University College London
DSP Gifty Rudolph, Police Hospital
Ms Linda Sarpong, Secretary, Noguchi Memorial Institute for Medical Research
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Prof. Ralph N. P. Tettey, GAAS
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