INAUGURAL LECTURE

Evolution of Biomedicine in Kenya:
The Challenge of a Changing Disease Pattern

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Barasa Otsyula Khwa–Otsyula, EBS

MOI UNIVERSITY
PRESS

Dedication

To the Medical Students and the Patients who, over the years, have caused me as much pain as they have given me joy. Not only have they taught me many things, but we have also shared indelible and treasured moments.

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Contents

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I am grateful for the opportunity I was given by the University to serve as Head, Department of Surgery and later as Dean in the formative years of the School of Medicine.

Many thanks go to Prof. P. Ayuo (Dean, School of Medicine), Prof. R. Tenge Kuremu (Head of Department of Surgery), Dr. R. Downing, Prof. Kofi Tsekpo and Dr. A. Obala who read the manuscript and made positive suggestions. I am also grateful to my secretary, Mercy Kananu, other colleagues and friends who encouraged me.

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Finally, in a special way, I would like to acknowledge my late father, Dr. Yona Otsyula, for exposing me to medicine from tender age and my mother, Mrs. Flora Otsyula, for whom I went to Medical School, the larger family particularly my brothers and sisters for their unwavering support, my children and grandchildren for allowing me to use their time for training and work and most importantly, my wife, Dr. Mary Otsyula, for her patience, moderation and being there for me.

Abstract

Medicine is the science and art dealing with maintenance of health and prevention, alleviation or cure of disease. Whereas the scientific aspect may appear obvious, the art is not always fully appreciated by both practitioners and the public. The 1948 definition of health is visionary but is not attainable prompting the current discussions on what health is. Disease is impairment of normal function of any part of the body whose effects is ultimately felt by the entire human being irrespective of its origin. Traditional medicine, based on cultural values that tied practitioners and patients together, had served the people of Kenya well prior to 1885. However, it suffered a major setback because the colonial administration lacked ability to distinguish between traditional medicine from witchcraft and the superior results from biomedicine.

Biomedicine was introduced to support economic development of the colony. However, the policy changed in the 1920s to extend the health care delivery system to the Africans. The resulting eradication and control of some diseases together with improved diagnostic ability led to a change in disease pattern promoting the ongoing discussion on emergence of new diseases. The apparent increase in some diseases to epidemic proportions is a misrepresentation of the situation, since there is evidence that most of these diseases have always been here. The features of the colonial Health care delivery system still occupy a central position in the health sector today. Attainment of Health Sector objectives in the next twenty years as outlined in Vision 2030 will depend on avoiding the pitfalls that hindered the achievement of similar strategies in the past; performance of economic and political pillars; and a clear understanding of the current health status and risk factors in Kenya

"I do not come with timeless truths. My consciousness is not illuminated with ultimate radiances. Nevertheless, in my complete composure, I think it would be good if certain things were told."

Frantz Fanon, Black Skin, White Masks

Citation

Professor Barasa Otsyula Khwa–Otsyula

Professor Barasa Otsyula Khwa–Otsyula was born in 1947 to the late Dr. Yona Otsyula and Mrs. Flora Ilavusa Otsyula in Busia, Kenya. He is the eldest child in a family of more than 40 children.

Professor Otsyula attended various Primary Schools in Western Province until 1958 when he joined Government Maasai School Kajiado, where he sat KAPE in 1963. In 1964 he joined Narok High School sitting Cambridge School Certificate in 1967. He attained Division I. At Narok he was President of Science Club, a member of Young Famers Club and the vice captain of the School. He went for 'A' Levels at Strathmore College in Nairobi between 1968 and 1969 and sat for London certificate in GCE in January 1970.

In July 1970, he joined University of Nairobi qualifying with Bachelor of Medicine and Bachelor of Surgery in 1975. He did internship at Kenyatta National Hospital after which he was posted to Kakamega Provincial Hospital for one year. He returned to University of Nairobi/Kenyatta Hospital in 1977 for postgraduate training and graduated with M.Med. (Surgery) in 1980. He worked for one year before proceeding to Birmingham, England for training in Cardiothoracic Surgery between 1981 and 1984. During this time he worked as a registrar and senior registrar in the West Midlands Health Authority. Upon his return to Kenyatta Hospital in 1984, he was appointed a consultant surgeon, chairman of theater users committee and an honorary lecturer at University of Nairobi. He restarted open heart programme in 1985.

He took several courses among them: the Senior Management Seminar No 81/89 at Kenya Institute of Administration in 1989; Management Internship in administration of Department of surgery and theatres at Brigham and Women's Hospital, Boston,

USA in 1990; a course in Cardiac Surgery at Beramo in Italy 1991, and in Coronary artery surgery at the School of Continuing Medical Education, Tel Aviv University, Israel in 1991 and a course in Laparoscopic Surgery at Linkoping University, Sweden in 1994.

Prof. Otsyula was appointed senior lecturer and Head, Department of Surgery in 1992. At the same time he was appointed a consultant surgeon at the Uasin Gishu District Hospital — now Moi Teaching and Referral Hospital. He started cardio–thoracic surgery in Eldoret. In 1995 he was promoted to Associated Professor. Between 1995—1999, he sourced for funds from the Second Precipitarian Church of Indianapolis for the construction of a four–room operating theatre block at Moi Teaching and Referral Hospital, which he supervised.

From 1994 to–date, he has represented Moi University on the Medical Practitioners and Dentist Board at the time when the University was experiencing problems with recognition. He chairs the Specialist and Education Committee which prepared core curricular for Medicine and Dentistry for Universities in Kenya.

In 2008, Prof. Otsyula chaired the Technical Committee that prepared Guidelines for assessment and accreditation of Medical and Dental Schools in the East Africa Community Region and was a member of the team that carried out inspection of all Medical and Dental Shools in the Region.

In 1999 he was appointed Dean, School of Medicine and a co-opted member of University Management for 6 years. During his tenure as Dean, the school achieved the following:

- Phase II MHO project, which was used to enhance research, support post–graduate training and construction of the learning resource center building.

- Bill Gates Grant, which supported HIV prevention in COBES centres, purchased four vehicles for COBES and supported post graduate training.
- Built the Department of Anatomy, laboratories – with funds raised by the Department.
- In conjunction with Indiana University Team Leader and the Director of Moi Teaching and Referral Hospital, AMPATH was started for management of HIV patients at MTRH and COBES Health Centres.
- Began PSSP and M.Med. programmes which included M.Med in Family Medicine — the first and only one in Kenya.

In 2001 he was awarded a Mary Weston Fellowship to University of Natal, South Africa to participate in research on carcinoma of the esophagus. In 2008 he was promoted to full professor.

Prof. Otsyula has served on several committees including the folowing:

- Member of the committee on establishment of the International Institute for Medical Education by Education Commission forForeign Medical Graduates,
- Member of Commission for Higher Education Committee on Credit Transfer,
- Member of Aga Khan University search Committee for Chairman of Family Medicine Department in East Africa,
- Member of Mt. Kenya University Council;
- Member of the Medical Advisory Research Committee – Ministry of Medical Services.
- He also served on several Senate committees.

- Team Leader for the VLIR Health Science Project and the Webuye HDSS Scientific committee.
- He is the current Chairman, Board of Governors (B.O.G) St. Augustine Girls' High School – Lukhuna and member of B.O.G of Tabani Friends Secondary School.

On December 12, 2010, Prof. Otsyula was awarded The honour and style of Elder in the second class of the Order of Burning Spear (EBS) in recognition of distinguished services rendered to the nation, conferred by H.E. Hon. Mwai Kibaki, EGH, President of the Republic of Kenya.

He is a member of the following professional bodies:

- Kenya Medical Association,
- Association of Surgeons of East and Central AfricaKenya,
- Kenya Cardiac Society.

In his early days he was the team doctor for AFC Leopards football club. He sponsors a football competition for Medical students in honor of his late father Dr. Yona Otsyula.

Professor Otsyula is married to Dr. Mary V.B. Otsyula and they are blessed with 6 children.

Prof. Richard K. Mibey, FWIF, EBS
Vice Chancellor
Moi University

November 15, 2012

Chapter One

Definitions: Medicine, Health and Disease

"We must turn to nature itself, to the observations of the body in health and in disease to learn the truth."
Hippocrates

Medicine

I think of medicine as "the science and art dealing with maintenance of health and prevention, alleviation or cure of disease". It is about quality of life rather than preservation of life. This definition applies to biomedicine or conventional medicine as much as it applies to traditional, complementary or alternative medicine. The science and art apply simultaneously all the time. The science concerns itself with anatomy and physiology representing the vegetative aspect of living organisms. At this level the human bodies obey laws of biological science which are not as precise as laws of physical science. The less understood mental or psychological aspects influence functioning of the human body, making human beings even more complex.

Medicine as an art, is not obvious to many people and is sometimes dismissed as an outmoded concept. Hippocrates regarded medicine as an art and is quoted as having said *"Medicine is of all the arts the most noble; but, owing to the ignorance of those who practice it, and of those who, inconsiderately, form a judgment of them, it is at present far behind all the other arts."* Because of the importance of medicine as an art, it is worthwhile discussing it further. Some people believe that medical students would benefit from taking courses in art, such as fine art, music, poetry

and dance, since it would help in nurturing creativity involving originality, imagination, inspiration, and inventiveness. The art can be summed up in four principles: mastery, individuality, humanity and morality which measure not what doctors know but who they are:

- Mastery means expertise, wisdom, a creative thinking and being alert to the reality that sickness is not as obvious as it seems. It encompasses the humility to listen and the studiousness to always question and learn.

- Individuality of the sick was well put by an educator A. Cornelius Celsius 2,000 years ago when he wrote "Nay, even in the same patient, the particular characteristics of a disease are very variable". While doctors must respect statistical means, they must tell the patients what is right for them individually.

- Humanity is as basic as doctors imagining what it is like to be their patient and offering the competence, kindness, and devotion that they themselves would want. This does not entail being emotionally involved in the patient's plight but rather connecting to the entire human being, not just to the disease or organ which is critical to healing.

- The doctor-patient relationship rests on a moral foundation. A vulnerable patient hands over a measure of their privacy and control to the doctor because of need, thus creating an asymmetric partnership that demands physician integrity. This is the explanation of the Hippocratic Oath, which in summary says: "Tell the truth, do no harm, take no advantage, keep secrets." Therefore taking the Oath represents a moment of sanctity for a profession that is a timeless art, based on trust and a patient's faith.

- *Biomedicine, conventional medicine or Western* medicine refers to clinical medicine based on the principles of natural sciences such as biology, physiology and biochemistry as practiced by doctors and allied health professionals.

- Broadly, *Traditional Medicine* is the sum total of the knowledge, skills, and practices based on theories, beliefs, and experiences indigenous to different cultures used in the maintenance of health as well as management of physical and mental illness. Traditional systems, in general, have met the needs of their communities for many centuries and have demonstrated great potential of therapeutic benefits in contributing to modern medicine it is estimated that more than 30% of modern medicines are derived directly or indirectly from medicinal plants.

- The National Center for Complementary and Alternative Medicine (NCCAM), in the United States of America, defines *Complementary and Alternative Medicine* as a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine. Complementary and Alternative Medicine are complete systems of theory and practice that have evolved over time from different cultures. WHO has reported that about half the people in industrialized countries regularly use complementary and alternative medicine. Steve Jobs was reported to have sought complementary medicine treatment in Europe. This growth in consumer demand and availability of services of traditional and complementary medicine has outpaced the development of policy on their regulation by governments and health professions in many parts of the world.

- The boundaries between Traditional Medicine and Complementary and Alternative Medicine on one hand and biomedicine are not absolute.

Health

Health is defined by World Health Organization as "a state of complete physical, mental and social well-being and not merely absence of disease or infirmity" which originated from the International Health Conference, New York, 1946. The objective at the time was "attainment by all peoples the highest possible level of health" (Charles 1968). At this time the Second World War had just ended; peace and health were seen as inseparable; chemotherapeutic and antibiotics were coming into the market with discovery of sulphonamides and penicillin; an increasing number of vaccines had become available; other drugs such as insulin and antiseptics were used routinely. There was optimism that all the challenges to health including disease would be conquered in a short period of time. The focus was on moving people towards favourable health spectrum and enhancing the bodily reserves. This conceptually important and inspiring concept of health has not been of operational value or much practical use. Visionary thinkers in 1948 could not have foreseen world events of the 1980s particularly oil crisis, global recession, structural adjustment programmes that shifted national budgets away from the social services including health and HIV/AIDS.

In fact, a state of complete physical, mental, and social wellbeing corresponds much more closely to happiness than to health. However health and happiness designate distinct life experiences as was brought out clearly by Sigmund Freud, after stopping smoking cigars for health reasons. He wrote: *"I learned that health was to be had at a certain cost… Thus I am now better than I was, but*

not happier." Health is one of those elusive concepts that are the subject of never ending discussion revolving around spiritual aspects, ethics, equity and gender (Saracci 1997, Alejandro 2008, Yach 1998).

- In 1998 the WHO Executive Board adopted a resolution to change its constitution to include the spiritual values that are core to all major religions which states that "we should do unto others as we would like them to do unto us" which is of public health importance as it emphasizes the need for collective action as a basis for effective infectious disease control, reduction of levels of injuries, violence and stopping of spread of products that lead to increase in non-communicable diseases.

- Historically, ethics focused on conduct of health professionals, emphasizing provision of compassionate care, respect of individual choices, autonomy, confidentiality, avoiding harm, and appreciating others' values as well needs. Today this must be applied not only to individuals, but also to social aspects of health care and research. Therefore, ethical frameworks extend to equity and social justice in access and utilization of health care in addition to assessment and promotion of quality in health systems and services. Ethical framework must take into account rapid changes in science, research, technology and environmental stainability. Recent advances in genetic engineering, stem cell research, genetic impediments, limitation of resources, incomplete scientific knowledge on determinants of health, effectiveness of interventions and maintenance of integrity of human genome raise ethical concerns.

- This definition of health is limited by unrealistic belief that all could be healthy and failure to take into account other determinants of health such as gender, individual characteristics and behaviour, the social-economic and the physical environment.

Disease

The term *disease* broadly refers to any condition that impairs normal function. In this condition there is a disturbance in the homeostasis of the internal environment and its relationship with the social surrounding. It is a pathological condition of a tissue, organ, or system resulting from varied causes, such as infection, genetic defect, or stress, and characterized by an identifiable group of signs or symptoms.

Chapter Two

Traditional Medicine

Kenya is one of the countries born out of the 1885 Berlin Conference, where the Nations of Western Europe shared Africa. Since then, there has been very little change on map of Kenya. The country was inhabited by different ethnic groups which had health care delivery systems specific to themselves and influenced each other depending on their proximity and interaction. Apart from health care of the coastal people which was influenced by traditional medicine of Asian origin (Arabic, Indian Chinese and other far East cultures) as a consequence of many years of trade between the two groups, traditional health care in most of the country was not exposed to foreign cultures.

Traditional health care had both the public health and curative components (WHO). The public health was concerned with health promotion and disease prevention tied together through tradition, cultural norms and taboos and punishment for none conformity was severe. Curative care was based on the general African cultural philosophy which required the practitioner to consider the human being before material gain (Olumwullah 2004) Payment was insured by cultural believe that if one did not "thank" the practitioner the medicine would not work. The practitioner was a person of high standing in the community with a high sense of professionalism and integrity, open and available to serve others when need arose.

Curative services, which had general as well as specialized aspects, involved a systematic quest for answers to the origins of a particular disease aimed at determining what or who caused it and why it has affected a particular person at a particular time. In some situations divination - *which involves techniques and beliefs such as the casting of divination objects, extra-sensory perception or ability (clairvoyance/telepathy) or interpretation of dreams and vision* - was used to arrive at a diagnosis based on a combination of patient's symptoms, self diagnosis and where necessary, the impressions of other family members. Health problems were treated with medicines, rituals or both depending on the nature of the illness and the practitioner's knowledge and skills. The mode of administration of medications included oral ingestion, steaming, sniffing of substances and cuts or body piercing. Diet was an important part of the prescription. One of the strengths of traditional medicines was the practice of treating patients at home under family care though sometimes patients would be transferred to other locations such as the practitioner's home. Isolation was observed when required. Satisfactory healing involved recovery from physical symptoms as well as social and psychological reintegration of the patient into the community by re-establishing social and emotional equilibrium. Rehabilitation integrated in every aspect of curative care.

Curative services had distinct areas of specializations which included mental health, midwifery and surgery.

- *Mental health*: The process of divination was commonly used to explain mental and psychological problems of patients. It played a significant role in the treatment of neurosis and helped re-trace a patient's life from its past to how it interplays with the present and future. This re-tracing provides a link between the patients' problems and their social, cultural, intellectual and environmental background.

- *Midwifery: Midwives* were often older post-menopausal mothers who gave prenatal care, attended to deliveries, and provided postpartum care to the mother and her infant. The midwives were trained to recognize and deal with deviations from the norm. In general, they strove to help women have a healthy pregnancy and natural birth experience

- *Surgery* included bone setting for treatment of fractures, circumcision, bur holes, and even thoracostomy. Apart from circumcision, the other surgical procedures have been abandoned in favour of the conventional medicine which has a wider range and gives better results.

- *Anaesthesia* as recorded in Genesis or as is practiced today was not used; there were practices that enabled people to withstand the pain as it is evident in Michener's description of Bagishu circumcision.

The approach of traditional practitioners to disease indicates that they had a good understanding of basics anatomy, physiology and pathology. Anatomy was learned generally from the slaughter of animals but postmortems were not performed except in some communities where a baby had to be removed if a pregnant woman died. The natives believed that yaws was less severe if contracted in childhood (Stone 1937) indicating some knowledge of the role of immunity that may be present in babies and children.

Traditional medical practices were passed on from one generation to another through training and apprenticeship. The trainees, who learnt the trade under supervision, were groomed to understand diseases diagnostic procedures, medicinal resources, as well as preparation and administration of the medications. The training prepared practitioners to be responsible, accommodating,

hardworking and good listeners which gave them an edge over practitioners of conventional medicine.

Does it work?

Traditional medicine has worked for centuries though it is not easy to tell when, how and to what extent. From my own experience there are some examples as follows:

- While working at a provincial hospital where every time a woman in labour came for admission vomiting greenish material, she would have a ruptured uterus. The older people in the community knew that this was due to administration of a specific herbal medicine at the wrong time during labour. The action of this medicine on the uterus must be similar to some of the drugs used in modern medicine.

- I once saw a patient who came with a history of having been hit on the head and consequently got paralyzed on opposite side. A traditional 'surgeon' had operated on him and removed some bones and clots and sutured the wound with sisal. During the procedure he was given cold milk. And soon after this procedure, he was able to move his limbs. I took x-rays of his head and found a defect in the skull. As much as I did not want to believe him, his story was convincing and consistent.

- I recently saw a patient with chest pain and weakness of one of the upper limbs. His chest x-ray (x-ray 1) showed a lesion in the right chest and CT scans of the head (x-ray 2) showed a lesion in the brain. Histology of the chest lesion was reported as suggestive of a carcinoma. After discussion with the neuro-surgeon we agreed that the two lesions were most likely of the same origin, hence we could not offer the

patient any treatment. This patient went for herbal medicine. When he came for review, there was marked improvement in his symptoms. Repeat of the CT scan of the head showed a reduction in the size of the lesion. (X-ray 3)

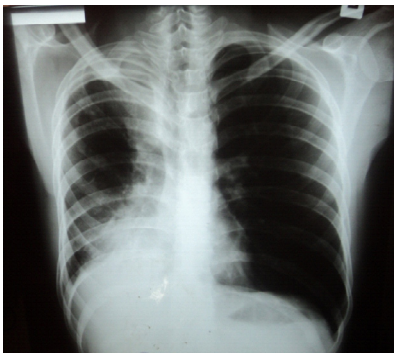


Figure 1: Chest X-ray showing tumor on right side

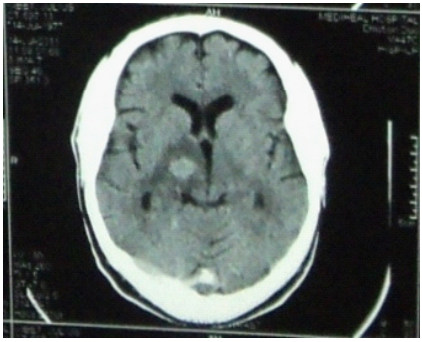
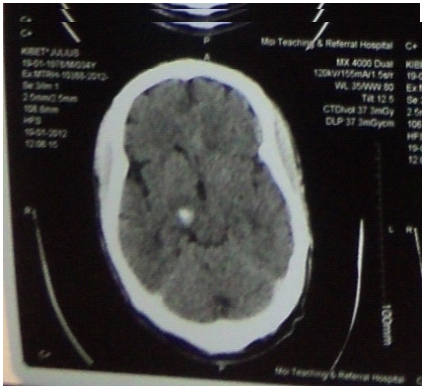


Figure 2: CT scan of the head showing brain lesion



X-ray 3: CT scan of the head showing brain lesion without oedema

Who uses Traditional or Complementary and Alternative Medicine?

Personally I neither use, nor prescribe, or recommend herbal medicine because there are still many unanswered questions. I have also seen many patients who opt for herbal medicine and return with advanced disease.

The Word Health Organization estimates that about 80% of the population in developing countries including the African Region use traditional medicine for their Primary Health Care needs. Wamai (2009) puts this figure at 23% in Kenya. Despite this high patronage, traditional medicine is often been stigmatized by the practitioners of modern or conventional medicine who view herbal medicines as "witches brew". Since the 1925 Witchcraft Act in Kenya, diviners and healers have been misconceived and condemned wholesale as "witch doctors", "wizards", or "witches" which has seen many innocent diviners and healers arrested, arraigned in court, fined or imprisoned and their paraphernalia (objects or tools of profession) confiscated and destroyed.

Analysis of data collected at the Webuye Health and Demographic Surveillance Systems Site on health seeking behaviour of the community, showed that 1% of this population had gone for traditional medicine; 67% go for biomedicine - majority of whom use Government hospital- and 32% treated themselves or did not take medicine (Figure 1) in the preceding 3 months. This finding suggest that the situation in Kenya might be different from the WHO observation.

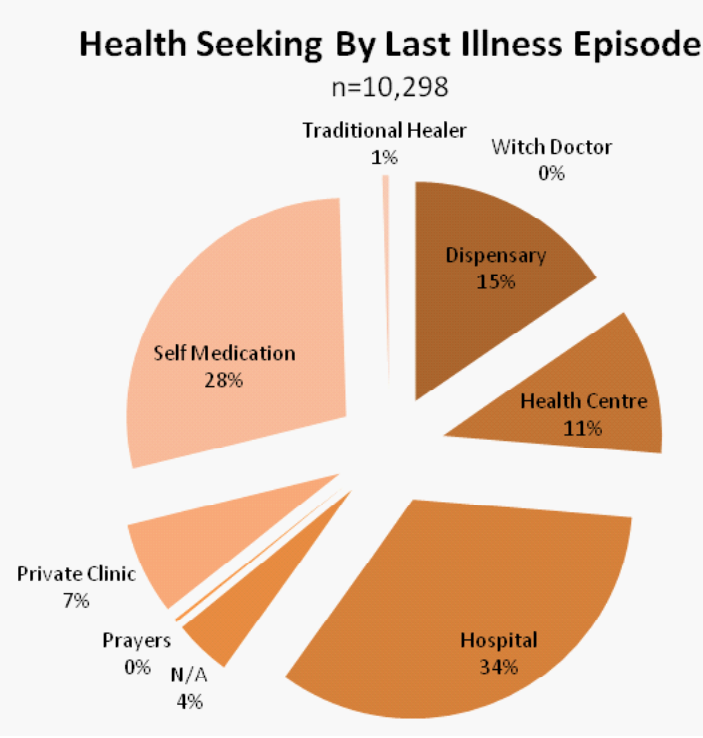


Figure1: Webuye - HDSS Health seeking behaviour in the last 3 month

People who use traditional or complementary and alternative medicine fall into several categories. viz:

- People who will only use traditional medicine for all their illnesses.
- Some people who use this form of treatment for specific conditions. For instance in Eldoret many people believe that operating on cancer increases its rate of growth and the risk of spreading to other parts of the body. That there would be an increase in rate of growth is not true. However, there is some risk of implanting some cancers in the incision scar. Normally the surgeon takes this into account when advising surgery.
- People who have chronic and/or incurable diseases or have been treated with limited success and those who have conditions with no known treatment turn to this treatment as last resort. They may use this separately or concurrently with conventional medicine "only to return when organs fail or bodies are broken" as pointed out by Downing (2011).
- Other people use this treatment because they cannot afford the conventional medicine. Therefore, they choose this because it appears cheaper and is readily available.
- Some people routinely use both forms traditional/ complimentary and conventional medicine.

The Risk of Traditional Medicine

There are risks associated with use of traditional medicine outlined as below:

- Currently, due to lack of training of traditional practitioners in most communities, and the growing number of herbalists advertising themselves on radio and on the street, there is a great danger of being treated by quacks or unqualified people.
- No one knows the active ingredient in whatever they are selling and often they are not willing to reveal the origin of their medicines.
- The medicines are not labelled
- side effects are not known especially in pregnant women, nursing mothers, or children and their interaction with other medicines, are not known.

Future of Traditional Medicine

Inability of the colonial government to distinguish between witchcraft and divination forced this aspect of traditional care underground. (Tinga 1998 & Mutungi 1971). The ritual aspect of traditional medicine is less used today because modern people, who do not appreciate cultural norms on which this is built, find it repugnant. The use of herbs, on the other hand, has tended to drift into complementary and alternative medicine. Because of this and lack of reliable information, the traditional medicine practiced by our grandfathers is in danger of extinction. Therefore there is an urgent need to collect information on diseases and their traditional remedies. We need to collect and record anecdotes even when they are embarrassing and primitive for

scientific research to discover hidden treasures; wrong people claiming intellectual property rights; facilitate standardization of production; and identification of side effects.

Currently practitioners of traditional and complementary medicine are licensed by Ministry of Culture and Social Services, which authorizes the holder to perform a variety of activities under the supervision of District Cultural Officers with permission of local administration. There is need to establish a regulatory body under the Ministry of Health for regulation of Traditional or Complementary and Alternative Medicine practitioners and their practice.

Chapter Three

Development of Biomedicine

The missionaries, who had arrived in Kenya before 1885, introduced biomedicine at the end of the nineteenth century independent of colonial government (Chaiken 2008). They provided systematic health services at mission hospitals and clinics during the first two decades of colonial rule. By 1920 colonial medical officials were responsible for the health of government employees, European settlers and ensured that epidemic diseases did not disrupt the colonial economy (Dawson 1987). The Medical officers spent a great deal of time combating diseases such as plague, which was an insignificant cause of African morbidity and mortality, but a threat to the flow of migrant labour, urban Europeans, and production in cash-crop growing areas. The common diseases afflicting rural Africans - such as malaria, yaws, and intestinal parasites - received little attention. The colonial government's major concern was the economic development of the colony which depended on European settlers having a steady flow of relatively healthy African workers. The authorities assumed that the African reserves had abundant untapped supplies of male labour, which only needed to be forced out to work. The health of African male labourers was not a worry as sick labourers could be routinely dismissed and easily replaced. In fact, before 1920 only one medical officer was permanently stationed in an African reserve in the whole country. He worked by moving from place to place and did not visit some areas for two or more years despite

occurrence of epidemics.

Colonial Policies

This attitude towards provision of medical services to Africans changed in 1920 due to increasing pressure in British Parliament to improve the health services to Africans in recognition of the large numbers of Africans who lost their lives fighting for the British in World War I. Improved services would make the colonial government to be viewed favourably in the eyes of the world. It would also offer something to the Africans to counter increasing African opposition to colonial policies on taxes, labour and land. The Principal Medical Officer (PMO), hoping that government would be sympathetic to the health policies as a public relations move to quiet unrest in the rural reserves, justified the need to improve medical care for the following reasons. First, because the natives were seen as agents of disease transmission, keeping them healthier would better protect the European settlers; secondly, administration of the reserves would be easier since the government would be seen as "more than a mere tax-collector" and maker public health campaigns more popular; and lastly benefit was an economic one as ensuring better health of the African population would keep the labour force stocked with healthy workers of African labour and increase tax revenues. In other words the medical official, knowingly or unknowingly, was offering to use the power of medicine to further the aims of colonialism. At this point in time medicine, had become an instrument of oppression. At the same time the more paternalistic people, felt the need for this action because they considered the Africans backward and needing social uplifting (Mufaddal 2006).

According to the Annual Medical Report of 1925, one medical officer was appointed to take care of a very large stretch of country

with a population in some cases of as many as 300,000. He was expected to manage the hospital, treat patients, be responsible for control of measures against outbreaks of epidemic, supervise dispensaries, and exercise control over the expenditure of stores. In addition he was responsible for public health measures in the district. The work was naturally beyond the powers of a single officer, who was routinely transferred from place to place, losing whatever familiarity he had gained with the people and area. Under-funding and under-staffing were perpetual problems. The officers chose embarked on programs of curative rather than preventive medicine because it was too expensive. This move improved the situation a little but care remained rudimentary at best with no real effect.

The efforts to deal with yaws reflected the dilemma of the colonial medical policy (Dawson 1987).The decision to tackle yaws first was ideal. The disease was endemic, with 60 – 80% of the population showing serological evidence of having had contact with the disease with distressful signs and symptoms. With new arsenic-based treatment able to reduce transmission, there was a good possibility of attaining dramatic results. The anti-yaws campaign was inextricably interwoven with the development of colonial health care policy. Therefore, the story of yaws gives an insight into why and what policy decisions were made at this time.

There were four options considered in eradication of yaws: immunizing the population; segregating the infectious members of the community; raising the standards of sanitation in the native reserves; and rendering a large proportion of the infected members of the community non-infectious.

- Immunisation was not possible since there was no vaccine

capable of giving immunity to yaws.

- Isolation was rejected as impractical since in a heavily infected district most of the population would have to be quarantined.
- The idea of improving standards of sanitation was supported by all members of staff who pointed out that it was only when African standards of living, education, and sanitation were raised that many disease problems would be solved. Even so, they all realized that this goal was a utopian dream, prohibitively expensive as well as politically impossible.
- The public health and sanitation campaigns required the cooperation and trust of the population involved. The previous campaigns for smallpox vaccination and plague were not popular with the rural African population. Thus until the government could get Africans to see the value of biomedicine and accept the Medical Department's ideas on public health, the medical staff felt that their best efforts lay in practicing curative and not preventive medicine.
- The fourth approach was to render a large portion of the population non-infectious in order to prevent new cases was selected. The choice was informed by the fact that arsenic-based drugs seemed to magically clear secondary yaws lesions. This excellent clinical result and the popularity of the injections with the African population were the reasons why yaws was the first endemic disease to be treated on a wide scale.

The Church of Scotland Mission at Tumutumu introduce a system where seriously ill patients were admitted to the hospital staffed with a European physician and nurses while those with

ulcer and minor illnesses were treated at satellite dispensaries by African dressers. The Medical Department replicated the system in Fort Hall and Gusii which had high prevalence of yaws. Anti-yaws therapy showed the population the value of Western medicine and it was hoped that it would turn them away from using "native medicine men and witchcraft." It also had economic value as outline by the Principal Medical Officer when he wrote *"The economic value of the work done in Native Reserves cannot, but make itself felt in the country generally. The large number of cases of ulcers which have been cured in Kavirondo or which have been treated must, in the future, result in increased labour available either for work on European farms or to increase production in the Reserves."*

In the 1920s the antimicrobials had not come on the market and knowledge of drugs use was scanty. There was an aspect of adventure in introduction of new drugs with uncertain properties. Following an article in *The Times* to the effect that bismuth salts had been found useful in treatment of syphilis, authorities introduced it in Kenya at the time when no one knew how to prepare it, its action or side effects. The drug was prepared in Nairobi tested on a few rabbits and released for human use.

Though the yaws campaign achieved desired effect, there were many unforeseen side effects which include:

- The skin lesion (ulcers) healed following the first injection greatly reducing the incidence of clinical yaws and the patients responded by stopping treatment prematurely. The treatment suppressed the symptoms, breaking transmission cycle and preventing new cases. But the disease went into latent phase leading to increased rates of tertiary yaws twenty years later. The anti-yaws campaigns gave the hypodermic needle therapeutic importance in the eyes of the Africans who saw it as a panacea for treatment of all diseases and demanded an

injection for all types of afflictions.

- Physicians did not realize the need to continue to treat patients in the latent stages of the disease in order to prevent relapses; they had no means of determining who was in a latent stage or who was free from the disease;

- It complicated the matter further by increasing demand for 'sindano' which made patients history unreliable as indicators of latent disease. The epidemiological importance of treating contacts of yaws victims was not known, thus many incubating cases were missed.

- The best drug preparation and correct dosage were unknown. Different batches of the drug had different degrees of toxicity, which included stomatitis, muscular, cardiac, and nervous complications, starting after the second injection. The site of injection often resulted in a local painful swelling.

- The reduction in active cases of yaws and the numbers infected people removed the protection against venereal syphilis which was the reason for heightened incidence of this disease beginning in the 1940s.

- The numbers of both yaws and syphilis patients had an exponential increase, resulting in prohibitive costing, forcing the government to introduce "cost sharing".

Eradication of yaws had to wait until early 1950s for the introduction of the procaine penicillin, which in the correct dosage cured and prevented relapse of yaws.

The period starting 1920 and going into early thirties saw changes in colonial medical policy heavily influence by lessons learned from the anti-yaws campaign. The important ones which are

evident in medical services today include the following:

- *Suppression of traditional medicine*. Initially the colonial government recognized traditional medicine as a part of the African and made no efforts to prohibit the practice. In fact, the government preferred to leave them alone as long as they did not disturb the peace. However the missionaries saw things differently. While, they did not explicitly oppose the practice of using herbs and natural remedies, they called for the "*cessation of traditionally sacred observations and consultations with diviners and other religiously-medical specialists."* Eventually the government agreed with them and enacted Witchcraft Ordinance of 1925 which failed to define witchcraft and to distinguish it from traditional medicine leading to a strong social stigma against using traditional medicine, (Mutungi 1971, Tinga 1998).

- *Decentralized hierarchical system*. This system where seriously ill patients were admitted to the hospital while those with ulcers and minor illnesses were treated at satellite dispensaries by African dressers was first used by missionaries at Tumutumu. Later it became government policy.

- *Cost sharing*. Local Native Councils (LNC) were implemented in 1924 and the responsibility for the health care needs of the African population was passed to them. The LNCs, composed of elected members of each community, were liable for levying taxes on the local indigenous population, and funding services that were not adequately provided by the government.

- *Public Health measures*. Before 1920 Public Health measures particularly immunisation experienced hardship because in 1916 some "vaccinated" individuals had contracted smallpox and the African people took it that the Europeans were

deliberately spreading smallpox. At the same time the African population loathed other public health measures, particularly anti-plague measures which required burning of infected huts. The success of anti-yaws campaign helped to counter hostility against public health measures among the natives.

- *Medical Safaris*. The safaris, introduced in 1927 as part of the anti-yaws campaign, were used for diagnostic and curative services; teaching public health; and conducting immunization campaigns. Some people argued that these "flying campaigns" were not effective because they did not take place often and they performed cursory functions when they did happen. When the Medical Officer (M.O) was coming, the people would be told to assemble at the chief's homestead for some unexplained type of medical treatment. Many people would not come and since the M.O. did not keep records of attendance there was no way of knowing how many came. Overall the staff was enthusiastic to attend these safaris even when government could not afford to pay. This was captured in the 1932 Kenya Colony and Protectorate Medical Department Annual Report as follows: "*It is to the lasting credit of the staff of medical officers and sanitary inspectors that in the period of depression when the financial provision for traveling became entirely inadequate to meet the needs of the districts, and incomes as well as allowances had been reduced, no officers reduced the amount of their traveling opportunity, but all without exception continued to the utmost extent that they could afford to carry on their work at their own expense.*"

Training

The earliest African staff were recruited from among soldiers returning from World War 1 (WWI). They received minimal on the job training as dressers and were deployed to take charge dressings or as stretcher bearers. Although they had little ability to deal with the ubiquitous problems found in rural villages, they were able to supplement the work of the nurses. However the colonial administration did not trust them because they sometimes appeared to have mental lapses as reported by Dawson when he said, **"***In 1924 the use of African dressers began to encounter opposition within the Medical Department. Some physicians thought the Africans were incapable of handling the task and subject to unexplainable lapses in memory which had undesirable consequences for patients. Also, some African dressers were giving injections to patients on demand without any visible symptoms of yaws."* Little did they realize that the Africans were just showing a characteristic of oppressed people as explained by Fanon (1952) when he said, *"The black man has two dimensions. One with his fellows, the other with the white man."* The workers were probably just disobeying instructions but escaping punishment by pretending to have forgotten.

In 1926 Makerere University, in Uganda, opened a medical school which trained a small number of doctors for East Africa. The first Kenyan doctor qualified from Makerere in 1940. With time training of other carders of staff was set up. By 1931 the Jeanes School in Nairobi had established a two-year curriculum on public health and basic curative medicine for staff who qualified to be the primary staff members of the dispensaries. The midwifery training program started at the Lady Grigg Maternity Centre in 1935.

There was no major policy change starting 1950 until independence but practice of medicine continued to be influenced by the general global development.

The state of medical services at end of colonial rule was captured in the memoirs of Farnsworth Anderson, a former District Medical Officer and Director of Medical Services, in 1973 when he wrote the following: "Six *and half years after I retired, Kenya gained its independence. We were always led to believe that it was government policy that the local people, white and black, would get self-government of some sort of multi-racial basis eventually, but nobody thought it would happen in our generation. However at the time I left, and presumably at independence, we handed over a first class medical service. Morale was high, discipline was good,"* While this may appear to be over stating the achievement of the colonial administration, having grown up around hospitals and having been in this service for over 37 years, I agree with this view.

Post-Colonial Period

The health care delivery system at the time of Independence in 1963 was inadequate in terms of the number and distribution of medical facilities and personnel (Mutiso 1995) with high morbidity and mortality especially in children. The Government, therefore, undertook to improve the health of the people as was outlined in Sessional Paper No.10 of 1965 on African Socialism and its Application to Kenya. The government declared free medical services and instituted programmes aimed at improving of access to health care and reduction in disparity between districts. New health facilities were built directly and on self-help basis through "Harambee" effort. There was a deliberate effort to increase personnel in the country through expansion of the training of nurses, public health officers, clinical officers and

pharmaceutical technologists among others. Medical Schools were setup starting with University of Nairobi in 1967 going on to the current seven in the country while training continues outside the country. Non-governmental organizations and development partners have also played a significant role in the improvement of the health care delivery system.

The independent Kenya witnessed the expansion and improvement of health care delivery system to the rural areas. Between 1960 and 1992 there were improvements in health indicators with decrease in infant, child and maternal mortality and morbidity rates, crude death rate, and increase in life expectancy. Despite this effort the health care delivery system has continued to be uneven particularly in the arid and semiarid areas. The healthcare delivery system still suffers from the same challenges that were important in colonial times among them poverty, inadequate funding, shortage and mal-distribution of health personnel, low literacy levels, lack of safe drinking water, sanitation and infrastructure. The 1990ssaw a declining trend in the health status of the population attributed to decline in economic growth, dwindling donor support and implementation of structural adjustments that required budget cuts in the social sector spending together with rapidly growing population. Increased incidence of HIV/AIDS, and increasing levels of poverty have also played a role in the decline in health indicators. The current government policy is to move from curative to preventive services through improvement of personal hygiene, sanitation, clean water supply nutrition, housing, health education and disease control (Health Sector Report 2012**).**

Chapter Four

Factors Influencing the Practice of Medicine in Kenya today

Factors that influenced post independence practice of medicine in Kenya, as is anywhere in the world, are infinite, and the importance of anyone of them varies from country to country. In this region, these have not been studied extensively, so examples that follow are based on my experience in medical practice. The discussion will be restricted to what I see as having major impact, whether positive or negative, on a health care development.

Colonial Past

The colonial medical system was the precursor of the policies currently influencing biomedicine in Kenya. The hallmarks of the colonial era policies were emphasis on decentralized hierarchical system, location of the main health institutions and medical personnel in urban areas, emphasis on preventive medicine, vertical approach to diseases and cost sharing as summarized by Chaiken (2008). The decentralized hierarchical system was evident in Kenya Essential Package for Health (KEPH) in the National Health Sector Strategic Plan (NHSSP) II 2005–2010 as shown below in figure 3. In this system the majority poor rural population, live far away from levels 4 – 6 of care in urban areas, have limited access to the services of a doctor and may never be seen by one in their lifetime.

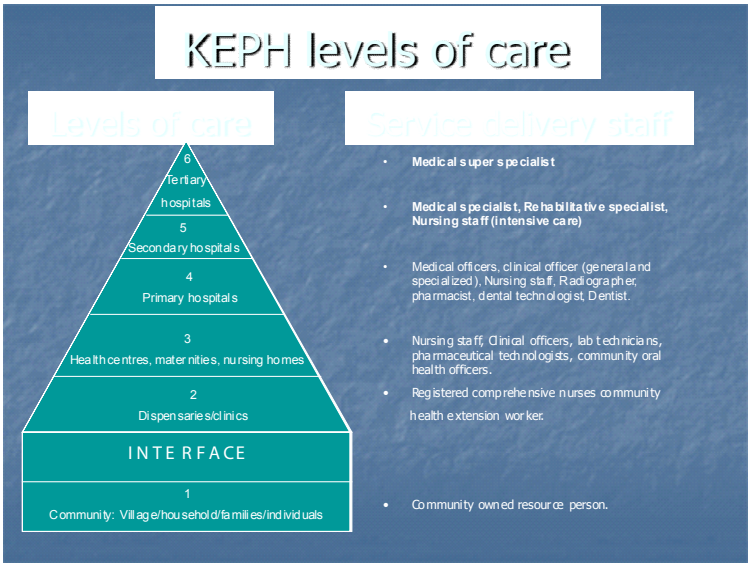


Figure 3 KEPH Levels of Care

Source: Ministry of Health Strategic Plan

Kenya emphasizes preventive approach though curative services continue to consume the greater amount of money spent on health sector. Vertical approach is evident in the handling of HIV/AIDS which is similar to the way yaws was handled. Malaria, the leading cause of morbidity and mortality in Kenya (DHS 2008-2009), does not receive as much attention.

The colonial influence is enhanced by presence of elements similar to Primary Health Care with emphasis on disease prevention, treatment of common diseases, community participation in planning their health care, referral system and reliance on local manpower. This is interesting since the Alma-Ata declaration

came 25 years after independence. Indeed the colonial health system was well designed as supported by researchers in the 1980s who found "anecdotal information from local people about how some aspects of health and sanitation services had been better in the colonial days", (Moradi 2008, Chaiken 2008).

Shortage of doctors

Government health institutions are faced with shortage of doctors greatly affecting utilization, efficiency and quality of healthcare services despite a tremendous increase in numbers of doctors in absolute terms since independence. While in 1964 Kenya had 734 doctors (KIPRA 2011), the number increased to 4,890 doctors by 2012 (MPDB 2012), but the number of doctors per 10,000 population (figure4) does not show as much change. The rate of registration of new doctors (Figure 5) fluctuates from year to year. The high figure in 1978 reflects re-registration of all doctors following the enactment of Medical Practitioners and Dentist Act of 1978.

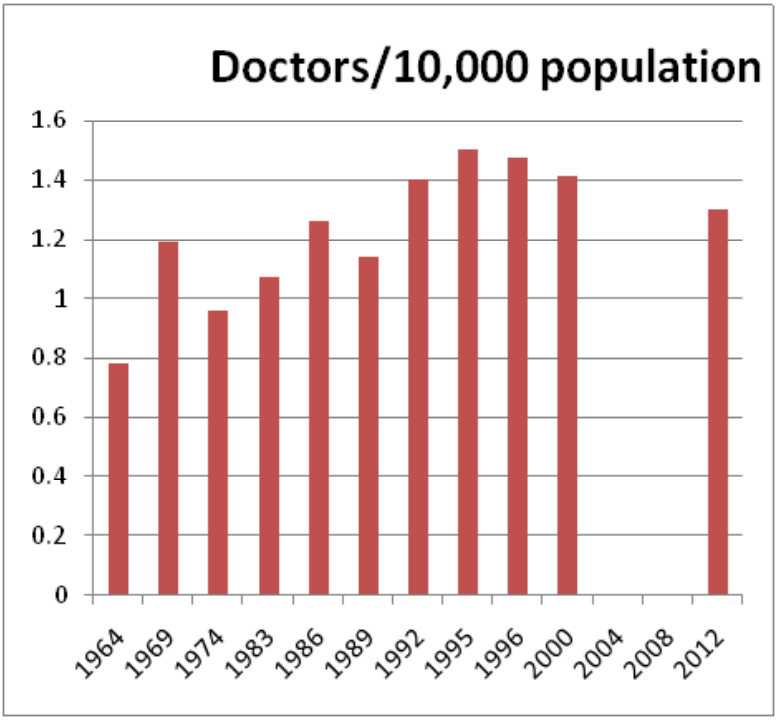


Figure 4 Doctors per 10,000 population.

Source: KIPRRA and Medical Practitioners and Dentists Board

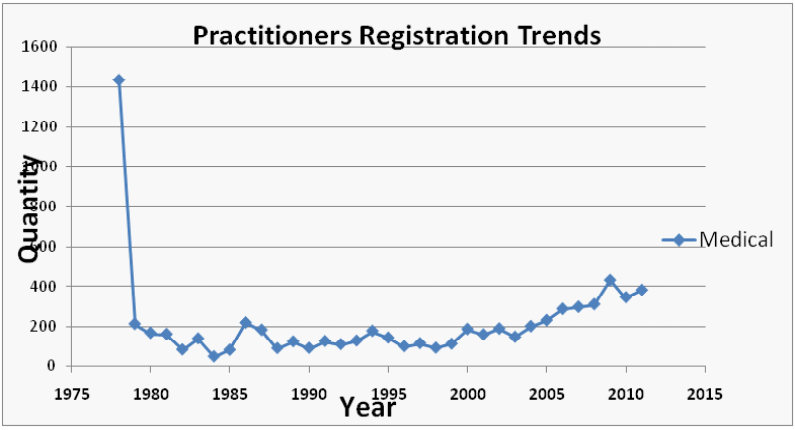


Figure 5 Registration of doctors since Independence

The total number of doctors in Kenya compares poorly with countries which have well developed health care delivery systems (Figure 6).

There is uneven distribution and coverage by doctors including specialist (Figures 6—7) with greater concentration in Nairobi and other urban centers. In 1997, about 80 percent of the doctors were working in urban areas where 20 percent of the population lived. This imbalance negatively affects healthcare provision.

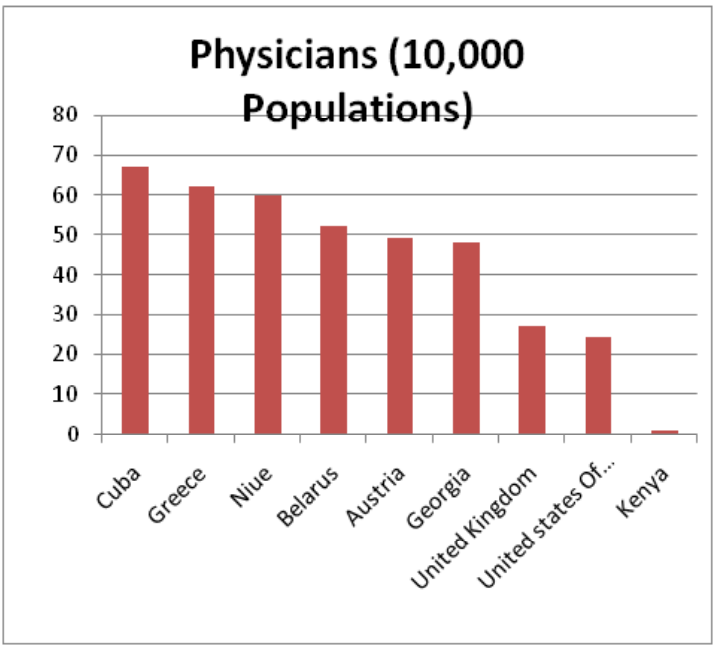


Figure 6: Doctors in different countries (WHO World Health Statistics 2012)

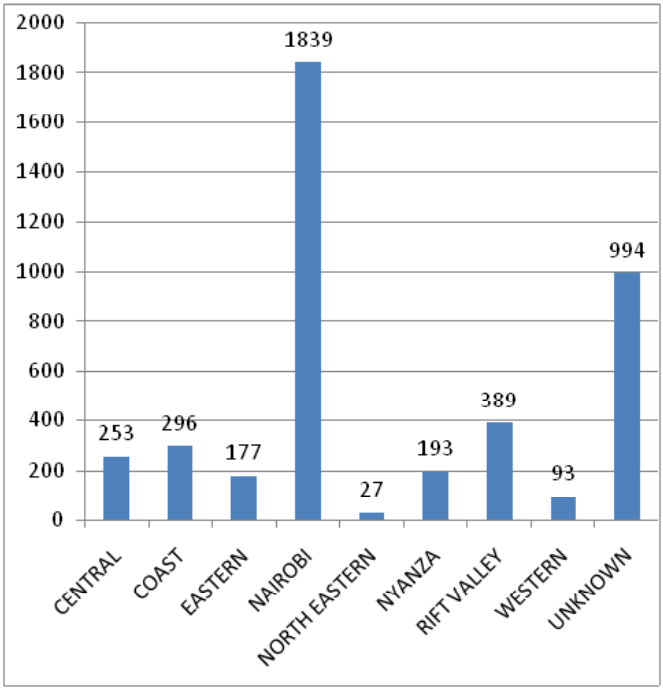


Figure 7 Doctors in Kenya

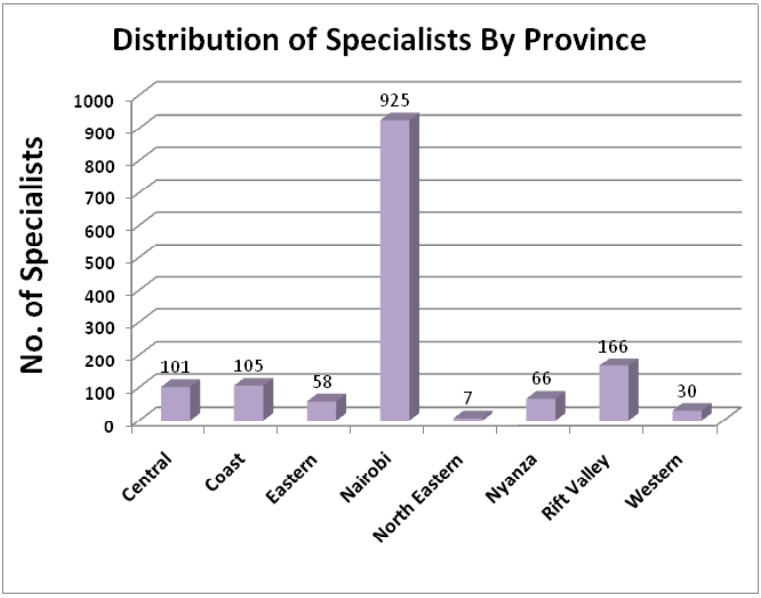


Figure 8: Specialist Doctors in Kenya

Inadequate financing of healthcare

After independence the Government rolled out an ambitious plan aimed at making health care more accessible to the people of Kenya abolishing user fee and building many health institutions. Today the Health Sector in Kenya is financed through four main sources, namely the government through the Exchequer; donors; the private sector (insurance and out of pocket); and non-governmental organization. National Hospital Insurance Fund was established in 1966 but its contribution has been negligible but proposed changes might make a difference (Wamai) Cost sharing introduced in 1980s increased contribution of out of pocket financing of Health care. The current government

financing of health expenditure, standing at the public per capita health care spending of $12.6 in 2010/11, is far below the WHO recommendation of an average of $44 per capita expenditure on health care. The overall budgetary allocation to health has remained at 6% of the national budget for the last three years falls short of the Kenya's commitment to spend 15% of its budget on health, as agreed in the Abuja Declaration. With the prevailing socioeconomic crises, dwindling donor support in terms of amounts and unpredictable disbursement patterns has further limited available resources. The gross under-financing of the health sector, accentuated by inefficiency of the system and lack of cost-effectiveness in service delivery, has reduced the sector's ability to ensure an adequate level of service provision to the population. This severely limits access to health care of an overwhelming majority of the poor who rely on public facilities which in part explains late presentation of patients and reliance on complimentary medicine.

Ethics and Regulation of medical practice

Medicine comprises specialized knowledge and skills dealing with life, so much needed or precious in every society. Because of this doctors and medicine men were generally treated with respect, prestige and honour in every society since the beginning of human civilization. On the other hand, each society struggles to control the power of doctors to ensure that this power is used appropriately and equally important is the need for the medical practitioners to protect themselves from quacks. For these two reasons regulation of the medical practitioners is important.

The earliest regulations for the protection of patients originated from codes of conduct of various traditional practices in different parts of the world. Modern regulation of medical practice is derived from the Code of Ethics attributed to Hippocrates who

lived in the early 5th century B.C. This famous oath is said to have emerged a century later. Some people may feel that the oath is a relic of the past, but "with an esprit de corps and a professional ideal which, with slight exceptions, can hardly yet be regarded as out of date" (Collier1910). The oath has served and continues to serve mankind well. It has been modified to remove reference to God in the phase of increasing secularization of society and education, and in recognition of the changing character of medicine and law. When education of doctors moved under the university the section that required doctors to train children of their teachers without a charge became irrelevant. However, it is not clear why the section requiring a doctor to "abstain from every voluntary act of mischief and corruption; and seduction of females or males, of freemen and slaves" was removed. The current one as recommended by 46th World Medical Association (WMA) General Assembly, in September 1994 and was editorially revised by the 170th and 173rd WMA Council Session in May 2005 May 2006 respectively. Both original and the new version (Table 1) do not provide for punishment of doctors for malpractice except disgrace. Punishment provided for under the Medical Practitioners and Dentists Act involves sanctions against the license to practice.

Table 1: Versions of the Oath

The Hippocratic Oath (Original Version	46th WMA General Assembly, Stockholm, Sweden, September 1994 editorially revised by the 170th WMA Council Session, Divonne-les-Bains, France, May 2005 and the 173rd WMA Council Session, Divonne-les-Bains, France, May 2006
I SWEAR by Apollo the physician, Aesculapius, and Health, and All-heal, and all the gods and goddesses, that, according to my ability and judgment, I will keep this Oath and this stipulation.	I SOLEMNLY PLEDGE to consecrate my life to the service of humanity
TO RECHON him who taught me this Art equally dear to me as my parents, to share my substance with him, and relieve his necessities if required; to look up his offspring in the same footing as my own brothers, and to teach them this art, if they shall wish to learn it, without fee or stipulation; and that by precept, lecture, and every other mode of instruction, I will impart a knowledge of the Art to my own sons, and those of my teachers, and to disciples bound by a stipulation and oath according the law of medicine, but to none others.	I WILL GIVE to my teachers the respect and gratitude that is their due; I WILL PRACTISE my profession with conscience and dignity; THE HEALTH OF MY PATIENT will be my first consideration;
I WILL FOLLOW that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to any one if asked, nor suggest any such counsel; and in like manner I will not give a woman a pessary to produce abortion.	I WILL RESPECT the secrets that are confided in me, even after the patient has died; I WILL MAINTAIN by all the means in my power, the honour and the noble traditions of the medical profession;

WITH PURITY AND WITH HOLINESS I will pass my life and practice my Art. I will not cut persons labouring under the stone, but will leave this to be done by men who are practitioners of this work. Into whatever houses I enter, I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption; and, further from the seduction of females or males, of freemen and slaves.	MY COLLEAGUES will be my sisters and brothers; I WILL NOT PERMIT considerations of age, disease or disability, creed, ethnic origin, gender, nationality, political affiliation, race, sexual orientation, social standing or any other factor to intervene between my duty and my patient;
WHATEVER, IN CONNECTION with my professional practice or not, in connection with it, I see or hear, in the life of men, which ought not to be spoken of abroad, I will not divulge, as reckoning that all such should be kept secret.	I WILL MAINTAIN the utmost respect for human life; I WILL NOT USE my medical knowledge to violate human rights and civil liberties, even under threat;
WHILE I CONTINUE to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of the art, respected by all men, in all times! But should I trespass and violate this Oath, may the reverse be my lot!	I MAKE THESE PROMISES solemnly, freely and upon my honour.

Ethical issues in practice of modern medicine were summarized by Mettanando Bhikkhu as follows:

1. Issues of care and comfort

    a. Professional-patient relationship, foundation of health care service.

    b. Choosing goals of treatment: curative or palliative, and the transition of treatment.

c Control of symptoms:

d Principle of double effect, especially in the treatment of chronic pain

1. The action is good in itself
2. The intention is solely to produce the good effect.
3. The effect is not achieved through the bad effect.
4. There is sufficient reason to permit the bad effect.

2. Issues of consent and communication.

a. the patient agreement to medical procedure has to be voluntary, competent and informed

b. Research: covered by the Declaration of Helsinki, adopted by the World Medical Association 1964, revised in 1975.

c. Confidentiality: this is important, but not absolute obligation. Information can be revealed if there is a risk to others.

d. Disclosure: there are varieties in treatment in different cultures. Generally, the information should be told by senior doctor in charge of the patient. Relatives should be told after the patient has been told and not before.

3. Issues of life and death

a. Prolongation of life: whether the patient has the right to refuse food and water, whether to resuscitate the patient, or continue artificial life-support.

b. Termination of life: Physician assisted suicide, euthanasia

4. Issues of needs and resources
    a. Cost of health care
    b. Provision of health care
    c. Allocation of resources
5. Issues of HIV/AIDS infection

    Although the disease is relatively new, the impact on health care is very high.

According to John Raach the earliest record of statutory regulation of medical practice in UK was in 1421 when doctors petitioned parliament to ask that "nobody without appropriate qualifications be allowed to practise medicine, saying that unqualified practitioners caused "great harm and slaughter of many men". Eventually in 1511, a statute which placed regulation of the medical profession in the hands of the bishops and universities was enacted. The reasoning at the time was captured by Raach as follows: "*For the legislators of 1511 there were two important agencies at hand which could have served as licensing authorities for the medical profession: the local governmental officials and the Church. With the extensive development of local units of government one wonders why such officials as the sheriffs, or the justices of the peace, were not chosen as the licensing authorities. Certainly their power was extensive enough to permit adequate regulation of the profession. Yet it would seem that more than a mere disciplinary control as desired by the parliament of 1511. Medicine as one of the learned professions could not be relegated to regulation by the average county official. It required an intelligent and educated authority to supervise it, as well as an authority whose power was comprehensive enough to make that supervision effective. Such an agency was the Church, which in addition to its extensive organization possessed a well-trained personnel and a system of courts that could serve as a disciplinary body.*

Aside from the practical consideration of an institution which was both universal and powerful enough to serve as a licensing medium, a traditional bond existed which probably influenced the legislators. From primitive times the power of healing had been associated with the supernatural. Through various periods in history, medicine and religion had been closely or remotely associated, depending upon the stability of society at the given time. The close association between medicine and the Church in Western Europe during the middle ages was due in part to the lack of any other group that could prepare itself for medicine, and in part to the sacramental character of the Christian Church.

Birth and death are important in the sacraments of the Church, and are times when doctors play a prominent role. According to Catholic dogma, the sacraments appropriate to those moments can be administered 'by laymen in the absence of a priest. It is only logical, therefore, to expect that the Church would be interested in and concerned about, the type of individual who administered the sacraments of baptism and extreme unction. The State, on the other hand, needed an institution which could exercise a general control throughout the country, and no institution suited the need better than the Church. Although the licensing act of 3 Henry VIII, c. 1, was passed before the Universal Church disintegrated, the traditional association was apparently so strong that no alteration was made in the provisions for licensing when the English Church was reformed."

The main purpose of the 1511 statute was to "rid the country of the quacks who infested it" and to that end it provided for a financial reward for those who reported them. There were minor changes in the statue until 1858 when The General Council of Medical Education and Registration of the United Kingdom was formed for the purpose of enabling persons requiring Medical Aid to "distinguish qualified from unqualified Practitioners."

Regulatory bodies handle doctors based on code of ethics and what is believed to be right and relevant at the time of action. Regulation is dependent on many factors related to the regulator, the practitioners and the patients among others. Let us look at some of them.

The regulator

The Medical practitioners and Dentist Board was established, in 1978, under Chapter 253 The Medical Practitioners and Dentists Act "*to consolidate and amend the law to make provision for the registration of medical practitioners and dentists and for purposes connected therewith and incidental thereto*" was modeled on the British Medical Council. The mission of the Board is "to ensure provision of quality and ethical health care through appropriate training, regulation, licensing, inspection and professional practice. All these functions are based on medical ethics. The Board, as currently constituted and financed, does not have capacity to carry out these functions. 13 out of 16 members come from Nairobi, where 10% of Kenya's population lives. This position is contrary to the spirit of devolution and, decentralization enshrined in the 2010 constitution, but is unlikely to change unless the rules, governing the election and appointment of Board members today, are changed. The Board wholly relies on the fees paid by doctors, which is not enough to support the expected functions. Consequently the Board is unable to employ appropriately qualified persons to run its functions, making it necessary for Board members to function as though they were employees.

The people

Vigilance of the recipient of the services of the doctor (in this case the patient) is a major factor in regulation. However the people are usually not in a position of strength due to several

factors. Being ill makes patients vulnerable, lack of knowledge, and not having access to correct information on what might have happened are some factors that contribute to the patients' inability to play a significant role in regulation and control of the medical profession. Increasing public awareness of their rights has brought about an increase in the number of complaints against doctors lodged with the Board (Figure 9). This is not to say that every complaint is equal to something wrong having been done, but it keeps doctors vigilant and accountable. Such complaints should normally be decided on a professional basis, but they have attracted lawyers who insist on following the legal system of decision making. Yet it is known that deciding on these matters based on the law alone can easily get the wrong-doer off the hook, if he happens to be the one with the smart lawyer.

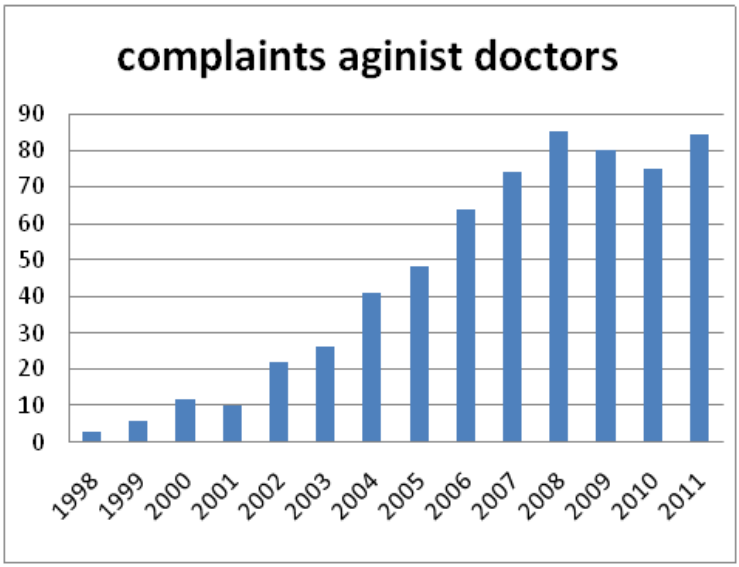


Figure 9: Complaints against doctors in recent years

Doctors

There is an acute shortage of doctors in public sector. The doctors who work in public sector also engage in private practice, resulting in conflict of interest, adversely affecting the quality of health services. According to a KIPRA working paper No.11 of 2004, consultants in public hospitals spent only 8 hours a week in their place of employment. Transparency International-Kenya in 2011 reported that doctors "*are juggling jobs at different health facilities therefore they have inadequate time to rest, relax and concentrate on their primary duties which may compromise the quality of healthcare provided to citizens.*" It further states that doctors, like other health professionals, "*tend to concentrate their efforts in major urban centres - not only for the purpose of seeking opportunities for upward mobility, but also in searching for a ready market for their professional services. They spend few hours in public facilities but create more time for private professional services and consultancies*". The report summarized the situation as follows: "*The staff are rarely seen at public facilities and when available, they are in a hurry and intimidate their clients, leading to poor service delivery.*" Patients in public hospitals go for days without being seen by a doctor, a situation made worse by a myriad of other problems ranging from lack of supplies to inadequate infrastructure. A look at the two National Hospitals will show that they are grossly over-staffed compared with available facilities. There is an increasing trend to work on shifts which have been brought about by a strong lobby arguing that long working hours increased possibility of making mistakes. This may be true for junior doctors who are usually required to stay in hospital continuously, but not for senior doctors who should take responsibility for patients individually and would normally not be required to be in the hospital continuously. Neither the Board nor the employer (government) seems to have capacity to deal with this behaviour. This leaves one wondering

what happened to the oath that doctors took? What happened to the honour? Or was Bernard Shaw right to say *"As to the honor and conscience of doctors, they have as much as any other class of men, not more and no less."?*

Confidentiality

Historically, curative services were between the practitioner and the family of the patient while public health aspects were in-built in culture. At that time it was easy to keep what the doctor knew between the himself and the patient. Over the years parts of medical practice have been ceded to other players, sometimes to unqualified or untrained people, ostensibly, because of increasing workload, specialization, growth of knowledge and cost. The other health care workers (who include nurses, hospital administrators, and pharmacists interact directly with patients and each other and have access to patient records in the course of their work. The development of electronic medical records makes it possible for people far removed from patients to have access to patient information (Were 2011). How then can anyone regulate flow of information? We have seen in the case of HIV that lack of confidentiality and stigma associated with the is one of the factors limiting access to care because some patients would rather not have treatment than be known to have AIDS.

Training

Training of doctors at University of Nairobi starting in 1967 has made a tremendous contribution to medicine in this country. At the time of enactment of CAP 253 The Medical Practitioners and Dentists Act in 1978, the country did not anticipate the coming of other medical schools. Therefore it made the MBChB degree of University the "gold standard" for Kenya for purposes assessing graduates from outside the country. In 1991 the Act was

amended to bring medical education under the Board without altering the above section, therefore making all medical school in Kenya subordinate to university of Nairobi. The matter is further complicated by the fact that the universities are established under independent Acts that do not refer to the Medical practitioners and Dentists Act. Therefore Universities can award degrees without worrying whether the graduates will be eligible to practice in Kenya.

Recently, the country has witnessed rapid expansion in numbers of students admitted to medical schools, both regular and parallel, without corresponding growth in resources. Fees levied at the rate of unit cost is not always ploughed back into the programme at the rate that formed a basis for the unit cost and there is a great shortage of staff qualified to teach medical students.

The Board in conjunction with Regulatory Bodies from East African Community region has put in place a mechanism for regulation of medical training to ensure graduates are safe for provision services to the community. Unfortunately this process is experiencing difficulties for several reasons. Firstly because the universities are established under independent Acts of Parliament and therefore they can choose what they want to do without reference to anyone else; secondly the programmes are increasingly used as source of money and prestige for their universities; and finally conflict of interest between the role of the Regulatory Bodies and interests of its membership (many of whom are from the Universities).

The Post graduate programmes are also facing problems with the current training consists of 3 year Master of Medicine (M.Med.). Programmes followed by two years under supervision before one is considered a specialist. But when one graduates with

the M.Med. degree they are immediately sent out to work independently releasing inadequately trained people to the unsuspecting public. Even when they are put under supervision the supervisors may not be available to train them. For these reasons there is a general agreement at professional level to make M.Med. training five years and remove the requirement for post M.Med. supervision. The full effect of the current scenarios will be seen in the next 10–15years.

Science and technology

Science and technology has a major impact on medicine directly or indirectly. Discovery of vaccines, drugs and equipment has had direct positive impact. With vaccines various diseases have been eradicated or controlled. Discovery and use of various modes of radiology in medicine has revolutionized diagnosis and treatment while the discovery of ARVs has converted AIDS from a death sentence to a chronic disease. Such advancements are not as wonderful as they appear at first site because of unforeseen situations. As in the case of yaws, the rate of transmission was reduced leading to reduction in cases of yaws, but 20 years latter there was increase in number of tertiary yaws. When penicillin came into the market in the forties the future looked bright. At last an answer had been found for infectious diseases until resistance emerged. This behaviour of microorganisms continues to be a major challenge to antibiotic treatment. Other forms of bacteria hitherto unknown such as non–TB mycobacterium and multidrug resistant TB are continuing to surface.

Chapter Five

Impact of Biomedicine

Introduction of biomedicine was an integral part of the package brought by the colonial administration in Kenya. Among other events that occurred at the same time were formal education, introduction of National laws, technology, international trade and change in agriculture. While it is not possible to enumerate all of them, it is sufficient to say they influence each other. Therefore these must be borne in mind as one looks at the impact of biomedicine in Kenya. The impact is greatest in areas traditional medicine, population and change in disease pattern.

Traditional Medicine

As discussed earlier, biomedicine and loss of culture has driven traditional medicine almost to extinction.

Population

Since Kenya as we know it today came into existence at the 1885 Berlin Conference, one cannot speak of population of Kenya before then and we have no way of reconstructing the information since natives did not have written records of vital events. In the early days of colonial era it was not possible to collect population data on people living in vast country without communication infrastructure and trained personnel capable of collecting required information. Attempted to estimate the population often ended with conflicting and grossly inaccurate figures, so it is not clear how the population of 2.5 million was

arrived at in 1897. After introduction of "Hut Tax" in 1901 population estimates were made based on the number of huts and by assuming that there were three persons per hut, women constituted 51 % of the adult population and that children made up 37 % of the total population. Though dishonesty of hut counters was common, annual tax records were used to get a fairly accurate count of adult males. Accuracy of these estimates varied from district to district. Overall these censuses were nothing but elabourate forms of counts, usually based on existing information until 1948 when Kenya had its first real census. In addition to indigenous population there was a small number of Arabs and Indians confined to the coast.

The population of Kenya underwent major changes during the Colonial Period. Throughout the period multiple factors, including famines, droughts and epidemics of different diseases, had severe effects on the African population. The European may have contributed to lowering fertility rates by moving many young men to work on the farms, roads and army. It is estimated that of the 250,000 men enlisted in the African Carrier Corps, almost 50,000 died due to exhaustion and disease and on return brought back diseases such as Spanish influenza and meningitis which caused a lot of deaths. Migration also caused fluctuations in total population. After the Second World War the situation changed due following eradication of some diseases, improved nutrition (Moradi 2008), availability of drugs, overall growth in the economy leading to a higher standard of living and enhanced knowledge on hygiene leading to lowering death rate. Health indicators must have improved, though there are no records on health indicators during that period and even the 1948 census does not bring out this clearly. After independence records show improvement in health indicators until the 1990s when, there was a deterioration in the health status of the population

with resultant increase in mortality and morbidity. According to KIPPRA (2004) the causes for this included increasing poverty, a decline in per capita income, unavailability of food, deteriorating quality of, and poor access to health services due to introduction of user fees, increased incidence of HIV/AIDS, and limited budget allocations to the health sector.

Even though the records are incomplete there has been a tremendous population growth in the last century (Figure 10).

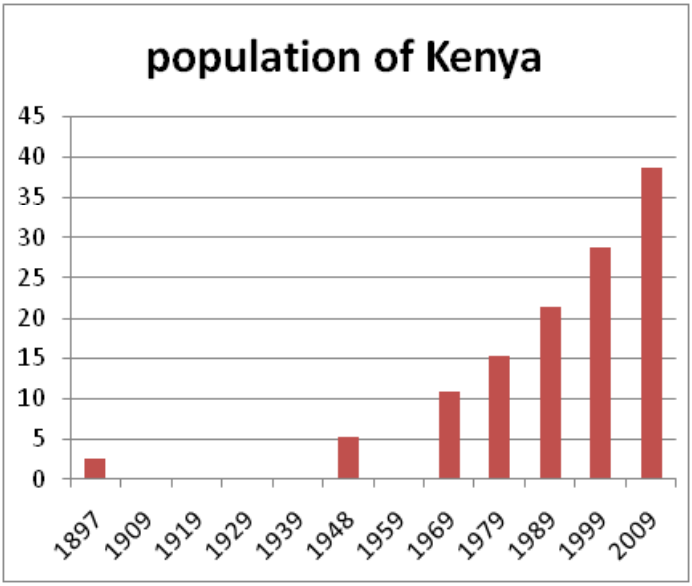


Figure 10: Population of Kenya

Changing pattern of disease

The Standard Newspaper of September20, 2012 had a headline on one of the inside pages asking the two Ministers of Health *"Has cancer reached epidemic proportions?"* Indeed everyone is worried about the apparent increase in certain diseases. But has anyone examined the situation properly to establish facts? This country is in a rather unfortunate situation of not having representative data Available data is usually derived from institution records. Close examination of these records one finds that they are often incomplete, of poor quality and wanting in many ways. This data is collected by people who do not have sufficient knowledge of the subject matter and in addition they do not take into account factors that limit or determine access to health care. Vint (1935) observed that records on age–incidence of malignant diseases among natives were useless, since they represented an estimation of the medical attendants. Cooper (1998) wondered, how statistics that appear in national and international agency reports are generated in absence of basic health indices. He concluded that "*Since there are no data, the numbers are guesstimates: representations of reality formed from models, extrapolations, and common sense, constrained largely by the need to avoid conflict with previous estimates. Health statistics in the absence of vital registration become part of a hopeful fantasy in which the basic measures of life are quantifiable in all societies."*

Publications based on this data lead us to believe that some common diseases had a different distribution among Africans as compared to Europeans. A few years ago it was believed that intracranial meningiomas occur more commonly among native males than females which was the reverse of what was seen in the Europeans. When I studied intracranial meningiomas for my M.Med. (Surg) dissertation, I found that overall it appeared commoner in males than females. But when I looked at the

population coming from a radius of 50 km from Nairobi, the ratio reversed. It was a question of access, rather than race, with females living further from Nairobi having less access to treatment than males.

There is some data generated over the years which we have not taken into account in discussions like this. In 1915 there was the first *mass health survey* in Kenya which involved examination of African male conscripts for Carrier Corps for First World War done in two stages. First the African Chiefs and European Administrators screened young men and sent those whom they found fit for further screening by the medical officer. Of those who were seen by the medical officer, 30—40 percent were rejected as medically unfit. The main problems found were tertiary yaws and organic heart disease, which crippled or incapacitated many young men at the time. The cause of heart disease was not defined but there was discussion on whether this was due to rheumatic fever or not. Interestingly some people thought that rheumatic fever was rare in Kenya before the 1930s. It is now believed that this view may have been a reflection of medical ignorance about African health. In spite of these findings and that of Vint in 1937, cardiovascular diseases were incorrectly considered to have limited impact in Kenya, presumably because they were masked by high prevalence of the infectious diseases in the past.

In 1935 Vint published a paper on Malignant Diseases in the Natives of Kenya in which he reported the results of examination of 2378 tissues and found 546 (23.8%) with malignant change. He rightfully pointed out that this could not be used to calculate incidence of cancer in Kenya but concluded that these results provided "evidence against the theory that cancer was rare among indigenous people living under natural and primitive conditions." Absent from this list was lymphomas, thoracic and

central nervous system malignances. These were most likely missed because surgery of these specialised areas had not started in Kenya.

In 1937 Vint published another paper giving a summary of findings in 1000 consecutive post-mortem examinations of native bodies in Nairobi. At that time sulphonamides were not available in Kenya and penicillin had not come on the market. It was time when, the best one could do for a patient presenting with pneumonia was to try and lower the temperature as they waited for the patient go through all the stages and recover or die on the way. The causes of death, as found by Vint, in are shown in the table 1 below:

Table 1: Causes of Death Cases: Post–mortem Findings in the Natives of Kenya

Pneumonia	298
Tuberculosis	132
Violence	108
Septicaemia	100
Diseases of the cardio-vascular system	56
Typhoid	51
Malaria	36
Plague	35
Diseases of the Urinary system	33
Dysentery	29
Neoplasms	26
Cerebro-spinal meningitis	20

Diseases of the liver	17
Intestinal obstruction	13
"Infantile oedema"	8
Asphyxia	6
Syphilis and broncho –pneumonia	6
Asthemia and terminal pneumonia	4
Food Deficiency	4
Diabetes	
Encephalitis lethargica	3
Status Lymphaticus	3
Hodgkins disease	2
Pernicious anaemia	2
Relapsing fever	2
Shock, surgical	2
Trypanosomiasis	1
Total	**1,000**

If for a moment we were to remove pneumonia, tuberculosis, septicemia, typhoid and plague from the list, we would see that cardiovascular diseases and neoplasm move to the in the top five (Table 2). This makes these results similar to results of postmortem examination published by Ogeng'o et al (2011). Vint reported 89 cases of advanced artheroma not included in the table. The coming of treatment particularly antibiotics, in addition to elimination of some diseases, such as smallpox, yaws, and plague, brought to prominence a different pattern of diseases.

When this publication is put in the present day context as in table 2 it becomes clear that these diseases have always been here.

Table 2: 1936 cause of death modified

Violence	108
Diseases of the cardio-vascular system	56+89
Malaria	36
Diseases of the Urinary system	33
neoplasms	26
Cerebro-spinal meningitis	20
Diseases of the liver	17
Intestinal obstruction	13
"Infantile oedema"	8
Asphyxia	6

The author observed that lobar pneumonia in the African adult resembles that of children in Europe; and it is rare to find macroscopic evidence of reactionary fibrosis around pulmonary tuberculosis lesions. The post-mortem findings are those of a low septicemia resembling acute miliary tuberculosis in European children. He therefore concluded that: "My post-mortem experience among the natives of Kenya may be summarized in the following theory: infective disease in the native tends to be a fatal septicaemia. One reason for this is that the reticulo-endothelial system has either reached or almost reached the point of blockage. This system is unable to deal with the new organisms and possibly the production of antibodies does not take place. In addition the kidneys owing to chronic disease cannot carry out their normal function. Death results not from a racial lack of

resistance, but from a lack of resistance due to repeated assaults by disease on the body`s defensive mechanism — the reticulo-endothelial system." Technically these patients had an Acquired Immune Deficiency Syndrome.

I recently saw a patient who had presented with diarrhea, dysphagia and dehydration on and off. The referring doctor had investigated the patient and found an anterior mediasternal mass. On endoscopy the patient had extensive candidiasis. HIV test repeated on several occasions was negative. At sternotomy a well circumscribed mass measuring 5 by 6 cm was removed and on histology it was found to be a thymoma. Post operatively the patient did well but two weeks later he fell ill again and was admitted to hospital with fever, vomiting, diarrhea, oral and anal canidiasis. His HIV test was still negative. Is this the type of patient referred to by Vint or were Vint's patients having AIDS?

The paper by Vint ignored a lot of other important information as the author pointed out this when he said "*Many conditions have been ignored in this review of 1000 post–mortem examinations. Congenital abnormalities have not been mention but are frequent. Appendicitis has not been seen although there was one case in which the tip of the organ was atrophied and fibrosed. Helminthiasis is universal and spirochaetal disease shows a very high incidence amongst the native population."* Though it probably would not have been published today it has given us useful information.

A look at data from the Eldoret Cancer Registry supports the proposal made by Vint. The total number of cancers recorded in Eldoret Cancer Registry 2001 to 2011 was 11, 576. The top 10 are shown in figure 11. These figures do not show all case seen in Eldoret as some specimens are taken directly to Nairobi and not all patients from this region come to us. The number of cases

of Kaposi sarcoma is high which may be due to continuous monitoring of AIDS patients in AMPATH, it is important to note that Vint observed in the two papers that there was a high ratio of sarcomas.

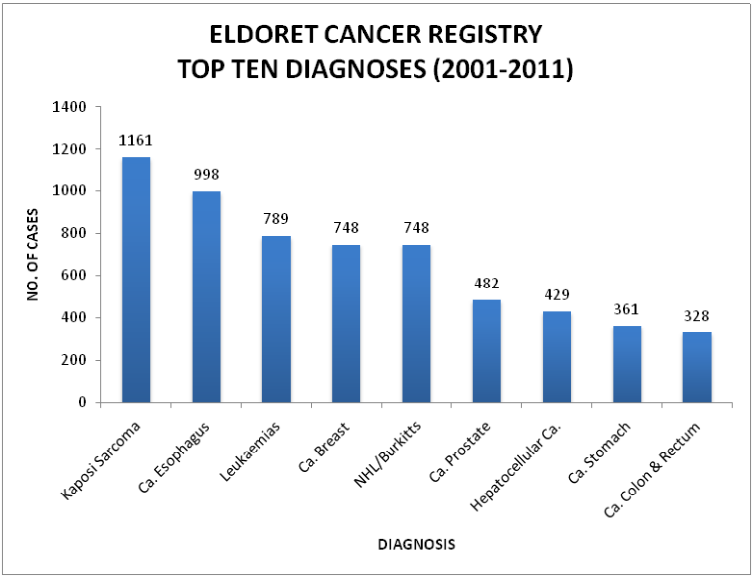


Figure 11: Top Ten Cancers 2001—2011

Reasons for increased visibility of some diseases

Examples given below will help to shade some light on how we arrived where we are. Western Kenya was always known to have high incidence of oesophageal cancer, followed by Nairobi, Eldoret and Bomet. The thing that is common among these centres is presence of a cardiothoracic surgeons. A surgeon

who worked in Eldoret in 1946, also worked in Kisumu and then Nairobi. He was the first to report the occurrence of this disease in Kisumu and later attempted oesophagectomy with some success. As cardiothoracic surgery developed in Kenya the number of cardiothoracic surgeons increased with corresponding increase in number of patients. In summary it may appear that "doctors cause disease epidemic", but in real sense it takes prior knowledge and a high index of suspicion to recognize disease.

Since I came to Eldoret in 1992 the numbers of cases of carcinoma of the oesophagus have grown tremendously. For the years I worked at Kenyatta Hospital, I saw two to three Kalenjin patients a year, at the moment we see 3—5 patients a week figure (12). These numbers are frighteningly high. In fact some have published papers and others have even written PhD thesis on the subject.

Most of our patients come for treatment late for various reasons. Some prefer to try herbal medicine first, while others are unable to pay. Treatment varies from oesophagectomy, palliative procedures and radiotherapy depending on the stage of diseases, location of the cancer and their state of health, but for many it is too late and nothing can be done. Unfortunately when we send the patients to Kenyatta Hospital for radiotherapy, they often get six month appointment by which time most of them have died.

The challenge is in how to increase awareness to prevent the disease and come early for treatment when they get it. The main problem is finance for field activities and to setup a reliable treatment facility. Field activities would include quantification of the problem, identify possible risk factors, and giving information to the people. Eldoret requires a unit with a 5 day dedicated theatre and radiotherapy. This story is meant to give

you some idea of the ordeal that many people face daily in this environment. This disease which mainly affects poor people has little chance of ever being highlighted by the press.

Carcinoma of the oesophagus is what is commonly referred to as "throat cancer". It is a painless but very distressing condition because it blocks swallowing. Most time the patient does not realize how serious it is until they are unable to swallow saliva. Even though overall prognosis for the disease is poor, people appreciate being able to swallow, and the doctor is always under pressure to do something. Imagine a family which has food and one of their own is unable to eat, therefore slowly starving to death. Those who are well will not be able to eat happily hence transmitting stress to the family.

Awareness of the people in general has increased due to increased availability of information. The press has played a major role in this and every time a person of high profile has one of these 'new" conditions the press highlights it. But when the same person has malaria they probably will not mention it.

The chances of being miss informed from this sources of information is high. Recently The Medical Practitioners and Dentists Board launched "The Code Of Professional Conduct and Discipline" for doctors. The following morning one of the radio stations reported that The Medical Practitioners, Pharmacists and Dentist Union had launched the code and its CEO Dr. X was quoted as having said something. The correct position was that the code was that launched by the Board and X is neither a doctor nor is he the CEO of The Medical Practitioners, Pharmacists and Dentist Union.

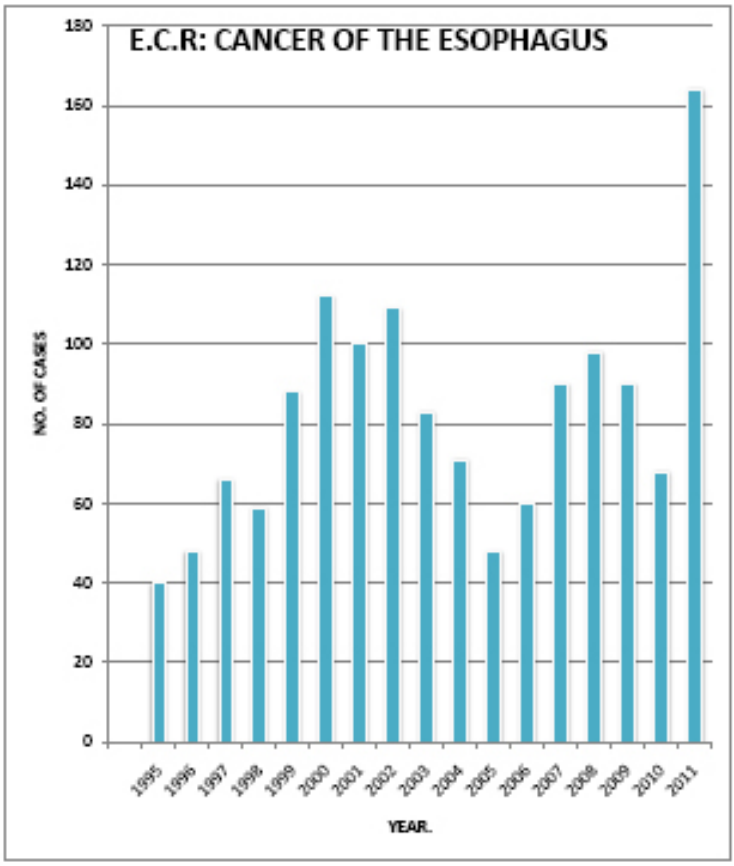


Figure 12: ECR Caner of the Esophagus

Lifestyle diseases are disease caused by human behaviour previously attributed to dramatic shifts in the way human beings live, often due to advancements in a society or its scientific progress. This trend was attributed to economic transition,

urbanisation, industrialisation and globalization bringing about lifestyle changes as was experienced in affluent societies in the mid 1990s. More recently it has been recognized that lifestyle diseases which used to be referred to as "Western diseases" or "diseases of affluence" occur in non-affluent societies where malnutrition is an important risk factor. Low birth weight, a close ally of poverty, is now recognized as an important risk factor in lifestyle diseases (Curhan, 1998). Important risk factors in this country include unsafe water, sanitation and hygiene; indoor smoke from solid fuels; underweight; unsafe sex; and unhealthy diet. The issue of diet is an old one having been proved by Daniel as recorded in the book of Daniel chapter one in the Bible. Daniel and his friends declined to eat the King's rich diet and " At the end of the ten days they looked healthier and better nourished than any of the young men who ate the royal food." *Lifestyle diseases,* which are also known as non-communicable and chronic diseases, often result in loss of independence, years of disability, or death, and impose a considerable economic burden on health services (BeLue 2009). Indeed these diseases are a developmental issue. Unfortunately, despite the well-known benefits of a healthy lifestyle, only a small proportion of adults follow such routine.

New diseases and syndromes have appeared since the arrival of the colonial administration. AIDS is the most commonly cited and I will not go into the controversy of whether indeed AIDS is new or not. Publications by doctors who worked in this country in the first half of the last century suggest that hypertension did not exist. In 1937 Blake published a paper on "Primary Arterial Hypotention". Subsequent studies (Poulter 1990) suggest that there is an increase in blood pressure associated with migration to Nairobi. Hypertension is perhaps one of the new diseases.

Chapter Six

Decision Making in Medicine — A Personal Perspective

Having discussed the environment in which I work in this section I will briefly look at the process of decision making as it applies to medicine consequently affecting my daily work. This is where both the art and science meet. The process involves three approaches, namely by algorithms, evidence, or intuition.

Algorithms and evidence based medicine

Case 1. A young lady in her twenties went to see her doctor with chest pain. An X–ray Showed a shadow in the left chest and she was sputum negative for acid fast bacilli. In absence indications of any other pathology she was put on anti–TB treatment. On completion of her treatment she took up an assignment in a Western Europe for one year. While there she had bronchoscopy and a fine needle aspirate. There was no lesion on bronchoscopy and cytology showed no evidence of malignancy. Therefore it was assumed that shadow was scar from healed TB. Two years after her initial complaint she visited her doctor again and the shadow on her chest x-ray had become larger. The doctor asked for a bronchoscopy. She presented with a hoarse voice, Honer's syndrome and elevation of the left diaphragm. After evaluating her and taking advantage of hearing what had happened to her in the last 2–3 years, I made a diagnosis of carcinoma of the lung and sent her for percutaneous biopsy by the radiologist. Histology showed adenocarcinoma. Treatment would have been surgery,

but this was not an option because of the location of tumour involving the phrenic nerve, recurrent laryngeal nerve, thoracic sympathetic chain, common carotid and subclavian arteries see fig. 12 - 15. The tumour was not sensitive to other modes of treat. The parents asked if they could try herbal treatment and I agreed. I am yet to get a feedback on the outcome.

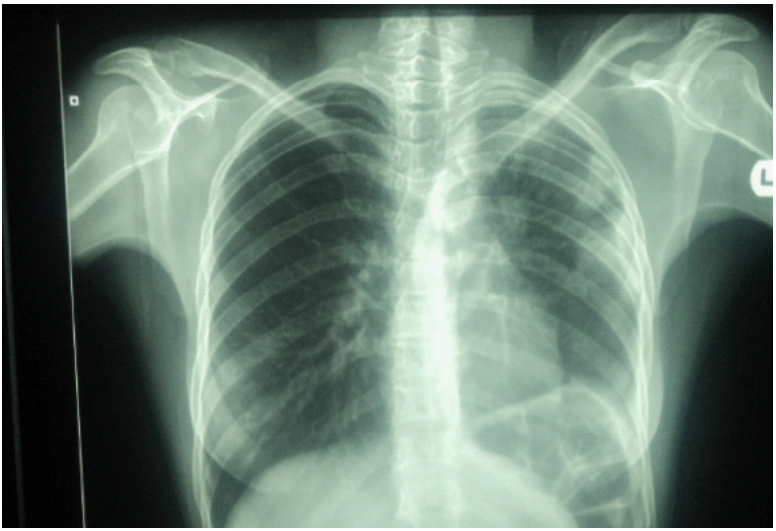


Figure 13: Chest X-ray showing elevation of left diaphragm

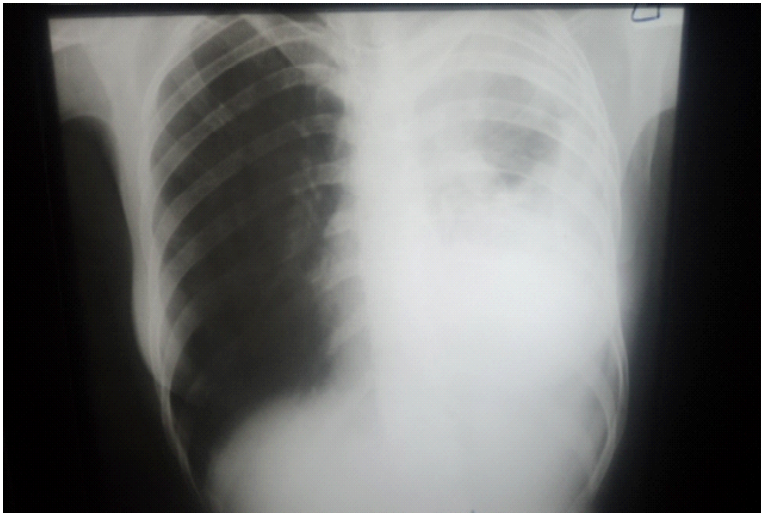


Figure 14: Chest X-ray showing collapse of left lung

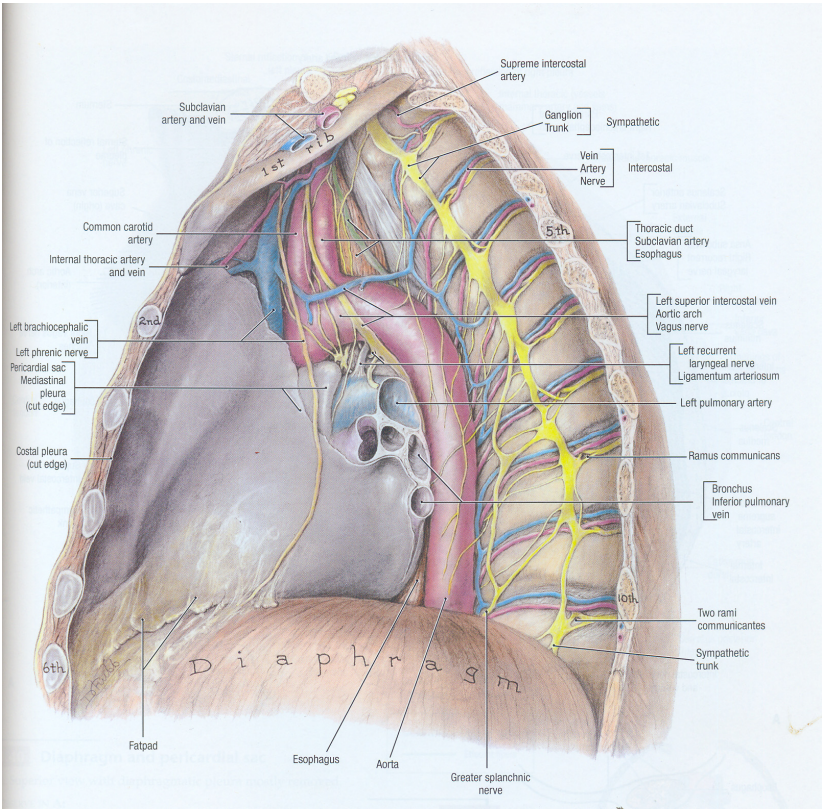


Figure 15 Normal Left hilum

Source: Source: Anatomical pictures – Grant's Atlas of Anatomy

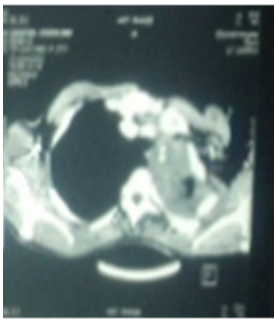


Figure 16: CT scan of the chest showing tumor on the left

This case brings to light an everyday dilemma in medicine. We know cancers of the lung are rare at this age anywhere in the world and we also know that the commonest cause of this kind of shadows in our environment is pulmonary TB. The initial decision was based on algorithms in which clinical decision making follows predictable steps using simple rules to govern which path to take at each junction. By the time we went to the next level it was too late, yet I have also operated on patients who should have been treated for TB only which commonly occurs in countries where TB has been controlled.

Case 2. Two children, who had visited Kisumu during school holidays, developed a fever after their return to Nairobi. Blood slide on one was positive for malaria while the other was negative. The first child was treated for malaria while the second was not. The second child visited his doctor several times and eventually was admitted to the hospital. On the second day in hospital he was found to have 4+ malaria. He developed other complications, deteriorated and died despite being on treatment.

This approach requires that no treatment is instituted until there is evidence for making that decision. Indeed this is a scientific approach. Unfortunately the human body, as is often in biological systems, does not obey laws in the same way machines obey the laws of physical science. Each individual is unique depending on their genetic makeup and their past experiences.

Both algorithms and evidence separately or together do not always give answers. However in training of medical students, we emphasis the two as though they were God sent truth because student must have a good understanding of these principles which they will use for most of their lives.

Intuition

Case 3 .A young female patient in her twenties presented with several years history of episodes of hypertension and loss of pregnancies. She was seen and investigated in various hospitals without a definite diagnosis. Ultrasound showed a right adrenal tumour, but the test for Vanillyl Mandelic Acid was negative. She was put on treatment for hypertension. One day, while continuing treatment, she became unconscious. She was transferred to MTRH where one of the senior doctors made a diagnosis of pheochromocytoma on hearing the story. Drugs for preparation and use during surgery had to be imported. Operation was done but post-operatively the patient developed hypotension, one of the most dreaded complications, The patient was managed and she recovered and has since became a mother.

Case 4.Sometime ago I worked in an advanced paediatric cardiac unit where we spent many hours trying to reach an accurate diagnosis before surgery, yet we still did not reach a correct diagnosis in many cases with complex congenital abnormalities. What was interesting was that there were two consultant

paediatric cardiac surgeons: surgeon A who appeared to ooze knowledge and when we were at standstill always had a logical explanation. Surgeon B on the other hand was not as loud, but in difficult situations his opinion was almost always correct at the end of the day. The other difference between them was when they performed surgery. Surgeon B's results, even in the most complicated situation, were superior to those of surgeon A. It was believed that surgeon A was clever with his head while surgeon B was clever with his hands. I leave it to you to decide which one you would consult if you had a patient.

These two cases are similar in many ways. The doctor hears the story and he makes the correct diagnosis instantly. Is this divination, magic or guesswork? This is intuition, defined as an astonishing mental performance that moves quickly yet unaccountably to correct conclusion. This is a consequence of using extensive expert knowledge which enables one to make rapid accurate judgments that even the person making the judgment may not be able to easily explain. I do not intent to go into theories, characteristics and limitations of intuition, but I wish to say intuition cannot be taught in the same way we teach algorithms and evidence–based medicine as a basis for clinical decision making. It is the sum total of many things including inborn factors, learned information, what one has heard and experience used in some unexplained way to reach almost instantly the correct decision. Discussing with a friend we agreed that the brain was an integrated circuit capable of holding incredible amount of information that it is able to integrate and reach a decision instantly. This is what surgeons have to do when an unexpected event occurs in theatre. Time is of essence and in this situation it is not therefore purpose of searching literature or following rules of evidence. Operation on any given patient is a quasi-experiment which cannot wait for ethical approval.

This is the reason why it takes at least 5 years or more to train a specialist and why apprenticeship under different teachers is important. This is also the reason why two surgeons given the same scenario might reach different conclusions.

Difficult times

*Case 5.*Shortly after I arrived in Eldoret I saw a child with a foreign body in the airway. Because we had no equipment to handle the situation I referred the patient to Nairobi. The patient died on the way.

Case 6. A few years ago a close friend of mine came to see me with x-ray showing a large retrosternal mass. In those days we did not have capacity to do percutaneous biopsy. After a long discussion we agreed that he should have surgery in Nairobi. However he insisted that I must be present. I agreed to assist in the operation. The patient was brought to theater in the morning and we operated on him. After removal of the tumour, he started oozing blood from the tumour bed. We were unable to control the bleeding and he died on the table. The family was waiting outside theater and I had to go and tell them. The road was long, dark and lonely. Under these circumstances the surgeon must face the situation.

At a point like this I fall back to what Leon Abrams taught me. He said whatever you do some patients under your care will die. In this case the surgeon takes responsibility. If a patient your care dies the surgeon must account to himself. If the patient died because of something you have done, you must make sure that it does not happen again. If not he must not go around with a long face.

In the first case I felt the pain the parents felt and decided not to send another of these patients to Nairobi again. Since most of the foreign bodies are usually on the right, taking advantage of the anatomy and my past experience, I decided to always approach the foreign body from the right and opened the trachea above the azygos vein for bodies on the left except in situation where there was indication that the foreign body was impacted.

In the second case I held meetings with the family to try and explain what had happened.

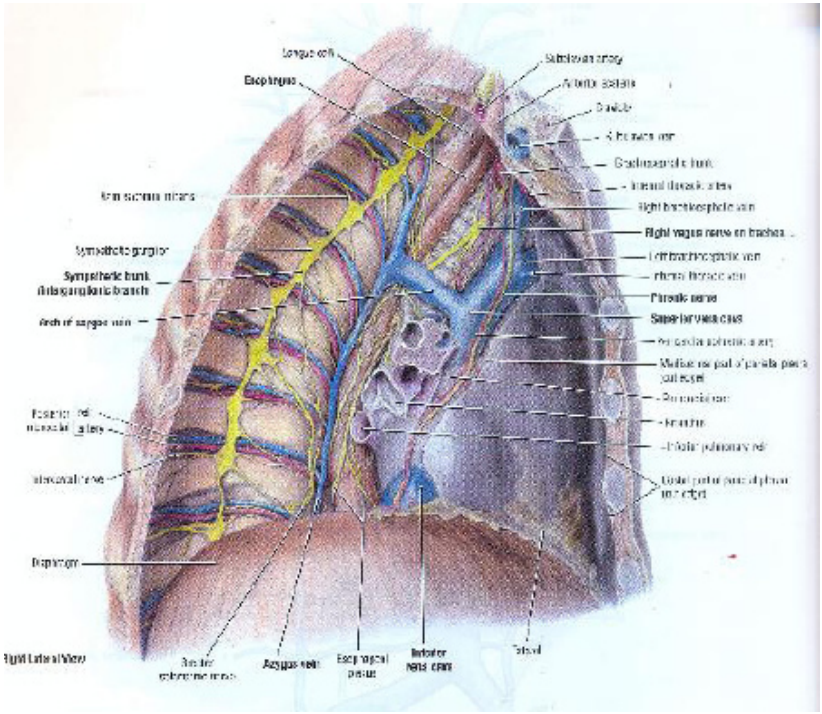


Figure 17. Normal Right Hilum

Source: Anatomical pictures – Grant's Atlas of Anatomy

Chapter Seven

The Future Health Sector

I do not trust fervor. Every time it has burst out somewhere, it has brought fire, famine, misery... And contempt for man. Fervor is the weapon of choice of the impotent.

Frantz Fanon, Black Skin, White Masks

Vision *2030* is development blueprint aiming at making Kenya a "middle income country providing high quality life for all its citizens by the year 2030". The goal of the health sector is to "provide equitable and affordable health care at the highest affordable standards to her citizens" in line with the bill of rights. Attainment of this ambition depends on the performance of the three pillars.

Good health is essential for economic growth and poverty eradication. However in a country where poverty levels are high one gets into a vicious cycle in which poor health causes poverty and poverty contributes to poor health. In order to make progress, this cycle must be broken. If this is not done Vision 2030 will fail to achieve its goal in the same way as the Sessional Paper No.10 of 1965 on African Socialism and its Application to Kenya failed to eliminate the three allies: disease, poverty and illiteracy. Among the national papers are the various development plans and District focus for Rural Development of 1983 which introduced decentralization to strengthen district based health management and National guidelines on primary Health care. One of the main

reasons for failure to make a difference is that policy statements are drafted with the help of experts who do not understand the situation on the ground making it difficult to translated it into action, reducing the policies a mere statements of intent. The other reason is lack of resources for implementation of the plans.

The major international declaration during this period include the 1978 Alma-Ata declaration on Primary Health Care (PHC); Financing Health services in Developing Countries an Agenda for Reform (1987) by the Word Bank; and Millennium Development Goals. The Alma-Ata declaration aimed at health for all by the year 2000 specifically targeting the developing countries. The declaration envisaged urgent action by all governments, all health and development workers as well as world communities to protect and promote health of all the people. It recognized inequality in health status of the people between developed and developing countries; interface between health, economic, social, and cultural factors; and the people's right to participate in planning and implementation of their health care. By the year 2000 health for all had not been achieved, so members of the United Nations signed the Millennium Declaration resulting in Millennium Development Goals (MDGs) which looks almost like a restatement the Alma-Ata declaration moving the deadline to 2015. It is becoming increasingly clear that the MDGs will not be achieved. Like PHC, MDGs are unlikely to produce significant impact in Africa in that period. In general International declarations are nice statements made at international meetings dominated by international community. The recipients are often represented at these meetings by people who either know better than to argue in situations where they have already lost, or people who have no courage to say no. Often the resolutions have been drafted in advance and intense lobbying carried before the meeting.

Research

The Health Sector strategic objectives for research is to "Conduct research aimed at providing solutions for the reduction of disease burden in Kenya". This is crucial for the country to avoid pitfalls of implementation of policy statement of the past, it is important to find local, culturally acceptable and affordable methods of disease prevention, treatment and eradication. It is therefore important to get representative health data on current health status of the community and local health risk factors to support transition from policy to implementation.

Research in Kenya is severely limited by inadequate funding as it is in 2007 World Bank Report which shows that Kenya spent 0.42% of its GDP on research and development compared with USA, with a much larger GDP, spending 2.67% of its GDP in the same period. Consequently health research in Kenya is conducted and managed by a diverse number of Development Partners and the private sector. However, in absence of a national health research agenda to focus and define priority research areas the interest of the person providing the funds take priority producing results may not be suitable for local consumption. This absence of clear direction is one of the reasons why developing countries are attractive for health related research. Other equally important reasons are availability of a large pool of eligible participants; inexpensive researchers; and less ethical committees demand. In addition the outcome of this kind of research is not useful because there is very little coordination, accountability and impact analysis of the results.

In the Health Sector Working Report of January 2012, the responsibly for research is entrusted to Kenya Medical Research Institute (KEMRI). However KEMRI, which is mainly funded by donors, largely deals with biomedical research leaving broader

concerns of community health, operations, health policy and systems research unaddressed. Universities which have capacity to carry out research, have not been assigned this responsibility and were not mentioned in the report.

Universities believe that professors must be able to attract research money but since Kenya allocates minimal funding for this purpose, it means that professors must look further afield for this purpose. As we have seen the donor's needs comes first and the research may not necessarily address areas of local priority. Against this background, Kenyan researchers are often disadvantaged and their work may not have an impact at country level particularly when there is no local mechanism of collating and analyzing research findings.

At a meeting, organized by the Department of Vital Statistics, attended by all the Health and Demographic Surveillance System (HDSS) Sites in Kenya, it emerged that though most of the sites are affiliated to KEMRI the data generated by the various sites belonged to the partners who funded its collection. The state could only have access with permission of the partners. Whereas it is important to ensure security and confidentiality of this kind of information (Carrel 2008), it defeats logic to think that the Government of Kenya cannot readily access the data of its people.

The Health and Demographic Surveillance System (HDSS)

In the preceding sections a lot has been said about lack of data yet the investment needed to improve health information system and setup a national civil registration and vital statistics system in Kenya is unlikely to be made in the near future. In Kenya, like in other developing countries, with a rudimentary state of health information systems and without effective and

comprehensive national civil registration and vital statistics system, the long-term social, economic, and demographic impact of major diseases can only be estimated using models. Without empirical data on age and cause-specific morbidity and mortality, these estimated projections are sometimes based on educated guesses and intuition rather than fact as highlighted by Cooper in 1998. Reliable estimates require the input of accurate data into the models, from as many geographical zones as possible in the country. For this reason a group of staff from College of Health Sciences came up with a proposal to establish a Health and Demographic Surveillance System (HDSS) Site at Webuye. The HDSS are not a replacement for civil registration and vital statistics systems, but they serve as a short- to medium-term measure to provide data for health and population planning. They also provide useful lessons for countries that intend to set up nationally representative sample vital registration systems. The site was established in 2007 with support of the VLIR Programme.

Health and Demographic Surveillance Systems were defined by International Network for the Continuous Demographic Evaluation of Populations and Their Health (INDEPTH) as a set of field and computing operations designed to prospectively collect and analyse demographic and health related data of well-defined populations in clearly defined geographic areas. HDSS sites generate high-quality, population-based, longitudinal demographic and health data important for planning at local and National level. The information collected include longitudinal follow-up data on the births, deaths, morbidity, socio-economic status, pregnancies, immunizations, parental survival, water, sanitation and health seeking behaviour. The cause of death occurring at home can be established by verbal autopsy, which has been shown to be an economical and useful way of improving

the quality of cause-of-death information using health workers with minimal training. These sites, provides accurate information describing the "at risk" population (denominator) which is not provided by health facility generated information.

Apart from the Webuye site there are six other sites in Kenya as follows: Four are associated with KEMRI and two are independent. One is located in Coast Province, two in Nairobi, three in Nyanza and one in Western. They routinely collect baseline data several times a year.

The vision of the Webuye HDSS Site is "To be a centre of excellence in demographic and health surveillance and health research." The goal and objectives of the HDSS are outlined in the proposal for its establishment. The site was set up to support achievement of the University's mandate by providing a community labouratory for research required for career development of staff and teaching of both undergraduate and postgraduate students. Priority research areas were identified as:

i. Demographic changes

ii. Chronic non-communicable diseases

iii. Water and sanitation/environmental health.

iv. Malaria

v. Tuberculosis and other infectious diseases

vi. Nutrition

vii. HIV/AIDS and other STIs

The Ministry of Health recognised the importance of this project and foresaw the possibility of establishing similar units in other parts of the country that would produce reliable data to be used in countrywide estimation of events. Recent recognition of non-

communicable disease as an important health concern in Kenya is an example of an area where research on identification of risk factors could be conducted at the site. The Department of Vital Statistics recently asked the HDSS to work with their Bungoma Office.

Achievements

Data Collection

Webuye HDSS has been in operation for four years. It has carried out six update cycles since the baseline census collecting longitudinal data on the births, deaths, morbidity, socio-economic status, pregnancies, immunizations, parental survival, water, sanitation and health seeking behaviour. It has registered a total population of 77,000 people in 13,333 households and 9,784 compounds within the area.

Research Activities

There have been 8 nested studies carried out within the Webuye HDSS.

i. Prevalence of Intestinal worms in children under 5 years of age in collabouration with the AMPATH project.

ii. Prevalence of malaria in children under 5 years of in collabouration with the AMPATH project.

iii. Type and level of disabilities among the residents of Webuye HDSS

iv. Causes and treatment of jiggers from the infested households

v. Assessment of cardiovascular risk factors among the residents of the surveillance area.

vi. Assessment of the quality of water in collabouration with the Civil and Structural Engineering Project.

vii. Survey on the antimalarial medicine in retail outlets within and around the surveillance area.

viii. Survey of injuries in children below 18 years of age.

Database Design and Construction

Webuye HDSS database was developed in-house modeled on the Household Registration System (12,13) which ensures accuracy and consistency of the database specifically for longitudinal follow-ups of individuals over a long period of time. The data is stored in a Mysql database. The data base is undergoing further development in collabouration with ***INDEPTH.***

Data Sharing

To facilitate data sharing among the stakeholders, the HDSS has developed a publication policy that guides the project on how data will be shared without compromising data privacy, security and confidentiality. It also addresses the issues of intellectual property rights, research ethics, authorship rights and data access for research and publication.

Student Research

To date, four (4) students have completed their research and written their Masters thesis in Webuye HDSS.

Publication

Two published

1) Nathan Smith, Andrew Obala, hrispinus Simiyu, Diana Menya, Barasa Otsyula and Wendy Prudhomme O'Meara. Accessibility, affordability and availability of antimalarials

in a rural district in Kenya after implementation of a national subsidy scheme. *Malaria Journal*. 2011;10:316

2) Andria Rusk, Nathan Smith, Diana Menya, Andrew Obala, Chrispinus Simiyu, Barasa Khwa-Otsyula, Wendy O'Meara. Does anti-malarial drug knowledge predict anti-malarial dispensing practice in drug outlets? A survey of medicine retailers in western Kenya. Malaria Journal 2012, 11:263

Several others are in preparation.

Challenges

For the first four years the site did not face major problems, but the committee is aware of problems that face HDSS Sites internationally.

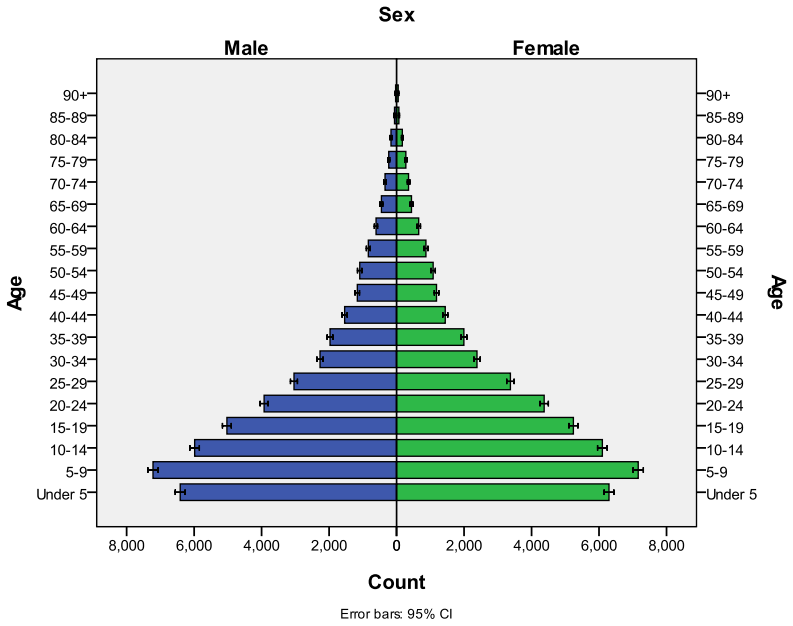
- *Sustainability*. The funding for the site stopped at the end of first phase and we have requested the university to take over. However there is funding for sites like ours from the INDEPTH that we will apply for when we become members of INDEPTH. We are also in the process of applying for funding from elsewhere.

- *Community fatigue*. In the long run the community will get tired particularly if it is subjected to too many activities without evidence of benefit.

- *Ethical issues*. Confidentiality of individual participants, minimization of the risk of misinterpretation of data, balancing risks and benefits to research participants and communities is a delicate matter and long-term surveillance activities have introduced a new dimension in ethics of research. (Carrel 2008)

- *Data Sharing*. Data use has been identified as one of the major problems in running any HDSS site. Issues relating data include protection the participants, ownership, intellectual property rights of the investigators, lack of qualified staff able to handle the data collected and protection of data from misrepresentation.

There is a problem with the under fives in this population pyramid. Investigations are going on and it may be necessary to go back to the field.



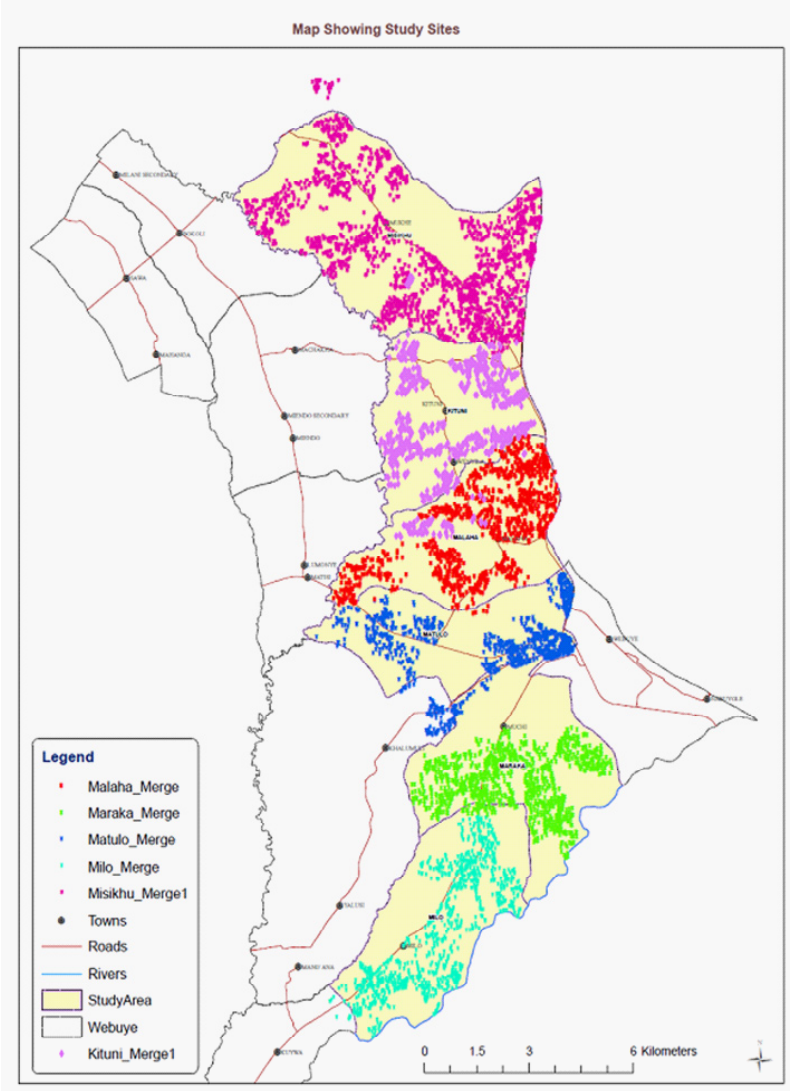
Population Pyramid for Webuye HDSS: 2011

Information use to plot the map, *Location of the homesteads Map 1*, was shared with our partners and they concluded that some of the homesteads were located in Uganda. It turned out that they use the wrong programme to plot the homesteads on the map. This is an example of how data can be misrepresented,

Family Medicine

Achievement of ambitions of Vision 2030 requires appropriately qualified staff in correct proportions of different carders of doctors and other health professionals as well as facilities. As far as doctors are concerned priority should be a doctor who can function in most parts of the country and is trained to deal with more that 70% of the conditions that face Kenyan population. The family physician fits this description. A Family Physician is a medical doctor able to provide competent and comprehensive clinical care over a wide range of patient conditions, considering the patient's physiologic, psychological, socio-economic, cultural and spiritual dimensions within the context of their family and community, and not limited by the person's age, gender, organ system or disease entity. Technically, the Family Physician is distinct from other specialists by being a 'generalist', with a 'working knowledge' of other specialties thus he is able to offer comprehensive and quality care. Justification for family physicians is as follow:

- The increasing demand on the undergraduate student to learn facts required to practice medicine. At qualification doctors are not sufficiently trained to provide general, comprehensive care to the individuals and community.



Location of the homesteads on the map

- It was assumed that Medical Officers, in the current system, would be able to play the role of family physicians but they lack the breadth and depth of appropriate training required for this purpose.
- Inappropriate emphasis on specialty rather than generalist training contributes to inappropriate distribution of the doctors and rising cost of care.
- Increase cost-effectiveness of healthcare through rational use of resources
- Family physicians are trained to provide accessible, holistic, continuous, comprehensive, and cost-effective quality care.

Chapter Eight

Conclusion

"Whether we shall meet again I know not.
Therefore our everlasting farewell take"
William Shakespeare Julius Caesar

The last one hundred years has seen traditional medicine almost pushed to extinction by events around colonial administration which include biomedicine, law and the new religion that resulted in a change in believes. What remains of it is increasingly being integrated into complementary medicine. Despite this there is an urgent need to preserve what remains of it.

Biomedicine was first introduced by missionaries who probably were being paternalistic considered Africans backward and needing social uplifting. The doctors, represented by Principal medical officer, realized the power of biomedicine as an indirect instrument for subduing the native and made a passionate appeal to the British government to extend the services to the natives at the beginning of the 1920s. The anti-yaws campaign illustrates the process they went through to come up with policies which are still evident in health care delivery system today. Establishment of a health care delivery system was an important side effect of colonial era. The impact of colonial medicine was greatest in population increase and change in disease pattern.

Advances in biomedicine eradicated some diseases and control of others.

At independence the government put in place ambitious strategies to increase access to health care for all the people of Kenya. The government increased the budget, number of trained staff and infrastructure. These measures improvement in living standards have improved health care in Kenya but not to the levels anticipated due negative effect of rapid population growth and the economic crisis. The overall direction of heath care policy changed starting 1980 under pressure from donors to accept structural adjustment programmes that shifted national budgets away from the social services leading to a declining trends in health. Once again the government has developed an ambitious plan in Vision 2030 which requires careful planning to avoid the pitfalls of previous strategies. Moi University can play a role by generating high quality timely and representative data at the HDSS and training of Family physician.

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Mr. G. A. Kimaro and his family have great pleasure to present this flower vase picture to Dr. B.O. Khwa-Otsyula who conducted a successful Heart Operation to Judica Gadi Kimaro on 18th September, 1984, at Kenyatta National Hospital, and thus saved the life of a boy.

The whole family is sincerely grateful for the service. This present is only an expression of their gratitude; for they cannot possibly pay the real value of the service rendered by Dr. B.O. Khwa-Otsyula.

signed

Gadi Abel Kimaro of Dar-es-salaam

THANKS DADDY

GOD, thanks for Daddy. Not for one, but several Daddies
I learnt to call one of them "Baba" when I was only one year old.
No sooner did I get used to him than he told me about another Daddy
He said He was bigger and sweeter than "Baba"
Yah, He's God my Daddy

One evening I fell, I was unwell, indeed I wasn't myself!
Yet I cling to my pal. And on "Baba's" shoulder I yell
Oh my innocent heart was gel. Yet I wouldn't give it up
"Baba" too cried to someone's shoulder. Yah, my pal's…

One morning after endless sleep. Two weeks, days and nights of unknown anguish
I opened my feeble eyes! I saw yet another Daddy…
He had sweet fatherly Smile on his face
"Daughter… You're Safe.." he was indeed kind
I asked him tenderly, "Are you God or Baba?" "Am Daddy Daktari,
I've treated your heart, so that God would live in.. ok

I turned to "Baba" seated beside my bed.
*Tears of **JOY** rolling down his cheeks… I confessed*
"Baba" so besides you, there are two more loving Daddies, God and Prof."
*He shook his head wiping off tears and said "**Prof. Otsyula** in your other Dad*
"He has mend your tiny heart for God to live in"

And so, I touched my heart and asked God to enter it…
It became warm and big enough to host God
And my new heart guided me into the ways of God
One of which is my thirteen year old song: "Thanks God for all the Daddies
*Thanks to Baba "n" thanks to **Prof. Otsyula**.*

I am not the only daughter! Thanks on behalf of my other Brothers and Sisters
*Them, who have had their hearts touched, by our Daddy. **Prof. Otsyula** Bless*
His hands all the more, and fill his heart tenderness. For through His hands,
God you've given me a future. And through His heart, God, you've put a new
Breath in my life. A future that I and Baba had given UP…