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TOPIC:

EXPLORING DAGGERS, DRIVERS,
AND TOOLS OF HEART DISEASE IN
NIGERIANS

By

PROFESSOR JANET NGOZI AKPARA AJULUCHUKWU

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EXPLORING DAGGERS, DRIVERS, AND TOOLS OF HEART DISEASE IN NIGERIANS

An Inaugural Lecture Delivered at the University of Lagos
Main Auditorium on Wednesday, 17th of February, 2016

BY

PROFESSOR JANET NGOZI AKPARA AJULUCHUKWU
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DEDICATION

My lecture is dedicated to the Nigerian/LUTH Healthcare Team: over-worked; arguably under-paid, and possibly working with 'skeletal' resources. No one person or group can do the work of patient-care. Eleanor Roosevelt states that: 'we are all afraid to care too much; for fear that the other person does not care at all'. We may also note that 'we cannot do well until we all do well'.

As a Cardiologist, I know that my heart failure patient needs me and others in a well-oiled knowledgeable multi-disciplinary care TEAM.

My Health – Care Family background cries out for scientific inter-professional harmony in the health-team for our patient's good-because that is why we are there.

My HEALTH-TEAM Family

- My late father – Chief Francis N Mberekpe was a British - soldier–trained-Nurse;
- my late sister Caro Mberekpe - a Scottish-trained ENT nurse, and retired as a Chief Nursing Officer: last post: FMC Owerri.
- my Husband – Chuddy Sam Ajuluchukwu is a Pharmacist;
- my oldest son- Dr Obiora Mann Ajuluchukwu is a Consultant Radiologist;
- my second son - Mr Ifeanyi Chukwuka Kiss Ajuluchukwu is an Economist/Banker. My only daughter - Mrs Adaeze Lyzz Umezuruike is an ex-banker, now an entrepreneur. They both are the non-medical business gurus, who have promised to provide THE AJULUCHUKWU Hospital/ Medical Centre.
- my youngest son- Dr Bryan Ogonna Ajuluchukwu is an Economist and also holds a doctorate degree in Pharmacy;
- my daughter-in-love-Dr Omotara Ajuluchukwu is a Senior Registrar in General Surgery and also an important member of the medical team.



Figure Dedication 1: Multi-Disciplinary Health Professional Care for one Heart Failure Patient

Finally, To GOD BE ALL THE GLORY: GREAT THINGS HE HAS DONE!

Thank you Father for your blessings. Help us all to rejoice together p-r-n; and to carry each other's burdens stat, In Jesus' mighty Name I pray.

PROTOCOL:

The Vice Chancellor, Professor Rahamon A. **BELLO**;
Deputy Vice Chancellor (Academic & Research), Professor Jide **ALO**;
Deputy Vice Chancellor, (Management Services), Professor Duro **ONI**;
Registrar and Secretary to Senate and Governing Council, Dr Mrs. Taiwo **IPAYE**;

My Provost, College of Medicine, Professor Folashade **OGUNSOLA**;

My Dean, Faculty of Clinical Sciences, Professor Afolabi **LESI**

Deans of other Faculties;

Members of Senate of the University of Lagos;

Members of Board of the University of Lagos Medical Centre

My Students: Past and Current

Our Students-Great Akokites/current Trainees

My Former and Current Patients

My Lords, Spiritual and Temporal;

My Family and Friends

Gentlemen of the Press;

Distinguished Ladies and Gentlemen

▪ In learning:

- I thank all that have taught me (Teachers and Patients)
- All that I have taught.
- All that I have learnt with [my research team mates, co-authors, and the Cardio-Team].

INTRODUCTION:

To God Almighty, be all glory and honour. May His Holy Name be praised forever.

Gown and Town: I thank the Vice Chancellor for the opportunity to deliver this inaugural lecture, and for approving my choice of date. I also appreciate our amiable Vice Chancellor, whose conviction regarding good health and health promotion has enshrined the Staff Medical Screening (SMS) as a YEARLY birthday gift for all staff.

Mr Vice Chancellor Sir, remember that **'In February, it is all about the HEART'. The title of my lecture is "Exploring the Daggers, Drivers and Tools of Heart Disease in Nigerians".**

My chosen date, -17th February is auspicious; it is only two days after my husband's 71st birthday, and three days after St Valentine's Day – the Heart Day. I am also celebrating 'six decades-plus' on planet- earth; and most importantly, it is my eighteenth year in the service of the University of Lagos; the University of First Choice and the Nation's Pride. This

inaugural lecture, thus announces my official 'getting to age', which gives me the impetus to stand here and talk to ALL, about my GOWN in TOWN.

This Inaugural lecture is the 290th of University of Lagos, the sixth from the Department of Medicine, the second from a cardiologist, and the second from a female professor of the department.

Amazingly it is the first from a female cardiologist, who is also the first alumna of this great university – what the Ibo's will call *Nwa-Afor* Unilag (i.e. daughter of Unilag).

The HEART – as my Destination/Role of Voices and Choices

Mr Vice Chancellor Sir, my final academic destination as a clinical investigative cardiologist has been long, kinked and tortuous- reminiscent of bad varicose veins and also 'amoebic', direction – wise. I do not know how or when the seed of becoming a medical doctor was sown in my life. However, it was ALWAYS known in the Mberekpe family that TATA will be a medical Doctor. As a child in Port-Harcourt, many grasshoppers found themselves without abdominal entrails under the surgical blade of our surgeon – to be play-teams. It was very interesting to me, that 'post-surgery', the grasshoppers calmly walked away. That kindled my interest on structures above the stomach. I also nursed the ambition of being a French linguist following the flattering comments of Mrs Ndupuechi, my French tutor at Queen's School, Enugu. Well, I finally got to College of Medicine, University of Lagos for undergraduate MBBS in 1975. At graduation, in 1980, I bagged the University of Lagos Alli-Idowu prize for Surgery. This feat mapped out a surgical pathway. Some stronger voices suggested otherwise. My most respected and inspiring teacher-late Professor O. O. Ogundipe also wanted me to be a Paediatrician. But, seeing I could even 'out-cry' the affected mothers of sick babies, I left the children alone. So, here I am in Adult Internal Medicine. Nonetheless, I know that there is no coincidence about God's plans. I thank God Almighty, who has made everything beautiful.

Why Cardiology: For sub-specialisation, Professor A. O. Somorin, - my mentor, motivator and HOD invited me to Dermatology. I thank him for his continued support and interest in my career. Cardiology is the branch of medicine dealing with the heart, its functions and its diseases. Cardiology was my choice following my attraction to the mathematical and unambiguous physical principles. As a clinical investigative cardiologist, I am a Doctor with special training and skills in finding, treating and preventing diseases of the heart and blood vessels; embarking on my career as an independent clinical professional and educator.

Today, with integrative models of medical education, Cardiologists are grappling with more biochemistry, molecular biology, and increasingly exciting possibilities of diagnoses and interventions that can even sometimes cheat death. Nowadays, a potential client could present with cough, leg swelling, chest pain or 'aborted sudden death', as manifestations of heart disease.

Mr Vice Chancellor Sir, my lecture on 'Daggers, Drivers and Tools of Heart Disease in Nigerians', and their interrelationships will have the outline of:

Exploring Daggers, Drivers & Tools of Heart Disease

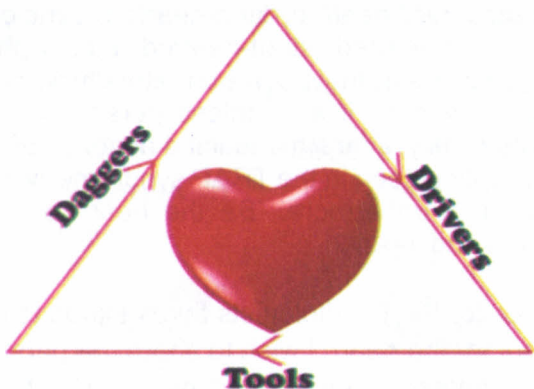


Figure 1: Interrelationship of Daggers, the Drivers-Determinants and Tools in Heart Diseases

OUTLINE

- The HEART as a 'Non-Medical' entity in literature, (Bible).
- Heart structure and function.
- Cardio-Vascular Disease [heart +vessel].
- Cardiovascular Risk Factors' a.k.a DAGGERS.
- HYPERTENSION: and others as daggers.
- HEART FAILURE: commonest complication and final common pathway.
- DRIVERS or determinants of Heart and vessel disease. Epidemiologic Transition and the Double burden.
- TOOLS of the Business.
- Learning From my Patients.
 - Contributions:
 - My publications/responsibilities/advocacy
 - New directions
- Recommendations: University/profession/Nation.
- Acknowledgements

1.0 The Non-Medical Heart

The word - 'heart' is reflective of many aspects of human nature; especially love and integrity. In common English language usage, the heart can be an adjective, verb or noun, resulting in phrases like: heart throb, sweet-heart, broken-hearted, stone-heart, faint-heart, hard-hearted, kind-hearted, simple-hearted, soft-hearted, whole-hearted, stout-hearted, etc. A phrase like 'have a heart', also tells us that people can literally be 'heart-less'. Physiologically, I wonder if a heartless person can be alive. However, anatomically, acardia, meaning absence of the heart, is a rare complication seen in the TRAP syndrome-twin reversal arterial perfusion. Furthermore, 'Be the heart' of something depicts centrality and passion.

Mr Vice Chancellor Sir, Cardiologists takes things to heart and always look out for the heart. I wish to share our perspective of every-day heart phrases. 'Sweet heart' means a 'diabetic heart', and a 'heart throb' is palpitation; while 'take heart' suggests heart transplant. A hard heart supports diastolic or

relaxation failure and a soft heart will support systolic or contraction failure.

Amazingly, in the King James' version of the Bible, the word HEART appears 725 times in the Old Testament and 105 in the New Testament. I shall leave the meaning of 'Heart of Gold' to you with this picture of the Heart of Gold Hospice.

In the Holy Bible, Jeremiah (Jer. 17.9) emphasises that 'the heart of man is deceitful and beyond cure, who can know it?'



1.1 Valentine/Cupid/Mammalian Heart

Mr Vice Chancellor Sir, These two images represent the heart; depending on the context: LOVE versus BIOLOGY.

The HEART: what it means to different people!

- Valentine heart
- Cupid's



- Human heart



Figure 2: The Cupid-Valentine Heart versus the Mammalian-Human Heart

At this time of the year, the 'Valentine heart' and red roses are very familiar images to many educated 'westernised' adults. We can compare and contrast a Valentine heart and a mammalian or human heart. A Valentine heart also carries a piercing arrow, which Cupid, the god of love **shoots** at a victim; AND the VICTIM FALLS IN LOVE. In such instance, the arrow or dagger is love. For today's lecture, however, the heart 'daggers' are biological or biochemical factors that can damage the heart resulting in falling sick. Kindly note that both daggers of Cupid or Medicine may ultimately result in a fall.

2.0 Heart Structure and Function

'Biology 101' teaches that the whole human being originates from the fusion of the mother's egg and a father's sperm cell. This fused cell will undergo several cell divisions and process of differentiation (meiosis), resulting eventually in different structures and organs. A rudimentary heart structure is recognisable at approximately 19th day – of - life. Then, the heart attains functionality and starts observable 'beating' around the 22nd day after conception. From that time, the heart continues to beat-without a rest; [or much rest], until it arrests at death-hopefully at a ripe-old-age of 90 years-plus.

Mr. Vice Chancellor Sir, "Which of us would like our heart to take a rest or to arrest? God forbid! It is for this reason that Cardiologists are 'made' so they can study, manage and prevent conditions that can lead to cardiac disorder and cardiac arrest.

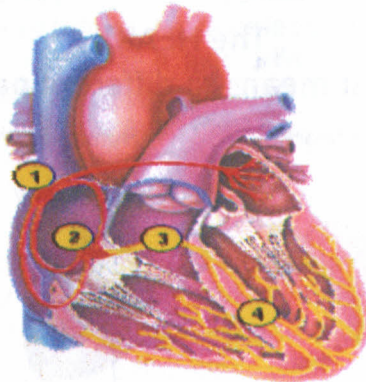


Figure 3: Cut section of the heart with its walls, valves, great vessels and arborisation of electrical network

2.1 Structure of the Heart

THE HEART described as a HOUSE

Mr Vice Chancellor Sir, this introduction of the heart will finish with a brief anatomical description. Grossly, the heart consists of four chambers, separated by walls and valves. In my education of the lay public, the analogy of a house has proven useful in describing the functional structures. My feedback shows that heart disease is greatly de-mystified, when this basic understanding of heart structure is assured. As the heart has three basic layers, I teach that the outer protective covering of the heart called PERICARDIUM is like an outer-fence; the middle contractile muscle layer-called MYOCARDIUM, makes up the walls. Then, ENDOTHELIUM, the inner smooth lining is like 'plastering'. The HEART VALVES serve as doors that ensure blood flow in one direction. Finally, the 'electrical wiring' consists of the specialised electrical network which ensures NORMAL SINUS/regular rhythm. Heart damage and HEART FAILURE can develop from damage of any 'house structure'. The HEART is definitely a WONDER PUMP. All its parts are endowments to help it work efficiently in its major job of distribution of blood, nutrients, oxygen etc. In response to certain stimuli, the heart also synthesises some peptides and proteins that can alter its size, shape and functionality. Thus, the heart can also be described as an endocrine organ.

Heart Function: Functionally, the heart is really two distinct hearts-the right heart and the left heart. The right heart collects 'spent or used' blood, and directs it into the lungs for oxygenation and removal of carbon-dioxide. Then this oxygenated blood goes into the left heart; whence it is distributed via the aorta to all other parts of the body, including the heart, finger nails and hair. Discovery of this circuit is credited to William Harvey (1578-1657) – the Physician to King Charles.

As a pump, the two upper chambers or atria are first filled with blood, then contracting, they squeeze blood into their respective ventricles. Then the ventricles in turn, contract to

cause ejection of blood into the distributing vessels called arteries. Please note that the relaxation occurs before contraction. The heart rhythm of muscular relaxation and contraction is regulated by the electrical network, which ensures regularity and orderliness.

THE CARDIAC OUTPUT (CO): is the amount of blood pumped out of the heart in a minute. The CO is approximately five [5] litres per minute; which is judiciously distributed to all body systems in a **fixed sharing formula at rest or during exercise**.

Cardiac output at Rest and Exercise

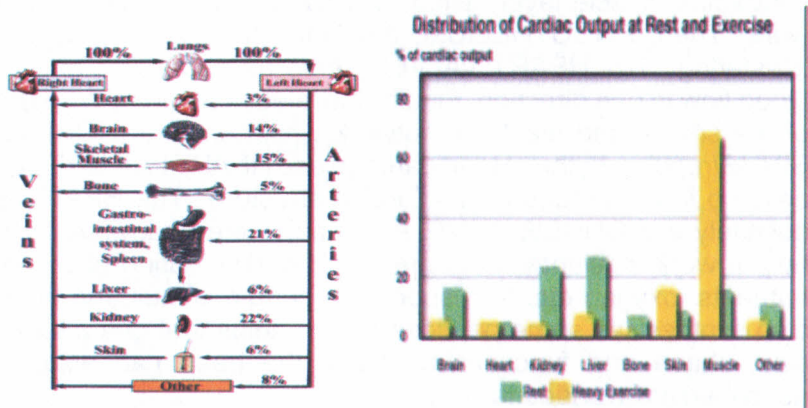


Figure 4: showing the Distribution of Cardiac Output at Rest and at physical activity/exercise

The heart as a master distributor

Formula: Cardiac output CO is stroke volume (SV) x heart rate (HR). Cardiac output needs to be generated and distributed without impediment. The Figure 4 shows the usual distribution of cardiac output to the body. The heart receives 3%-5% of cardiac out-put; while the kidney receives up to 25%.Both structures are described as fist-sized with different functions. Thus, this operative model is based on equity; related to need or function and not size. More importantly, when needed; during increased activity, cardiac out-put will increase quickly by activation of the sympathetic/neuro-hormonal systems. The distribution of cardiac out-put will

again be dictated by the need of more active organs. In sharing resources, the Nigerian healthcare system which has been described as a man-made disaster has a lot to learn from the heart.

3.0 Definitions

3.1 Cardio-Vascular Disease (CVD):

Mr Vice Chancellor Sir, some definitions will be useful at this point.

Cardiovascular disease (CVD): is an umbrella term that includes ALL diseases of the HEART and BLOOD VESSELS. Some authorities use CVD interchangeably with heart disease.

CVD: Diseases of Heart and Vessels

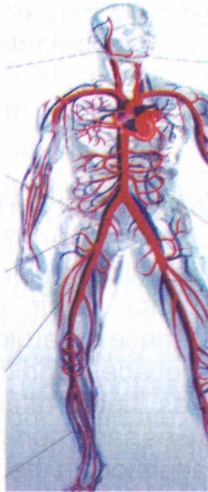


Figure 5: showing heart and vessels=the cardiovascular system

CVD as a broad term encompasses a wide range of diseases but the World Health Organisation [WHO] top five are: hypertension, stroke, heart attack, rheumatic fever/rheumatic heart disease and heart failure. Based on current World Health Organisation data, 75% of the burden of cardiovascular diseases [CVD] is found in the low and middle income countries [LMICs], with associated alarming increases in their risk factors.

Global Deaths from Cardiovascular Disease [cvd]

16.7 Million deaths annually

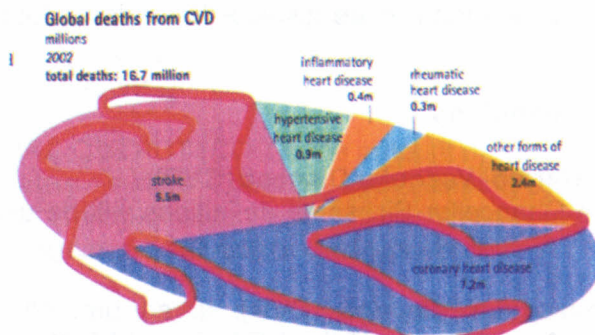


Figure 6a: Global Cardio-Vascular Disease [CVD] Mortality Profile

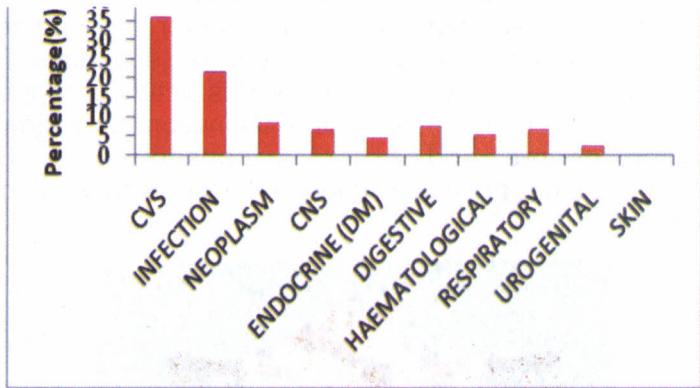
Evidence abounds that CVDs are devastating and contribute to premature mortality globally. Figure 6a depicts the contribution of different CVDs to annual global mortality, in which CVDs were estimated to have caused 16.7 million deaths. Mr Vice Chancellor Sir, the factors feeding this epidemic and their drivers will be now explored.

Cardiovascular (CVD) Mortality in Nigeria:

Is the global picture same in Nigeria?

As infectious diseases like malaria and HIV-Aids have an immediacy and urgency; their consequences are easily noticeable. But, the menace of cardiovascular diseases could be hidden and silent for decades, and then explode with disastrous complications such as heart attack or heart failure. Thus, Cardiovascular Diseases sadly contribute to premature mortality with only little public attention. In the 1990s, the Global Burden of Diseases group predicted that cardiovascular diseases would overtake infections as major causes of death in adults in the developing world. Our research has recently proved this prediction to be true, the Nigerian scene now mirrors the global pattern. In 2013, we published a paper on causes of acute medical deaths in a 5-year period in LUTH. The three top conditions were cardiovascular disease (CVDs), infections, and tumours. It was surprising that CVDs were more frequent than infections.

Ajuluchukwu, J.N.A., Abdulkareem, F.B., Achusi, I.B., and Mbakwem, A.C. 'Clinical and Autopsy Parameters of Acute Medical Deaths in an Emergency Facility in South West Nigeria'. *J Clinical Sciences* 2013; 10: 21-26.



Legend 6b: Pattern of Classes of Acute Medical Causes of Death

The data concerned 250 males (58.5%), and 177 females (41.5%) with a mean age of 44 years. As shown in the Figure 6b, CVDs contributed 36%; while infections were 22%.

Justification

Mr Vice Chancellor Sir, as the life expectancy of Nigerians is sadly 51 years; our data demonstrated the ugly toll of CVDs in our people as well as its occurrence at a younger age. This devastation also affects a very important segment of the population, which includes young parents, and mature workforce etc. Our results thus invite urgent attention to CVDs (heart diseases), as important contributors to the mortality profile of our people. The good news is that majority of CVDs are eminently preventable. It is this prevalent scenario that has provided a justification for my continuing research interest, and this inaugural lecture.

3.2 Risk Factors a.k.a daggers

Mr Vice Chancellor Sir, World Health Organisation (WHO) defines a RISK FACTOR as any **attribute, characteristic or exposure** of an individual which increases the likelihood of

developing a disease. So for heart disease, imaginative authors have used the imagery of 'daggers' to depict the many damaging risk factors of heart disease.

3.3 Risk factors as Daggers in the Heart

As in literature and tarot cards, the greater the number of daggers, the greater the expected painful consequences. Thus, each dagger represents one risk factor. This picture of daggers in the heart is intended to aid the imagination regarding the damaging degree and expected consequences. Such understanding may provide an important basis of prevention and intervention.

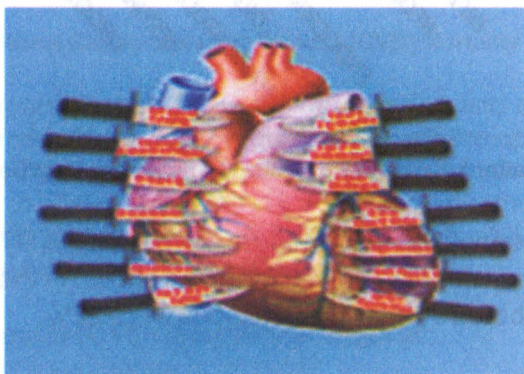


Figure 7: Daggers in the Heart

The terminology 'risk-factor' was coined by Kannel WB et al in 1961. This resulted from the search and later recognition in post 1940s of 'non-infective' factors that caused heart problems. At that time, it was observed that although improved hygiene caused a drop in infections generally; but heart disease continued to soar. It was the new contributory non-infective/non-communicable factors that were called RISK FACTORS. Supported by the muscle of United States of America Government, great epidemiologic research of the Framingham group demonstrated these new risk factors.

Mr. Vice Chancellor Sir, the first three identified risk factors for heart daggers are: **elevated blood pressure/hypertension, elevated blood cholesterol and enlarged heart.** Since then,

many more have been identified with a current number of 15 or more and we are still counting. It must be noted that the link between the presence of these risk factors and the heart, and its vessels is initiation and progression of heart and vessel damage.

3.3 Classification and Types of Risk Factors:

Mr. Vice Chancellor Sir, these daggers are classified as follows:

ESTABLISHED Risk Factors	EMERGING Risk factors
Non Modifiable	Inflammatory factors:
Modifiable	Homocysteine
Non Modifiable: age, sex, FH	C-Reactive Protein
Modifiable:	Clotting factors
Behavioral: e.g. smoking	Fibrinogen
Biological: e.g. hypertension	

Table 1: Classification of RF

The MODIFIABLE RFs are those that their harm potential can be reversed or decreased by medical interventions and treatment. Examples include: Behavioral factors, such as smoking and physical inactivity. Biological-Modifiable risk factors include hypertension, diabetes, abnormal blood cholesterol and obesity.

On the other hand, the NON-MODIFIABLE risk factors are NOT altered by current medical interventions. They include advancing age, sex/gender, and family history.

Risk factors aka 'Daggers'

Back to contents

Risk Factors for Cardiovascular Disease	
<ul style="list-style-type: none">• Modifiable<ul style="list-style-type: none">• Smoking• Dyslipidaemia<ul style="list-style-type: none">• Raised LDL-C• Low HDL-C• Raised triglycerides• Raised blood pressure• Diabetes mellitus• Obesity• Dietary factors• Thrombogenic factors• Lack of exercise• Excess alcohol consumption	<ul style="list-style-type: none">• Non-modifiable<ul style="list-style-type: none">• Personal history of CHD• Family history of CHD• Age• Gender

Table 2: World Health Organisation (WHO) Table of Cardiovascular Risk Factors/'Daggers'

3.4 Emerging or New Daggers

In recent times, some newer damaging factors have been implicated as cardiovascular (CVD) players but the scientific jury is not fully out on their consistent harm-potential. So they are currently termed 'EMERGING' risk factors. They include bio-factors of inflammation and enhanced clot formation [intra-vascular blood clots]. Their examples include: fibrinogen, homocysteine, and C-reactive proteins [CRP].

4.0 Hypertension: Importance as a heart-dagger

Mr. Vice Chancellor Sir, Hypertension is also known as high blood pressure and dubbed the 'silent killer'. ***Hypertension is defined as elevated blood pressure higher than that expected for an individual's age and sex.*** It can affect any age, even babies. Hypertension is classified as primary; if the cause is unknown and secondary- when it complicates conditions such as kidney or endocrine diseases.

Primary hypertension occurs in more than 90% of affected individuals. The risk factors of primary hypertension are linked to salt and obesity. Another addition to the classification is the class of pre-hypertension. This is defined as a systolic blood pressure of 120-139 mm Hg, and or a diastolic blood pressure of 80-89 mm Hg. Authoritative evidence suggests that this class of adults will benefit from health education, promotion and surveillance, in-order to prevent the progression to overt hypertension.

Hypertension is the most prevalent cardiovascular risk factor. Globally, it is responsible for approximately nine (9) million deaths annually. World-wide, a BP of 140/90 mm Hg or above has been noted in 70% of heart failure, strokes, and heart attacks.

4.1 Hypertension as a Dagger in Nigerians

For Nigeria, the Federal Ministry of Health data of mid 1990s is shown in Figure 8 and indicates that among adults (>15 years), 15%-20% is the prevalence of hypertension. This depends on the cut-off value. Previously, 160/95 mm Hg was the cut-off value; however, in 1999, World Health Organisation adopted 140/90 mm Hg as the cut-off value for hypertension.

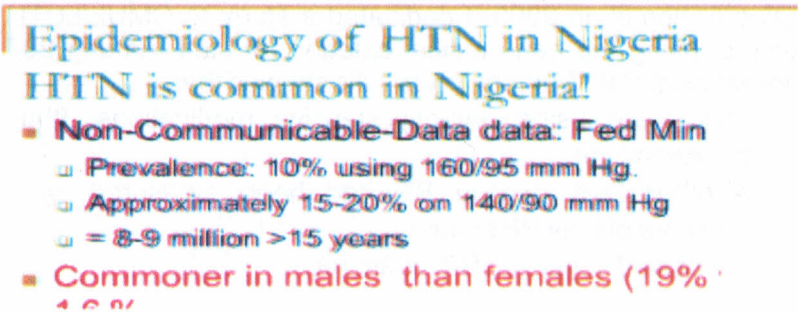


Figure 8: data of Federal Ministry of Health on Hypertension

4.1.1 Hypertension can complicate or accompany other conditions, such as metabolic syndrome, and obstructive sleep apnoea. In figure 9, Odia documented that 16%-80% of heart attack patients in Africa had hypertension.

RF profile in blk africans

RF	Falase	ogunowo	pouroune	Renanbot	tricolat	fofona
N	15	31	25	45	103	11
Age> 50		62.3			65	
Males	80	80.7	80	83.7	81	82
Chol high						
Htn	73.7	88.7	48	16.3	53.3	
Smok	6.7	6.5	36	90.3	64.5	45.4
DM	40	19.4	16	14	27.3	
OBESITY		0.9	24	23.2	37.6	63.6

Figure 9: Hypertension (HTN) as a prominent Risk Factor in Heart Attack Patients in Africa

Mr Vice Chancellor Sir, research has a lot to do with need to update and upgrade information. Our research in different groups showed that hypertension is prevalent. Since, 'Charity begins at home', in 2005, I dedicated a study to CMUL/LUTH workers, using the non-medical category of staff. Among 297 Non-Medical staff Workers, my results showed that:

- 20% were using anti-hypertensive medications, [thus hypertensive].
- Another 26%: whose BP had been measured were unaware of their BP status.
- 5% of staff never had BP measured.

Contribution: This information has already helped relevant authorities and healthcare teams in mapping out management and education strategies to tackle the identified gaps for our staff and other patients.

This study was published as: *'Ajuluchukwu JNA. Survey of Blood Pressure Status and Knowledge of Risk factors of*

4.2 Variable Cut-Off values Affect Prevalence

Another contribution was in the importance of different cut-off values for diagnosis and prevalence of hypertension. World Health Organisation cut-off had changed from 160/95 to 140/90 mm Hg in 1999. This change was associated with some confusion as expected. Our famous Ministry of Health Non-Communicable Disease data had been obtained using 160/95 mm Hg. There was need to examine the effect of altered cut-off values on prevalence data. In our study of pattern of risk factors among Nigerian executives, both 160/95 mm Hg and 140/90 mm Hg respectively were used for hypertension prevalence.

- using 160/95 mm Hg and 140/90 mmHg, the prevalence of hypertension was 14.9% and 20.4% respectively.
- Other heart disease risk factors were noted as follows: overweight status-33.0%, obesity-16.0%, alcohol use - 28.6% and smoking 8.0%.

Publication: NwachukwuJ, Inem V, Ajuluchukwu JNA, Ayankogbe OO, Jarikre AE. Cardiovascular Risk factors in Nigerian Company Executives Presenting for Group Life Assurance. Nigerian Hospital Practice 2007; 1: 13-16.

Contribution: Compared to the NCD data of 1997, after 10 years, an increase occurred in prevalence of hypertension [from 10%-14%]. (b) Expectedly, use of different cut-off values provided different prevalence figures. (c) These data also added to important information used in articulating personalised care as well as other strategies for community preventative care for like groups.

Our recent study amongst apparently healthy non-hypertensive control subjects showed that 44% had the pre-hypertension status.

1. Publication: Ale OK, Ajuluchukwu JN, Oke DA, Mbakwem AC. *Impact of pre-hypertension on left ventricular mass and QT dispersion in adult black Nigerians. Cardiovascular J Africa 2014; 25: 78-82.*

4.4 Multiple/Clustering of Risk Factors

Mr. Vice Chancellor Sir, one will not necessarily develop heart disease with exposure to a heart risk factor. But the likelihood of heart disease increases with greater numbers of risk factors. The corollary is that the risk is reduced with ACTION against any one risk factor. Many risk factors are 'silent' at the onset. So, annual check-up strategies are useful to detect them.

Multiple risk factors are the rule rather than the exception. World Health Organisation (WHO) has emphasised that risk factors tend to cluster in 'at risk' individuals. Thus, a hypertensive individual could have the risk factor of hypertension, and diabetes, obesity and cholesterol issues in different combinations. The clinical implication is that the presence of two risk factors will promote HARM exponentially and not just as a simple summation. Thus, healthcare professionals and clients should be aware of this risk profiling and intervene accordingly. Thus, a diabetic hypertensive patient is at graver risk than one with only hypertension. This concept guides risk prediction and even directs specific choice of appropriate treatment.

In 2011, using the OCEAN-ANAEDO medical mission, I examined the risk factor pattern in a semi-rural eastern community. It was rather eye-opening to note that:

- multiple risk factors i.e. daggers were prevalent.

In Hypertension, Multiple RFs=Daggers Co-exist, Even in a Rural Nigerian Community

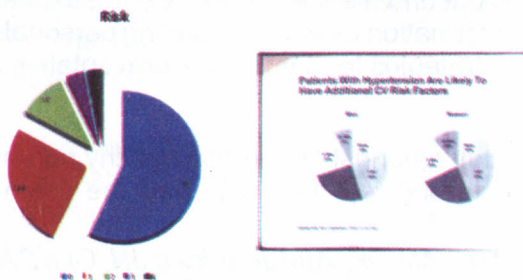


Figure 10: Multiple Risk factors in the Community

- Approximately half (47%) of apparently healthy adults in the community had a clustering of 1-5 different risk factors all silent. Such a degree of involvement was unexpected in the rural community. The results thus raise a red flag concerning alteration in the community profile.

4.5 Risk factors in Hypertensive Patients

Mr Vice Chancellor Sir, our in-house unpublished audits of the risk profile of newly- referred hypertensive patients also came in useful. Our data indicated that multiple risk factors were frequent in the group. As shown in the table, more than 30% of patients had different risk factors of heart enlargement, and elevated cholesterol, co-existing with hypertension.

Multiple Cardiac Risk Factors in Newly Referred Hypertensive Cohort

Parameter	Proportion%
X-Ray Cardiomegaly	37.1
Isolated Aortic Unfolding	5.0
Elevated Total Cholesterol	45.2
Abnormal fasting glucose	30.8

Table 4.5: Pattern of Risk factors in 415 LUTH Hypertensive Patients

Unpublished data compiled and analysed by Ajuluchukwu JNA and Osibogun A.

Contribution: Globally, there has been a paradigm shift of hypertension treatment from BP level-only 'stepped care' approach to global risk reduction and individualised therapy. Our data has provided home grown data to guide such patient –care strategies.

In line with this, our survey of Nigerian General Medical Practitioners, found that 70% or more physicians indicated that their determinants of hypertension treatment choices, depended significantly on target organ damage, and presence of risk factors.

Conclusion: our data has demonstrated that a majority of the general medical practitioners in Lagos appear to practice according to hypertension guidelines.

Publication: Ajuluchukwu JNA, Jarikre AE, Inem VA. A Survey of General Medical Practitioners Knowledge of Hypertension Care: Assessment of Practices, and Choices Influencing Management. J Med & Med Sc. 1999; 1: 84-89.

5.0 Consequences of CVD Risk Factors

Mr Vice Chancellor Sir, consequences of cardiovascular damage result in (a) vessel-blockage syndromes and (b) heart muscle damage or enlargement.

5.1 Endothelial Damage and Vessel Blockage via Atherosclerosis

Individually and in combination, the different prevalent cardiovascular risk factors interact with the inner lining of the heart or vessels to cause ENDOTHELIAL DYSFUNCTION. Such vascular endothelial changes result in mal-adjustment in vessel sizes; initiation and progression of vessel narrowing, and eventual vessel blockage by a process of *atherosclerosis.

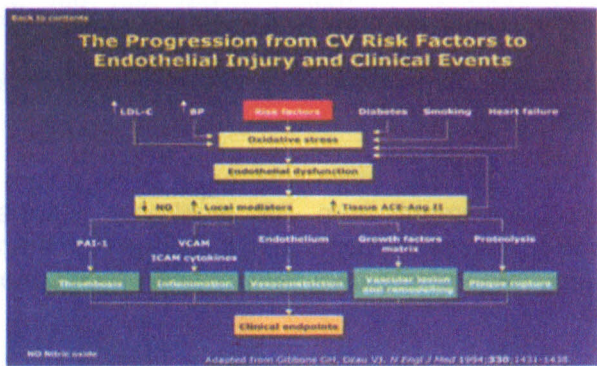


Figure 11: multiple risk factors/daggers collaborating to cause INJURY

A blocked artery compromises the supply of nutrients and oxygen to designated regions of the heart or the body. Such

compromise may result in silent or provoked manifestations of tissue starvation, such as angina or an immediately recognisable manifestation of tissue death such as heart attack, or limb death (gangrene). When such occurs in the territory of the brain, then a type of stroke occurs.

5.2 Consequence of Arterial Blockage: Heart Attack

The coronary arteries are the arteries that supply the heart itself with blood and nutrients.

Heart attack or myocardial infarction is a dreaded consequence of this arterial blockage. Heart attacks are the leading cause of death in all WHO regions except the African region. This celebrated rarity is now giving way as the prevalence of risk factors and heart attacks rise. In our previously mentioned autopsy study of acute medical deaths; acute heart attacks were not identified but three patients demonstrated some evidence of 'old' heart attack.

Contribution: Our findings still support that heart attacks are deadly but infrequent in our environment as a cause of acute medical deaths.

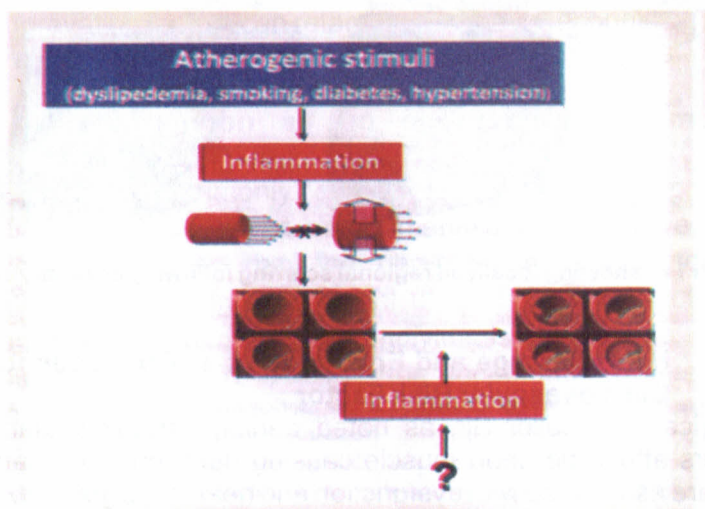
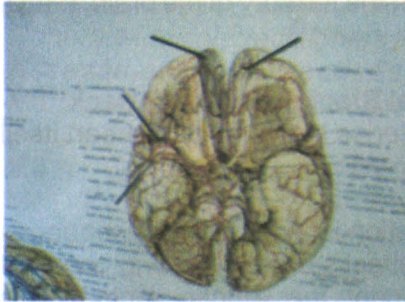


Figure 12: showing blood vessel at different stages of narrowing and blockage

Consequences and Complications of Vascular (artery) blockages



Stroke



Gangrene or death of toes

Figure 13: Showing Target organ Involvement resulting in Gangrene of Big Toe

Symptoms and manifestations

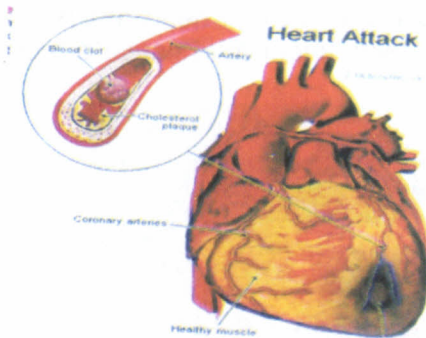
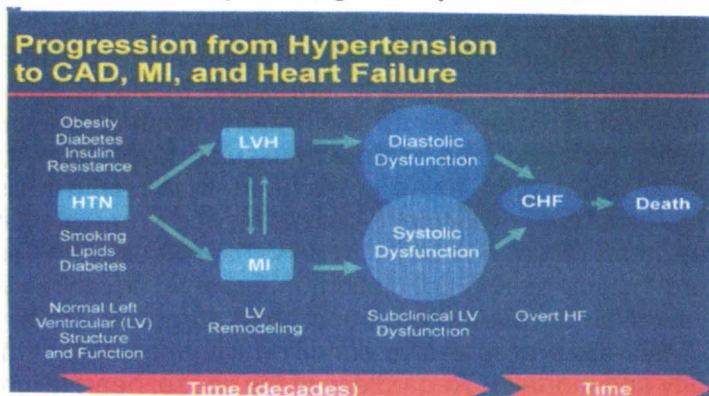


Figure 14: showing localised regional scarring following coronary artery blockage

5.3 Heart damage and Enlargement as Consequence of Cardiovascular Risk Factor

Mr Vice Chancellor Sir, as noted earlier, cardiovascular risk factors affect the heart muscle causing heart muscle changes that are associated with dysfunction and heart enlargement.

CVDs are silent killers: Decades of 'silence' preceding a 'noisy' exit



**Figure 15: Time frame from Daggers -Silent Structural Change-
Observable Disease**

Figure 15 summarises the time frame from silent occurrence of one or multiple risk factors to the time when symptoms result or event occurrence. The spectrum of structural changes include heart muscle enlargement, (LVH), or heart muscle death (MI=heart attack), then heart muscle dysfunction, and then followed by overt heart failure. There are many points in this time frame that appropriate intervention and elimination of risk factors or aggravating factors can retard this journey. Recognising these alterations are articulated in modern treatment strategies.

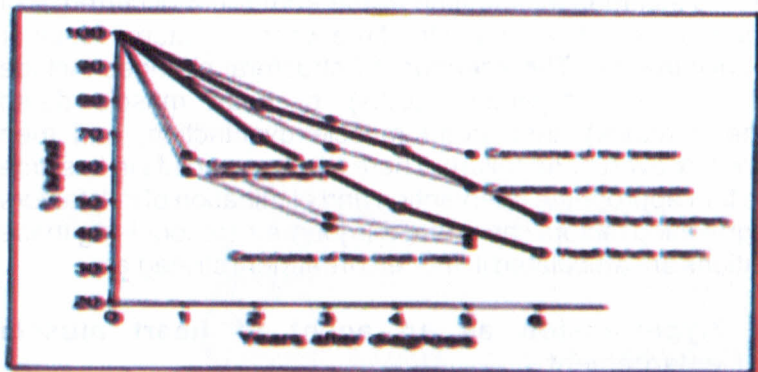
5.4 Hypertension as an agent of heart muscle enlargement

Hypertension commonly affects the heart causing heart enlargement as a target organ manifestation. The resulting muscle dysfunction may be characterised as systolic or diastolic. Depending on the tool utilised, frequency of heart enlargement in hypertensive individuals is variable. Using electrocardiogram, 18%-56% is the documented frequency in Nigerian hypertensive subjects. However, with chest x-ray heart enlargement, frequency of 37% was noted in our newly referred hypertensive patients. This finding has implications for treatment choices. Use of echocardiography can additionally

help in characterising the dysfunction as systolic and diastolic with prognostic and management connotations.

5.5 Heart Failure! The New Malignancy - the new Cancer

Mr Vice Chancellor Sir, Heart failure is the FINAL COMMON PATHWAY of all diseases of the heart including the inner endothelial covering, the middle muscular layer, the outer pericardial covering, or 'holes' in the heart. In the industrialised world, as other cardiovascular diseases reduce in prevalence or severity, heart failure has been noted to rise. Reasons given in literature include ageing population, therapeutic advances with better survival for heart attacks and heart surgeries. However, Heart Failure is a progressive condition with increasingly high morbidity and mortality. Regardless of the cause, heart failure is a lethal condition; as lethal as certain malignancies since more than 35% of affected men and women may die within two years.



Survival curves for heart failure and various forms of cancer among males and females aged 55-74 years. (Data from the Framingham Study²⁰ and the Norwegian Cancer Registry, Oslo, 1990.)

Heart Failure (HF) as PUMP Failure. The heart is an efficient organ. It recognises periods of low and high work demands and adjusts accordingly. If healthy, there is efficient conservation of resources. Thus, heart failure as a clinical syndrome occurs when the heart is UNABLE to deliver SUFFICIENT blood for the use of body tissues.

Myocyte (heart cell) enlargement is an early rule during the clinical course of HF. It develops in response to mechanical, haemodynamic, hormonal and pathologic stimuli. Increased cardiac work or stress induces increased expression of genes such as natriuretic peptide and foetal contractile proteins. This adaptation results in larger heart cells, and eventually, a LARGER heart; but its constituent proteins are INFERIOR. These newly formed proteins recruited to help and repair the failing heart are intrinsically defective. Thus, they contract poorly, relax abnormally, and demonstrate electrical irritability. Such processes thus result in Heart Failure and Arrhythmias-the abnormal heart rhythm, which may precede sudden cardiac death.

5.6 Hypertension Causing Heart Failure

African and Nigerian Experience

Mr Vice Chancellor Sir, in Africa, hypertension is a predominant cause of heart failure (HF); whilst heart attacks are the major cause in the Western world. In the African THESUS Heart Failure Study, the prevalence of hypertension was 25% but our data in LUTH indicated that hypertension was associated in more than 50% of HF. Heart attack caused only 2% of heart failure in THESUS HF cohort, and 3% of LUTH heart failure (Figure 16 and table 5.6).

Associated Co-Morbid Conditions in Heart Failure [LUTH]
(Ajuluchukwu JNA, Anyika EN, Raji KA in JHA 2013)

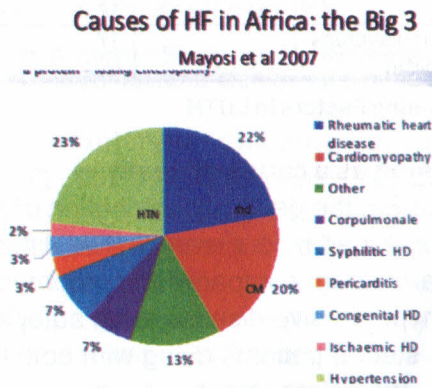


Figure16: The African THESUS Heart Failure Data

Condition	Percentage (%)
Hypertension	45
Hypertension and Diabetes	16
Dilated Cardiomyopathy	27
Dyslipidaemia	20
Thyrotoxicosis	6
Rheumatic heart disease	6
Atrial Fibrillation	6
Heart attack	3

Table 5.6: Causes and Comorbidities of Heart Failure in LUTH

5.7 Aggravating Factors of heart Failure

Mr. Vice Chancellor Sir, in Heart Failure, the concept of aggravating factors is important as the presence of such factors can fuel rapid heart muscle decompensation and progression of HF. Furthermore, elimination of such factors is also an important management step in heart failure.

Contribution: Our study of LUTH acute heart failure patients has provided the pattern of aggravating factor; so healthcare professionals have information to plan and provide safe and effective therapy for our patients. This publication was in 2014.

Table of Aggravating Factors of Heart Failure amongst Admitted Patients in LUTH (Ajuluchukwu JNA, Anyika EN, Raji KA)

Aggravating Factor	Proportion %
Low blood potassium	30
Infections	27
Severe hypertension	18
Herbal concoctions/alcohol	17
Arrhythmias	17
Non-adherence to diet/drugs	17
Pulmonary embolism	6

Table 5.7: HF Aggravating Factors in LUTH

5.8 Hypertension as a cause of death

Mr Vice Chancellor Sir, the general contribution of hypertension to mortality was examined by our team. In two different ten-year periods, our research team compared the proportions of known complications of hypertensive disease in an autopsy study. The study cohort consisted of patients dying with both hypertension and hypertrophy (heart enlargement).

Our data in Figure 17 showed that in the period of 1982-1991 versus period of 1992-2001, the causes of death showed a non-significant increase in heart failure deaths but a near- significant decrease in strokes. This is consistent with global trends, which showed that stroke prevalence and mortality appeared to be declining especially with improved hypertension care. Sadly, 47 years was the mean age at death of these patients. This young age at CVD death is grossly inconsistent with global expectation, knowing that advancing age, defined as age of ≥ 65 years is the requisite non-modifiable risk factor. However, these findings support earlier observations that identified hypertension in Blacks as aggressive, associated with earlier onset target organ complications, even at lower blood pressures. Mr. Vice Chancellor Sir, our findings have rather indicated a status quo in hypertensive outcomes or even a deterioration. To change this situation, different strategies would definitely be required.

Mbakwem AC, Ajuluchukwu JN, Oke DA et al : Nig J Clin Pract 2009

Cause of death	1982-1991 %	1992-2001 %	p value (significance)
stroke	55.0	50.0	0.06
Heart failure	38.2	45.0	0.89
Haert Attack	3.8	4.2	ns
Kidney Failure	3.2	1.0	ns

Autopsy study of acute deaths of hypertension related pe

AVEARGE AGE: 47 years (sd 12.3)

Figure 17: LUTH Autopsy Study of Hypertension and Hypertrophy showing comparable Outcomes over 20 years

5.9 Success of Intervention Using Education Program

In an on-going observational study [2003-date] of adult Lagosians in a worship site, the prevalence of hypertension was >20%. [Comparable to Federal Ministry Data] Our study also showed that at community level, 'Awareness, Detection, Education {ADE}programs are effective **Tools** in controlling risk factors of heart disease. We have recorded obvious positive trends in targeted parameters of systolic, diastolic

blood pressures, and body mass index – an index of obesity [BMI].

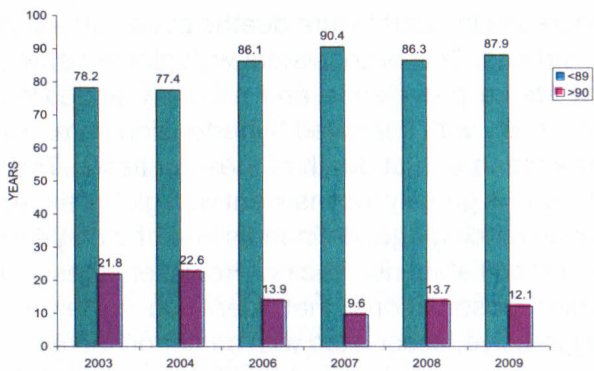


Figure 18: Pink (dark) Bars show Abnormal Diastolic Blood Pressures of an Adult Community. With 'ADE' intervention as proportion decreased from 21.6% in 2003-12% in 2009

Similar information is also shown in the table 5.8, further indicating that the mean systolic blood pressures also decreased from 122.7 mm Hg in year 2003 to 113.0 mm Hg in 2009. The program consisted of health talks on health risks, one-on-one sessions when needed, and aerobic exercises.

Trends: systolic BP by gender

	2003	4	5	6	7	8	9
Females							
Mean	122.71	119.18		115.44	112.82	118.30	113.03
Min	90	90		90	80	90	90
Max	220	195		144	160	180	150
Std dev	23.51	17.26		14.39	15.96	19.14	12.34
Males							
Mean	121.95	122.15		118.56	111.17	123.30	120.35
Min	80	80		90	80	110	100
Max	190	190		150	160	148	150
Std dev	18.66	19.01		12.71	18.97	10.75	13.46

Table 5.8: showing the gradual decrease of mean systolic blood pressure following community awareness-detection-education program

The untiring passion and great organizational skills of my co-researcher - Dr. Eyo Nyong of Catholic Chaplaincy Centre of LUTH/CMUL is gratefully acknowledged for getting the program this far.

6.0 Cholesterol as a dagger

Mr. Vice Chancellor Sir, abnormal lipid profile, including abnormal blood cholesterol levels is another established risk factor. Several challenges have dogged the cholesterol story.

(a) There are several cholesterol components that make up an abnormal lipid profile. These include and not limited to: total cholesterol (TC), low density cholesterol [LDL], high density cholesterol [HDL], and triglycerides [TG]. (b) The normal reference value has been changed several times, thus contributing to confusion for both health care professionals [HCPs] and clients. It ranks rather low in the community health concerns. This will need innovative methods for successful preventative and clinical intervention. (c) A cholesterol/lipid panel test is also considered 'pricey' at three thousand naira.

It was in 1950 that John Gofman et al (of University of California) discovered that increased LDL and low HDL cholesterol were found in men with atherosclerosis. Thus, it joined the league of risk factors.

Framingham Heart Study :1984

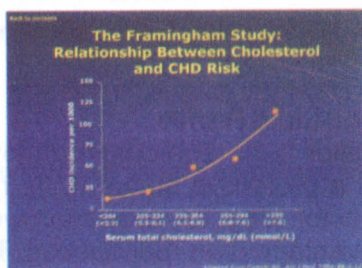


Figure 19: showing Higher Levels of total Cholesterol are Associated with Higher Mortality from Coronary Heart Disease

6.1 Mr. Vice Chancellor Sir, our study in the community/Aspanda Market Traders recorded that only 27% of them had heard of cholesterol as a heart risk factor. Education was not an issue here, as 60% of them had secondary school education or more.

6.2 Nigerian National data in mid 1990s showed that Kano and Ikot Ekpene communities respectively had the highest and lowest average values of total cholesterol. In recent times,

Kano has been recording increasing frequencies of heart attacks. Kano has also been dubbed the Hypertension capital of Nigeria. Amongst our newly referred hypertensive patients, more than 40% had elevated total cholesterol. Associated clinical features and target organ damage direct treatment choices of our general medical practitioners.

1997: Total Cholesterol in women >men.
 Note: highest in Kano; lowest in Ikot Ekpene

NCD-C6

THE SUMMARY INDICES OF CHOLESTEROL BY LGA AND SEX

LGA	SEX					
	MALE		FEMALE		OVERALL	
	MEAN	SD	MEAN	SD	MEAN	SD
URBAN						
LAGOS (M)	115.5	42.0	128.1	48.1	122.8	46.1
LAGOS (I)	126.8	41.3	142.9	43.8	136.1	43.5
KANO	146.8	35.8	162.8	38.4	154.4	37.9
OREDO	111.1	42.0	124.8	50.2	117.3	46.6
IBADAN	126.6	42.4	138.1	47.0	130.3	44.2
RURAL						
MALUMFASHI	109.0	31.0	117.1	33.5	112.7	32.4
IKOT EKPENE	89.3	27.7	97.0	26.7	93.4	27.4
KONDUGA	131.4	34.6	148.7	39.1	138.6	37.5
BODINGA	100.8	36.0	106.4	40.3	102.4	37.4
NTIKOKA	134.2	45.5	144.1	43.2	140.8	44.2
CHIACHANGA	112.5	36.4	117.8	36.7	115.3	36.6
MANGU	103.7	38.0	103.0	35.1	103.3	36.3

SD=Standard Deviation

Figure20: National Data on mean Total Cholesterol Levels in Nigerian Communities

6.3 Gender and Lipid Profile

Mr. Vice Chancellor Sir, regarding cardiovascular disease, female gender is a protective status while male gender is an established risk factor (dagger). However, women tend to lose this protective advantage after menopause. Thus, in one of our studies, we examined the lipid profile of post-menopausal women and compared it to age-matched men, and pre-menopausal women. We found that total cholesterol in post-menopausal women was higher than that of pre-menopausal women, but was lower than that of the men, in Figure 21a&b. We concluded that the changes in lipids/cholesterol may contribute to the adverse cardio-vascular profile in post –menopausal women. But males still had a worse lipid profile at all ages. Similar findings were also noted in male and female hypertensive patients, where male hypertensive patients had higher total cholesterol than age-matched non-hypertensive males or age matched hypertensive females.

Publications:

Ajuluchukwu JNA, Jarikre AE, Anorlu RI. Plasma Lipid Profile of Menopausal Nigerian Hypertensive Women. J Clin Sci 2001; 1: 8-10.

Jarikre AE, Dim DC, Ajuluchukwu JNA. Plasma Lipids in Nigerian Hypertensive. The Gender factor. Nig. Qt. J Hosp. 196; 6: 293-298.

Adverse lipid profile (TC/HDL;TG): Pre
menopause<post menopause<older men
Ajuluchukwu JNA, Jarikre AE, Anorlu RI, JCS 1995

Menopausal vs premenopausal				Post Menopausal versus men			
	POST	PRE	T VALUE		post	men	T
Age	57.7 1.74	55.7 1.1	*9.18	Age	57.7	57.8	0.04
BMI	28.5 1.6	26.8 2.0	0.95	Bmi	28.5	26.7	0.95
TC	5.23 0.23	4.89 0.18	1.16	TC	5.23	5.59	1.27
HDL-C	1.14 0.06	1.25 0.04	0.41	HDL-C	1.14	1.03	1.41
LDL-C	3.73 0.2	3.04 0.18	2.56	LDL-C	3.73	4.08	1.21
TG	0.99 0.04	1.65 0.06	*9.20	TG	0.99	1.64	5.10
TC/HDL	4.60 0.05	3.90 0.06	*8.96	TC/HDL	4.60	5.4	10.2

Tc: Pre/ Post/ men
4.89/5.23/5.59

Tc/hdl: 3.9/4.60/5.4

Figure 21a & b: Adverse Cardiovascular Lipid Profile in Post-Menopausal women compared with Pre-Menopausal women

6.5 Mr. Vice Chancellor Sir, this next study compared the effect of Vitamin E and Tocotrienol on lipid profile of high risk CVD patients. Tocotrienol is a sub-family of vitamin E that possesses three double bonds, in its isoprenoid side-chain. After 28 days, there was a significant drop in total cholesterol and triglyceride in the tocotrienol group (TOCOVID); but no significant reduction in the Vitamin E group.

Tocotrienol: effective for Lipid Lowering in Nigerians with High Risk CV Profile

T3	Wk 0	Wk 4	% delta	P value	AT	Wk 0	Wk 4	% delta	P value
TC	6.10 (0.66)	5.47 (1.16)	9.87 (15.6)	0.02	TC	5.92 (0.52)	5.47 (0.76)	5.5 (15.3)	>0.05
LDL-C	3.8 (0.85)	3.24 (1.26)	12.1 (34.4)	0.04	LDL-C	3.84 (0.75)	3.28 (0.94)	14.6 (34.2)	..
HDL-C	1.61 (0.51)	1.55 (0.34)	6.3 (36.5)	>0.05	HDL-C	1.40 (0.62)	1.29 (0.30)	22.0 (50.8)	..
TG	1.56 (0.46)	1.35 (0.41)	7.1 (31.4)	>0.05	TG	1.49 (0.59)	1.79 (0.62)	+38.5 (61.7)	..

TOCOVID GP

VITAMINE GP

Table 6.5: Ajuluchukwu JNA, Okubadejo NU, Mabayoje M. et al 2007 Nig. Post grad J. Data Demonstrating that Tocotrienol Reduced Bad Cholesterol Fractions

From these data, we concluded that tocotrienol and not tocopherol could be beneficial in initial treatment strategies in lipid therapy.

7.0 EMERGING RFs/DAGGERS

Mr Vice Chancellor Sir, It appeared esoteric to look for emerging risk factors when infections surrounded us. However, as there was a dearth of such studies from our sub-region, we undertook the task. Our team consisted of Adebayo K.J, Oluwatowoju I.O, Onakoya A, and I. We investigated blood homocysteine – and its frequency in diverse clinical conditions. [Homocysteine is an intermediary product of methionine metabolism].

- We first established the normal reference ranges for the healthy adult subjects in our environment as 4-8 mmol/L. This is consistent with other climes.
- We established normal reference ranges for normal pregnancies and demonstrated higher levels were noted in eclamptic pregnancies. Thus, measurement of this 'dagger' can also provide an early warning or red-flag for further appropriate intervention, resulting in better outcome for baby and mother.
- Ajuluchukwu J.N.A, Oluwatowoju I, and Onokoya A studied the occurrence of hyper-homocysteinaemia–

- HHC (defined as tHcy > 15umol/L in diverse conditions. HHC occurred in 70%, 56% and 50% of stroke patients, hypertensive and diabetic individuals respectively. We recommended that HHC will be a relevant intervention or target for prevention using folic acid and vitamin B, under physician supervision.

The published papers are:

1. Adebayo KJ, Ajuluchukwu JNA, Oluwatowoju IO. Plasma Homocysteine: Establishing Reference Values for Healthy Adult Nigerians. Arch. Clin Res 2006; 1 (12) 25-28
2. Adebayo KJ, Oluwatowoju IO, Ajuluchukwu JNA. 'Plasma Homocysteine Levels in Normal and Pre-eclamptic Pregnancies in Nigerian Women'. J ClinSci 2004, 4:18-20
3. Ajuluchukwu JN, Oluwatowoju IO, Adebayo K, Onakoya A. 'Total Plasma Homocysteine in Diverse Cardiovascular Diseases in Urban Africans'. World J Life Sci and Medical Research 2011; 1 (6): 126-132.

8.0 Changing Pattern of Heart Diseases: the Rise and Fall of Different Heart Diseases

Mr. Vice Chancellor Sir, nowadays, clinical decision-making are scientifically guided by evidence – based medicine methodologies. However, simple descriptive and observation do quite well for patterns and changing patterns of diseases. Such studies have helped capture the changing landscape of heart diseases noted on the African continent.

8.1 In Medicine, many things African remind us of infections and nutritional deficiencies. Endemic infections and emerging/reemerging infections have been playing their parts on heart disease in Nigeria.

Figure 8.1a is that of a patient with TB of the heart having drainage of pericardial effusion-fluid collection around the heart. This type of gross heart involvement is rare in industrialised nations. The recent appearance of HIV-AIDs has further changed our heart disease patterns.



Figure8.1a: showing Draining of Bloody Pericardial Effusion Complicating Tuberculosis of the Heart

8.2 Our research has documented that there is significant heart muscle involvement in non-complicated HIV patients without AIDs. Use of echocardiography easily detects such abnormalities. These findings have alerted the health care providers to this hidden complication.

*Publication: DA Olusegun-Joseph, **JNA Ajuluchukwu**, CC Okany, AC Mbakwem, DA Oke, NU Okubadejo. 'Echocardiographic Patterns in treatment-naïve HIV-Positive Patients in Lagos, South west Nigeria'. Cardiovasc J of Afr. 2012, 23: e1-e6.*

8.3 Current Decreasing Prevalence of Endemic Heart Disease

Endomyocardial Fibrosis (EMF) is a disease of unknown cause, seen majorly in Tropical Africa. A helminthic aetiology was implicated since its occurrence was associated with hypereosinophilia. As documented by one of our Cardiology fathers: Okuwobi BO, in the 1960s, EMF was the second commonest cause of heart failure. Nowadays, this disease has practically disappeared from our practices. Missed diagnoses and rampant deworming have been implicated in its decreasing prevalence.

Endomyocardial fibrosis : disappeared in Nigeria!

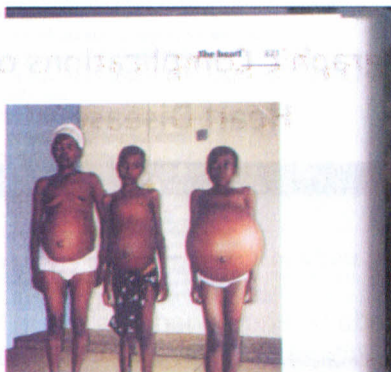


Figure 8.3: showing young patients with endomyocardial fibrosis – Exhibiting the 'Stick-on Egg' Appearance. (Courtesy EHO Parry Principles of Medicine in Africa)

8.4 Rheumatic Heart Disease [RHD] is the commonest acquired heart disease of the young in Africa. It is a global scourge, causing 0.8 million deaths annually. It is a dreaded consequence of streptococcal throat infection. The aetiology of the heart involvement is thought to be a consequence of a molecular mimicry or 'mistaken identity'. The body's immune system attacks the heart tissues, which have a molecular similarity to the streptococcal bacterium. The disease has acute and chronic sequelae. In the THESUS study, 22% of heart failure was attributed to RHD. In contrast, in the LUTH heart failure publication, only 6% was attributed to rheumatic heart disease. Our experience also confirms the observation of others that morbidity and severity of rheumatic heart disease are more severe in Nigerian African patients. Up to 70% of our patients had one or more complications. Furthermore, we have also noted a decline in prevalence in the patient population.

Ajuluchukwu JN, Anyika EN, Raji KA. 'Physician Adherence to Pharmacotherapy Guidelines for Chronic Heart failure in a Tertiary Health facility in Lagos-Nigeria'. *Journal of Hospital Administration* 2014; 3(2): 32-41

Ajuluchukwu JNA & Ekure EN. *Echocardiographic Features of Rheumatic Heart Disease in Lagos*. *Mary Slessor J Med.* 2010; 10: (1)116-123

Echocardiographic Complications of Rheumatic Heart Disease

Feature	Percentage %
Dilated left atrium	77.4
Small Aortic root	13.2
Increased RV outflow	18.5
Thick RV walls	13.2
Increased LV diastolic dimension	24.5
Increased LV systolic dimension	60.4
Decreased LV fractional shortening	56.6
Mixed mitral valve damage	41.5

Table 8.4: Ajuluchukwu & Ekure: Complications noted in RHD in LUTH (2010)

9.0 Rises in Non-communicable Disease and the Drivers of Change

Ischaemic heart disease (heart attack) is the leading cause of death in all regions of the World Health Organisation except the African region. Although 50 years ago, it was considered extremely rare in Africa, there is now evidence to the contrary. The prevalence of heart attacks and its risk factors are on the increase in certain parts of Africa.

Mr. Vice Chancellor Sir, Hypertension as a risk factor will be used to illustrate this change in pattern. The early Missionary or colonial Doctors documented the virtual absence of hypertension and its eventual identification only after the 1940s. After the World War II; hypertension was recorded in many African countries. So What Happened? What are the factors responsible for these changing patterns?

History of Hypertension in Africans

- Turn of the 20th century: Dr Cook-CWS Mengo, Kampala.
 - Virtual absence of arterial hypertension.
 - 1929: Dominica-Lake Victoria
 - African men; moderately low BPs, tended to fall after age 40 years.
 - 1934: Bika-Lake Victoria
 - Low BPs still encountered.
 - Post 2nd World War:
 - Hypertension present; and BP increases associated with increasing age, noted in Kenya, Cameroun, Nigeria, Ghana etc.
-

Figure 9.0(Rise): The story of Hypertension in Africa

Mr. Vice Chancellor Sir, another surprising observation was that in early 1980s, even World Health Organisation was uncertain about CVD occurrence in Africa or the particular aetiological players as indicated by the title of this WHO publication.

1982

"Are cardiovascular diseases important causes of mortality in Africa? Results of a WHO/UGMS cardiovascular disease follow-up study over a five – year period in a suburb of Africa"

AC Chukwuemeka, JOM Pobe, E Larbi et al
Tropical Cardiology 1982; 8 : 105-110.

Figure 9.0-Rise1: a Publication of World Health Organisation

With this WHO publication, the burden of CVDs in the African zone was fully recognised. Unfortunately, the endemic infective diseases such as malaria still remain prevalent and relevant. The resulting co-existence of infections with non-infective heart disease [daggers] has made Africa – a double-burden region.

9.1 DRIVERS [DETERMINANTS] of the Current Pattern of Heart Diseases

Mr. Vice Chancellor Sir, I have provided some evidence to establish there is a change in pattern of heart diseases. The current picture is a mixed bag in which some heart conditions

are decreasing, and others appear to be rising. The determinants or drivers of this trend will be discussed briefly.

Non-communicable heart diseases are on the increase as a result of aging of the population, population growth, life-style choices, dietary habits, economic factors, and environmental factors, including environmental degradation.

9.2 Contribution of Proximal and Distal Risk Factors

In philosophy, a causal chain is an ordered sequence of events in which any one event causes the next. As an illustration, proximate factors of heart disease are established risk factors - such as hypertension; while the drivers or distal factors are the REASONS for occurrence of hypertension. These distal factors may be traced to tradition, dietary choices, high salt intake, adverse alcohol consumption, and sedentary life-style. Other drivers may be epidemiological/nutritional transition of Westernisation, and urbanisation. Thus, the neglect of upstream and distal factors will culminate in completing the causal chain.

9.3 Dietary factors

An Ayurvedic proverb states that *'When diet is wrong, medicine is of no use; and when diet is correct, medicine is of no use.* This is a powerful though debatable statement that captures the crucial role of diet in the development and prevention of heart disease. Diet is one key factor that can impact other daggers, such as hypertension, diabetes mellitus, and lipid profiles.

Salt

There is compelling evidence that salt consumption is the major cause of raised blood pressure/hypertension. Salt ingestion can be direct and deliberate as when used in cooking or added at table. It can also be covert or hidden, when ingested as preservatives or food seasonings. For cardiovascular health, there is a need to reduce salt intake to less than five (5) grams daily from the current 9-12 gms daily of many Western countries.

My patients have shared some of their habits or choices that encourage high salt consumption, these include: salting the fresh plantain before frying 'do-do', salted cereals and oats; adding 'kaun' to 'ewedu' soup, cooking and softening beans and 'ukwa' with kaun, and drinking the sauce as a delicacy for the man of the house. A sure way to a 'dagger' in the heart.

9.4 The role of urbanisation in Blood Pressure increase lends support to the environment and life-style contribution to blood pressure.

- (a) The movement of rural Luo army recruits to Nairobi and the resultant increase in blood pressure elegantly demonstrate this phenomenon.

This natural observational study supports the role of urbanisation, stress, and environment on the health status.

Effect of Rural-Urban migration of female Luo Kenyans

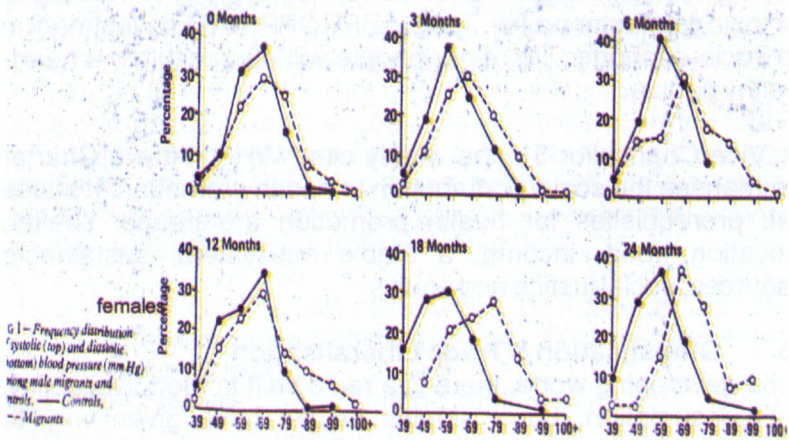


Figure 9-Rise-4: Changing Blood pressure Pattern as Luo tribal people sojourn in the City-supporting BP changes and Urbanisation

The graphs show a comparison of blood pressure of Luo Tribal people in the city (broken line) compared to their controls in the village (solid line). From three months,

10.1 Clinical Diagnoses

Apart from high-tech tools, we still need and use our God-given senses as a most important first step in any clinical contact. In clinical medicine, Diagnosis starts with patient contact; where a clear history and focused clinical examination will focus on the problem or strategy. The examination format is universal and constitutes of four steps of 'IPPA'. IPPA stands for Inspection with our eyes, Palpation with fingers, Percussion-using fingers and finally the use of an ANCILLARY object, such as STETHOSCOPE, a tailor's tape measure, cotton wool etc. I shall also add that my camera and phones are tools in my clinical experience. The cardiological tools are classified as non-invasive versus invasive.

10.2 Chest X-Rays as a Cardiac Tool

The relationship between the cardiac 'client' and the health-care team will be illustrated later. A cardiologist needs the chest x-ray to provide important information but it is the Department of Radiology that will provide the radiograph or x-ray image.

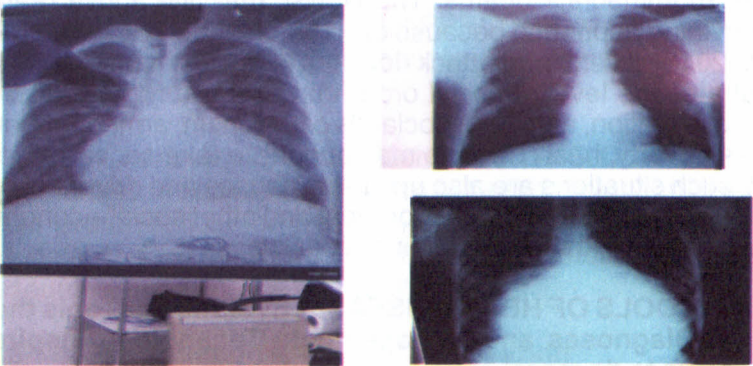


Figure T10-2: showing Chest X-rays demonstrating different heart sizes and shapes

These factors and others help in diagnosis and identify important complications.

10.3 Electrocardiogram

ECGs are graphic representation of electrical potentials of the heart. Information from the ECG can detect chronic complications, or warn of immediate life-threatening situations.

Organised electrical heart activity

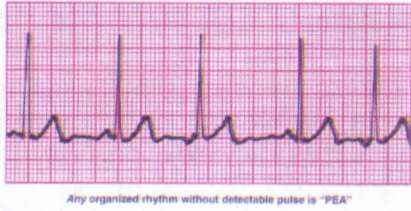


Figure T 10.3a: electrocardiogram (ECG) showing an 'organised' heart rhythm

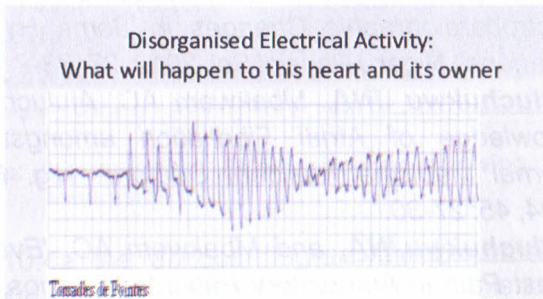


Figure T10.3b: ECG: showing serious degree of disorganised rhythm of a Pre-Death Rhythm

No heart action:

- CARDIAC ARREST!!!!!!



Figure T 10.3c: ECG showing NO heart rhythm of a Dying Individual

It should be noted that this clinical scenario of cardiac arrest can be aborted and reversed if time, location, skills and tools permit.

In one of our studies, we used the Rose Questionnaire a WHO-validated- tool for ischaemic chest pain. We found that positive ischaemic features were shown in only 7% of chronic chest pain patients. Abnormal ECG was also a correlate of a positive ischaemic manifestation.

We concluded that ischaemic pain makes up only a minor proportion of such manifestations in ambulatory care. An abnormal ECG increases the yield of positive tests.

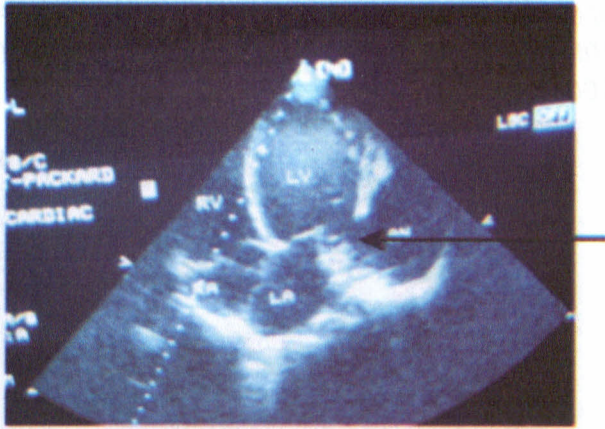
Some of the works of our research team using ECG as a tool are as follows:

- *Anigbogu CN, Isichei CV, **Ajuluchukwu JN**. 'Blood Pressure, Heart Rate, Cardiovascular Reflexes and electrocardiographic Changes in Some Hypertensive Nigerians'. Niger J Physiol Sci. 2012; 27: 23-2*
- ***Ajuluchukwu JNA**, Mbakwem AC, Ajuluchukwu SC. 'Knowledge of Atrial Fibrillation amongst Nigerian Internal Medicine Resident Doctors'. Nig. Medical J. 2004, 45: 27-30.*
- ***AjuluchukwuJNA**, and Mbakwem AC. 'Evaluation of Chest Pain in Ambulatory Patients in Lagos, using the Rose Questionnaire and Resting Electrocardiogram (ECG)'. Nig.Qt. J of Med. 2002: 12(1-4): 60-65.*
- *Mbakwem AC, **Ajuluchukwu JNA**, Oke DA. Clinical, Electrocardiographic and Echocardiographic Features of Atrial Fibrillation in Nigerians. Nig. Quart J Hosp. Med 2002, 12: 29-33*

10.4 ECHOCARDIOGRAPHY: a cardiac tool

Echocardiography has been dubbed the 'seeing' stethoscope. It has revolutionised cardiology. It is a non-invasive imaging technique that uses 'sound' as the driving energy. Its primary benefit is in the detection and quantification of abnormalities of STRUCTURE and FUNCTION. It aids in the diagnosis of specific heart conditions, such as heart attack or pulmonary embolism.

Non-ischaemic LV Pseudoaneurysm showing a big tear in the wall of the heart!



Many Underlying causes can not be treated!!

Figure T10.4a: 2-dimensional Echocardiogram showing a pseudoaneurysm

In figure T10.4a the echocardiogram demonstrates the big tear/gap in the wall of the left ventricle. Without this tool, the full diagnosis was hidden and definitive intervention was impossible. This is a time-bomb waiting to explode. One can imagine the disaster if the patient got into a little argument or fight.

My team has contributed to knowledge using investigative Echocardiography [as a Tool]; as demonstrated by nine full paper publications.

Some of which are noted below:

1. **Ajuluchukwu JNA** and Ekure EN. 'Echocardiographic Features of Rheumatic Heart Disease'. Mary Slessor J M. 2010; 10: (1)116-123.
2. Mbakwem AC, AjuluchukwuJNA, Oke DA. Clinical, Electrocardiographic and Echocardiographic Features of Atrial Fibrillation in Nigerians. Nig. Quart J Hosp. Med 2002, 12: 29-33.

3. Oke DA, ***Ajuluchukwu JNA***, Mbakwem AC, Alli O, Omolaye O. Okolie HI, and Bastos A. 'Clinical and Echocardiographic Assessment of Nigerian Patients Seen at the Lagos University Teaching Hospital with Features of Mitral Valve Prolapse'. West African J Med 2000, 19 (3): 200-205.

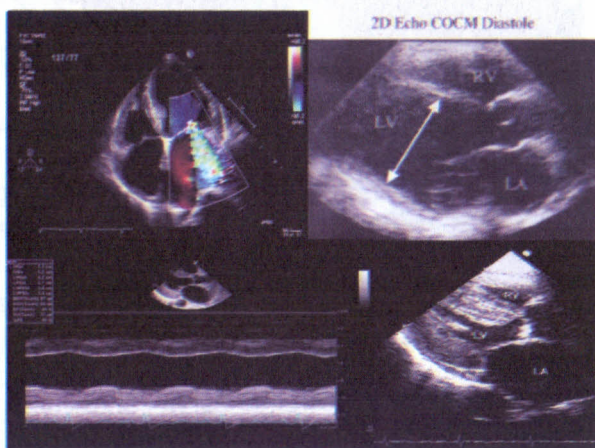


Figure T10-4b: showing a composite of Echocardiography frames, showing leaking valve, dilated chamber, and thickened muscle

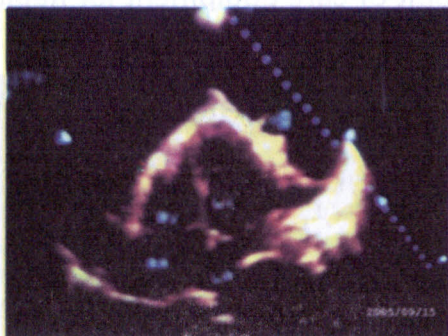
"Hole in the heart:" affliction brought on by accident in utero: sickness, drugs etc



Figure T 10.4c: 2 Dimensional Echocardiography showing a 60 year old man with 'hole' –in-heart

This patient was treated for several years as having a right-sided heart muscle dysfunction of unknown cause. Echocardiography confirmed that cause was known and it was a 'hole in the heart'. This change offered the patient a definitive treatment.

TB: an infective cause of CVD



Role of other endemic infections eg TB: more drugs,
More expenses etc

Figure T 10.4d: 2 Dimensional Echo showing Fibrinous Pericardial Effusion

In figure T10.4d, is an illustration of pericardial disease of T.B or HIV-AIDS.

10.5 CT angiography can non-invasively aid diagnosis of 'holes in the heart', heart attack, and cardiomyopathy - heart muscle disease. The recent introduction of this tool by the Department of Radiology – LUTH has raised the diagnostic profile of LUTH.

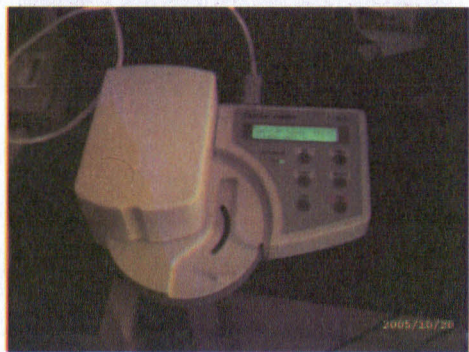
10.6 Point of Care Tools

Mr Vice Chancellor Sir, world-wide, the landscape of cardiology is being repainted, for efficiency and rapid diagnosis using point-of-care tests and useful cardiac biomarkers at the bed-side. The principle involves the detection in the blood of micro-levels of molecular/biochemical substances released from a sick heart.

The University of Lagos Central Research grant (CRC) empowered our Cardiology team with one of such. The grant empowered the team to study the 'Usefulness of NT Pro-Brain

Natriuretic Peptide in Heart Failure Amongst Children and Adults' respectively. Mr Vice Chancellor Sir, our team was the first to study NT Pro BNP in Nigeria. Our data confirmed that levels of blood NT Pro BNP correlated with several indices of severity of Heart Failure [HF].

Point-of-care Equipment for Rapid
Diagnosis and decision-making



Un
CR

Figure T10.7: Point of Care Equipment for Rapid Diagnosis of heart attack, heart failure and blood clot in the legs or lungs

NT-Pro BNP=NT Pro Brain Natriuretic Peptide

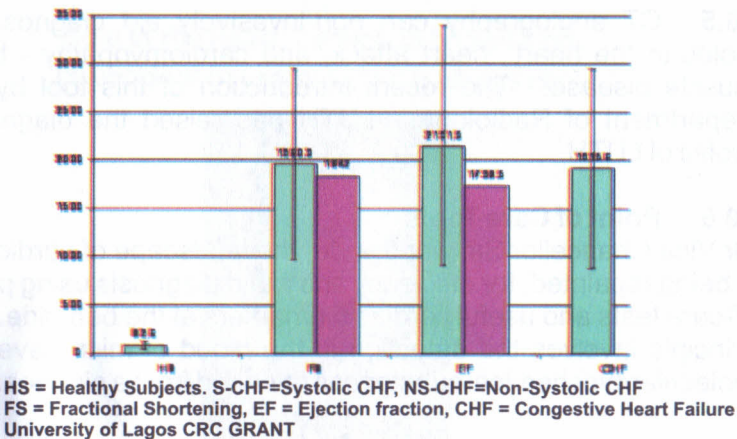


Figure T10.7a: Comparison of NT pro BNP among Control Individuals and Heart Failure with and without Reduced Ejection Fraction

NT Pro BNP: is a factor released by ventricular cells of a 'heart in trouble'. The stimuli for its production cause electrophysiological abnormalities. The measurement of its blood levels can support the diagnosis, severity and monitoring of Heart Failure. It also has prognostic usefulness especially as it is predictive of sudden death in chronic heart failure.

This CRC grant – supported research has yielded two International publications and an invitation to Japan for an oral presentation at the ISCU conference. The presentation at the International Society of Cardiac Ultrasonography held in Kobe-Japan [ISCU 2010]. The presentation was well received as shown in this award ceremony. The investigators-Drs Mbakwem, Ekure, Oladipo and Professor Okoromah and my humble self, continue to appreciate the University of First Choice and The Nation's Pride.

Publications on NT Pro Brain Natriuretic Peptide

1. Ekure EN, Okoromah CA, **Ajuluchukwu JN**, Mbakwem A, OO Oladipo. 'Diagnostic Usefulness of N-Terminal Pro Brain Natriuretic Peptide among Children with Heart Failure in a Tertiary Hospital in Lagos-Nigeria'. *West African J Med* 2011; 30: (1) 29-33
2. **Ajuluchukwu J**, Mbakwem A, Ekure E, Okoromah C, Oladipo O. 'Reliability and Accuracy of Amino Terminal Pro-Brain Natriuretic Peptide in Congestive Heart Failure'. *The Internet Journal of Cardiology* 2010; 9 (2): 1-10

Conference Presentations

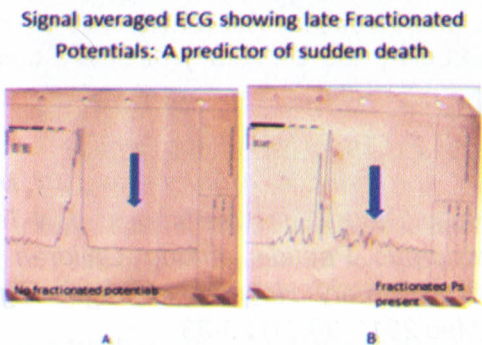
1. 2011: *International Society of Cardiac Ultrasonography [ISCU] at Kobe Japan:*
2. 2015: *Faculty of Clinical Sciences Annual Conference*

10.7 Tools Used in the Study of Sudden Cardiac Death

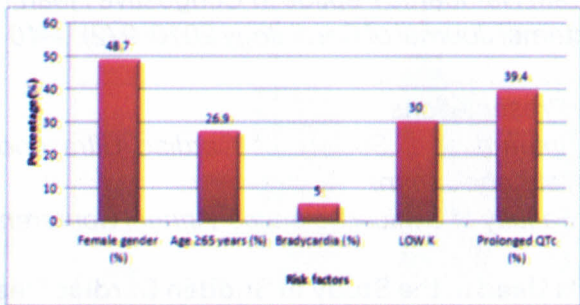
Prediction of sudden death has attracted cardiologists all over the world. Apart from blood clots [fresh or old thrombus] inside the coronary artery of the heart, the next most common finding in sudden cardiac death is heart muscle hypertrophy. Thus,

left ventricular hypertrophy is a predictor of sudden cardiac death. (Please note that a predictive factor is only a marker)

Mr. Vice Chancellor Sir, to support or disprove that left ventricular hypertrophy was related to sudden cardiac death, my Masters project in University of Melbourne was to seek a relationship of ECG-LVH with two indicators of sudden death, identified by sophisticated tools. My study showed that ECG – LVH by Cornell criterion correlated with invasively induced ventricular tachycardia as well as non-invasive late potentials in high Risk cardiac patients. Kindly note that the sample patients were patients with syncope and clinical ventricular tachycardia.



The conclusion is that ECG-LVH by Cornell is a useful tool for sudden death correlates.



AHF: Distribution of Torsadogenic Risk Factors in LUTH
J Hosp Adm 2014; Ajuluchukwu JNA, Anyika EN, Boyle CA.

Figure T10.7: Risks of Torsades de Pointe in Acute Heart Failure Patients Admitted in LUTH

Primary hypertension occurs in more than 90% of affected individuals. The risk factors of primary hypertension are linked to salt and obesity. Another addition to the classification is the class of pre-hypertension. This is defined as a systolic blood pressure of 120-139 mm Hg, and or a diastolic blood pressure of 80-89 mm Hg. Authoritative evidence suggests that this class of adults will benefit from health education, promotion and surveillance, in-order to prevent the progression to overt hypertension.

Hypertension is the most prevalent cardiovascular risk factor. Globally, it is responsible for approximately nine (9) million deaths annually. World-wide, a BP of 140/90 mm Hg or above has been noted in 70% of heart failure, strokes, and heart attacks.

4.1 Hypertension as a Dagger in Nigerians

For Nigeria, the Federal Ministry of Health data of mid 1990s is shown in Figure 8 and indicates that among adults (>15 years), 15%-20% is the prevalence of hypertension. This depends on the cut-off value. Previously, 160/95 mm Hg was the cut-off value; however, in 1999, World Health Organisation adopted 140/90 mm Hg as the cut-off value for hypertension.

Epidemiology of HTN in Nigeria

HTN is common in Nigeria!

- **Non-Communicable-Data data: Fed Min**
 - **Prevalence: 10% using 160/95 mm Hg.**
 - **Approximately 15-20% on 140/90 mm Hg**
 - **= 8-9 million >15 years**
- **Commoner in males than females (19% vs 16%)**

Figure 8: data of Federal Ministry of Health on Hypertension

Ethnic Differences in Cardiovascular Drug Response Potential Contribution of Pharmacogenetics

Julie A. Johnson, PharmD

In the early 1980s, clinical differences in response to the blood pressure (BP)-lowering effects of β -blockers and to a lesser extent, diuretics were noted between ethnic groups. The most convincing evidence at that time came from a Veterans Affairs (VA) Cooperative Trial¹ which showed with

Ethnic Differences in Response to Warfarin Therapy

Ethnic differences in the warfarin dose required for an international normalized ratio (INR) between 2 and 3 are well

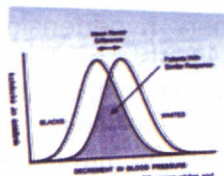


Figure C-1a: Showing a Publication Supporting Ethnic Differences to Drug Therapy

Figure C-1b: showing that Blacks may differ from Whites in their Anti-Hypertensive Drug Response

Such notions and publications affect (a) drug selection (b) physician-uptake of the guidelines, (c) Physician Inertia. These may be detrimental to our own patients who miss out on global leading edge research findings. To dispel these uncertainties, our research responsibilities include Physician Education, and provision of LOCAL data for decision-making. As I often quote: 'in God we trust, but all others bring data.'

Success/Good Response to treatment

Our research has helped to raise that confidence level and also help NAFDAC with the data required for registration of new drugs in Nigeria.

My research has shown that Nigerians respond to orthodox anti cardiovascular therapeutic agents, just like other peoples despite some publications to the contrary. This has increased confidence for prescribers and patients.

1. Ajuluchukwu JN, Anyika EN, Raji KA. 'Physician Adherence to Pharmacotherapy Guidelines for Chronic Heart failure in a Tertiary Health facility in Lagos-Nigeria'. Journal of Hospital Administration 2014, volume 3(2): 32-41
2. Oke DA, Ajuluchukwu JNA, Mabadeje MO. 'An Open Label Optional Titration Trial to Evaluate the Efficacy, Tolerability, and Safety of Valsartan in Patients with Mild to Moderate Essential Hypertension Treated for Eight weeks in the Lagos University Teaching Hospital'. Nig. Medical Practitioner 2005; 47: 65-68.
3. Oke DA, Mabayoje MO, Ajuluchukwu JNA. 'Effect of Lacidipine on Patients with Mild to Moderate

Hypertension. An Open-Label study'. Nig. J. Med. 1998, 7: 43-45.

4. **Ajuluchukwu JNA**, Okubadejo NU, Mabayoje M, Ojini FI, Okwudiafor RN, Mbakwem AC, Fasanmade OA, and Oke DA. 'Comparative Study of the Effect of Tocotrienols and alpha Tocopherol on the Fasting Serum Lipid Profiles in Patients with Mild Hypercholesterolaemia: A Preliminary Report'. Nigerian Postgraduate Med J. 2007, 14: 30-33

11.2 Mr. Vice Chancellor Sir, another area of solid contribution is our publications regarding the role of Therapeutic exercise in Heart Failure. Publications from industrialised countries had shown the benefits; but the uptake was low in developing countries. Dr OA Ajiboye took the bull by the horn and clearly demonstrated in her PhD Project that: supervised exercise was beneficial, well tolerated and even reduced the drug requirement of Nigerian heart failure patients. I co-supervised this Heart failure project.

1. Ajiboye OA, Anigbogu CN, **Ajuluchukwu JN**, Jaja SI. *Therapeutic Effects of Exercise Training on Selected Cardio-Pulmonary Parameters and Body Composition of Nigerians with Chronic Heart Failure*. Nig. Qt. J Hosp. Med 2013; 23: 295-301.
2. OA Ajiboye, CN Anigbogu, **JN Ajuluchukwu**, Jaja SI. *Exercise Training Improves Functional Walking Capacity and Activity Level of Nigerians with Chronic Biventricular Heart Failure*. Hong Kong Physiotherapy J. 2014.
3. Ajiboye OA, Anigbogu CN, **Ajuluchukwu JN**, Jaja SI. *Prediction Equations for 6-minute walk distance in apparently healthy Nigerians*. Hong Kong Physiotherapy J. 2014.

Other contributions in exercise and cardiac disease and hypertension have been published by our research team as follows:

1. Jaja SI, Okeke HA and **Ajuluchukwu JNA**. 'Haemodynamic Changes Following Mild Exercise in Hypertensive Patients on Therapy'. Nigerian J Internal Medicine 2002, Vol. 5: 8-12.

2. Emehara G, Abass AO, Nwankwo EI, **Ajuluchukwu JNA**, Oke DA. 'The Effect of a 3-month Aerobic Exercise Programme on Body Weight, Percent Fat, and Body Mass Index of Cardiac Patients at the Lagos University Teaching Hospital (LUTH)'. J Nig. Assoc. Sports Sci. and Med (JONASSM) 2007,9: 24-26.

11.3 Personal Family Success Regarding Hypertension

Our own personal/family experience convinces me that hypertension is largely compatible with a ripe old age especially if there is good adherence. My late mother-Ursula Oputa-Mberekpe, had a history of hypertension at age 47 years. She lived out her life, and died in 2011 at a ripe old age of 93 years. After the diagnosis, it was our responsibility to provide her hypertension medications and her responsibility to adhere to her physician's treatment plans. Thus, hypertension-the silent killer; though silent, does not have to be a killer. Her life of adherence and longevity lends support to the observations of Dr Koop, who stated that "the best medicines will work, ONLY if taken".

11.4 Benefit of Antihypertensive treatment based on time of Day

Our research titled 'Chrono Therapy in Nigerian Hypertensives' by Okeahialam BN, Ohihoin E, Ajuluchukwu JN, studied effect of medication ingestion based on the biological clock. We compared two groups of hypertensive patients, who were similar in blood pressure profile, heart enlargement, and medication requirements. They were randomised to day-time [DT] versus night-time [NT] ingestion of anti-hypertensive medications. The results demonstrated that the night-time group recorded:

- better reduction in systolic and diastolic blood pressures; and
- significant reduction in indices of heart enlargement.

To crown it all, this presentation won the Faculty of Clinical sciences - Best Researcher Award 2011 at the now-famous Annual Unilag Conference and Fair.

12.0 My Observations: 'for Zion's sake, I will not keep silent'... [Isaiah 62: 1]

My Ramblings and Grumblings

12.1 World Advances in Medicine

Mr Vice Chancellor Sir, the usefulness of keeping abreast cannot be over-emphasised. Our research and practices must take our people forwards regarding patient-care. Our forefathers did great with what they had but we must make haste to ADVANCE.

The human genome has been cracked. Now we are talking pre-conception prevention of heart disease in high risk families, foetal echocardiography, in-utero surgical treatment of arrhythmias and Nano-medicine. Gene therapy is an option for several aspects of disease management. Gene manipulation has been used to improve quantity and quality of agricultural output.

At one end of Medicine spectrum, advances are leading to Nano medicine, defined - as the application of nanotechnology at the molecular level for diagnosis, or prevention. (A nano-meter is one billionth of a meter). On the other hand, people are returning to herbal concoctions. 'One bottle cures all ills': can it be true? What is the cause of the medical disorder? What could be the consequences of elastic dosing and intervals? Whose responsibility is it to provide safe medicines for Nigerians?

In African culture, use of herbs is believed to have a place in the treatment of diverse ailments. Current use is predicated on claims of positive effects for intended purposes, pressure from elderly mothers in immediate and extended families, personal or cultural beliefs and COST or affordability. Orthodox healthcare may not be accessible or affordable to many Nigerians. Here innovative National Health Insurance Scheme can help.

Our ancestors must have done well for us to be here today, and I am sure they would want us to out-do them, However,

TODAY, we have to/NEED TO outdo them. We are on the march of life. I love dynamic words and phrases that show that we have not seen half of it yet. As: spiralling statistics, emerging diseases/advances in treatment, paradigm shifts. The human spirit keeps searching for improvement. Not standing still or going back to WHAT OUR ANCESTORS DID. Our ancestors had no planes for transportation, so we can outdo them.

Cardiac treatment is exciting now with new directions, such as stem cells/device treatments/transplant/Ventricular assist devices as bridge or destination treatment. Appropriate regulatory bodies should be ready to provide directions and to oversee the interventions in such endeavours.

12.2 Drug Safety

In my experience, many patients 'hate' to believe that certain chronic diseases are not fully curable, but manageable. So there is a tendency to seek quick cures and fixes. Many heart failure and hypertensive patients have had disastrous experiences during such experiments.

I always quote that 'Not all Things Natural are safe' I even give the example of goats eating some deadly leaves with bad consequences.

'Safe Medicines for Nigeria-Who cares?' Fond memories of late Prof Dora Akunyili from a title of one of her lectures to the annual Pharmacy conferences.

Our people are not only dosing on herbal mixtures, they are also using orthodox medications without appropriate monitoring. Adherence issues also come up as medications are not used as they ought. Fragmented healthcare systems create barriers to medication adherence and contribute to some of these issues.

The following figures will help to illustrate (a) polypharmacy (b) adverse drug reaction (c) dangerous commercial concoctions. Whose responsibility is it that 'killer bitters' is on sale to Nigerians to buy and die?

Safe Medicines for Nigerians: WHO cares?



Polypharmacy!! Prescribers beware!

Figure (a) Drug Safety: showing a patient of mine with all her medications: prescribed and bought over the counter

Drug Safety Issues Drug-drug interactions



Figure (b) Drug safety: Patient with an adverse drug reaction. Note 'scalding' appearance on the skin. [Drug here can be orthodox or alternative medications]



Figure (c) Drug Safety: Cutting from our dailies commenting on Concerns over Killer Herbal Bitters

Mr. Vice Chancellor Sir, Nigerian HealthCare System through the eyes of a Non-Medical Observer

A marketing quote states that: 'advertisement is chest-beating; but word of mouth is endorsement'. So I decided to see a bit more of our health/healthcare through the eyes of a non-medical observer.

Joseph Edgar writes about Dingba Igwes death: ***'how could someone wake up hale and hearty, kiss his wife, go for a jog and end up in a mortuary? This is the life of an average Nigerian..., for us life is laborious and short...'***

This is food for thought for all relevant stake-holders in the Health-Care System. Why did Mr Dingba die? Is this the expected lot of Nigerians as noted by Mr Edgar?

RECOMMENDATIONS

(That the Daggers may be blunted- prevention!)

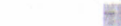
Health is **EVERYONE'S BUSINESS**

- At a personal level, King Solomon encourages us as follows: Proverbs 4:23: 'Keep and guard your heart with all diligence... for out of it flows the springs of life'.



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to death as seeds of ill-health or Daggers can be cultivated at any time. A unified health care system also includes ALL POLICIES, and non-medical ministries including, agriculture/education/women and youths/and works. Like a domino, everyone can fall if the other falls.

5) Knowledge is power.

- a) 'Education as Vaccine' this is an NGO for prevention of HIV/AIDS. However, this strategy can be borrowed and adapted for prevention and intervention on heart daggers.
- b) Education will empower Health promotion; awareness drives early detection and compliance to preventative steps.
- c) Education: Grassroots education will affect distal daggers of life-style, behaviour, diet and nutrition. Proximal factors of smoking, alcohol and their consequences may be better appreciated.
- d) Add cardio-vascular and other health promotion to school curriculum at primary, secondary and university levels.
- e) In the University of Lagos: for Collaborative –integrative - Inter-professional Training and Practice for health care Affiliated Faculties such as Faculty of Clinical Sciences and Pharmacy, including sitting in one class with role play to practise on their different roles in patient care.
- f) To add National Health Bill and National Health Insurance Scheme to Curriculum of Healthcare Affiliated Disciplines.

6) To promote activities for Brain-gain for our Professionals. We need to promote retention policy after training and efforts to discourage brain-drain. Promoting partnerships of brain-gain from groups in diaspora; contributing their quota as a giving back gesture.

Contributions & Achievements

Learning from My Patients

1) My Research

Cardiovascular Research	Number of Publications
Hypertension	18
Other non-HTN Daggers: (homocysteine; cholesterol)	7
Heart Failure	8
Physician education	4
Other CV diseases	5
Echocardiography	8
Others	12
Total	61

Table CA1: Classes and Quantum of Health Research Publications

2) Medical Education & Capacity Building

- a) Mentoring and Supervision at all academic levels of undergraduate, and postgraduate education-including PhD, and Fellowships.
- b) Undergraduate External Examiner to 3 universities.
- c) Assessor/Examiner to National Postgraduate Medical College.

3. Medicine Graduates from 1997-TILL DATE

s/n	Year	Medicine [MBBS] graduands
1	1997	65
2	1998	177
3	1999	105
4	2000	131
5	2001	133
6	2002	34
7	2003	136
8	2004	100
9	2005	240
10	2006	155
11	2007	226
12	2008	138
13	2009	114
14	2010	151
15	2011	82
16	2012	95
17	2013	153
18	2014	109
	TOTAL	2,339

Table CA2: Unilag MBBS Graduates of University of Lagos f rom 1997-date

4. Proudly involved in 'CREATING' of over 3,000 medical and Dental Graduates

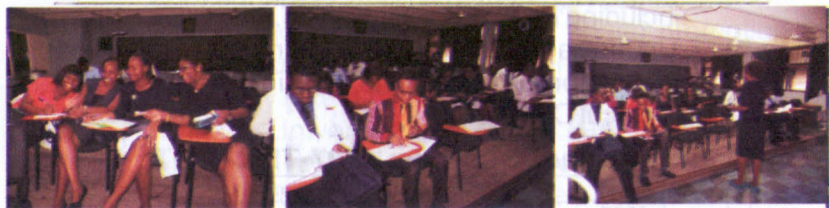


Figure CA3: Composite Picture of the inaugural Lecturer with Post graduate and Undergraduate Students

5. **Notable Experiences**

- Meeting with Prof Schilling of Schilling test fame.
- Serving in Geneva–Switzerland as a Temporary Adviser to World Health Organisation on Secondary Prevention of CVD in Low Resource Countries.
- Meeting with serving and former Presidents of Nigeria.
- Meeting with Foreign Governors.
- Receiving AWARDS: Medical and Others.

6. **Self-training and committed life-long learner:** Personal responsibility to be a life-learner resulting in self-Improvement.

'And with all thy getting get knowledge and



My global pursuits for knowledge to the Glory of God

Figure CA4: My own Locations for Golden Fleece of Cardiology are indicated by Golden Stars on the world map

1. Innovative Healthcare

- Working with Foundations and Missions
 - Screening and take-up of detected cases
 - Provision of home-based permanent health data
 - Practising with Home – based records
- Bottom–top prevention Community Education and Enlightenment [ADE=awareness/detection/education]
- Use of Drama sketches for Cardiovascular Health Education
- Commissioning a Musical Record for HYPERTENSION –Lyrics in Appendix VI
- Media Partnership on Community Education/ Enlightenment: radio/television/print media.
- As editor, collaboration with Cardiology Team and our Cardiac Nurse to publish a patient-education book titled - 'Heart Failure-Questions Answered'.

- Development of Map of Cardiovascular Stations of Life in collaboration with Non-Communicable Disease Committee with Professor G. Onyemelukwe as Chairman. Its potential as a health educational tool is clear.

Where are you on this station?

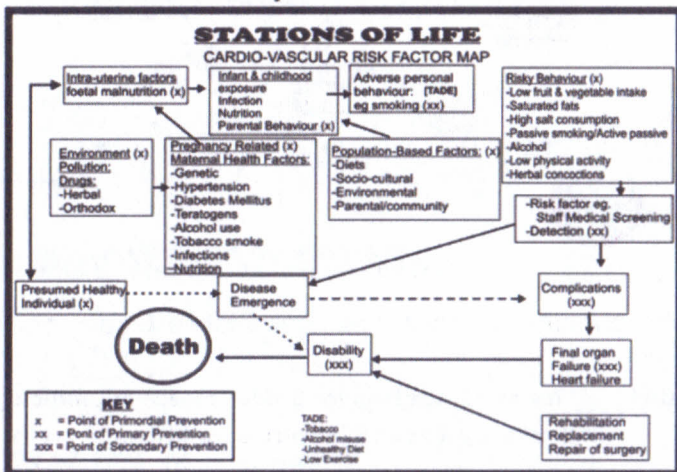


Figure CA5: Stations of Life Map with Points of Risk factor Encounter

New Directions

1. As Head of Department: to encourage and support the establishment of Post-graduate Courses. This will encourage growth and capacity in the healthcare-team. Two such programs are already in the pipeline-Masters in Neurosciences and Cardiological Sciences.
2. **To Establish KTMAN Foundation: keeping the Men Alive in Nigeria**

Mr Vice Chancellor Sir, happenings in the community capture our attention as scientists in the spirit of TOWN and GOWN. In the book *Loud Whispers*, Joseph Edgar 'claims' that "nowadays, the best way to get the dividend of democracy is to be a 'widow'. The numbers of

widowhood NGO/movements and Nollywood films attest to the numbers and the needs of these sisters of ours. The support given them is wonderful and laudable.

However,

My contribution will be in the line of 'PREVENTION OF WIDOWHOOD', by KEEPING THE MEN ALIVE IN NIGERIA, KTMAN Foundation will target the men; use innovative methods to reach them, empower them with appropriate health education to guide their lifestyle choices. As women are stakeholder, there shall also be a women's arm to help with encouragement and partnership.

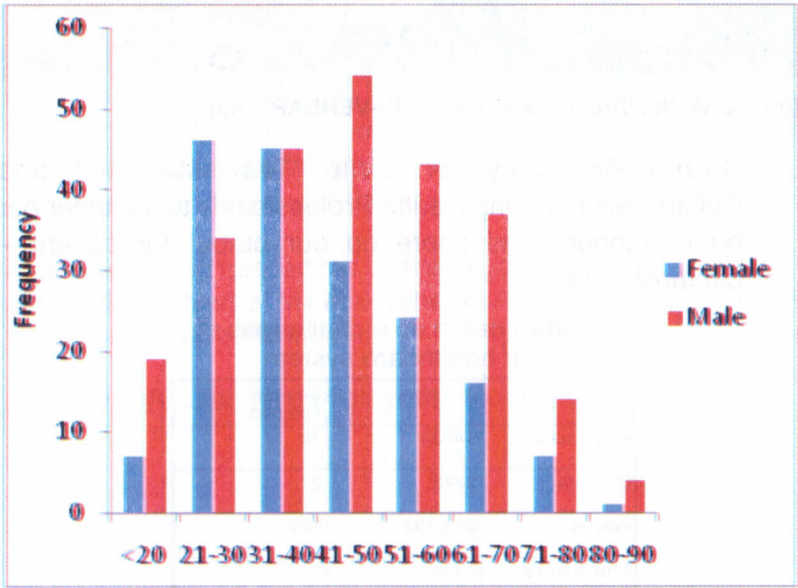


Figure CA7: Graph showing Age and Sex Distribution of Emergency Room Deaths (Significantly more men after age 41 years)

- 3. Developing the SAVEHEART App for care of hypertensive and Heart failure Patients App development is already underway in collaboration with Mr. A. U. Ofili and Dr. Nwoye of Department of Biomedical Sciences, CMUL.

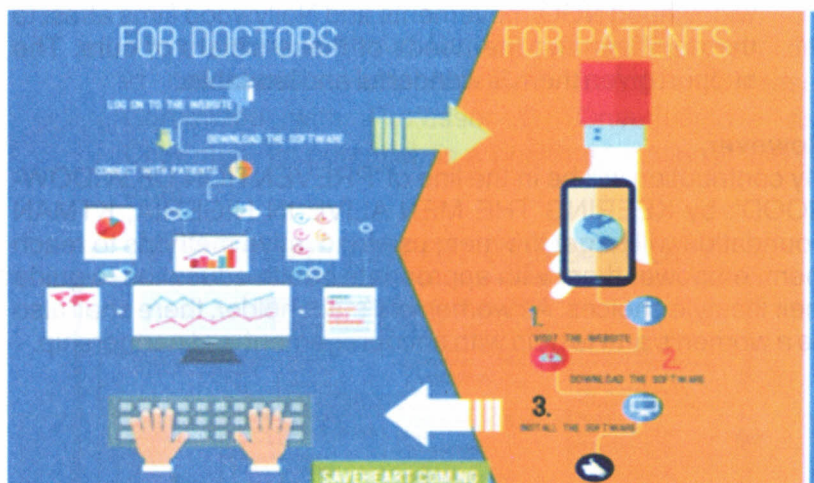


Figure CA8: the Circuit-Panel for the 'SAVEHEART' App

4. Strong Advocacy for Virile 'Team-Manship' and Collaboration among Health Professionals to shoulder our poor numbers and shore up our output for patient – centered care.

Sudden death as a challenges of our healthcare system

HCP	number	Density/ 100,000
Physicians	34923	28
Dentists	2842	2
nurses	210,306	170
Pharmacists Others**	6344	5

Nigerian data FMCH-2003-4, staff

Figure CA9: showing some Nigerian Health-Care Professionals Data

Health-Care Team: we are too few, too thin on ground. So, collaboration and cooperation will be the way to go, for patient-centred care.

5. Urgent Development of Interventional Cardiology as a strong support for definitive Cardiology Practice.

CONCLUSION

Mr Vice Chancellor Sir, thank you for your attention. It has been all about the heart. A wonderful '60 minutes' for me; in which my search-light has beamed on my worries about the heart of Nigerians, the daggers, the drivers/determinants and the tools of our business.

I communicated that:

- heart disease is not inevitable, and that the risk factors or damaging daggers are preventable;
- Risk factors are initially silent, so a search is usually necessary, during annual personal screening, community screening or one-on one health-care contact;
- The risk factors can be genetic or are consequences of our actions (habits and life-style; what we eat (high salt and saturated fat intake); and
- and can respond to timely intervention.

As the Lord God has led me this far, I pray for further guidance in Jesus Mighty Name. My academic journey continues...and I am ready for new directions.

I thank you ALL for the part played in moulding me.

ACKNOWLEDGEMENTS

- 1) **Acknowledging the Current University Management:**
Under the dedicated leadership of our amiable Vice Chancellor, who has a heart for the heart of staff and students and the stout-hearted management.
I have great respect and thanks for Professor Tolu Odugbemi, who brought me physically to the Unilag Main Campus.
- 2) **Provosts:** I acknowledge the role in my growth, of all the past Provosts and especially the current Provost.

PROVOSTS CMUL	Names	Period
1.	Prof Tolu Odugbemi	1997-2000
2.	Olalekan Abudu	2001-2004
3.	Prof S. O. Elesha	2005-2008
4.	Prof Oluwole Atoyebi	2009-2012
5.	Prof Folashade Ogunsola	2013-TILL DATE

Deans: All my Deans are respectfully acknowledged, for your support and encouragement; as I slowly but surely got 'here.'

DEANS	Names	Period
1.	Prof Mrs Y. M. Olumide	1995-1999
2.	Prof A. E. Ohwovoriole	1999-2003
3.	Prof A. O. Grange	2003-2005
4.	Prof C. U. Odum	2005-2009
5.	Prof Adefule Ositelu	2009-2012
6.	Prof M. A. Danesi	13 th Jan-Jul 2012
7	Prof FEA Lesi	1st Aug 2012- TILL DATE

Under the watchful mentoring of Deans - Professor Uche Odum, and Professor FEA Lesi, I successfully moved onto the Professorial cadre.

• **LUTH Chief medical Director**

Special thanks goes to our immediate past CMD, Professor Akin Osibogun, who encouraged the LUTH cardiology family by successfully setting up the LCP open heart surgery outfit.

Great appreciation goes to current CMD-Professor Chris Bode, for his continued support, total commitment and sustenance of the LCP Open heart Surgery program and other support of the cardiology Team.

- **My Great Teachers/Mentors – I thank All that have taught me.**
 - Professors O. O. Akinkugbe, Professor M. Isiekwe: Senior Colleagues/Special Teachers who have provided needed encouragement and invaluable support at different times.
 - I thank all the Past HODs of the Department of Medicine, CMUL, who have contributed to my growth. I also appreciate in a special way Professor KO Odusote and Professor O. O. Elegbeleye for your roles in my Residency Program training and 'setting' me on the Cardiology pathway.
 - Following the brain-drain and no mentor in cardiology, Professor A. O. Somorin adopted me, since he was the HOD. He wrote a 'thousand' letters on my behalf, and finally found me a place to start my Cardiology training [by the kind invitation of Professor Donald Harkness] in the Department of Cardiology, University of Wisconsin-Madison, USA. Professor Harkness ensured, amongst other kind gestures, that I met with Professor Schilling of the Schilling Test fame.
 - Professor E. L. Bandele is known for his love of literary works. His love for the written word allows him read a whole dissertation overnight, [if necessary]; the dissertation would come back with accompanying insightful, useful comments and perspectives. I am a grateful recipient of that gift.
 - I must remember departed mentors & peers: Dr B. Jaiyeola, Professor A. E. Jarikre, Professor B. O. Okuwobi, and Prof O. O. Ogundipe.
 - I thank Professor M. O. Kehinde for manning the Chair of the Laboratory Committee, and for a seamless handing-over of the HOD baton to me.

- It is a pleasure to say 'thank-you' to Professor M. A. Danesi, who has mentored me at all tiers of my life in CMUL - as a medical student, a Trainee-Resident Doctor, and an academic. We all appreciate your 'ever – open' office door, and ever – ready help. As the current Head of Department of Medicine, I am greatly inspired by your thoughtful innovations, and untiring attention as the Director of Training of the Department.
- Great appreciation goes to Professor A. E. Ohwovoriole, who encouraged us to publish with chants of 'Publish and Prosper'. Many thanks for establishing the Nigerian Journal of Internal Medicine, which gave a needed academic start and boost to many. You are also appreciated for the ethos of the Endocrine family, which many admire and wish for.
- How can I thank ALL my Research Partners and co-authors? Where do I start? It is a great honour having my name cited beside yours in publications. That is acknowledgement indeed. For me, that creative thread will be there always as cement to our friendship.
- I acknowledge Professor BO George and Dr HAI Talabi for their introductory role in my cardiology training, at the inception of my career.
- My Dedicated Foreign Teachers: Dr Ford Ballantyne-Winsconsin/ Dr David Hunt-Melbourne/ Prof R. Larkins - Melbourne.
- Special appreciation goes to Echo Room Staff: CNO Mary Bastos – she is a retired ADA –Nursing who can be my NURSE any day. She is also a worthy co-author in our publications. Many thanks to Sister Eke-our diligent and technology – savvy partner.
- All Academic and Non-academic members of the Department of Medicine-the 'Mother' Department; the Department with the Core values of STRID²E! Student-centric, (great Team-spirit, Responsibility, Integrity, Diligence/Dedication and Empathy).

- I thank all staff of Department of Medicine Research Laboratory: for their role in the IGR drive and their readiness to embrace new technology.
- The Cardiology relay team consists of the Paediatric Unit, the Adult Cardiology Unit and the Cardio Thoracic Surgery team. The patient is passed from Unit to Unit, p-r-n. I have enjoyed working with all of you. My special thanks go to Professor CAN Okoromah, Associate Professor EN Ekure, Mr (Dr) E. Ogunleye and Mr (Dr) O. O. Olusoji.
- My Appreciation goes to all Trainee Resident doctors and Colleagues-to-be as I wait for you to join me in the Consultant's Lounge.
- Appreciating the achievement – hungry spirit of my younger Colleagues: Dr K. O. Ale, Dr D. A. Olusegun-Joseph, Dr C. E. Amadi, and Dr O. Adegoke.
- An important tool of cardiology management is patient education and information. I am thanking the Cardiology Team for all your effort in the preparation of our patient education book titled *Heart Failure: Questions Answered*, edited by JNA Ajuluchukwu. It will really enhance the patient care here and beyond.
- My Colleagues: the 'Three Musketeers' Associate Professor AC Mbakwem, Professor D. A. Oke, and I. I thank God for all the work, camaraderie, and collaboration that we enjoyed and the friendship we must not forget.
- My unalloyed gratitude goes to my colleagues- the respective acting-HODs. They have allowed me some respite to get a breather, attend conferences and still meet the Department in one PIECE. They are Associate Professor O. Lesi, M. O. Mabayoje, Professor F. I. Ojini and N. U. Okubadejo. Prof Okubadejo has this mantle currently, even as Lagos braces for the Lassa fever saga. Thank you all so much.

- I must thank the members of the vibrant Education and Grand round Committees respectively.
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- Past and Current Patients: I thank and appreciate all my patients, who have allowed me to 'Doctor' them-it was an honour, will always be an honour.
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- I thank all the NGOs that gave me the exposure, opportunity, and the exciting moments in the Community. Most especially the Chike, Okoli Foundation, the Cheshire Home, OCEAN-ANAEDO and the Dr Adesina Olaniba Heart Foundation. The Michael and Cecilia [Ibru] Foundation is hereby especially appreciated.
- My budding cardiologists and very Special Students who were the ever-ready foot-soldiers in the community screening and education programs: The Catholic Students Association of the Catholic Chaplaincy Centre of LUTH/CMUL, AMSUL, COMPSSA, and the K' Bites.
- I must acknowledge my new family of the Full Gospel Business Men's Fellowship International.
- I thank the Catholic Women's Organisation of the Catholic Chaplaincy Centre of LUTH/CMUL, and

especially the Surulere Deanery for the award of Grand Patroness.

MY FAMILY

My late Father: Chief Francis N Mberekpe, who coached me for my examinations/taught me all the Maths that I know; and ensured that I could face any academic challenge, and made me believe so.

My late Mother: Mrs Ursula O [Oputa] Mberekpe: ANYANWU – 'Sunlight', as her father Oputa Uzukwu named her. She would prefer to tackle all the house chores, so that I could read my books, including comics. As recently reminded by Rev Fr. Kwame Owiredi, my current Chaplain: She also accompanied me to community outreaches [as Professor Virgy Onyene would attest] in order to reassure people that hypertension was not ALWAYS a killer. She lived with hypertension for over 40 years.

I salute my siblings for all the love we share: Peter C Mberekpe, Lilian Anozie, Oputa Francis Mberekpe.

Fond memories and prayers for our departed siblings: Ajanupu, Caro and especially our lovely, saintly – **Ndi**; a gentle giant - who died fighting in the Nigerian Civil war. He paid the ultimate price! He died without a grave: wifeless, widow-less, and childless.

Kudos to Friends: Professor Sylvia Uzochukwu, Lynda Egri-Okwaji, Tobi Odunnaiya, Regina Chukwude, Auntie Cee, and Mrs R. Mowete.

Great appreciation to my cousin-Lolo Iyabo Justina Onyehasi for being a daughter to my mother and a friend to me.

Internal Medicine gave me friends as sisters. I acknowledge Dr Grace Okudo-Consultant Dermatologist, and Dr Rosemary Okwudiafor, consultant chest physician.

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My children who shared me with my books; waited patiently or impatiently in the car, under the trees in the E –block car-park LUTH so that I could do a quick ward-round on Christmas Day. Thank God, in those good old days – there were no kidnappers or 'gbomo-gbomo'.

They are Dr Obiora Mann Ajuluchukwu, Mr Ifeanyi Kiss Ajuluchukwu; Mrs Adaeze Lyzz Umezuruike and Dr Bryan Ogonna Ajuluchukwu. May God Almighty guide, guard and sustain you all in your endeavours. May God be first in your lives. You all are my sunshine, no! The myocardium of my HEART! I know that I am very blessed, as you are my blessings.

The AJULUCHUKWUs: for making me one of you.

My relations: all the Mberekpes, & the Uzukwu Oputas.

For my Husband: Mr Sam Chuddy Ajuluchukwu, a pharmacist with strong back-ground in Quality Assurance and astounding versatility in all things – LIFE. He is my Friend, my Partner, my co-author, and my HALF. May God bless you immensely for your never-tiring, invaluable encouragement and support. You know that you are the 'oga' at the top; and the owner of the owner.

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Appendix I

Guiding Quotes

- Knowledge is power
- With friendship and understanding, we can go far, together.
- A leader is one who knows the way, shows the way, and leads the way.
- Lead from the back, and make others believe they are in front. Nelson Mandela
- Education is the most powerful weapon which you can use to change the world. Mandela Nelson
- Albert Einstein: The aim of education must be the training of independent acting and thinking individuals; who however see their highest life problem, in the service of their community.
- AE: We cannot solve our problems with the same thinking we had when we created them
- There is no never in Medicine, no always; BUT common things are more common.
- In God we trust; but all others bring DATA.
- GET TO THE BASICS.
- Advertisement is chest beating; Word of mouth is endorsement (Muyiwa Afolabi)
- Anyone who cannot read or write is like a blind person. (Fatima Binta Bello)
- Mother Theresa: I alone cannot change the world; but I can cast a stone and cause a ripple.

Appendix II

A Physician's Prayer

God, Thou great Physician,
I fall on my face before Thee,
Since every good and perfect gift
must come from Thee.

I PRAY

- Give skill to my hand, clear vision to my mind

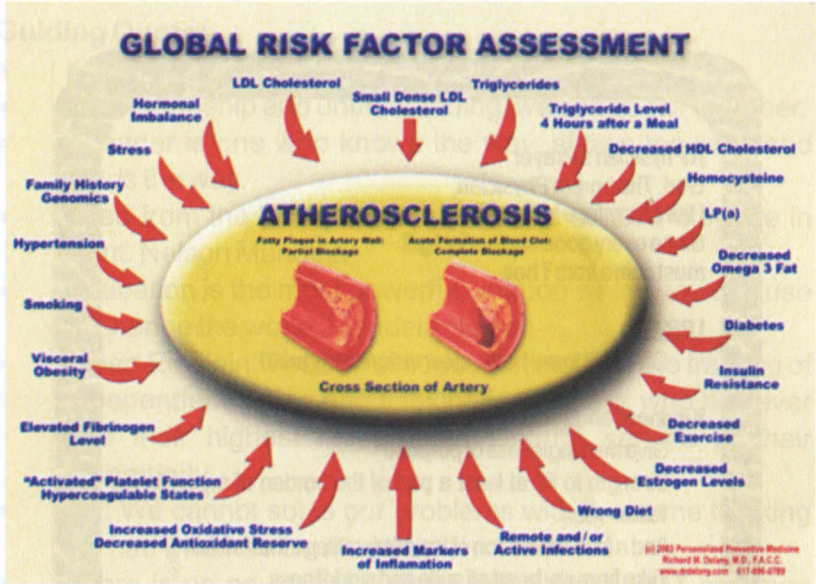
Kindness and sympathy to my heart

- Give me singleness of purpose
- Strength to lift at least a part of the burden of my suffering fellow-men
- And a true realisation of the rare privilege that is mine
- Take from my heart all guile and worldliness

That with the simple faith of a child

- I MAY RELY ON YOU.

Risk Factors



Old and New 'Daggers' of Heart Diseases



Appendix III

My SUMMARY: by JNAAjuluchukwu

I have pursued hypertension and heart failure:

- In the cool of my clinic
- In the heat of market places
- Working at several worksites
- Worshipping in different worship sites
- Teaching under trees, posh hotels, and even palaces
- Making my point in class, on print media, on television, at Aso Rock
- And following NGOs anywhere and everywhere.

Thus gaining

- Professorship
- Friendships
- Awards
- Prayers
- Sometimes tears

And even getting names such 'Queen of Hearts', *Dibia-eze*, Mommy, Grandma, Mother of all, etc.

Appendix IV



The Ritual Signingoff

Appendix V



Teaching Everywhere!

Appendix VI

Song: 'HIGH BLOOD PRESSURE'

(By Austin Uzoechina & Ajuluchukwu JNA)

Attention!! I want to expose a killer/So silent, it won't even show as a fever/ no symptoms, why d'yu think a person will fall?/like that, yakata and he was strong before/ rush him to the hospital and he becomes deformed/that is if it isn't to the world beyond he falls/s'like film, when you hear of kidney disease/ heart attack, peripheral artery disease/ aneurysm, - heart failure and stroke/ they should raise red flags man it's nothing to joke/ (WETIN DEY CAUSEAM?)

Chorus-High blood pressure, and dem dey call am, hy-per-tension (2ce)

BROS YEE, THIS TALK NA CONFIRM/ JUS BRIEF ME MORE, MAKE I UNDERSTAND/ No wahala, you see the heart is like a pump/ taking blood through the vessels, to and from/ the whole body, if the vessels get narrow or rigid, or the blood gets thickened, blood pressure increases/when its higher than normal, the vessels are strained/and later get blocked or burst, affecting the brain,/heart or organs, cause blood, supply, to them becomes low/the heart has to work harder for the blood to come through/ when the blood's not enough, organs start to die/ HAA BROS,BUT WHAT'S THE THINGS THAT MAKE THEM DIE?/It could be weight, family health history, or diabetes/ age, bad diet, lifestyle all feed it/ plus smoking and alcohol, some think is the best thing/ really don't know, what they doing is investing/ - (in) Chorus

BROS I DEY YOUNG, DEY STRONG, AND I DEY RELIEVED/IT CANT CATCH ME LAI LAI, IT'S OLD PEOPLE'S DISEASE/ You think? High blood pressure doesn't care/ if you're young, or you feel stronger than a bear/ it will gbab you, HAA, WETIN MAN GO DO? / eat healthy, avoid fried or greasy food/salty food too, cause this is what they do/

they thicken the blood, and raise the blood pressure too/ if you're overweight, thing to do is lose the weight/ 'esasise' 1, 2, 30 minutes a day/stress and too much worrying are stable health enemies/you need avoid these two things, by any means/no smoking, reduce the alcohol, it's not pleasure/do these like I've said, it will steady blood pressure/also check your blood pressure numbers regularly/ doing these will keep you healthy, march to February/ (you will never carry)

Chorus



Heart Team

Hearty Support and Congratulations from Colleagues

Dr. P.M. Kolo

Congratulations Prof
in advance. Wishing
you a great outing.

Dr. P.M. Kolo

Okechukwu Ogah

Congrats Prof.
To God be the glory

Ogah

Ugadamu

**Congratulations. Wis
hing you a successful
outing.**

Ugadamu

Kamilu M. Karaye

Many congratulations
to one of the mothers
of cardiology in
Nigeria.

We are proud of you,
Prof Ajuluchukwu.

Best wishes,

Kamilu M.
Karaye

Dike Ojji

Very big
congratulations to the
mother and mentor of
many Cardiologist in
Nigeria!

We are always proud
of you!!

I am very confident it
is going to be a great
success as the Lord
Almighty has gone
ahead of you.

Very Best Regards

Dike Ojji
University of Abuja
Teaching Hospital

Akinyemi Aje

Congratulations to Dr
Jane Ajuluchukwu

We are proud of you!
Ma.

Congratulations also
to the Cardiology unit
of LUTH.

Regards

Dr Aje

Katibi Ibraheem

Congratulations in
advance.

Ibraheem.

Bode Balogun

Big congratulations
Jane. Best wishes on
that special day.

Bode Balogun

S. S. Danbauchi

Ma Sister
Congratulations, the
Lord is your strength.
He will see you
through amen.

S. S. Danbauchi

Dr. A. M. Adeoye

Congratulations
ma. Wishing you a
huge success on
that day ma.
Shalom

Dr. A. M. Adeoye

Dr. Olalekan

Good Morning Ma.

Congratulations on
your Inaugural what
else to wish a
wonderful mother and
a great mentor than a
successful lecture.
God bless you ma.

Dr. Olalekan
FMC Ado-Ekiti

Odili Augustine

Congratulations Ma.

We pray that you will have an excellent outing.

Augustine Odili,
FMCP.

Odia OJ

The cardiology woman of timber is having her day. And there's no doubt that it's going to be a great day.

Odia OJ

Simeon Isezuo

Congratulations and Best Wishes to Prof Ajuluchukwu and her family. Remain richly blessed.

SA Isezuo

Kelechi Okonta

Congratulations prof.

Wishing you success in your attainment of this great milestone.

Regards,

Kelechi Okonta

Dr. Kelechi Okonta

Congratulations prof.

Wishing you success in your attainment of this great milestone.

Regards,

Kelechi E Okonta

Dr Mark R. Akpa

Congratulations prof! Wishing you a beautiful and successful outing.

Dr Mark R. Akpa

Dr. O. Usim

Congratulations to our distinguished Prof ,Mentor and Mother of Cardiology in Nigeria.

Looking forward once again to an in -depth teaching and many thanks for being such a great role model.

Best Wishes,

Dr. O. Usim
Reddington Hospital
VI, Lagos

Bose Babaniyi

Dear Jane,
Congratulations on your inaugural lecture. I wish you a great day ahead. May you be blessed now and always.

Bose Babaniyi

Anthony Akintomide

This is to congratulate Prof. Ajuluchukwu as she prepares to deliver her inaugural lecture and synopsis of her academic work. Well done!
AOA

Dr. Tony Akintomide

Mahmoud Sani

Congratulations Prof.

We wish all the best and God's guidance as you present your inaugural lecture.

Best wishes

Mahmoud U. Sani

Henry Okolie

Congratulations to the Queen of the Heart ma.

This is one of the greatest news for me and my family in this year 2016.

Henry Okolie

Odia OJ

The cardiology woman of timber is having her day. And there's no doubt that it's going to be a great day.

Odia OJ

MS Isa

Congratulations
Madam

MS Isa
(ABUTH Zaria)

Bode Balogun

Big congratulations Jane. Best wishes on that special day.

Bode Balogun

Basil Okehialam

Dear Jean,
I will miss to cheer you up from the crowd as you give your inaugural. The title made me start dreaming of attending, but unfortunately I shall be out attending a conference in France. Please save a copy of the presentation for me.

Wishing you God grace.
Enjoy the day when it comes.

Basil Okehialam

Sam Ike

Congratulations, Prof Jayne, on this Auspicious day of your Inaugural!

May the Lord Crown your efforts, Diligence and Lifetime statement with great success!!

Sam Ike.

Thanks for your enormous contribution to cardiovascular and medical care.

Thanks for showing us the way, thanks for raising the bar, thanks for creating this pleasant palpitation in us. It feels good. That day is blessed already

Dr. Eze C. Nwafor

Akinsanya**Olusegun-Joseph**

Congratulations in advance to a great mentor, teacher and Queen of Cardiology in Nigeria.

Very sure of an excellent and stimulating day. We are looking forward to seeing as many as possible on this day.

Kind regards.

Dr Olusegun-Joseph
Luth, Lagos.

