UNIVERSITY OF ILORIN

ONE HUNDRED AND FORTY-FOURTH (144TH)
INAUGURAL LECTURE

'FROM NOTHING TO SOMETHING: EVIDENCE IS THE BEST TEACHER'

BY

PROFESSOR ADEYINKA ABDULRASAQ AKANDE
MB;BS(ABU), FWACP(Laboratory Medicine), FMCPathology
MPA(Ilorin), PGDE(Ilorin), CERT. Computer programme (Ilorin)
Department of Chemical Pathology
Faculty of Basic Medical sciences
College of Health Sciences

THURSDAY, 13TH MARCH 2014

This 144th Inaugural Lecture was delivered under the Chairmanship of:

The Vice Chancellor
Professor AbdulGaniyu Ambali
DVM (Zaria), M.VSc., PhD. (Liverpool), MCVSN(Abuja)

13th March, 2014

Published by:
The Library and Publications Committee,
University of Ilorin, Ilorin, Nigeria.

Printed by
Unilorin Press,
Ilorin, Nigeria

PROFESSOR ADEYINKA ABDULRASAQ AKANDE

MB;BS(ABU), FWACP(Laboratory Medicine), FMCPathology
MPA(Ilorin), PGDE(Ilorin), CERT. Computer programme (Ilorin)

Professor of Chemical Pathology

BLANK

Protocols

Mr. Vice Chancellor Sir
Deputy Vice Chancellors (Academics, Management Services and Research, Technology and Innovations)
The Registrar
The Bursar
The University Librarian
Provost, College of Health Sciences and Chairman committee of Provost and Deans
Deans of faculties, Postgraduate School and Student Affairs
Members of the University of Ilorin Governing Council
Emeritus Professors
Professors and Other Senate Members
Directors and Heads of Departments
Academic and Non –Academic staff of the University of Ilorin, Ilorin
Members of the Academia of other Universities home and abroad
Chief Medical Director, University of Ilorin Teaching Hospital, Ilorin
Other Principal officers of the University of Ilorin Teaching Hospital, Ilorin
My Lords Spiritual and Temporal
My Mum
My Wife and the boys (Children)
My Immediate and Extended family members and relations
My Mentors – Professors CNB Tagoe and ABO Omotoso
Friends and well wishers
Distinguished Invited Guests
Great students of the University of Ilorin, Ilorin especially the University scholars,
Other students of Other Universities present
Members of Mighty Pen and tube
Distinguished Ladies and Gentlemen

Preamble

Mr Vice Chancellor sir,

Few hours ago sometimes in the sixties I was born nothing. My conviction today is that 'Life is the only journey that ends where it started. It started from nothing to something and will end with nothing; I have learnt from yesterday, living for today and hoping for tomorrow. This is the story of a young nothing baby boy who became something (Professor) and is gradually on his way to nothing.

To The Almighty Allah belongs all praises and worships. The Cherisher of all His creations. The Creator who has made it possible for me to stand before you to render my years of stewardship in academia, simply tagged as the 144th Inaugural lecture of the University of Ilorin. Ilorin.

This is the 5th lecture in the department of Chemical Pathology and Immunology, not by my plan or making, but by my divine appointment as the 5th Professor of Chemical Pathology in the thirty five years of existence of the department. For us in the department, the principle is 'first in, first out.' Therefore you will agree with me that the stage is mine today.

The discourse of today's lecture is to further the previous inaugural lectures in the department with the primary focus of emphasising the subject of my speciality as the 'Supreme court of medicine.'

Down the memory lane, the first inaugural lecture from the department which was the 26th inaugural lecture of the University was delivered by the erudite (late) Professor H.O. Adewoye on the 11th of June,1987. This was the year I was pronounced a physician. The lecture was titled 'Role of Chemical Pathology in Traditional Healthcare'

The 33rd Inaugural lecture of the University and the 2nd in the department was delivered by a great mentor, (Late) Professor B.A. Aiyedun in 1989 titled: 'Games parasites played: Immune survival among parasites'. The 3rd was titled 'Longevity – How Long? Immunological involvement in aging' delivered by Professor G.O. Oyeyinka in 2012 as the One hundred and

seventh (107th) inaugural lecture of the University of Ilorin. Shortly after that also in 2012, came the 4th lecture from the department titled 'Chemical Pathologist: The final judge in Health and in Diseases' delivered by Professor A.B. Okesina.

Sir, like the popular saying goes, 'To whom much is given, much is globally expected'. You would imagine how much I must have been challenged by the previous inaugural lecturers in the department who were at one time or the other my teachers. I therefore, realise your high expectations of this lecture. As Einstein said, 'If I don't deliver it simply, then I don't understand it enough'

It was my father who used to tell me 'If you cannot be an ordinary tree in the forest, then be an extra-ordinary tree in the shrub.' Mr Vice Chancellor sir, this is obviously not the best in the series of inaugural lectures but accept this as an extra-ordinary one that would do two things namely;

(a) Pitch me against the audience
(b) Improve both the quality and quantity of life of at-least one person in this hall.

Sir, don't ask me who, surely I would be the one because evidence is the best teacher.

I am therefore grateful to the Council of the University of Ilorin and the entire academic community world-wide for considering these efforts worth-while to earn me a place in the pinnacle of my speciality as a Professor of Chemical Pathology on the 19th September 2011. I dedicated the appointment to a simple saying 'A worthwhile life is the life lived for others'

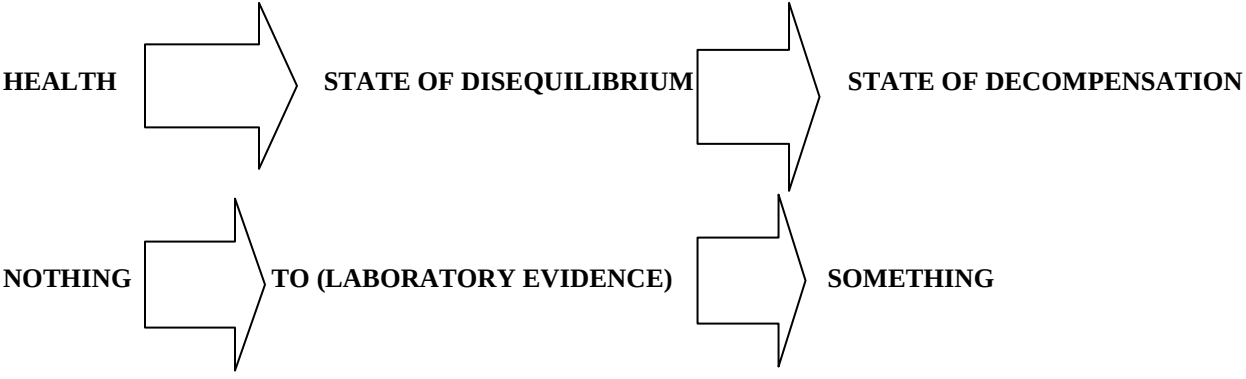
Introduction

'Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted.' My speciality belongs to a broad branch of medical profession which is known as Pathology. Simply put, this is a branch which

deals with the study of the abnormal functioning of a cell resulting in disease condition.

Therefore, Chemical Pathology is the branch of Pathology which studies the changes in the physical characteristics to detect abnormal functions of a cell, tissue, organ with resultant body disequilibrium, body compensation and finally decompensation known as disease.

Figure 1


HEALTH
STATE OF DISEQUILIBRIUM
STATE OF DECOMPENSATION
NOTHING
TO (LABORATORY EVIDENCE)
SOMETHING

Functionally, the practice of Chemical Pathology can be defined as the application of Analytical Chemistry in Medicine. It is the laboratory analysis and interpretation of the various body fluids and specimens like blood, urine, saliva, sweat, tear drop, calculi, stool, hair, nail etc. in order to diagnose, screen, treat, postulate and follow-up the level of disequilibrium or de-compensation. (disease condition). Therefore, it is proper to imagine me firstly as a medical investigator, second as an advocate and finally as a judge in the supreme court of Medicine. By this, I mean what I do is to identify (initiate research) clinical problems, investigate, interpret and make final pronouncement on them and then advise on the outcome of the findings based on the evidences before me.

Mr Vice Chancellor sir, learning is acquiring new or modifying and reinforcing existing knowledge, behaviours, skills, values and preferences using different types of information. It builds upon and is shaped by what is already known.. By that, learning produces changes that are relatively permanent. Learning therefore helps to become better at everything and to live a better life. Education is a form of learning frequently taking place under the guidance of others or personally (under guidance by a teacher or personally by experience). But, the question is where does the best learning take place? Is it from a school, book, home or from a mentor? The answer is simply in this popular saying that' experience is the best teacher.' This is because experiences in life teach more than what is contained in a book or what can be taught in a school. When something happens to an individual, a learning takes place and a personal perception and feeling is transferred from time to time as experience or education. That is to say that the best way to learn and understand is to learn by self. And because it is more meaningful and rewarding, it is well worked out and more seriously taken personally. Experience cannot be learnt from someone else.

Experience can be pleasant or bad. While pleasant experiences only last for a short time because of the

accompanying joy and celebrations, the bad experiences last longer because of the emotions and reactions attached, which most often than not are not easily forgettable. Any experience that has a formative effect on the way of thinking, feeling or act may be considered as educational. Experience therefore prepares a lesson for action against future reaction in order to make the lesson palatable or avoid complications of the lesson. Because it is an expression of a previous lesson, it would appear as a way of doing things in similar situations all the time. Thus, every similar feeling would attract a similar action or reaction. This is to say a lesson has been learnt. Experience is thus a teacher because it provides education.

However, the ways we gather experience tend not to be systematic. Experience which is more consistent with personal belief is regarded as 'teacher' while those inconsistent, are ignored and discarded. Inferences are based on personal lesson sometime with wrong perception and conclusion with expectations that tend to affect what we see, do and react. Thus, there is no attention to rates and comparison, so, there is tendency to assume that preposition that feel wrong are invalid.

Mr Vice Chancellor sir, Evidence in medical practice can therefore be defined as the judicious use of the best current available scientific research in making decisions about the care of patients.[1] Evidence-based medicine (EBM) as commonly used, is intended to integrate clinical expertise with the research evidence and patient values. This is simply achieved by the use of laboratory tests and findings in combination with clinical skills to deliver a comprehensive medical-care to the client.

Sir, the ideal and safest way to approach a clinical laboratory for test is at the request of a physician and such result ideally should be interpreted in the context of the patient's problems by a Pathologist who, thereafter, gives a meaning to it and finally transmits a report (not test result) to the clinician with all the necessary advice.

Evidence Based Medicine:

Evidence-based medicine (EBM) is defined as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patients.[1,2] It is, more specifically, the use of mathematical estimates of the risk of benefit and harm, derived from high-quality research on population samples, to inform clinical decision-making in the diagnosis, investigation or management of individual patients.[3] Its application in general health care service is known as Evidence Informed Healthcare or Evidence Based Health Care or Evidence-Based Practice in health services.

In practice, clinicians contextualize the best available research evidence by integrating the evidence with their individual clinical expertise, patient's values and expectations.[1] The incorporation of patient values and clinical expertise in EBM partly recognizes the fact that many aspects of health care depend on individual factors. These include variations in individual physiology, pathology, quality-of-life and value-of-life judgments.[4] These factors are only partially subjected to scientific inquiry and sometimes even cannot be assessed in controlled experimental settings. Application of available evidence is therefore dependent on patient circumstances and preferences, and remains subject to input from personal, political, philosophical, religious, ethical, economic, and aesthetic values. This has led to a shift from the original term Evidence 'Based' Medicine to Evidence 'Informed' Healthcare, to emphasize that decisions need not necessarily be based on or comply with the evidence but influenced by other factors as listed earlier..

The broad field of Evidence based medicine would include rigorous and systematic analysis of published literature to synthesize high quality evidence. It could also be referring to a medical ‘movement’, where advocates work to popularize the method and usefulness of the practice of EBM in the public, patient communities, educational institutions, and continuing education of practicing professionals.

Evidence-based medicine (EBM) has evolved from the need to bridge the gap between research and practice. EBM applies research information (evidence) to clinical practice, emphasizing the importance of the use of quantitative (as well as qualitative) evidence in the "art" of clinical decision making. It aims to make decision making more structured and objective by better reflecting the evidence from research.[5,6] By introducing the use of research information in clinical decision making, particularly from clinical epidemiology,[7] EBM has driven a transformation of clinical practice and medical education.

Evidence – Based Decision Making

It aims at using the experience of a population of patients reported in the research literature to guide decision making in practice.[8] This practice of evidence-based medicine requires the application of population-based data to the care of an individual patient.[7] In the past, we have relied on the experience of physicians or other health care workers to make decisions about therapy. In the current information era, this approach would be suboptimal as health care workers rapidly find themselves unable to cope with the influx of a huge variety of new information, from the irrelevant to the very important. Therefore, evidence-based decision making gradually emerged as a solution to integrate the best research evidence with clinical expertise and patient values and expectations as practised by the individual health care provider.[8] The concepts and ideas attributed to and labelled collectively as EBM/EBHC have now become a part of daily clinical lives, and health care professionals increasingly hear about evidence-based guidelines, care paths, questions and solutions. The controversy has shifted from whether to implement the new concepts to how to do so sensibly and efficiently, while avoiding potential problems associated with a number of misconceptions about what EBM/EBHC is and what it is not [7.] The EBM/EBHC-related concepts of hierarchy of evidence, meta-analyses, confidence intervals, study design, and so forth are so widespread, that

health care professionals have no choice but to become familiar with EBM/EBHC principles and methodologies.

Evidence – Based Health Service

An evidence-based health service is the practice of evidence-based medicine at the organizational or institutional level.[9] It strengthens the motivation of any health service decision-maker to use scientific methods when making a decision. Michael Fischer and colleagues at the University of Oxford found that evidence-based rules may not readily 'hybridise' with experience-based practices orientated towards ethical clinical judgement, and can lead to contradictions, contest, and unintended crises.[10] In their recent large study of the UK health knowledge economy, they found the most effective 'knowledge leaders' (managers and clinical leaders) use a broad range of management knowledge in their decision making, rather than just formal evidence.[11] Evidence-based guidelines may provide the basis for government policies in health care and consequently play a central role in the improvement and modernisation of contemporary health care systems.[12]

Applicability and Finding of Evidence

The five main steps to practicing evidence-based medicine include the identification of knowledge gaps and formulation of a clear clinical question, literature search to identify relevant articles, critical appraisal articles for quality and the usefulness of results. Other consideration is whether the available evidence is valid, important and applicable to the individual patient, implement clinically useful findings into practice.[13]

Healthcare professionals must always apply their general medical knowledge and clinical judgment not only in assessing the importance of recommendations but also in applying the recommendations which may not be appropriate in all circumstances.

The applicability of evidence to patients' management is derived from simple questions such as:[14]

- Is my patient so different from those in the study that results cannot be applied?
- Is the treatment feasible in my setting?
- What are my patient's likely benefits and harms from the therapy?
- How will my patient's values influence the decision?

When looking for appropriate evidence, the search for available guidelines is very important and If no guidelines are available, search for systematic reviews, primary research, general internet searching or discussion with a local specialist[15] (at this level beware poor-quality information from the internet or individual personal bias from even the most respected specialist).

Types and Analysis of Evidence

In general, the hierarchy of studies for obtaining evidence is systematic reviews of randomized controlled trials (RCTs), controlled observational studies - cohort and case control studies and uncontrolled observational studies - case reports. [15]

Expert opinion must not to be confused with personal experience (sometimes called eminence-based medicine). Expert opinion is the lowest level of acceptable evidence but, in the absence of research evidence, may be the best guide available.

Systematic reviews of randomized controlled trials (RCTs) especially those with double-blind placebo controls, are regarded as the gold standard of clinical research. These studies work very well for certain interventions, eg drug trials, but it is much more difficult for other interventions, such as using sham acupuncture or sham manipulation as the control.

In a Longitudinal or cohort study, a group of people are followed over many years to ascertain how variables such as smoking habits, exercise, occupation and geography may affect outcome. Prospective studies are more highly rated than

retrospective ones, although the former obviously take many years to perform. Retrospective studies are more likely to produce bias.

The more data are pooled, the more valid the results but possibly the less relevant they become to individual patients.[16] Meta-analysis can therefore be a useful tool but it has some important limitations. A meta-analysis takes perhaps 10 trials of 100 patients and to combine the results as if it were a trial of 1,000 patients. Although this technique rates highly, the methodology may not be identical in all studies and further errors may be caused by a bias to certain publications. A good meta-analysis should contain funnel plotting with cut and fill to assess the completeness of a publication.[17] A large, well conducted trial is therefore far more valuable than a meta-analysis.

Evidence Outcome (Result) and Conclusions

It is important to consider how convincing the results are, whether the statistics (e.g. P value, confidence limits) are appropriate and impressive, and whether there are any possible alternative explanations for the results. The results of a trial may be relatively simple to express in terms of numbers dying or surviving or may be much harder to quantify[15]. The quality adjusted life years (QALY) index may be used for such parameters as pain, incontinence and disability.[18]

The results should be clearly and objectively presented in sufficient detail (e.g. age or gender breakdown of results). Consider whether there was an adequate response rate in a questionnaire study (ideally above 70%) and whether the numbers in any study add up. The result should identify the rate of loss of follow-up during the study and how non-responders have been dealt with, e.g. whether they have been considered as treatment failures or included separately in the analysis.

The researcher must assess whether the results are clinically relevant and whether the conclusions are supported by the results of the research study.

Conclusions of a study checked to validate the relationship between the stated aims and objectives of a study and whether any generalisations made from a study carried out in one population have been applied inappropriately to a different type of population. Consideration must be given to the possibility of any confounding variables, eg age, social class, ethnicity, smoking, disease duration, comorbidity. Bias may have many forms, eg observer bias such as non-blinding, trying to ensure a patient has drug rather than placebo, contamination where the intervention group passes on information to the control group in health education intervention studies.

Annual and seasonal factors in the variation of disease may be important, especially for respiratory infections, rhinitis and asthma.

Discussion and Grading of Evidence Recommendations

The discussion should include whether the initial objectives have been met, whether the hypothesis has been proved or disproved, whether the data have been interpreted correctly and the conclusions justified. The discussion should include all the results of the study and not just those that have supported the initial hypothesis. An hierarchical system for levels of evidence used in recommendations and guidelines are[19]

A variety of grading systems for evidence and recommendations is currently in use. The system used is usually defined at the beginning of any guidelines publication.

The hierarchy of evidence and the recommendation grading relate to the strength of the literature and not necessarily to clinical importance.

A simpler system of ABC is recommended by the US Government Agency for Health Care Policy and Research (AHCPR) as follows:[15]

A: requires at least one RCT as part of the body of evidence.

B: requires availability of well-conducted clinical studies but no RCTs in the body of evidence.

C: requires evidence from expert committee reports or opinions and/or clinical experience of respected authorities. Indicates absence of directly applicable studies of good quality.

Mr Vice Chancellor sir, with these at the back of my mind, I decided to concentrate my academic pursuit on providing biochemical evidences on Non communicable diseases (NCDs) in our environment with the aim of influencing the management protocols of NCDs towards a more effective and efficient management outcome

Evidences from Non-Communicable Diseases (NCDs):

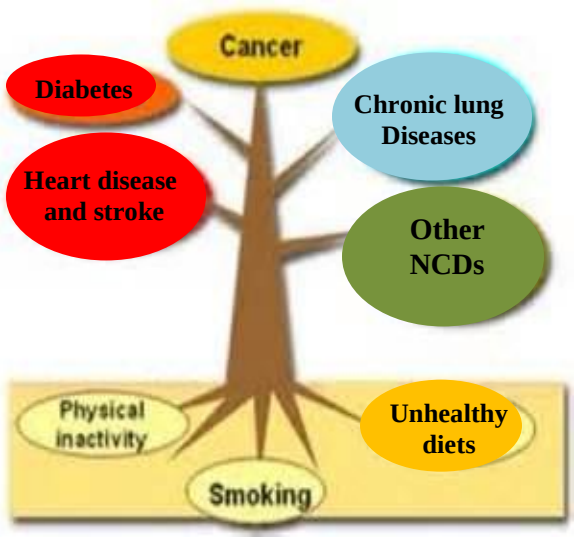
The meaning of 'Nothing' in the dictionary is 'state of non-existence'. In this lecture , the word nothing is to connote the compensatory stage of a disease process which is represented by the word 'I am well'. This is the stage when the body tries to adjust to the disequilibrium. When I see a client at this stage through their annual medical evaluation, I salute them and label them as wise.

'Something' on the other hand means a thought to be important or worth taking notice of. This is the stage of de-compensation which is represented clinically as organ failure – heart, kidney, liver brain failure. This is the stage at which an individual begins to experience some discomfort and compulsorily wishes to see a physician. This is the stage of disease manifestation.

Picture 1: Sudden and unexpected chest pain
Reference: UN taking action to prevent explosion of NCDs | French Tribune
Submitted by Nimisha Sachdev

According to WHO, NCDs kill more than 36 million people each year. Nearly 80% of NCD deaths accounting for about 29 million deaths occur in low and middle income countries.[21] More than 9 million of all deaths attributed to NCDs occur before the age of 60. Ninety percent (90%) of these premature deaths occur in low and middle income countries. Cardiovascular diseases account for most NCD deaths or 17.3 million people annually, followed by cancers (7.6 million), respiratory diseases (4.2 million) and diabetes (1.3 million). These four groups of diseases account for about 80% of all NCDs deaths and they share many risk factors such as – physical inactivity, harmful use of alcohol and unhealthy diets.[22]

Figure:3: This figure is showing the root causes of NCDs



Non-communicable diseases such as diabetes, high blood pressure, renal disease (often secondary to the former two diseases) and chronic respiratory diseases are predominantly the result of poor and Western lifestyle choices, often imported to Africa by way of colonialism and economic progress. .

Diets high in sugar, cholesterol and fat, as well as widespread smoking and excessive alcoholic intake at a young age are among the major lifestyle causes of NCDs. The globalization of unhealthy lifestyles like unhealthy diets may show up in individuals as raised blood pressure, increased blood glucose, elevated lipids, overweight and obesity.[21] Early diagnosis of complication of NCD can be treated with less expensive and less amount of drugs, less extensive surgery with less expensive follow-up care, and thus, overall, a significantly less burden on both the patient's life and productivity, as well as on the country's healthcare expenses. [22]

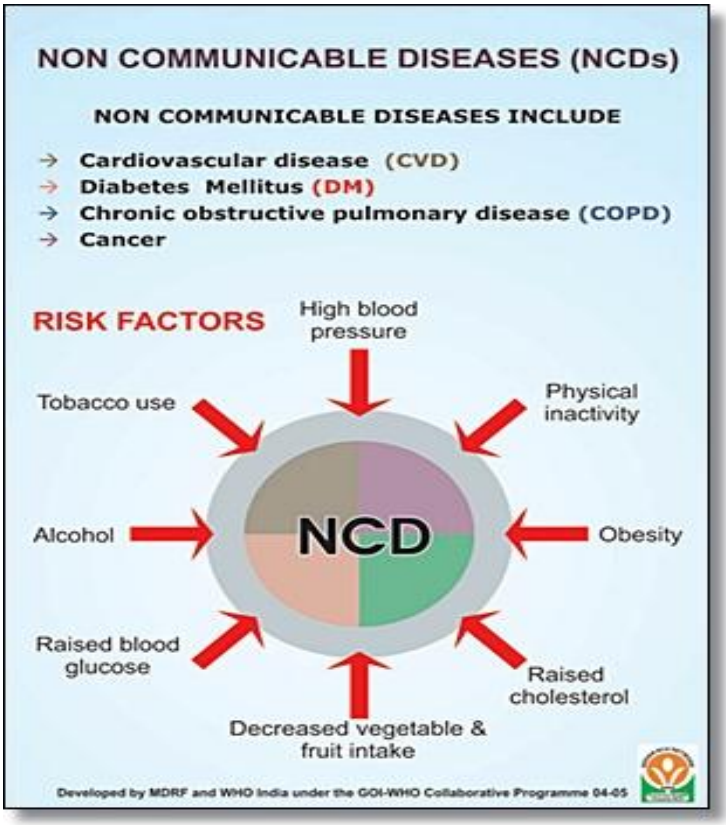


Figure 4: Relationship between causes of NCDs

Hypertension and Cardiovascular Events

Hypertension (HTN) or high blood pressure, sometimes called arterial hypertension, is a chronic medical condition in which the blood pressure in the arteries is persistently elevated.[23] This requires the heart to work harder than normal to circulate blood through the blood vessels. Blood pressure is summarised by two measurements, systolic and diastolic, which depend on whether the heart muscle is contracting (systole) or relaxed between beats (diastole) and equate to a maximum and minimum pressure, respectively. Normal blood pressure at rest is within

the range of 100-140mmHg systolic (top reading) and 60-90mmHg diastolic (bottom reading). High blood pressure is said to be present if it is persistently at or above 140/90 mmHg.[24]
With the prevalence rate of hypertension in Nigeria which is 12% in association with central obesity and cardiovascular events very common, coronary heart disease is becoming a leading cause of morbidity and mortality in the hypertension.[25]
Hypertension is a major risk factor for stroke, myocardial infarction (heart attacks), heart failure, aneurysms of the arteries (e.g. aortic aneurysm), peripheral arterial disease and is a cause of chronic kidney disease. Even moderate elevation of arterial blood pressure is associated with a shortened life expectancy. Dietary and lifestyle changes can improve blood pressure control and decrease the risk of associated health complications, although drug treatment is often necessary in people for whom lifestyle changes prove ineffective or insufficient. Hypertension may interact with other factors such as dyslipidemia, smoking and excessive alcohol ingestion in the development of CHD as suggested by recent evidences

These evidences suggest that the risk of CHD in newly diagnosed hypertensives was 22% because of the overall hypertriglyceridaemia and hypercholesterolaemia prevalence of 20.4% and 62.5% respectively. It was also discovered that the non-lipid factors included over-weight (BMI > 30kg/m^2) in 54%, history of excessive alcohol intake in 55% and glucose intolerance (FBG > 6.1%) also in 55%. Also of note is the fact that females were more affected by the metabolic risk parameters. From this evidence gathered, it was recommended that all physicians who attend to hypertension MUST do an annual serum lipid evaluation in the least, to prevent CHD.[25]

Table 1: **The mean values of fasting blood, lipid profile and Coronary Heart Disease (CHD) risk ratio by gender**

Serum Profile	**High risk group No = 30**		**Average risk gp No = 62**		**Low risk gp No = 44**		**Control No = 50**	
Gender	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
FBG µmol/L	5.7+0.2	6.5+0.4	5.0+0.1	5.1+0.2	4.0+0.1	4.1+0.1	4.0+0.2	4.0+0.5
TRG µmol/L	1.0+0.2	1.6+0.2	1.29+0.3	1.46+0.2	1.36+0.8	1.39+0.6	1.42+0.4	1.82+0.6
TC µmol/L	5.14+0.8	5.65+0.5	4.28+0.5	4.77+0.2	4.41+0.5	4.97+0.4	4.40+0.5	5.1+0.2
HDL-C µmol/L	0.62+0.8	0.57+0.7	1.22+0.9	1.64+1.1	2.93+0.7	2.21+1.0	2.58+0.8	2.25+1.2
LDL-C µmol/L	4.28+1.5	3.70+0.9	2.82+0.9	3.01+1.4	1.24+0.8	1.49+0.5	1.00+0.5	1.24+0.5
HDL-C/TC	0.13+0.0	0.12+0.1	0.30+0.1	0.29+0.2	0.66+0.0	0.59+0.2	0.59+0.0	0.55+0.1

Evidences on the relationship of electrocardiographic left ventricular hypertrophy to blood pressure, body mass index, serum lipids and blood glucose levels in adult Nigerians was gathered to conclude that Nigerians with ECG-LVH with ST-T waves changes have increased cardiovascular risk compared to with ECG-LVH alone. This is because they tend to have other coronary risk factors. They therefore constitute a sub-set of patients to be aggressively followed up with multiple risk factor intervention.[26]

Evidences have been conflicting on the role of body iron status in the development and progression of CHD. Increased body iron status could be a possible independent risk factor or in combination with other risk factors for the development of CHD. Study on high risk coronary heart disease, lipid fractions and transferrin saturation among hypertensive Nigerians showed that Transferrin saturation is not influenced by an increase in low density lipoprotein cholesterol in hypertensive subjects. Total cholesterol and HDL-C do not have any significant association with either total iron binding capacity, serum iron and transferrin saturation.[27]

Causal relationship between type 2 diabetes Mellitus, hypertension, obesity, dyslipidemia and insulin resistance known as metabolic syndrome was introduced more than a decade ago. However, it is not clear which of these metabolic components is the most powerful predictor of atherosclerosis with attendant CHD. The evidence from a coronary heart disease risk assessment among Nigerian hypertensives with metabolic syndrome showed that Obesity was found to be the commonest risk factor especially among females, followed by dyslipidaemia and Diabetes respectively. Hypertension is a commoner risk factor in the males while dyslipidaemia is commoner in the females. The CHD risk ratio was found to be significantly dangerous in 5.6% and high in about 10% of subjects with obesity, dyslipidaemia and hypertension combination [28]

Table 2: Correlation of plasma Lipids with serum Transferrin saturation in Hypertensives

	High CHD lipid fraction (N=82)	**Non risk CHD lipid fraction (N=80)**
Triglyceride	0.15 (Significant)	0.08 (Significant)
Total Cholesterol	0.28 (Significant)	0.25 (Significant)
HDL-Cholesterol	0.05 (Significant)	0.10 (Significant)
LDL- Cholesterol	0.15 (Significant)	0.12 (Significant)

Elevated plasma Total plasma homocysteine (tHcy) has been implicated especially among Caucasians as a risk factor for CAD, stroke and venous thrombo-embolism. These vascular risk has been observed to be stronger in hypertensive individuals. Review of data from epidemiological studies suggests that individuals with elevated plasma total homocysteine (tHcy) level may be associated with increased risks of cardiovascular disease. Hyperhomocysteine level of 5mmol/L or more has been associated with a 70% increase in the relative risk of CVD because of the direct toxic effect and proliferation of smooth muscle cell of the media endothelia. However, the data on the black population is limited despite the reported variation of age, gender and race. Assessment of plasma tHcy in healthy adult had helped to establish a reference range (4.5 – 17.7umol/L) in a black population.[29]

Table 3: Age by Gender stratification of plasma total homocysteine (tHcy) level

Age Group (years)	Male tHcy value (µmol/L)	Female tHcy value (µmol/L)
0-9	8.7	11.6
10-19	11.8	10.1
20-29	11.8	10.4
30-39	11.3	11.1
40-49	9.3	9.2
50-59	10.5	10.5
60-69	10.3	16.2
Above 70	13.7	0.0
Average Value	10.7	11.5

The establishment of the tHcy reference range was then used to study the plasma total homocysteine (tHcy) level and other biochemical risk factors in hypertension with and without cardiac event to predict the development and presence of cardiovascular events respectively. The study suggested that elevated plasma tHcy may be used to monitor cardiac event in hypertensives because it predicts occurrence of cardiovascular complications in hypertensives long before the symptoms of such event.[30]

Table 4: Correlation of serum tHcy with other cardiovascular risk markers

Parameters	Correlation Co-efficient	p-value
tHcy and age	0.183	0.50
tHcy and BMI	0.630	0.01
tHcy and SBP	0.734	0.01
tHcy and DBP	0.549	0.02
tHcy and TC	0.421	0.08
tHcy and LDL-C	0.530	0.02
tHcy and HDL-C	0.300	0.22
tHcy and TRG	0.432	0.07
tHcy and duration of hypertension	0.642	0.01

Endocrine Disorders

Diabetes Mellitus and Complications

Diabetes is the most common endocrine disorder with over 170 million people affected world wide. The prevalence world-wide ranges between 2-6% and has been on the increase in Africa over the last 20 years. The 1992 National prevalence study on NCDs indicated that the prevalence rate from urban and rural studies in Nigeria is between 2.7% (2.6% and 2.8% for adult male and female respectively).[31] Despite the increasing prevalence rate and the various associated complications, the knowledge of the disease by the public and the healthcare providers is still very poor. Challenges in the management of Diabetes vary from place to place. One of the greatest challenges in a developing world like Nigeria is how to increase public and physicians awareness towards early diagnosis, appropriate treatment measures and reduction of complication in the face of inadequate facilities and manpower.

Evidence gathered from a study on Model healthcare design for the management of type 2 diabetes in a Nigerian tertiary healthcare facility showed that DM management should include a change in diabetic clinic procedures and consultation using the colour code management. This involves both the

patient and the healthcare provider to provide a comprehensive healthcare programme designed to enhance attitude, knowledge and practical behavioural change [32]

Table 5: Colour code and healthcare management

YELLOW COLOUR CODE	The follow-up cases are coded yellow. The management decision is that this category of patient should be subjected to the same physician at every visit. This would promote physician-patient relationship and enhance improvement. This group would routinely be assessed for metabolic control, treatment response and development of complications
GREEN COLOUR CODE:-	Annual assessment. The patient in this category would have in addition to the assessment in the yellow code, the following Estimation of glycated haemoglobin Serum lipid estimation Serum Urea and Creatinine/ GRF determination Microalbuminuria estimation as well as fundoscopy examination.
RED COLOUR CODE:-	The clinic day which falls on the patients birthday is usually selected for the assessment appointment. This MUST be seen by the head of the management team because of the high level of skills and competence in the assessment and investigation of new patients. They should be subjected to the same assessment as in the GREEN CODE.

Many attending physicians in diabetic clinics do not request for lipid profile routinely as part of their management strategy. This is due in part to the widely held notion that lipid abnormalities are quite uncommon among Nigerian diabetes. A common aetio-pathologic mechanism between type 2 DM and lipid abnormalities and its association is well documented in the western world. Evidence from our study, revealed that Dyslipidaemia is seen in 43.2% of diabetes, with Low HDL – C (15.6%) and hypertriglyceridaemia (13.8%) being the commonest abnormalities. This is another story of evidence is best teacher for managing physicians [33]

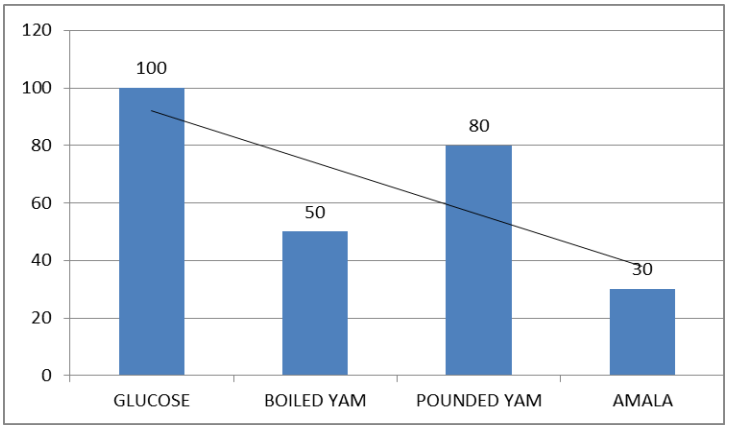
Diabetes remains a universal health problem and its management requires multi disciplinary approach. Dietary measures are necessary and inevitable to uphold the control of blood glucose, improve metabolic control and prevent complications. As nations become more affluent, the nature of carbohydrates consumption changes(ratio of complex starch to simple crabohydrate) with resultant occurrence of various diseases such as diabetes mellitus, hyperlipidemia and CHD. Glycemic Index (GI) assessment is based on the fact that simple carbohydrates are more readily available for immediate absorption by the gut than the more complex carbohydrate and they therefore produce a greater and faster rise in postprandial plasma glucose and insulin response than do the supposedly more gradually digested and absorbed complex carbohydrate. Thus, this can simply be defined as a valid index of the biological value of dietary carbohydrate. The Glycemic Index is influenced by the type, physical form, viscosity and cooking of the carbohydrate. Therefore GI has a major role to play in diabetics dietary management [34]

To set out an evidence, the glycaemic response to different preparation of yam in diabetic and non-diabetic Nigerians was studied.

The post pandrial responses to food can be affected by the method involved in the preparation of the food as earlier mentioned. Dietary intervention with food modification forms

the corner stone of management of types 2 DM world wide. The effect of processing on yam – a Nigerian staple food is amazing. *Amala* which is prepared from yam flour despite its long processing has a better post-pandial glycemic response index (PGRI) compared to other yam preparations like boiled and pounded. We therefore concluded that Nigerian diabetics should be encouraged to take more *Amala* than other yam preparations for better control [38]

FIGURE 5:



No consensus has been achieved on the components included in the definition of Metabolic syndrome. (MS). Uric acid and Gamma glutamyl transferase are however newer markers not mentioned in previous studies. Uric acid is a product of the continual process in the body where older cells are broken down for new ones. The serum level varies with age, body weight, gender, blood pressure, renal status and alcoholic intake. Evidence exists to the association of Uric acid and metabolic syndrome components such as dyslipidemia, obesity, insulin resistance and hypertension. Moreover, strongest association has been documented with serum lipids and body mass index (BMI). Like the other components it has also been shown to be an independent risk factor for CHD. One common picture on our Television screen nowadays is the appeal for help by Nigerians

with Chronic Kidney Disease (CKD). The prevalence of diabetic nephropathy is about 50% in patients with DM of more than 20 years duration. However, this figure is higher in blacks and seems to be assuming a public health issue level. Our evidence along this line showed the prevalence of hyperuricaemia among black diabetics to be 10.7% compared to 31.6% of patient with hypertension, hyertriglyceride, Low HDL-C and BMI >30kg/m^2 diagnostic of MS. A total of 23.7% who had MS and hyperuricaemia had serum uric acid values above 0.38mmol/L recommended as the cut off value. The correlation between hyperuricaemia and other components of MS as demonstrated suggests a common etiological factor between the MS components. Insulin resistance has been implicated as a common denominator. [36]

Table 6: Correlation between hyperuricemia (>0.38mmol/L) and metabolic syndrome components

MS Components	p-value when compared to subjects with <0.38mmol/L
Age (years)	**<0.05 (significant)**
BMI	**>0.8**
Total TRG	**<0.1**
TC	**<0.9**
HDL-C	**<0.7**
LDL-C	**<0.05 (significant)**
FBG	**<0.1**
SBP	**<0.05 (Significant)**
DBP	**<1.0**

Hyperuricemia is significantly related to age, LDL-C and SBP

The quality of life, morbidity and mortality in diabetes depend on the extent and severity of the association of the components (insulin resistance, dyslipdaemia, hypertension and obesity) At various times, a combination of hypertension and

DM has been described as the 'killer duet'. However, with the change in the population life style and other factors, other components are now known as 'independent killers.' MS can then be described as a 'killer monster'. Our evidence showed that 44% of diabetes had one form of dyslipidaemia, however low High Density Lipoprotein cholesterol (HDL-C) being the commonest (15.4%) and hypertriglyceridaemia in 13.8%. Metabolic syndrome components occurred in 41.3% in various combinations – DM+dyslipidaemia+Obesity being the commonest (13.8%)

Table 7: Prevalence of Metabolic Syndrome

Component Combination(s)	Percentages (%)
Insulin resistance - Diabetes Mellitus (DM)	16.5
DM + Hypertension(HBP)	6.4
DM + Obesity (OB)	29.4
DM + Dyslipidaemia (DL)	6.4
DM + DL + OB	13.8
DM + DL + HBP	6.4
DM + OB + HBP	11.9
DM + DL + HBP + OB	9.2

The significance of this evidence is that a large population of diabetics (83.5%) in Nigeria have another medical condition(s) (an independent killer). This is to say in simple terms that many Nigerian Diabetics (42.4%) have duet killer conditions, while 41.3% are living with monster killers. [37]

Mr Vice Chancellor sir, according to the National Institute of Health consensus development panel on impotence, Erectile dysfunction (ED) is defined as the persistent inability to attain or maintain an erection sufficient for satisfactory sexual performance. ED is very common and about 152 million men worldwide are currently affected. It is estimated that 322 million men would be sufferers by 2025. Apart from the psychosocial

effect of ED on the quality of life, the condition is commonly associated with some medical conditions that are prevalent in older age group. Diabetes Mellitus Type II is the commonest disorder most frequently associated with ED

Table 8: Frequency of Erectile Dysfunction in normo and dysglycemia

Variable	No (%) of ED	p-value when compared with Non ED
Normoglycemia	**2 (0.7%)**	**0.01**
Impaired Fasting Glucose (IFG)	**48 (56.6%)**	**0.05**
Diabetes	**43 (81.1%)**	**0.01**
TOTAL	**93**	

(Significant value is p-value <0.05)

In our study, the incidence of ED was 56.5% and 81.1% in Impaired fasting Glucose (IFG) and diabetes respectively. It was just a mere 0.7% in normoglycaemics. The import of these findings was that ED may be the first symptom of DM . This is because neuropathy is a common complication occurring in more than 50%of IFG who ordinarily would not have presented with frank DM within the next five years. [38]

Thyroid Diseases: Anterior neck swelling is the commonest manifestation of thyroid disease, the biochemical evaluation and status are important in the management of the disease as nearly half of the cases may be euthyriod. A third (36.3%) of the hyperthyroid cases were found to be consistent with nodular goitre and only 15% of the cases were primary hypothyroidism.[39]

Abnormalities in the circulating thyroid hormone concentration without associated pituitary or thyroid disease are seen in a variety of non-thyroid disease.(NTD). These abnormality may range from low T3 or T4 or combination of both. This is usually due to factors affecting the enzyme

(monodeiodinase) responsible for the conversion of T4 to T3 or the transport system for thyroid hormones. However, more often than not, the greatest challenge is the interpretation of thyroid function tests in acute and chronically ill patients who had no previous evidence of thyroid dysfunction.[40]

Reproductive Disorder: Menstruation: Oxidative theory has been investigated to explain the pathological basis of many medical conditions. This study was designed to examine the oxidative stress pattern during different phases of a physiological phenomenon of menstruation in relation to the hormonal characteristics. Our findings showed that the serum level of Malondialdehyde (MDA) significantly increased and coincided with the increased progesterone and estrogen levels during the luteal phase of menstruation which is characterised by foci and coalase necrosis. This may support the fact that oxidative stress theory has an important role to play (dysmenorrhea) in this phenomenon.[41]

Infertility: Infertility remains a common medical problem in developing countries and between 8-12% of couples around the globe have difficulty conceiving a child at some point in their lives.

Hospital-based studies have shown that oligospermic/azospermic male partners of infertile couples have endocrinopathy. The evidence revealed that 58.8% male partner had abnormal hormonal pattern. Hormonal work-up was advocated in infertile male couples. [42]

Table 9: Frequency of Hormonal disturbance in Male infertility

Hormonal status	Number of cases	Percentage (%)
Normal Hormonal status	21	41.2
Abnormal Hormonal status	30	58.8
TOTAL	51	100

Also, about 34.4% of primary infertility and 65.6% of secondary infertility have hormonal abnormalities as the cause of their infertility. The commonest biochemical abnormality is the hypergonadotrpic hypogonadism and only about 23% had biochemical picture consistent with hypogonadotrophic hypogonadism. Thus hormonal profile should be a goal standard in the diagnosis of anovulation and replacement is the key in the management of these categories of patients. [43]

Table 10: Pattern of Biochemical Diagnosis of infertility

Hormonal diagnosis	Primary Infertility	Secondary Infertility
Hypergonadotropic Hypogonadism	21(63.6%)	31(49.2%)
Hypogonadotropic Hypogonadism	9(27.3%)	30(47.6%)
Hyperprolactinemia	3(9.1%)	2(3.2%)
TOTAL	33(100%)	63(100%)

Conclusion:

In conclusion, Mr Vice Chancellor sir, the choice of this topic is essentially linked to the importance of my speciality (Chemical Pathology) in clinical practice as well as my training as a medical educator. Application of medical research evidences to patients' care and improved health care delivery by consistencies of treatment cannot be over emphasised. Also, the new philosophy of problem based and problem solving learning, prominent in new medical education curriculum is towards learning the process of evidence gathering and application in the clinics. This would help to establish national goal standards of patient care and training. It will also set criteria for evaluation and improve medical audit processes. Implementing the principles of EBM which rely on the principles of rules of evidence and research, requires commitments from all stake holders – Government, hospitals and health professionals. This would translate to restructuring of institutions, increased

funding, curriculum modification and dissemination of research findings through better collaborations between the institutions and researchers. All these are pointers to the fact that evidence is the best teacher rather than the popular saying that 'experience is the best teacher'. No two patients with the same complaints are the same, therefore, experience cannot be the sole tool in their management. Rather, an appraisal of each of them based on clinical evidence from laboratory test (evidence), clinical expertise and patient's belief is the best approach for the best clinical management and outcome. The rule is experience can be wrong and unpalatable but evidence is always right and rewarding.

It is said that 'Gravitational force is not responsible for people falling in love' Cherish the life you live because the world is always changing, nothing stays the same. I have given you all my love to live a living. Remember, 'when the solution is simple, God is answering'

Recommendations:

Vice Chancellor sir, I have attempted to expose us to the evidences from the test-tube especially from NCDs to the underlying inherent health danger– 'Nothing to something'
The meaning of this is the fact that many people are dying little by little (something) while the good things of life seem to be getting better. This certainly can only be due to two things

(a) Lack of quality health information (evidence as a teacher)
(b) I don't care attitude.

Therefore, I wish to make the following recommendations that could help to brace up to the challenges of managing life towards a better quality using medical evidences as a teacher.

1. To the Government:

(a) Restructuring of The Nigerian Institute of Medical Research (NIMR):

The mission of this institute is to conduct research into diseases of public health importance in Nigeria and develop structures for the dissemination of research findings while providing the enabling environment and facilities for health research and training in cooperation with the federal and state ministries of health and in collaboration with universities, allied institutions and organised private sector nationally and internationally. The strategic plan of 2011-15 identified among other things: Researchers appear to pursue individual goals rather than that driven by national health priorities, lack of appropriate legal framework, offering of more service than research, human capital development and poor funding. Therefore recommended key restructure areas would include identification and conduct of relevant research, support researchers, provide evidence-base for health policy, management and practice, increase funding and dissemination of research finding for clinical use.

(b) Establishment of a Nigeria National Research Fund (NNRF):

Evidence based initiatives are the current global best practices. It is in the interest of any nation to facilitate access to knowledge and information through researches. Therefore, there is a need to support and promote research through active funding, human capacity development and an enabling environment for the achievement of health national goals and development. This can only be achieved by the establishment of a national fund specifically designed to take of research funding. The may be generated through special levy, taxes and special government intervention fund.

(c) Establishment of a National Health Policy on Non-communicable diseases:

The prevalence of both Diabetes mellitus and Hypertension is on the increase. By the year 2020, about 20-30% of Nigerians would be suffering form either or both of them. It is therefore pertinent for the Nation to brace up using this evidence. This can be achieved by the Establishment of a National Health Policy on Non-communicable diseases, especially a Diabetes and Hypertension policy. In line with the WHO strategies and policies, the objectives of such policies should include

- Reduce the level of exposure
- Strengthen health care system
- Raise the priority
- Review and strengthen policies.

(d) Expansion of the scope and enrolments to National Health Insurance Scheme (NHIS) programme.

The current situation in the country where only between 2-5% of the population of Nigeria and about 70% of the formal sector is registered and covered by the NHIS is not acceptable. The programme should be expanded to achieve at-least 30-50% of both formal and informal sectors staggered within the few years as advocated by the Nigerian Medical Association. The scope of the scheme should also be expanded to cover medical evaluation.

(e) Establishment of centre for Cancer prevention, control and treatment:

The regional burden of cancer continues to grow; tackling it constitutes one of the major challenges in our region. AFRO member states adopted a regional strategy in which priority interventions include mobilization and allocation of adequate resources for acquisition of adequate infrastructure and equipment particularly for primary and secondary as top priorities - particularly Cancer screening centres.

(f) Annual work place Medical evaluation:

Over a century ago, the American Medical Association recommended that every healthy person above 35years of age should pay a yearly visit to the doctor to do a battery of tests, a head-to-toe physical examination, and a meeting to discuss anything that might be of concern to either the doctor or patient. This translated to people being advised to see their doctors not just when they are sick, but when, presumably, they are well. Some of the investigations include dipstick urinalysis for people over 60, Electrocardiography (ECG) blood pressure, annual Pap smear for ages 18 to 20 and every third year from age 20 to mid 30s, and at least every three years through age 65. Clinical breast examination annually beginning at age 40 and an annual mammogram to screen for early breast cancer for women from age 50.

A check of serum cholesterol annually or at-least once in every five years is recommended for all men between the ages of 20 and 70. After age 50, yearly stool screening for occult blood, Also after age 50, sigmoidoscopy every three to five years or air-contrast barium enema every five years may be useful.

This should be made compulsory in the public service and the certification should be scored as part of annual performance appraisal (APA). Medical evaluation policy relating to particular occupational hazards should be designed for various communities and groups in-line with the new concept. E.g all Chief Executives must have Blood pressure logbook in place

2. To the University:

(a) Medical education curriculum modification:

The rapidly changing body of relevant evidence and the need to up the game of clinical practice, the EBM as an approach to solving clinical problem should be included

in the medical curriculum. This is to further support current innovations of problem based and problem solving curriculum. For example, 37% of US and Canadian internal medicine residencies have time dedicated to EBM. This will make us much better by far in the nation of college of Health sciences.

(b) Formulation and adoption of the health promotion policy

I will like to recommend the promotion and adoption of the following:

I. Senate building lift policy (Descend only)
II. Certification of Medical fitness as one of the criteria for promotion.
III. Construction of interlock walkways along major roads especially in the quarters to encourage walking
IV. Enforcement of the Wednesday evening sport day activities for staff and students
V. Support for sport groups (families) e.g Badminton family.

(3) The individuals:

If an individual wants to feel better, have more energy and perhaps even live longer, look no further. Just like a car, routine maintenance is recommended daily, weekly, monthly and annually for optimal performance.

Daily maintenance:

(a) Regular exercises

'If exercise were a pill, it would be one of the most cost effective drug ever invented' – Dr Nick Cavill.

There are strong scientific evidences that regular exercise can reduce risk of major illnesses by up to 50%, lower risk of early death by up to 30%, lower risk of Coronary

Heart Disease and stroke by 35%, up to 50%, lower risk of type 2 Diabetes, up to 50%, lower risk of colon cancer, up to 20%, lower risk of breast cancer, up to 83%, risk of osteoarthritis, up to 68% risk of hip fracture, a 30% risk of fall among older elders, up to a 30% lower risk of depression and dementia.[44]

Recommended physical activity level for adults between 19 to 64 years is 150 minutes every week and adjusted for above 65 years as tolerated. (figure 6) These include fast walking, water and court aerobics, pushing lawn mower, riding bike on level ground with or without few hills and playing table tennis, badminton etc. It is free to take and has immediate effect and you don't need a physician to prescribe.

Figure 6: **RECOMMENDED PHYSICAL ACTIVITY LEVELS**

- **Children under 5 years should do 180 minutes every day**
- **Young people (5-18years) should do 60 minutes every day**
- **Adults (19-64 years) should do 150 minutes every week**
- **Older adults (65 and above) should do 150 minutes every week as tolerated.**

NOTE THAT DAILY EVENTS LIKE SHOPPING, COOKING AND HOUSE WORK DON'T COUNT TOWARDS YOUR 150 MINUTES

The several benefits of these are [45]

1. Control of weight
2. Combat of health conditions and diseases – Cardiovascular diseases
3. Improvement of Mood – stimulation of brain chemicals that may leave an individual

feeling happier and more relaxed. This would lead to better appearance, boosting self confidence and improve self esteem

4. Boosting of energy – Improvement of muscle strength and boosting of endurance.
5. Improve sleep quality
6. Reduce risk of stress, depression and dementia

(b) Dietary discipline:
'Eat and die little'
Medical evidences have shown that good food choices have positive impact on health and poor diets have long term negative effects [46] Diet is not just about giving the body sustenance, Nourishment engages every aspect of wellbeing – physical, social, emotional, mental and spiritual. When any of these aspects is unbalanced, eating behaviours can suffer. Relationships with family, friends, community and environment with nutrition should be considered as very important in NCDs. We need to make decisions about what and how we eat.

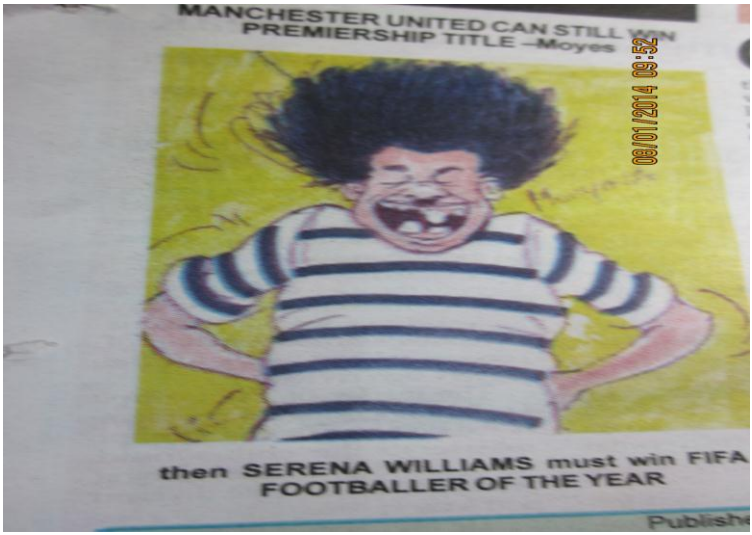
(c) Compliance with prescribed medication:
Once diagnosed with any of the NCDs, medication is usually as recommended by physicians. This includes the change in type, dose form as well as duration

(d) Health checks:
Weekly: (a) Weight monitoring:
(b) Self breast examination
Monthly: (a) At-least once Blood pressure Check
(b) Be more interested in your life by seeking information on research findings: This is the ICT era and information lies on the finger tips of individuals. Everyone is encouraged to read and obtain information on age

related medical issues at-least once a month. Seeking information on health promotional issues has been shown to encourage and improve compliance. Above all, don't be your own doctor, always consult a physician

Annually: Annual Medical Evaluation which include all tests of wellbeing

Figure 7: A cartoon showing a statement of experience vis-à-vis a statement of evidence



Acknowledgements:

Mr Vice Chancellor sir, I once again give glory, honour and gratitude to the Almighty Allah for making today another milestone in my life. My journey on earth has been characterised by praising, seeking, worshiping, trusting and thanking The Almighty Allah in happy, difficult, quite, painful and every moment. I openly confess that Allah has been faithful, patient and consistent with me. He has never for once disappointed or

left me alone. I am a success story of a faithful one. I have come a long way not by my will or powers, but through the grace of Allah Who gives comfort in place of all my sorrows, make happiness come after all sadness, give strength in the face of challenges, safety in place of fear and final victory over and above all forces.

I wish to express my gratitude to my parents – My father, Late Alhaji Ajibade AbdulHamid Atitebi Akande. He was a British trained disciplinarian. He called all shots. He was frank, confident, brave and hard working. For those who knew him *Akande Oogo, oju lanti funrawa, omo onikoyi eso*. That was a gene I surely inherited. His words were 'if you cannot be a tree in the forest, then be the best tree in the shrub' May the Almighty Allah forgive his mistakes and accept him as a servant. My mother - Alhaja Wosilat Mojisola Akande. A mother indeed. Her network of prayers locates me anywhere in the world. Thank you for giving me the best things I could ever imagine. I was educated in the best schools in the land, travelled far and wide, trained as an up-town kid. I never lacked at anytime. Your age long word of – 'remember the son of whom you are' kept ringing on and on. Thank you for still working on me because you never live up to your mother. May you live long to see more fruits ripe. *Insha Allah*. Love you mum. Special appreciations also go to my step-mothers for their love, prayers and care.

I appreciate the special contributions of the following for making my life worth while – Alhaji and Alhaja Hamzat Olayinka Adekanye, Alhaji Adebayo Adedeji, Alhaja Ahola Adedeji, Alhaja Amuda (Iya Ife), Mrs Kemi Adeoti, Alhaja Sherifat Jimoh and many others too numerous to mention.

I also appreciate the contribution of my mentors – Professor Clifford Nii Boi Tagoe (My Immediate past Dean) Professor A.B.O Omotoso (Provost, COHS) and Dr Rasaq Jimoh (MD, Delnik Hospital). They have invested so much in me because they believe so much in my potentials. I was constantly challenged because of my fear of disappointing them. They know that ' the only thing that interferes with my learning is my

education.' Don't burst an artery' my provost would say all the time

I thank all the members of the Faculty of Basic Medical Sciences – teaching and non-teaching for your continual support and co-operation. Special mention must be made of great friends like Dr Moyosore Salihu Ajao (HOD, Anatomy), My Tayo Ibrahim (My driver), Alhaja A.A Amusa Mr Ajao and Hajia Adi (former Faculty Officer) who had stood solidly behind me in the discharge of my responsibilities.

To all my teachers and classmates world wide – especially at Adeola Model School Ofa, Federal Government College, Ilorin and Ahmadu Bello University , Zaria. The message is that your boy and friend is made. I thank you all. – Professor Abdul Aguye, Profesor Ronke Adesanya, Late Professor Eglar, Professor Afonja, Professor Kazeem, late Dr Fred Jarikre, Dr Rasheed Odunola, etc

Special appreciations to my seniors, colleagues and resident doctors at the department of Chemical Pathology and Immunology. – Late Professor Aiyedun, Professor A.B. Okesina, Professor G.O. Oyeyinka, Dr S.A. Biliaminu and many others.

I appreciate all the support I enjoy from the members of staff of the Department of Chemical Pathology, University of Ilorin Teaching Hospital, Ilorin especially good brothers like Mr John Oyeyipo, Mr Toyin Babawale, Mr Akinyinka and Mrs Ayoola. We will continue to be one big family. My special appreciation goes to Professor Y.A.Quadri, Professor Bayo Lawal and Professor A.B.O Omotoso for their editorial assitance.

I acknowledge the spiritual support of The Nasrullahi Fathi Society of Nigeria (NASFAT, Ilorin Branch), Islamic Welfare Foundation (IWF), Islamic Medical Association of Nigeria (IMAN, UITH branch) and the Ansar-deen Itikaf group. They have provided me the opportunity to worship, serve and appreciate the Almighty Allah. I thank you all for your prayers, counsel and numerous home visits. Special mention must be made of Alhaji J.K. Yusuf, Alhaji Adelodun Yusuf, Arch Bolaji Abdulazeez, Hajia Shukurat Mohammed as well as all members

of NASFAT Medical Committee and my annual Ummrah group for allowing me to grow spiritually. *Jazakumullahu khaira. Amin*
To all my brothers and sisters, what else can I say. I appreciate all you have done to me and for me individually and collectively. Special mention must be made of Tunde and Kemi Akande, Ayo and Bola Akande and Teslim and Iyabo Akande, Kunle and Maryam Akande. To my Sis, Mrs Iwalola Bello Esq (Nee Akande) of Lawal Rabana & Co, who has transformed me from a Noble doctor to a 'learned colleague.' Always reminding me of my Left whenever I want to fight for my right.

I am indebted in several ways for the special roles my in-laws have played in my journey. My mother in-law is not only a mother, she is my personal friend and prayer consultant. She is never tired of making me very comfortable under any circumstance.

I am indeed very grateful to my lovely children- nieces and nephews - Angel Jibril and Moyosola Mejiosu, Hakimat and Halim Bello, Abdul, Iya, Rama, Haliyat, Azeezat, Karimat and Abdul (jnr), Akande

To the boys, (Mohammed Kabir, Mohammed Khaliq and Mohammed Kamaldeen) keep the barrack rowing. You have been the force behind my hard work, the source of my joy, sign of my victory and reason why I live. May your day like this come during my life time *Insha Allah*. Amen

Finally, to the commander-in-chief of the boys barrack. There are five boys in the barrack including my wife. She is my love, Mr Vice Chancellor. The architect of good product from good reasoning, the source of good guidance, pillar of prayer support and maker of my good meals. Love you dearly is my main confession.

I thank you for your attention and support. May the Almighty Allah bless you all. Amen.

Alhamdulillahi Rabbil alamin.

References

1. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. "Evidence based medicine: what it is and what it isn't". 1996. *BMJ* 312 (7023): 71–2.

2. Timmermans S, Mauck A. "The promises and pitfalls of evidence-based medicine". *Health Aff (Millwood)*. 2005. 24 (1): 18–28

3. Greenhalgh, Trisha. *How To Read a Paper: The Basics of Evidence-Based Medicine*. Wiley-Blackwell, fourth edition. 2010: 1.

4. Tonelli, MR. "The limits of evidence-based medicine." *Respiratory care.* 2001. 46 (12): 1435–40

5. Evidence-Based Medicine Working Group. "Evidence-based medicine. A new approach to teaching the practice of medicine". 1992. *JAMA* 268 ;1

6. Evidence-based health care and systematic reviews" The Cochrane Collaboration. 2012.

7. Centre for Evidence Based Medicine. 2012.

8. Eddy DM "Evidence-based medicine: a unified approach". *Health Aff (Millwood).* 2005. 24 (1): 9–17.

9. Gray, J. A. Muir (*Evidence-based health care & public health*. Edinburgh: Churchill Livingstone. 2009.

10. Fischer, Michael Daniel; Ferlie, Ewan. "Resisting hybridisation between modes of clinical risk management: Contradiction, contest, and the production of intractable conflict". *Accounting, Organizations and Society*. 2013. 38 (1): 30–49.

11. Dopson et al. "Health care managers' access and use of management knowledge". National Institute of Health Research, Service Delivery & Organisation Programme. 2013..

12. Ferlie, E. & McGivern, G. Bringing Anglo-Governmentality into Public Management Scholarship: The Case of Evidence-Based Medicine in the UK. *Journal of Public Administration Research & Theory.* 2013.

13. Straus S.E, Sackett D.L. Using research findings in clinical practice. *British Journal of Medicine.* 1998.1:337-42

14. Straus S.E, Sackett D.L. Applying evidence to individual patients. *Ann.Oncol*.1999. 10(1):29-32

15. Levels of Evidence, Centre for Evidence-Based Medicine, June 2010

16. Tonelli MR; The limits of evidence-based medicine. *Respiratory Care.* 2001 ;46(12):1435-40; discussion 1440-1.

17. Sterne JA, Egger M, Smith GD; Systematic reviews in health care: Investigating and dealing with publication and other biases in meta-analysis. BMJ. 2001 14;323(7304):101-5.

18. Johannesson M; QALYs, HYEs and individual preferences--a graphical illustration. *Soc Sci Med.* 1994;39(12):1623-32.

19. Eccles M, Mason J; How to develop cost-conscious guidelines. *Health Technol Assess.* 2001;5(16):1-69.

20. Segen Medical Dictionary.2010

21. Non-communicable diseases. WHO fact sheet, Media Centre. 2013

22. WHO Global status report on Non-Communicable Diseases. 2010

23. Chobanian AV, Bakris GL, Black HR et al. "Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure". *Hypertension.* 2003. 42 (6): 1206–52.

24. Carretero OA, Oparil S. "Essential hypertension. Part I: definition and etiology". 2000. *Circulation* 101 (3): 329–35..

25. Akande AA, Opadijo OG, Jimoh AK. Prevalence of Coronary Heart Disease risk factors with systemic hypertension. *African Journal of Medicine and Medical Sciences, 2004.* Vol 33: 121-125.

26. Opadijo OG, Omotoso ABO, Akande AA. Relation of electrocardiographic Left Ventricular Hypertrophy to blood pressure, body mass index, serum lipids and blood sugar levels in Adult Nigerians. *African Journal of Medicine and Medical Sciences,* 2003. Vol.32: 395-399.

27. Oparinde D P, Opadijo O G, Akande A A, Ogunro P S, Akinwusi P O, Okesina A B, Oyeyele A O. High risk coronary Heart Disease lipid fractions and transferring saturation among hypertensive Nigerians. *The Nigerian*

Postgraduate Medical Journal, 2005. Vol 12; No3 : 158-161.

28. Akande AA, Katibi IA, Salami AK. Coronary Heart disease risk assessment among Nigerian Diabetes with Metabolic syndrome. *Nigerian Clinical Review,* 2004. Vol.8; No3. :25-28.

29. Akande AA, Salisu OT, Kolo PM, Omotoso ABO.. Plasma total Homocysteine (tHcy) level in Healthy Nigerian Volunteers. *Journal of Haina Medical College. 2009.* Vol. 15 (11).

30. Akande AA, Salisu OT, Kolo PM, Omotoso ABO. Plasma total Homocysteine (tHcy) level and other biochemical risk factors in hypertensive with and without cardiac events. *Journal of Haina Medical College. 2009.* Vol. 15 (11).

31. Chinenye S. Diabetes Association of Nigeria – A proposal. Nigeria National Diabetes Centre. 2013

32. Katibi IA, Akande AA, Salami AK. Lipid Abnormalities among type 2 Diabete Mellitus patients: Our Experience in Ilorin, Nigeria. *Tropical Doctor.* 2004. No 34: 254-255.

33. Akande AA, Okesina AB, Katibi IA. Model Healthcare design for the management of type 2 Diabetes Mellitus in a Nigerian Tertiary Healthcare facility. *Diabetes International.* 2006. Vol 14; No1: 7-8.

34. Jimoh AK, Adeniran SO, Adebisi SA, Akande AA, Olarinoye JK, Okesina AB. Role of Carbohydrate in Diabetic Nutrition: A Review. *Internet Journal of Laboratory Medicine. 2009.* Vol. 3 No.(2):1-24.

36 Jimoh AK, Adeniran SO, Adebisi SA, Akande AA, Olarinoye JK, Okesina AB.(2008) Glycaemic response to different preparations of yam in diabeteic and non-diabetic Nigerians.*Mera: Diabetes International.2008.* 19-22.

37 Akande AA, Jimoh AK, Akinyinka OA, Olarinoye GO. Serum Uric acid level as an independent component of the Metabolic Syndrome in type 2 Diabetic. *Nigerian Journal of Clinical Practice.2007.* Vol.10, No.2; 137-142.

38 Katibi I.A, Akande A.A, Salami AK. Metabolic syndrome among type 2 Diabete Mellitus patients – Our experience in Ilorin, Nigeria. *The Nigerian Journal of General Practice.2003.* Vol.7; No 3: 8-12.

39 Akande AA, Olafimihan KO, Odeigah LO, Ayinmode BA. Erectile dysfunction as a marker of impaired fasting blood glucose (IFG). *International Journal of Medicine and Medicine Sciences.* 2010. Vol 2 (11):342-346.

40 Akande AA, Rahman GA, Abdur-Rahman LO, Gadzama AA. Test evaluation and Biochemical Pattern of thyroid disease in UITH, Ilorin. *Hamdard Medicus, Pakistan Quarterly Journal of Science and Medicine.* Karachi, Pakistan. 2006. Vol.49; No3; 128-132.

41 Akande AA, Rahman G.A. A literature review of Euthyroid Sick Syndrome (ESS) Journal of Postgraduate Medicine. *Nigerian Hospital Practice. 2007.* Vol. 1 (3); 66-69.

42 Akande A.A, Akinyinka O.A. Serum Malondialdehyde levels during menstrual cycle. *African Journal of Biotechnology. 2005.* Vol.4; No1: 297-1299

43 Akande AA, Jimoh AK, Idowu AA. Biochemical Infertility among females attending University of Ilorin Teaching Hospital, Nigeria.- *Nigerian Journal of Clinical Practice. 2006.*

37. Olatinwo AWO, Akande A.A, Kuranga S.A, Jimoh A.A, Ijaya M.A, Oparinde PD. The Hormonal Assessment of the Infertile Male in Ilorin, Nigeria. *African Journal of Endocrinology and Metabolism*, 2002. Vol.3; No1:62-64.

38. Exercise: Seven Benefits of regular physical activity. First Aid: Mayo Clinic, USA. 2011

39. Benefits of exercise. NHS choices. 2013

40. How does diet impact health? Taking charge of your health wellbeing. University of Minnesota. USA. 2013