

UNIVERSITY OF PORT HARCOURT

BLOOD SACRIFICE – HOW SAVING?

An Inaugural Lecture

By

Professor Oseikhuemen Adebayo Ejele

Inaugural Lecture Series

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DEDICATION

I dedicate this inaugural lecture to;

- The glory of Almighty God , who makes all things possible.
- All altruistic, voluntary, non remunerated blood donors, on whom the success, sustainability and quality of blood transfusion service depend, and
- The memory of our late loving and amiable first son Imomion Oseikhuemen Ejele, who died on September 2, 2010

ACKNOWLEDGEMENTS

Mr Vice Chancellor sir, may I use this opportunity to express my profound gratitude to the following ;

- My late parents: (a), Mr , Thomas Onowo Ejele, a successful cocoa farmer, who was the Balogun of the Anglican Church, OkeOdo, Kajola Ogbese, Akure, where I was born. (b), My mother, Mrs Maria Osemeahon Ejele (nee Agbator) who bore ten children, with me as the 9th, but went through the agony of losing the other nine mainly in childhood and having me as the only surviving child as far back as in 1957. She lived to a ripe old age of 88 years to enjoy her grandchildren
- My darling wife, Lady Professor (Mrs.) Philomena Ekeikhomen Ejele, KSJI (LAUX) – a piece of beauty, brains and brawn , whom i married some 34 years ago. Her love has been overwhelming as she has stood solidly besides me like the rock of Gibraltar. A modest lady and achiever that places premium on prayers, honesty, morality, commitment and due process. She helped me look after my mother who had stroke and lived with us for thirteen years under the same roof, receiving all the tender loving care we could muster. May God bless her abundantly.
- Our surviving and loving children; Akomen, Osezua, Ilobekemen (only daughter) and Ogbeide for their love, care and understanding.
- Late Apostle-General Benjamin Oijalen Agbator, my maternal uncle who took me over, in 1958 to Eastern

Nigeria as a son, from my mother (his only sister), when he saw the academic potential in me, and more importantly so that I could survive, and not go the way of my siblings. He was a disciplinarian and humane educationist, who loved academic excellence and steered me in that direction. Same appreciation to his Late wife mother-in-Israel Rebecca Agbator (nee Otaigbe), who reared me as one of her children, without discrimination.

- My late parents – in – law Mr. Michael Oriane and Mrs. Annah Arhu Alli- who rejuvenated and consolidated my catholic faith. Infact he became my God father, and she showered a lot of love on me as their only son in-law.
- My three giants; In a letter to Robert Hooke on February 5, 1675, Isaac Newton wrote: ‘ If I have been able to see further than others, it was because i stood on the shoulder of giants’ These three giants who inspired me and propelled me in my professional carrier as a Pathologist, and specifically a Haematologist are; (i) Late Professor Ambrose F. Alli, with his flare and quality of teaching as a medical student. He became my uncle-in-law in1978, and later the first executive Governor of old Bendel state in 1979. (ii). Late professor Nobert O. Osamo, a charming, humorous, fashionable Haematologist, who invited me into Haematology as a resident Doctor, and arranged my training in Benin and England. He was proud of his Oxford pedigree (iii). Late Professor Joe White, a distinguished Haematologist of Kings College

Hospital London to whom Professor Osamo sent me. He arranged my training at Kings, and Royal Postgraduate Medical School, Hammersmith Hospital, London, and Queen Elizabeth Hospital, University of Birmingham, U. K.

- Professor C. A. Anah, my teacher, as a pioneer medical student, University of Benin. He physically came to University of Calabar where I was lecturing to fetch me and my wife down to unique UNIPORT in 1990, when the College of Health Science lost accreditation for lack of teachers in some departments.
- Professor Kelsey Harrison, the then Vice Chancellor, who warmly received me in 1990, when Professor Anah brought me here, and promptly ensured that befitting accommodation was made available to my family.
- The sixteen Consultant Haematologists I have helped to produce to date, three of whom are Professors, two Associate Professors and some in the diaspora.
- The other members of my core research team; Professor C. A. Nwauche and Dr Osaro Erhabor, for their invaluable contributions. The number and quality of our publications attest to this.
- My colleagues and Resident Doctors in the Department, for being good team players.

PROTOCOL

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Great Students of Unique UNIPORT
Gentlemen of the Press,
Ladies and Gentlemen

I remain ever grateful to the Vice-Chancellor and the University of Port Harcourt Authority for this opportunity granted me to accomplish this rare academic mileage in the Socratic tradition. Am privileged to deliver this 85th Inaugural Lecture of the Unique University of Port Harcourt. I have flirted with this idea for a long time, and today, May 10, 2012, I feel fulfilled for the opportunity given to me.

Let me recall that this is the second lecture from the Division of Pathology, but the first from the Department of Haematology, Blood Transfusion and Immunology

The subject is technical and there is a lot to talk about, but I intend to simplify it as much as possible.

THE JOURNEY TO PORT HARCOURT

The Vice-chancellor Sir, permit me to start this inaugural lecture from a historical perspective. On our return from England in 1986, my wife and I took up appointment with the University of Benin, Benin-City. For some reasons, I applied to three other universities for appointment in 1987 as Lecturer I/ Consultant Haematologist. Of the three, Universities of Jos and Calabar responded. But the University of Port Harcourt failed to reply. The University of Calabar sent a high ranking official to Benin to persuade me to come over. I yielded to their pressure and assumed duty there and my dear wife joined later. Then, about 1989, my colleague and friend, Prof. V. C. Wakwe, who had assumed duty in University of Port Harcourt, during our interactions, requested me to come over to UNIPORT that better needed my services. There was some motion, but no movement. As fate would have it, my teacher in the medical school in the University of Benin, and the then Provost, College of Health Sciences UNIPORT, Prof. C Anah, visited my family in Calabar and pressurized me to come over and help him, as the College had lost accreditation partly because there was no Haematologist in the staff complement. I informed him that my wife was also a lecturer and should move with me. He promised to consult the Dean of Humanities in P.H, so that both of us could be interviewed. I could not resist my respected teacher. We came for the interview and were successful. So, this time, there was motion and movement. We therefore assumed duty here in UNIPORT in October, 1990. It turned out that I became the first full-

time Lecturer I and Consultant Haematologist in UNIPORT/UNIPORT Teaching Hospital, P.H.

The challenge was enormous as I had to put in place, from scratch, the necessary programme for Residency Training, as well as consolidate the undergraduate programme. Looking back, I am pleased and fulfilled that our modest efforts, with cooperation of the University and Teaching Hospital Authorities, have yielded a Department of Haematology and Blood Transfusion well recognized nationally and internationally. In fact, now, we are exporters of Consultant Haematologists to other Teaching Hospitals and Health Institutions. To God be the glory. This platform has also launched me to higher levels of service to my country, Nigeria, and the West Africa sub-region. For this, I remain grateful to those who, by their cooperation, made it all possible.

PATHOLOGY/ PATHOLOGIST

Vice-chancellor Sir, I am first and foremost a Pathologist, and specifically a Consultant Haematologist. Pathology is derived from the Greek words “*patos*” (suffering) and “*logos*” (study). Therefore, Pathology refers to the scientific study of the functions of the body in diseased state, i.e. the study of how the organs and tissues of the healthy body change to those of a sick person. It involves an understanding of the disease processes encountered in the patient who is affected with the disease. A Pathologist is a Physician who has been further trained to perform and interpret laboratory procedures and tests and make a diagnosis.

Pathologists, as Medical Specialists (Physicians), are the founders and leaders of Laboratory Medicine. As you know, the quality of the health of any nation depends on its Pathology (Clinical Laboratory) Services. They provide the scientific foundation for medicine, and bridge the gap between basic science and clinical medicine. When Clinicians make educated guess or impression, the final definitive diagnosis lies with the Pathologist.

Pathology is the backbone of Clinical Medicine. It is the medical science behind the diagnosis and cure of diseases. It comprises laboratory investigations and techniques employed in arriving at a correct and complete diagnosis for the benefit of the patient, the community, and the advancement of medicine in general. You hear about molecular genetics and

the genetic profile of individuals as the trend in medical diagnostics today. This is all Pathology. It also involves total responsibility for the management of certain diseases e.g. blood diseases. Thus the Pathologist makes it possible to apply scientific advances to improve the accuracy and efficiency of medical diagnosis and treatment. He also plays a particularly important role in preventive medicine by ruling out diseases or detecting them early. The earlier a disease is detected and treated, the greater the chance of cure, and the more cost-effective the treatment.

This enormous responsibility of confirming or refuting the diagnosis of disease, falling on the shoulders of the Pathologist, makes him to be likened to playing “next-to-God”, and called the “doctor’s doctor”, and the “consultant of consultants”. He thus acts as the “policeman” of medicine- a man who takes all evidence, the doctor of final diagnosis.

The standard of medical practice in any hospital or country is only as good as its diagnostic (Pathology, Radiology) services. The relatively poor standard of medical practice in Nigeria is multifactorial. But one major contributor to the lack of, or slow progress, has been inadequate Pathology (or Laboratory Medicine or Medical Laboratory) services and research. Investigation results and diagnoses are either incomplete, occasionally inaccurate or delayed, and consequently of little value or non-contributory to the care of patients. This is a serious impediment that affects all fields of medical endeavour.

Twenty first (21st) century medicine demands increasingly sophisticated equipment and techniques in the development of Pathology services. Without them, practice is stultified, incomplete and frustrating. The deficiencies and conflicts in pathology services in Nigeria contribute largely to the poor progress in Nigerian Medical practice and research. Physicians are unable to achieve full value of their training, and cannot attain international standards of research or investigation. Thus their researches cannot be published in media or journals that ought to enable them expose their findings or potential discoveries to the world of medicine. Also, patients are denied complete or accurate diagnosis and therapy and medicine fails to make its contributions to the Millennium Development Goals.

Today's medicine seeks the best evidence for a diagnosis, and to establish the extent and severity of disease with the aim of making prognosis by using reproducible and verifiable methods. Pathologists in Nigeria had hoped that at this stage of our national development, Pathology services would have been massively improved by the three tiers of government, the organized private sector, and non-governmental organisations- the often touted Public-Private Partnership (PPP). This has, largely, failed to happen, and makes for the arbitrary expectations and low accomplishment. Are we then surprised that medical tourism to places like India, South-Africa, UK, USA etc thrives? Take for instance the challenge that only about 50 Haematologists serve some 150 Million Nigerians, ratio of 1:3,000,000 instead of the ideal ratio of

1:100,000 of the population. How do we come out of this morass?

Remember that Pathologists as the doctors of final diagnosis, are the last to let you down- the autopsy(post mortem) examination, to conclude the diagnosis before we are lowered 6 feet into the grave. Here, a few suggestions may point in the right direction:-

- a) The Department of Pathology (Laboratory Medicine) services should be resuscitated in the Federal and State Ministries of Health, and headed by a Pathologist, in order to put a square peg in a square hole.
- b) The need for adequate funding for upgrading and updating of equipment and human capacity building to obviate the current dearth of Pathologists in Nigeria.
- c) The available Pathologists should assume and execute their leadership role in Pathology (Medical Laboratory) services and ensure quality.
- d) The fact that every specimen for test sent to the clinical laboratory is a form of consultation to the Pathologist means that such should be handled with utmost attention, care and quality. No test result has absolute meaning unless interpreted in the appropriate context. The Pathologist should provide this service by adding value in converting analytical result to a report and giving clinical advice to his medical colleagues. Pathologists should avail themselves of continuing professional development (CPD) programmes, and be interested in staff development programmes by acquiring sub- specialty skills in order to bridge the technology gap that drives medical tourism.

HAEMATOLOGY/ HAEMATOLOGIST

Yes, I am a Consultant Haematologist- a physician, specialized via postgraduate and residency training in Haematology. Haematology, simply put, is the study of the functions and dysfunctions of blood and blood-forming organs. The blood-forming organs include the liver, spleen, thymus and bone marrow. A Haematologist is a Pathologist, in a generic sense. He is both a Laboratory Physician and a Clinician. That is the beauty of this fascinating discipline. Haematology is subdivided into units:

- General Haematology
 - Principles of Haematology
 - Laboratory Processes
 - Haemopoiesis
 - Anaemias (Haemoglobinopathies,etc)
 - Systemic disease.
- Haemostasis/ Coagulation.
- Oncology/Cytogenetics/Cytochemistry/Immunophenotyping
- Blood Transfusion.

My research interest spans these sub-units, but this inaugural lecture will dwell largely on aspects of blood transfusion safety that my research team has reported widely on, which is Transfusion-Transmissible Infections (TTIs). The philosophy of the discipline of Haematology is epitomized in the book of Deuteronomy 12²³ of the Holy Bible, and it states..."for the life is in the blood". So, Haematology is the study of life itself. It is

the chair of this vital discipline that I was privileged to hold in this University, for a long time, until I produced another.

The Blood

Blood, a most important body fluid, is a connective tissue that is involved in the transport of oxygen (O₂) from the lungs to all the body tissues and carbondioxide (CO₂) from the tissues to the lungs for excretion. It is also involved in the transport of nutrients, hormones, metabolites and cells.

Blood is composed of two parts:

- a) The Plasma, and
- b) Blood cells

Plasma:

This opalescent fluid (straw coloured) component of blood makes up 55% of blood volume. It is made up of about 90% water, 7-8% soluble protein, 1% electrolytes, and 1% trace elements.

The plasma proteins comprise – Albumin, Globulin, and
- Coagulation Factors.

These proteins are involved in various physiological processes. The albumin, which is the most common protein (60-80%), is produced in the liver, and plays a major role in the maintenance of colloid osmotic pressure, and transport of different substances in the blood.

The Globulins, divided into alpha (α), beta (β), and gamma

(γ), function mainly as transport proteins. The gamma portion is involved in humoral immunity.

The coagulation (clotting) factors, produced mainly by the liver, are involved in the clotting process.

The plasma also carries respiratory gases, like CO₂ in large amount (about 97%), O₂ in small amount (about 3%), various nutrients (e.g. glucose, fats), metabolites (e.g. urea, ammonia), hormones and vitamins.

Blood Cells

These formed cellular elements are red blood cells, white blood cells, and platelets.

The red cells, formed in myeloid tissue, with biconcave shape, lose their nuclei on maturation. They contain haemoglobin which transports O₂ from the lungs, and CO₂ to the lungs, and also functions in body pH control. Every 120 days, all our red cells are replaced.

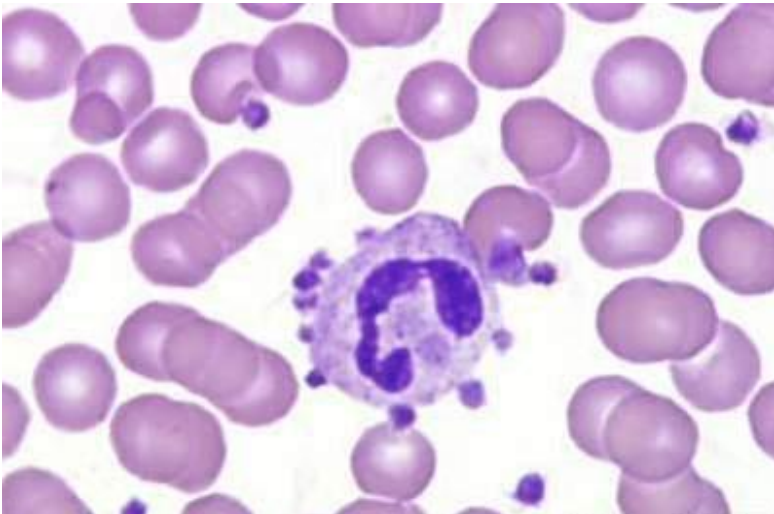
The white blood cells (leucocytes) are relatively larger than red blood cells, do not contain haemoglobin, hence are translucent. They have nuclei that are somewhat segmented. They are subdivided into:

- Phagocytes or granulocytes (e.g. neutrophils, basophils, eosinophils and monocytes)
- Immunocytes (e.g. lymphocytes , plasma cells)

The leucocytes function in immune responses, thus protecting the body from infections. Every 15 days all our leucocytes are replaced.

Platelets are membrane bound cell fragments, which generally lack nuclei. They result from fragmentation of large cells and megakaryocytes. The circulating half life is about 8-10 days, and they play a role in blood haemostasis, thus preventing complete and fatal exsanguination in the event of a minor injury.

FIG 1- PICTURE OF BLOOD FILM



Every six (6) months, we have a new blood stream. Every organ, tissue or cell of the human body is perfused or

nourished by blood. Every day our blood travels 168 million miles(i.e. 6720 times round the earth's globe) round the body, supplying all tissues with substances necessary for normal functioning, growth and multiplication of their cells. I wonder if there is any other tissue in the human body that works as hard. Think about this.

BLOOD SACRIFICE

By “sacrifice” here, I mean “to lose or give up something for the sake of something more important or valuable”. It also means the “offering of something valuable to a god, often an animal killed in a special ritual”. Blood can be used like this.

Today, blood is the most frequent medium used for the majority of the medical laboratory analysis; aimed at making a diagnosis of disease, monitor progress of treatment, assay drug level, or donating for friends, oneself or a patient in need of blood transfusion. These are forms of blood sacrifice from a consenting individual. Sometimes, blood sacrifice may be accidental and could lead to dare emergency. This is the crux of my lecture. Are these blood sacrifices saving?

From time immemorial blood has always been held in high regard and given deferential treatment across cultural, religious, social and spiritual strata. This suggests that there must be some saving grace in this blood.

From my earlier quotation from Deuteronomy, you will see that blood and life are inextricably interrelated. Some regard blood (life principle) as the seed from which life of various

types germinates. Tertullian in his writings in Apologeticus book 39 asserts that “the blood of martyrs is the seed of the church”. Thomas Jefferson also declared that “the tree of liberty must be refreshed from time to time with the blood of patriots and tyrants. It is the natural manure”.

To some others, blood is associated with a certain amount of uncleanliness. Shakespeare in Macbeth says “will all great Neptune’s ocean wash this blood clean from my hands?” But, on the other hand, blood is regarded as cleansing. For example, in a hymn written by Elisha Hoffnan which reads “Have you been to Jesus for the cleansing power? Are you washed in the blood of the lamb?” Over the ages, man has used his blood as a symbol of fellowship or kinship. The mutual letting of blood was a bond of the strongest type. Blood brothers are tied together inseparably during life as members of the same family, believing that they have something common in their blood which separates them from others (outsiders). Blood is life, and life is blood. (Osamo NO, 1980).

The pivotal role of blood in human life is for:

- Sacrifice for atonement for sins.
- Survival
- Sealing of covenants
- Identification of persons
- Initiation of adherents into some secret cults.
- Desire of demons for human blood.
- Healing for diseases.

All these are meant to gain some benefits. A few illustrations from different religions would do:

1) **African Traditional Religion:**

Blood is held in awe in African tradition. Blood is the vehicle of life, and thus carries messages to God, and could atone for sins, while restoring right relationship. Animal sacrifice, through bloodletting, is done to appease the gods, so that in illness the blood is given in exchange for the sick person. Blood used as covenant symbol binds those involved, with the understanding of sanctions should there be a breach. Some see blood as nutrient for mysterious powers- sorcery, charms, and mystical traditional medicines. So some degree of awesomeness is attached to any spilled blood. The belief that blood is the centre of the soul and personality makes it sacred. The mystery attached to blood makes it have both positive and negative power, depending on its source and usage. Thus blood is used in sacrificial rites, oath taking, magical practice, initiation rites, medicine practice, etc. So blood has an accompanying aura, whether sacred or otherwise, and being the life principle, stands as surety of a serious engagement between two persons. It cements ties of friendship, security, and genuineness, for example in economic life. (Charles S. Allison, 2005).

2) **Islam-**

In Islam, animal sacrifice to Allah, with the associated religious festival, dates back to Abraham, the father of the faithful. Blood is pivotal here and blood ties are prominent.

3) Judaism –

Blood is integral to the Jewish belief system. Ritual sacrifices involving animal blood, abound in the Jewish religious calendar, to “appease “God for offences committed and receive forgiveness/pardon. The flesh is eaten, while the life principle (blood) is offered to God. In ancient days, the supreme sacrifice was that of human blood e.g. Abraham and Isaac, Jesus Christ on the cross, etc.

4) Christian Religion-

Blood sacrifice is the basis for Levitical worship. Every single sin has to be atoned for by sacrificial blood- life poured out as an atonement (Leviticus 7²⁶⁻²⁷). Blood was pivotal to the relationship of Israel with God- sacrifices to the covenants of individuals and the nation of Israel.

Without the shedding of blood, there is no forgiveness of sins (Heb. 9²²). Blood sacrifice also saved the Israelites from their servitude in Egypt, as in Exodus 12³⁻¹³- “the blood on the door posts will be a sign to mark the houses in which you live. When I see the blood, I will pass over you and will not harm you when I punish the Egyptians”.

Blood was used for purification by sprinkling it upon the people and the altar (Exodus 24⁶⁻⁸). It was also used for consecration of priests and altar (Ezekiel 43²⁰).

However, the cleansing, reconciling and vivifying effect of the power in the blood of Jesus Christ is replete in the New Testament (Ephesians 2¹¹⁻¹⁶, Matthew 26²⁸, Hebrew 9²², etc.).

The blood sacrifice of Jesus on the cross is at the core of survival of the Christian religion. This New Testament perspective of blood sacrifice authenticates, consummates, and transcends the position of the Old Testament. Salvation is linked to the blood shed by Christ on the cross of Calvary. The death of Christ was a one-time blood sacrifice, for it accomplished what the Tabernacle and Temple sacrifices of the Old Testament could not. This is the divine nature of blood. You will recall the saying that the blood of an innocent soul murdered cries to God for vengeance. Recall the story of Cain and Abel as expressed in Genesis Chapter 4 vs 10 “Then the Lord said why have you done this terrible thing? Your brother’s blood is crying out to me from the ground like a voice calling for vengeance “

Choice of Topic of Lecture

My research interest covers a wide range of Haematology sub-specialties- Haemoglobinopathies, Haemostasis /Coagulation, Oncology, Anaemias, and Blood Transfusion. So far, I have published over sixty(60) research works in both national and international journals, books, and technical reports. It will not be possible for me to discuss all these. However, my focus will be on Safe Blood Transfusion Practice that a lot of my publications addressed.

Being the first full-time Lecturer/Consultant Haematologist, and the only one for many years, employed by the University of Port Harcourt in 1990, the challenges were daunting. At that time the Medical School was fighting for accreditation, and my department was one of the major reasons for this. So

I had to grapple with the daunting task of repositioning and rebuilding the department from scratch for accreditation. The service arm was also tasked as the only consultant to handle all the subunits of the department. Research was hampered, as there was paucity of data and equipment. There was need to update and upgrade facilities, for meaningful research to commence. The teaching of medical students and training of Resident Doctors for the Fellowship Programmes took their toll. I had to be the Head of Department for ten years. Mr. Vice-chancellor Sir, may I let you know that today I am happy and fulfilled that my department, with the cooperation and support of the University authorities, and that of the Teaching Hospital, has surmounted all odds, from a humble beginning, to national and international recognition. We now count among the best in the country, relatively well equipped, servicing many other hospitals in the South-South zone of Nigeria, and producing and exporting Consultant Haematologists to other hospitals. Some of our academic services go beyond the shores of this country.

Port Harcourt, as a large industrial, commercial, cosmopolitan and oil city, well linked by road, rail, sea and air transportation, attracts a large influx of people, and the population has grown tremendously over the years. Such growth demanded support services, among which was the health sector. My department had to brace up to this demand by providing Haematological services, more especially blood transfusion services. That is how safe blood transfusion practice captured my interest and attention.

A lot of blood is sacrificed everyday, as donation for transfusion, as samples for medical laboratory tests, lost from medical emergencies like road traffic accidents, obstetric complications etc. How safe are we from all these- the blood donor, the recipient, the patient, the health workers who handle the blood. There are implications for all concerned about blood safety.

Blood Transfusion Services in Nigeria.

Blood transfusion is a key part of modern health care worldwide. This is well appreciated in Nigeria. That is why the idea of a National Blood Transfusion Service, for Nigeria, was first mooted in the sixties, to ensure that safe blood is available to save the life of any patient who requires blood, no matter which part of the country the patient may be. This did not materialize until 2006, when the National Policy on Blood Transfusion for Nigeria was launched (FMOH, May 2006). I was privileged to be a member of the National Technical Committee on Blood Transfusion that drew up this policy. Prior to this time attempts were made in 1991, and reviewed in 2002, but without implementation. Blood transfusion activities were mostly hospital based, fragmented, uncoordinated and unregulated. Commercial blood donors held sway, blood services were grossly inadequate, substandard, and blood safety could not be guaranteed.

In trying to operationalise this policy, the same National Technical Committee (of which I am still a member), undertook a National Baseline Data Survey(FMOH,2007). I led

the team that covered Kano and Jigawa states. Our findings in the Technical Manual were as follow:

- Some 1 million units of blood were collected annually by both public and private hospitals and blood banks in Nigeria, as against 2 million needed.
- People will rather pay touts than donate blood, and such blood is of poor quality and usually risk-prone. The touts are usually unemployed, low class with high risk life style seeking to make money out of other people's natural misfortune. Some of the high risk profile lifestyles are multiple and shared sex-partners; alcohol and injecting drug abuse, poor nutrition and hygiene, etc.

The National study also showed that:

- Only 2.5% of donor blood comes from altruistic, voluntary , non-remunerated donors.
- 16% from paid donors.
- 80% from family replacement (ie relatives or friends coerced into donation). However some paid donors disguise as relatives
- Blood banking facilities were few and far between, and only available in few hospitals in the country. These hospitals even encountered great difficulties in obtaining enough blood, because the prevailing system of blood collection and distribution is hazardous and chaotic. Patients are made to provide donors and this encouraged the use of touts who hover around hospitals and collude with hospital staff in the process. Although many lives are saved through appropriate blood transfusion, but because of unregulated system the safety of patients could not be guaranteed. It is difficult to

ensure that every unit of blood was screened for transfusion-transmissible infections.

The problem of blood safety was compounded with the outbreak of HIV/AIDS in the 80s because about 10% of the infection in Africa was found to be due to transfusion of infected blood. So, blood continued to be scarce and many avoidable deaths continue to occur. So, in furtherance of our quest to enhance blood safety in Nigeria, our National Technical Committee produced another Technical Report titled "Operational Guidelines for Blood Transfusion Practice in Nigeria, 2007". This was aimed at harmonizing procedures, maximizing use of reagents and equipments in various centres, and achieving some reasonable level of quality control. The South-South Zonal Centre is located in Benin City, while the Armed Forces Zonal centre is in Port Harcourt, (Military Hospital)

Blood is a most important body fluid and source of life. In 1926, the British Red Cross instituted the first human Blood Transfusion Service in the world. Blood Transfusion service has developed tremendously over the years in sophistication, application and saving lives. Transfusion of whole blood is becoming obsolete, especially with the increasing demand for blood components. A unit of whole blood can benefit more patients if separated into its components and the patients are given their specific needs. This conserves resources and saves more lives.

Blood Components/ Products

Blood components are those constituents of blood that can be separated by centrifugation; while blood products are those harnessed by applying industrial process to a unit or pooled units of blood.

These are:

- a) Cellular Components:
 - Whole blood
 - Red cell concentrate
 - Frozen Red Cells
 - Plasma-reduced blood
 - Leuko-reduced blood
 - Irradiated blood
 - Neocytes
 - Washed Red Cells
 - Leucocytes concentrate
 - Platelet concentrate
 - Stem cells
 - Cord blood

- b) Plasma Products
 - Fresh Frozen Plasma
 - Plasma Protein Fraction
 - Cryoprecipitate
 - Albumin
 - F VIII Concentrate
 - F IX Concentrate
 - Immunoglobulins e.g.

Anti-D (Rhogam)
Tetanus Ig
Hepatitis Ig
Herpes zoster Ig
Measles Ig

These numerous components and products have their specific uses and are life saving, but when inappropriately used, can be dangerous. Blood is a scarce national resource obtained only from humans. A safe donor is the best source of safe blood. The cornerstone of a good blood transfusion service is altruistic, voluntary, non-remunerated donation of blood by healthy individuals. But safe blood is scarce in Nigeria. According to WHO, (2011), at least 1% of the population of a country should meet the minimum requirement of blood. For Nigeria, with a population of over 160 million people, at least 1.6 million units of safe blood are needed per annum. We are far from meeting this target because of fears, myths, negative attitudes, apathy and inadequate education for mobilization of donors, and shortage of infrastructure (Okpara RA,1988; Emeribe and Ejele OA, et al 1993)

Mr Vice-chancellor Sir, when I assumed duty here in 1990, these issues about blood availability and blood safety agitated my mind, and I set about looking mainly, at blood safety. Our blood differs from individual to individual. To date about 30 blood group systems have been discovered (Daniel G. 2007), and many of these affect blood transfusion if not adequately addressed. However, my research interest was hijacked into blood safety, especially transfusion-transmitted infections.

This was at the time of outbreak of Human Immunodeficiency Virus (HIV) infection pandemic, with the resultant Acquired Immunodeficiency Syndrome (AIDS). Other infections like Hepatitis-B virus (HBV), Hepatitis-C virus (HCV), Syphilis and Malaria also came into my shooting range.

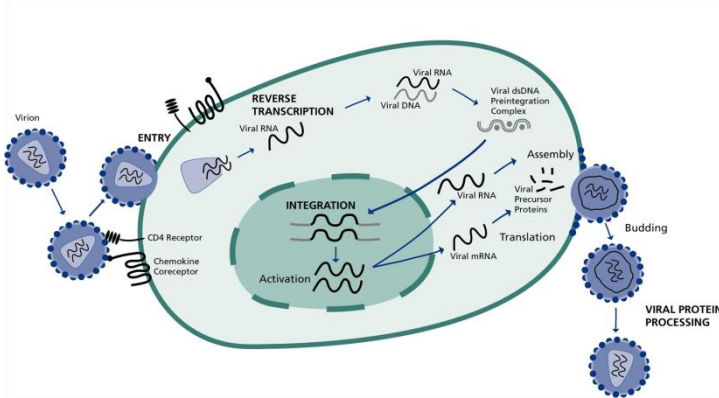
Table 1: Table of blood group systems.

No.	System name	System symbol	Gene name(s)*	Chromosomal location	CD numbers
001	ABO	ABO	ABO	9q34.2	
002	MNS	MNS	GYPA, GYPB, GYPE	4q31.21	CD235
003	P	P1		22q11.2-qter	
004	Rh	RH	RHD, RHCE	1p36.11	CD240
005	Lutheran	LU	LU	19q13.32	CD239
006	Kell	KEL	KEL	7q34	CD238
007	Lewis	LE	FUT3	19p13.3	
008	Duffy	FY	DARC	1q23.2	CD234
009	Kidd	JK	SLC14A1	18q12.3	
010	Diego	DI	SLC4A1	17q21.31	CD233
011	Yt	YT	ACHE	7q22.1	
012	Xg	XG	XG, MIC2	Xp22.33	CD99†
013	Scianna	SC	ERMAP	1p34.2	
014	Dombrock	DO	ART4	12p12.3	CD297
015	Colton	CO	AQP1	7p14.3	
016	Landsteiner-Wiener	LW	ICAM-1	19p13.2	CD242
017	Chido/Rodgers	CH/RG	C4A, C4B	6p21.3	
018	H	H	FUT1	19q13.33	CD173
019	Kx	XK	XK	Xp21.1	
020	Gerbich	GE	GYPC	2q14.3	CD236
021	Cromer	CROM	CD55	1q32.2	CD55
022	Knops	KN	CR1	1q32.2	CD35
023	Indian	IN	CD44	11p13	CD44
024	Ok	OK	BSG	19p13.3	CD147
025	Raph	RAPH	CD151	11p15.5	CD151
026	John Milton Hagen	JMH	SEMA7A	15q24.1	CD108
027	I	I	GCNT2	6p24.2	
028	Globoside	GLOB	B3GALT3	3q26.1	
029	Gill	GIL	AQP3	9p13.3	
030	Rh-associated glycoprotein	RHAG	Rh-associated glycoprotein	6	

(After Daniel G. 2007).

HIV/AIDS

Fig. 1. HIV



We are all familiar with HIV and AIDS. The virus was discovered in 1981 and the pandemic followed. The first case of HIV infection in Nigeria was in 1986. Since then the infection has grown to epidemic proportions. HIV is transmissible by blood. Various sentinel surveys, by FMOH have given the prevalence of HIV infection in Nigeria as follows (Table 2):

Table 2:

National Prevalence:

1991	1.8%
1993	3.8%
1995/96	4.5%
1998/99	5.4%
2001	5.8%
2003	5.0%
2005	4.4%
2008	4.6%
2010	4.1%

Table 3: National HIV prevalence trend among women aged 15-24 years. 2001-2008.

2001	6.0%
2003	5.3%
2005	4.3%
2008	4.2%

Table 4: HIV prevalence by age group (2008)

15-19 yrs	3.3%
20-24 yrs	4.6%
25-29 yrs	5.6%
30-34 yrs	4.9%
35-39 yrs	4.1%
40-44 yrs	2.9%

Table 5: HIV prevalence by zone (2005& 2008)

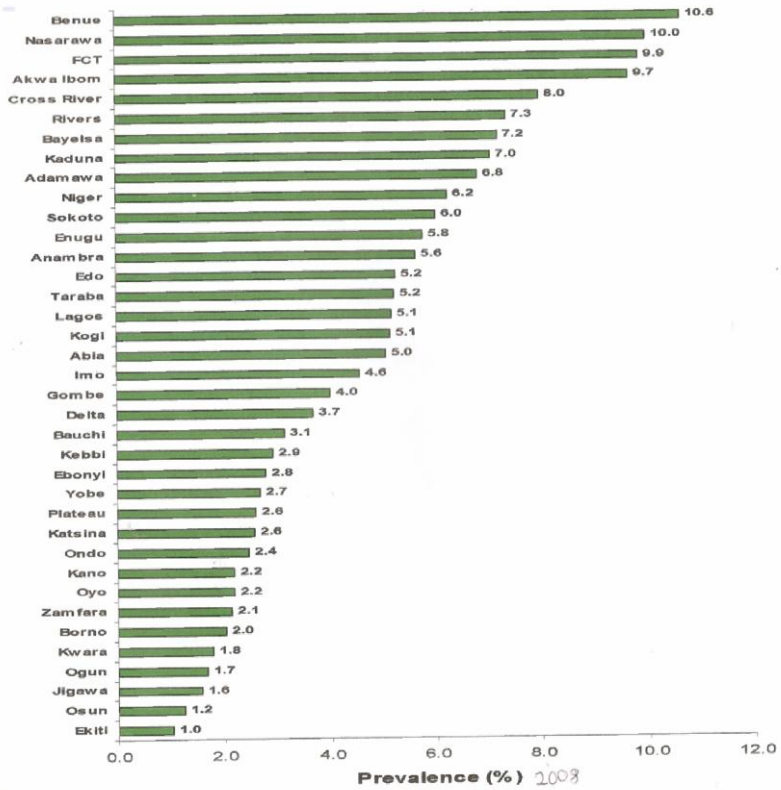
Zone	2005(%)	2008(%)
South-west	2.6	2.0
North-west	3.5	2.4
South-East	4.7	3.7
North-East	4.3	4.0
North-Central	6.1	5.4
South-South	5.3	7.0
National	4.4	4.6

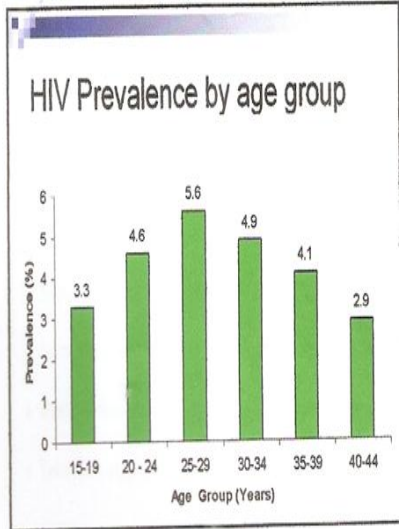
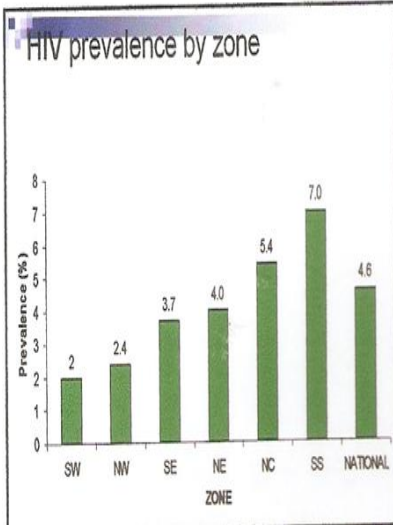
Table 6: HIV Prevalence by State (2005 & 2008)

Serial Number	State	2005(%)	2008(%)
1	Benue	10.0	10.6
2	Akwalbom	8.0	9.7
3	Nasarawa	6.7	10.0
4	Enugu	6.5	5.8
5	FCT	6.3	9.9
6	Cross River	6.1	8.0
7	Taraba	6.1	5.2
8	Kaduna	5.6	7.0
9	Kogi	5.5	5.1
10	Rivers	5.4	7.3
11	Niger	5.3	6.2
12	Gombe	4.9	4.0
13	Plateau	4.9	2.6
14	Edo	4.6	5.2
15	Ebonyi	4.5	2.8
16	Adamawa	4.2	6.8

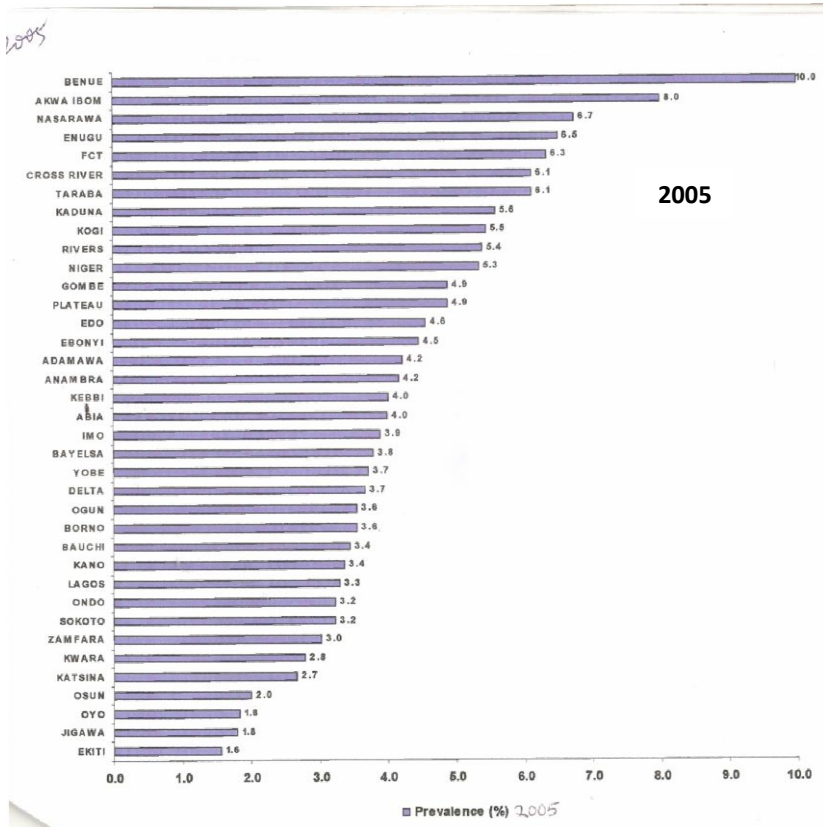
17	Anambra	4.2	5.6
18	Kebbi	4.0	2.9
19	Abia	4.0	5.0
20	Imo	3.9	4.6
21	Bayelsa	3.8	7.2
22	Yobe	3.7	2.7
23	Delta	3.7	3.7
24	Ogun	3.6	1.7
25	Bornu	3.6	2.0
26	Bauchi	3.4	3.1
27	Kano	3.4	2.2
28	Lagos	3.3	5.1
29	Ondo	3.2	2.4
30	Sokoto	3.2	6.0
31	Zamfara	3.0	2.1
32	Kwara	2.8	1.8
33	Katsina	2.7	2.6
34	Osun	2.0	1.2
35	Oyo	1.8	2.2
36	Jigawa	1.8	1.6
37	Ekiti	1.6	1.0

2008





2008



HIV Prevalence by Zone (HSS 2005)



Table 7: HIV Estimates by end of 2008 (Nigeria)

- 2.95 million PLWHA (Males 1.23M; Females 1.72M)
- Annual HIV at birth = 56,681
- Annual AIDS death = 280,000 (Males-123,000; Female-157,000)
- Cumulative AIDS death = 2.99M (Males-1.38M; Female-1.61M)
- Number requiring ART = 833,000 (adult – 740,000;

- children-92,000)
- New infections = 380,000 (adult- 323,000; children- 57,000)
- Total AIDS orphan = 2.23M
- Nigeria 2nd most burdened in the world, after South Africa.

Table 8: Global HIV Transmission

Type of Exposure	<u>% of Global Total</u>
1. Blood Transfusion	3-5
2. Perinatal	5-10
3. Sexual intercourse	70-80
Vaginal	60-70
Anal	5-10
4. Injecting drug use (sharing needles, sharps, etc.)	5-10
5. Health care Workers(needlestick injury etc.)	<0.01

Table 9: Risk of viral transmission, with injury from infected source, estimated as:

Source	<u>Risk (%)</u>
HBV (unvaccinated)	
-Source HBeAg +ve	37-62%-
-Source HBeAg -ve	23-37%
HCV	1.8
HIV	0.3

Our work on HIV in this University Teaching Hospital, attracted the attention of the Federal Ministry of Health that

appointed me Principal Investigator, Pilot Project, National Programme on Anti-retroviral Drug Therapy, South-South Zone in 2001 through 2006. Along with this, I was also appointed by UPTH in 2001, as Team Leader, Anti-retroviral Treatment Programme, until 2006. I therefore had the opportunity to look more closely into HIV problems, especially its implications for blood safety for the donor, the recipient, the healthcare worker, and the community.

We, in 1998, embarked on a comparative study of HIV prevalence and transfusion service of Nigeria(P.H) and Uganda (Mbarara). Uganda, at that time had a more advanced blood transfusion service, and we wanted to learn some lessons. We found that the prevalence of HIV among the volunteer blood donors in the two centres was similar, but Uganda had higher prevalence among the replacement group, only because of the higher prevalence of HIV in their community. So we renewed our call for National Blood Transfusion Service to improve our blood collection and safety (Wakwe VC and Ejele OA, 1998). Subsequent work led to an invited review article on “HIV/AIDS in Nigeria: The current situation” (Ejele OA, 2000) by the Nigerian Health Journal. This created a great awareness of the disease among clinicians and other health workers in Rivers State.

Then Ejele OA and Ojule AC went further to evaluate the enormity of the HIV problem in UPTH over a ten-year period-1989-1998. A total 15,538 subjects were tested, consisting of 13,294 blood donors (85.6%), and 2,244 (14.4%) patients. We found an alarming prevalence of 6.8% overall, which was

higher than the national average at the time of 4.5-5.4%. However, fortunately, the blood donors had only 2.8% prevalence. So, more precaution was needed for blood safety, so as to save more lives. Screening services thus got a boost from the hospital authorities, and later from FMOH that made us the South-South Zonal centre for HIV.

Conscious of this rising global profile of HIV, Ejele O A and Ojule AC, decided to assess the safety of our health care workers, especially in the laboratory. We analysed 210 consecutive blood samples sent to the Chemical Pathology laboratory. We found that 8.1% of the samples were positive for HIV. We had all along been occupationally exposed to this virus without knowing it. What a health hazard we were facing from small volume blood sacrifices from patients. We studied this risk of occupational exposure to HIV in UPTH for the period 2002-2005, with the follow findings:

- Route = Percutaneous exposure
No of health care workers (HCW) = 13
Males = 5 (38.5%)
Females = 8 (61.5%)
- Doctors = 3
Medical Students = 6
Medical Lab. Scientists = 2
Medical Lab. Technician = 1
Trainee Lab. Assistant = 1
- Departments:
Paediatrics = 6 (46.2%)

Surgery = 2 (15.4%)

Obstetrics & Gynaecology = 1 (7.7%)

Pathology Lab. = 4(30.8%)

Conscious of the fact that HIV co-infection occurs with other viruses with similar modes of transmission, we looked at co-infection with HBV. We found a high prevalence of HBsAg in 33 (9.7%) among the 342 HIV positive patients. This highlighted the need to pay attention to the recognition of potentially severe concurrent illness that may increase the morbidity and mortality of HIV-infected patients.

An assessment of HIV infection among our blood donors in PH showed an overall prevalence of 1.0%. This was among 1,500 consecutive donors, comprising 1481 males and 19 females, with 15 of them positive. Our value was lower than the Maiduguri (Baka et al 2008; Harry et al 1993) and Kampala, Uganda (Carswell 1987) values.

Because of the concern for health of the Health Care Workers handling blood samples from apparently healthy unemployed undergoing pre-employment medical examination, we studied the seroprevalence of HIV in their blood samples. They were 868 in number (373 males, and 495 females). We found 27 of them (27/868) i.e. 3.1% positive. This high rate seems to have been accounted for by the influence of poverty and low-socioeconomic condition associated with chronic unemployment, where the unemployed seeks to escape the everyday hardship by alcoholism, smoking, drug use, sexual promiscuity, etc.

In our research, we established a reference range for CD4⁺ lymphocyte count in healthy HIV-negative Nigerians to be 685±99 cells/μL (range 366-1235 cells/μL). This is significantly different from the Caucasian values with a range of 500-1000 cells/μL, with regard to the lower limit.

Hepatitis B (HBV) and Blood Safety

HBV is common, affecting about 2 billion people worldwide. Globally, it is estimated that 300-350 million individuals are chronic carriers of Hepatitis B virus (HBV) and 1.0 million people die annually from HBV-related causes and 50 million new cases occur annually. Cirrhosis of the liver and hepatocellular carcinoma are known sequelae, and make the infection a major public health concern. It is endemic in Nigeria and some studies have estimated that 12% of Nigerians are chronic carriers of HBsAg, although other studies have reported varying prevalence rates among selected groups in parts of the country.

Again, because of the paucity of data in the Niger Delta, we undertook this study and analyzed the results of HBsAg screening at our hospital (UPTH) over a five-year period (1996-2000). A total of 7,226 samples were screened. We found that :

- i. Overall seropositivity rate was 4.98%,
- ii. Carrier rate among blood donors was 1.5%, as against 4.6% by Ibiama (1976), also in Port Harcourt.
- iii. Carrier rate among hospital patients was 28.37%.

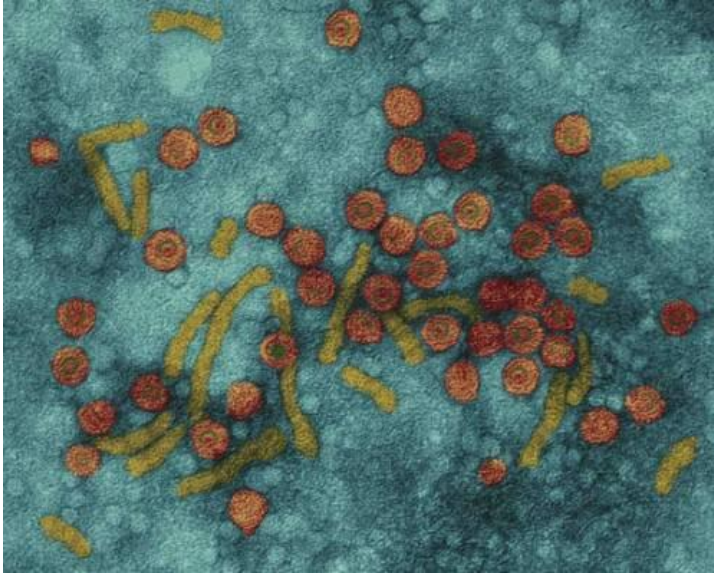
Therefore, HBsAg is common in Port Harcourt and its environs. The data also helped to focus attention on the

formulation of a hospital biohazard policy for laboratories and other clinical departments here and elsewhere in the Niger Delta area (Ejele & Ojule, 2004).

We also assessed the risk of occupational exposure by health workers in the laboratory to HBV infection. Some 200 consecutive blood samples, to Chemical Pathology laboratory, were analyzed. We found a prevalence rate of 14.5% for HBsAg as against 12% in previous studies in Nigeria (Olumide 1976, Ayoola et al 1986). Because of this high exposure rate a case was made for the mandatory provision of safety equipment, measures and regulations for the protection of medical and especially laboratory staff of the hospital (Ojule&Ejele et al 2001). In another study of 1,500 consecutive blood donors, we found a prevalence of 1.1% for HBsAg. This constitutes the risk of transfusion-transmissible HBV from our donors to recipients if donor blood is not properly screened before transfusion to a recipient.

The above findings confirm a high prevalence of transfusion-transmissible HBV among blood donors. So universal donor screening is essential for blood units intended for transfusion. A functional National Blood Transfusion Service will take care of this, collecting blood from voluntary, non-remunerated, low risk blood donors. Also health education of the entire Niger Delta area aimed at behavioural change from high risk behaviour that makes people vulnerable is essential in reversing the trend.

Figure 2: HBV



Hepatitis C and Blood Safety

In our quest to further establish baseline data on blood safety in the Niger Delta of Nigeria, we addressed the emerging issue of Hepatitis C virus (HCV) infection, another transfusion-transmissible infection. HCV was found to be the major cause of parenterally transmitted non-A, non-B Hepatitis worldwide, affecting about 170 million people (Alter M. J 1997). Even in the USA, it was the most common blood-borne infection, where about 36,000 new infections occurred each year (CDC 1988), with a prevalence rate of 1.8% in the general population, but less than 1.0% among blood donors (Stevens C. E et al, 1990).

But in developing countries the epidemiology of HCV is less understood. Studies have shown that the risk of transmission of HCV among volunteer blood donors in Peru was 1.1% (Sanchez J. L et al, 2000), and in Egypt 15% (Bassily S et al, 1995), while in Zimbabwe it was 0.9%. Because of the high infectivity of this virus, about 86% of those transfused with infected blood developed post-transfusion hepatitis (Van der Poel C. L et al, 1990). A study in Ibadan (Olubuyide et al, 1997) showed 18.7% prevalence among patients with hepatocellular carcinoma.

So, concern over transfusion-associated hepatitis led to many blood transfusion services worldwide implementing routine screening of blood donors for HCV antibodies. But most blood transfusion centres in Nigeria were not routinely screening blood intended for transfusion for this virus. There was paucity of data on the prevalence of anti-HCV among blood donors in Port Harcourt. The magnitude of transfusion-transmitted HCV, and the frequency and risk factors in P.H were unknown. So we investigated these issues in the Niger Delta to enable us advocate for a screening policy that encourages the exclusion of donors with surrogate markers for HCV.

First, we established the seroprevalence of HCV in the Niger Delta to be 3.0%, by studying 366 consecutively recruited individuals (Ejele OA, 2006). The highest prevalence of 3.8% was found in the 30-39 year age group, while the lowest, 2.2% was among the 40-49 year age group. We also found that the

level of education was a critical factor. HCV infection was higher in the less educated (4.6%) compared to 1.4% in the highly educated. Females were more infected (3.8%) than males (2.4%), and unmarried (4.1%) as against the married (2.2%).

With the above findings we decided to look into the question of blood safety in Nigeria, especially in the Niger Delta. So we studied 1,500 consecutive blood donors presenting to my department in 2003, made up of 1481 males and 19 females. We detected HCV antibodies in only seven (7) of them, giving a prevalence of 0.5% (Erhabor, Ejele et al, 2006). We therefore instituted donor screening for HCV antibodies in our blood transfusion unit, and called for urgent health education and awareness in the Niger Delta to check further spread of the virus, and reduce the risk of transfusion-acquired HCV.

In another study, we investigated HIV patients to determine the prevalence of HCV co-infection in them. Some 342 HIV patients were studied in our anti-retroviral therapy pilot project. We found a 0.9% HCV infection rate among HIV-infected patients in the Niger Delta region (Ejele OA et al, 2005). This is significant because both viruses constitute a global public health problem and cause of morbidity and mortality in Nigeria and many parts of the world. So, urgent health education, and preventive measures to check further spread are necessary.

Malaria and Blood Safety

Malaria causes 300-500 million infections annually, worldwide, with 1-3 million deaths. People living in malaria endemic areas are semi-immune. So there is a risk that potential blood donors who came from malaria endemic areas carry parasites that can be transmitted through blood transfusion. Malaria is one of the most common transfusion-transmissible infections (TTIs). It was first demonstrated in 1884, but the first case was recorded in 1911. The prevalence of plasmodium parasitaemia among blood donors in the Niger Delta is 10.2% (Erhabor et al 2007).

In Sub-Saharan Africa, malaria poses a great public health problem accounting for an estimated 80% of the world's malaria and 90% of its deaths. The parasite can survive for three weeks or more in refrigerated blood. This underlies its capacity for TTI through blood and blood components, like RBC, platelets, FFP, leucocytes, frozen red cells etc.

Many Western countries have strategies to identify donors carrying parasites through laboratory tests, using four possible targets:-

- a. Intracellular parasites – thick and thin blood film, with Giemsa or Wright staining.
- b. Antiplasmodium antibody- EIA technique
- c. Plasmodium Antibodies- EIA or Indirect Immunofluorescence (IFAT)
- d. Plasmodium DNA- assay (NAT); or flow cytometry (plasmodium DNA in cells will stain, whereas normal red cells will not).

Mr. Vice chancellor Sir, when I was a Senior Registrar in Haematology at St. Peter's Hospital, Chertsey, Surrey U.K. in 1984, a British-Pakistani young man had visited his ancestral home in Pakistan on holidays. On return to England he had gone to Blood Transfusion Centre as a voluntary blood donor. But he was rejected on account of having been to a malaria endemic country. Many weeks later he developed a Pyrexia of Unknown Origin (PUO) which defied all standard routine treatment. It became my lot in the Haematology Laboratory to diagnose plasmodium malaria infection, which I did. He was then treated with Chloroquine and found to be resistant. We reported this in the Lancet (1984) as the first case of RI Chloroquine resistant *P.falciparum* malaria from Pakistan, and at that time marked the western edge of migration of Chloroquine-resistant malaria in the world. You can see that if he had donated blood undetected he would have transmitted the malaria to the recipient(s) of his blood (Robinson, Hadley-Brown, Ejele et al, 1984).

Today there's no easy and practical way of screening a large number of blood donors for malaria. Even the USA uses questionnaire to determine donors at risk of exposure to infection, or those with prior history of malaria, for deferral. In Europe, three types of deferral criteria are applied:

- a. 6 months for tourist after leaving endemic area and are asymptomatic.
- b. 3 years following return from residence in an endemic area within the last 5 years.
- c. Permanent deferral for those with history of malaria.

In endemic areas, deferral is different. Neonates are passively protected, and adults are immune. Antimalarial treatment may be given. No routine testing of donor blood, but it is known that about 10% will be positive for *p.falciparum*. Blood film is not suitable for large scale screening. So, for malaria, you balance supply with safety from malaria. (Chitiyo, 2011; Leiby D. A, 2007) But the high prevalence of TTI- malaria among blood donors lays bare the need to routinely treat transfusion recipients with anti-malarials, as a prophylactic measure. Universal screening for malaria will enhance blood transfusion safety quite alright, but will limit the number of already scarce donors.

Syphilis and Blood Safety

Syphilis is one of the transfusion-transmissible infections. Through the years, a great controversy had arisen over the need for syphilis testing of blood donors (van Der Sluis J. J et al, 1985). But with the HIV pandemic it is now recommended that syphilis testing should be done to prevent those at risk from donating blood. So we tested 12,852 blood donors over a five-year period (1999-2003), made up of 7,552 commercial, remunerated donors, 5,247 family replacement and 53 voluntary donors. There were 150 females and 12,702 males aged 18-57 years. The serum from all donors was tested for the presence of treponemal antibodies using the Clinotech syphilis strips. Only 8 (0.1%) donors were positive. The prevalence increased steadily from zero in 1999, 2000, 2001, to 0.03% in 2002 and subsequently peaked at 0.17% in 2003. We observed a higher prevalence among youth (18-27 years),

and commercial remunerated blood donors. Our present position is that screening blood donors for Syphilis should continue.

In a different study (Technical report 2005) a prevalence of 7.6% was found in pregnant women in Rivers State. But a Port Harcourt study (Obunge et al 2006) found 5 positives out of 360 subjects, i.e. 1.38%. These prevalence rates also justify the retention of syphilis screening. (Fig. 3).

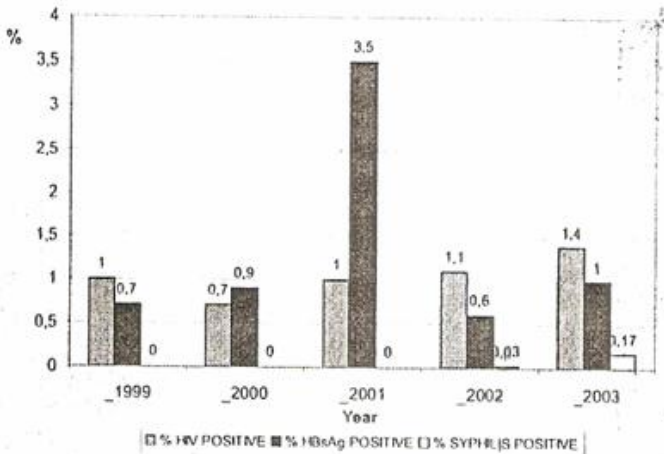


Figure 3. Trends in sero-prevalence of HIV, HBV, and syphilis among blood donors.

Parentage Disputes

Proud parentage is a social strength in African culture, and knowledge of the biological father of a child is of great importance in a patrilineal society like ours. Sometimes the maternity of a child is also in dispute, as happened a few years

ago in Lagos. So the adoption of children, although creeping in now, is still unpopular, unlike in the Western World.

We were inundated with requests for paternity testing among disputants (the mother, alleged father(s) and the child or children). Cases were usually referred to us from Social Welfare Office, the Court and the Police.

The disputants made blood sacrifices to enable us carry out relevant tests in resolving the medicolegal and social problems encountered by the disputants and the victims, thus saving, especially, the victim from such a quagmire. We did this over a long period of time, 1992-2002, and decided to analyze our findings, in view of the limited facilities at our disposal in the Niger Delta. We had 24 children to analyze, along with the disputants. Our screening methods included only ABO and Rh(D) blood grouping, sickling test and Haemoglobin electrophoresis. We did not have more sophisticated and modern HLA and DNA typing capability which tend to give an exclusion rate of nearly 100% (98, and 99.9% respectively) (Silver H. 1987; AABB 1990; Connor J. M et al 1987; Bidwell J. L 1992)

The total cumulative paternal exclusion rate with our routine techniques was only 16.7%(4/24), (Ejele et al. 2004) a far cry from the exclusion rates of about 98% for HLA testing, and 99.9% for DNA analysis. Thus our screening package was found to be inadequate. This was, however comparable with similar studies in Ife with 15.9% (Durosinmi et al. 1995).

We therefore advocated for capacity building in this country to provide for more sophisticated and reliable techniques in designated centres across the country. With such in place, no longer will “He is not your father” be a disgruntled woman’s weapon. Note that a child is born innocent and should not suffer for the transgressions of its biological parents.

RECOMMENDATION

Mr Vice Chancellor Sir, you can see from the forgoing that blood is precious, a living tissue and is beneficial as a medical therapy. It is the most precious gift that anyone can give to another person; the gift of life.

Pope John Paul II on 20/06/91 in a statement to the Congress of Society for Organ Sharing, stated and I quote ‘With the advent of organ transplantation, which began with blood transfusion, man has found a way to give of himself, of his blood and of his body, so others may continue to live’ Thus the Catholic Church strongly supports organ and tissue donation (fountain of Christianity).

Donating parts of our physical body before or after death does not compromise our belief in the resurrection any more than cremation or the natural decaying of the body after burial would.

To give blood is a privilege, and to receive safe blood is a right. Therefore, safe blood starts with a safe donor. Blood transfusion is a key part of modern health care
We need blood for;

- Surgical procedures(open heart surgery, fracture etc).
- Anaemias(pregnancy, organ and stem cell transplant, haemolytic disease of the new born)
- Blood loss (Road traffic accident, ectopic pregnancy, obstetric bleeding and peptic ulcer disease)
- Haemoglobinopathies(sickle cell disease, Thalassaemia,etc)
- Cancers (leukaemias, lymphomas, myeloma, solid tumours etc)
- Coagulation disorders (haemophilias, DIC etc)

Inspite of this enormous need, blood is a scarce and priceless national resource which should only be transfused with utmost caution when it is absolutely necessary, and when other means of treating the patient have failed.

Improper use can be dangerous leading to complications like transfusion reactions and transmission of disease or rarely death. About three percent (3%) of blood recipients have adverse effects. Any of the blood constituents can be involved in this. Fatality rate in blood transfusion is only 1 in 50,000 transfusions with haemolytic transfusion reactions causing about 70% of these. Infection causes the remaining fatalities.

The first successful transfusion of human blood occurred in 1818 by James Blundell, a British Doctor who transfused a woman for post-partum haemorrhage. The developed countries have since moved on from there to very sophisticated methods of blood transfusion. That is not so with our country Nigeria and many developing countries. The number of units

transfused yearly in this country is not known, neither is the number of units screened for diseases. Yet, ideally, the aim is for a near-zero risk in blood transfusion.

The world needs about 35 million units of blood annually, but gets 22 million only, with a short fall of 13 million units. Our National Blood Transfusion Service collected 2,000 units only in 2004 and 100,000 in 2010. Blood donor recruitment is the most difficult anywhere in the world, but in USA and UK where blood transfusion started, people were not averse to blood donation and did not need any behaviour and social change. This is not so in our country.

The standard recommendation by WHO and other International Blood Transfusion Organizations is a nationally organized and coordinated Blood service, under the control of a fully or semi- autonomous administrative authority. This has to be backed up by proper legislation and adequate funding by government. This is the model that has produced efficient and effective blood programmes in developed countries. So, what is needed to achieve the objective of blood safety in Nigeria is for government to approve the establishment of National Blood Service Authority, Agency or Commission, with full service and regulatory powers. Legal empowerment and financial support for the Commission will be required and is hereby advocated.

The essence of blood transfusion service is to provide adequate supply of safe blood, which is available, affordable and appropriately used. Safe blood is the blood which is not

harmful to the recipient and can be life-saving. But no blood is 100% safe just like any other drug.

The safety of blood transfusion depends on three main factors;

- I. Availability of Blood ; donor recruitment and retention, and adequacy of storage facilities.
- II. Safety of Blood; All the immunohaematological and serological aspects.
- III. Appropriate use of transfusion for treatment; smooth collaboration between transfusion centres and clinicians and adherence to the rules of prescription .
But the problems of NBTS are myriad;
 - Funding inadequacy.
 - Lack of some modern technological knowhow to fully utilize fractionation of blood, or recombinant technology to execute blood component therapy
 - Insufficiency of blood donors.

Therefore, in a situation of chronic blood shortage , there is no justification for excluding the well established and culturally adapted family / replacement blood donation system, otherwise there will be worsening of blood shortages and might cause harm to patients in need. So, combining replacement and volunteer blood collection is a pragmatic approach to ensure a sufficient blood supply in Nigeria. Safety improvement relies on repeat donation of either type of donor. Replacement donors can be weaned over to become regular volunteer donors.

We also need to create awareness of the need to encourage voluntary donation among Nigerians. Many new National

Blood Transfusion Centres need to be opened to cope with the huge demand for blood donation and transfusion in Nigeria.

The critical enabling environment for the successful implementation of blood safety is the Medical Laboratory. I am happy that the residual, simmering restiveness among the stake-holders in the environment is being addressed by the Federal Ministry of Health, which has called for a joint accreditation system by the two regulatory authorities; Medical and Dental Council of Nigeria, and the Medical Laboratory Science Council of Nigeria. This is commendable and will make for peace and harmonious co-existence. I urge all stake holders to embrace this decision to return us to global standards and international best practices.

Again, there has been a systematic relative exclusion of the core specialists from the NBTS. Blood Transfusion is a Clinical Specialist Professional discipline of the Haematologist. So, give NBTS back to the core professionals – the Haematologists – to manage. The difference will be clear.

Vice Chancellor Sir, I am aware that a good speech should be like a mini skirt, short enough to be interesting yet long enough to cover the subject. I will therefore crave your permission to conclude my lecture.

CONCLUSION

Distinguished audience, in the foregoing, we have gone through what blood really is, how dangerous it can be if inappropriately used or handled, and its saving nature under appropriate conditions.

We have also gone through some of my contributions to the advancement of my disciple, with focus on the Niger Delta Region of Nigeria, where I have been involved in some pioneering work since 1990, resulting in reference data generation. Most of these data are on blood safety and the saving nature of blood.

Blood remains a precious and scarce commodity and a gift of life, freely given to us by God, and to be freely given to others. All attempts so far to technologically produce artificial blood has failed, except for a few of the protein content of plasma and haemoglobin solutions. These serve as poor, temporary alternatives to blood or therapeutic agents for ischaemia, with all the toxic side effects. Remember the advert 'If it is not panadol, it cannot be the same thing as panadol'

Patients can refuse blood transfusion provided to keep them alive. We respect their belief and disposition. The provision of blood does not automatically result in life for the recipient. He must willingly accept the blood to receive life.

Some transfusions occur in some unusual places like laboratories, pharmacy/ medicine shops, private rooms / offices, alternative and traditional medicine practices without

requisite expertise, and other non-clinical and inappropriate settings. Some even carry out the weird practice of 'washing of blood'. Such should be avoided.

A well funded and well organized National Blood Transfusion Service (NBTS) takes care of all the shortcomings. The primary objective of NBTS is to provide a safe, continuous and adequate blood supply. The provision of blood, blood components and plasma derivatives, from voluntary non-remunerated donors should be the aim of all countries including Nigeria. We need to expand the creation of awareness of the need to encourage voluntary donation among Nigerians.

We implore all of you in this audience, who are eligible , to resolve to donate voluntarily, twice or thrice a year, and let each such donor resolve to recruit another two or more voluntary donors who would do the same. It is part of the civic responsibility of citizens, which has sustained blood service in the developed world. We salute the magnanimity of blood donors and International Organizations for support to the revitalization programme of the NBTS for standardization.

Standardization makes for cost effectiveness, and also affordability by ordinary Nigerians, who require these services wherever they may live.

There is blood, blood everywhere in all of us but hardly enough to meet our quest for blood transfusion to patients in dare need.

Come , come , make blood sacrifice.
It may be a gift of life to someone unknown.
Come , come , make blood sacrifice.
It may be a gift of life to save your relative or friend.
Come, come, make blood sacrifice.
The life to be saved may be yours.
Thank you for your attention. God bless

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**CITATION ON PROFESSOR OSEIKHUEMEN ADEBAYO EJELE
MBBS (BENIN); MSc (BIRMINGHAM); DCP (LONDON); FMC
PATH(NIGERIA); FWACP (LAB MED); KSJI, DINMA, GAPA,
ALPE.**



Mr Vice Chancellor Sir, I feel honoured, privileged and delighted to read the citation on this erudite scholar, an accomplished Professor and Consultant Haematologist, a builder, my mentor, an elder, leader and icon in his discipline in Nigeria and beyond. He is no other than Professor Oseikhuemen Adebayo Ejele. Today is his day to present the 85th Inaugural Lecture of the University of Port Harcourt.

Genealogy:

Prof. Ejele was born on the 30th of March, 1951 at Ogbese near Akure in Ondo State, to the late Mr. Thomas Onowo Ejele of Isibhelua Ihumudumu, Ekpoma, Edo State, and Mrs Maria Osemeahon Ejele (nee Agbator) of Idumoza, Iruokpen ,Ekpoma also in Edo State. His parents were cocoa farmers, settled at Ogbese near Akure. He was the 9th out of 10

children of his mother, but became the only surviving one since 1957. He lost his father in 1974, as a medical student, and his mother in 1998.

Education:

Primary: The early education of Prof Ejele is pan-Nigeria. He started his primary education at LA School, Oke Odo, Kajola Ogbese, Akure in the then Western Region. In 1958, his maternal uncle, Mr B. O Agbator, spotted his academic potential and took him to the Eastern Region to continue his education. He then attended standard school in the various towns, as his uncle moved around on transfer. These were 1. St. Bath's school Asata, Enugu (1958-59) 2. St John's Catholic School Odeapu, Onitsha (1959-60). 3. LA School , Umuohu Azueke, Umuahia(1960-61). 4. Township School Owerri (1961-62). 5. Back to St. Baths, Enugu (1962-63) when he sat his standard six examination as the last set of standard school attendees in Eastern Region before the change to Elementary School. He came out in flying colours.

Secondary Education:

He started his Secondary education at the National Grammar School, Nike Enugu (1965-66), where he was the darling of the proprietors of the school- Mr and Mrs Udokwu- on account of his brilliance. However, the impending civil war made him return with his uncle to his home in the Midwest Region. He then attended the Anglican (now Ujoelen) Grammar School, Ekpoma (1966-67) where he led his class. In his quest to read science subjects, his uncle moved him in class 4 to Western Boys' High School , Benin City (1968-69). Here again he shone

brilliantly, leading his class throughout, to become the best class 5 student for which he won an award. He crowned this with the best WASC result in the school with Grade one (aggregate 14) in 1969. He was also the Health Prefect.

For his higher school (1970) he went to Government College Ughelli, and was a House Prefect (Forcados House) and later School Prefect (HSC Hostel).

University Education:

When the University of Benin started in 1970 as Midwest Institute of Technology, he left the higher school to enrol for Medicine, as a pioneer student. He again performed brilliantly, and was among the 18 medical students sent to Ahmadu Bello University Zaria for the pre-clinical course (1971-73). He returned to UNIBEN in 1973 for his clinical course and graduated with MBBS (BENIN) in 1976. He was the Welfare Secretary for the Medical Students Association (UBEMSA).

Having completed his housemanship at the University of Benin Teaching Hospital in 1977, he proceeded to Epe, Lagos State for his NYSC posting and served there as the Medical Officer of Health (MOH). The Local Government Authority at Epe were so impressed that they offered him scholarship to specialize in Public Health and serve the LGA. But, however, his mentor, Prof. N. O Osamo, had earlier, during his housemanship in Benin invited him to return and specialize in Hematology and Blood Transfusion. This option he chose and the rest is history, as he rose to the pinnacle of his chosen

specialty as Professor and Consultant Haematologist here in the University of Port Harcourt.

Professional /Academic Career:

While doing his residency training in Haematology at the University of Benin Teaching Hospital, Benin City, his mentor late Professor N.O Osamo arranged further training for him in England where he came under the tutelage of Prof Joe White at the King's College Hospital London. It was Prof Joe White who sent him in 1980 to do the Diploma in Clinical Pathology (Haematology and Histopathology) at the world famous Royal Postgraduate Medical School, University of London, at the Hammersmith Hospital, London. With this he acquired state-of-the-art work experience back at King's College Hospital, London; North Middlesex Hospital, Edmonton, London: St. Peter's Hospital Chertsey, Surrey as a Senior Registrar in Haematology and Blood Transfusion. As immunohaematology caught his fancy, he went on to acquire M.Sc Immunology (1986) at Queen Elizabeth Hospital, University of Birmingham, Edgbaston, Birmingham, U.K.

On return to Nigeria in 1986 he completed his residency programme with a Fellowship of the National Postgraduate Medical College in Pathology (FMC Path) in 1987, and Fellowship of the West African College of Physicians in Laboratory Medicine (FWACP- Lab. Med) in 1989.

In 1988, he took up appointment with the University of Calabar as Lecturer1/ Consultant Haematologist. Here, he had to resuscitate the clinical aspects of haematology at the UNICAL Teaching Hospital , which had been left dormant after his predecessor left a few years earlier.

In 1990, as fate would have it, his teacher and the then provost college of Health Sciences, UNIPORT, Prof C A Anah, came to Calabar and persuaded him and his wife to take up appointment in UNIPORT, as a solution to the accreditation problem due to lack of academic staff in Haematology Department. So he relocated to UNIPORT as Senior Lecturer/Hon. Consultant Haematologist.

On assumption of duty, he became the first full-time academic staff and consultant , and commenced the daunting task of rebuilding and repositioning the department from scratch for accreditation. This was followed by many years of hard work, including training of students and resident doctors, starting the first ever Haematology Clinic and the in-patient care, the first ever sophisticated haematological investigations like bone marrow aspiration, and bone marrow trephine biopsy. For love of academics and his students, even when he was on leave of absence without pay, he was still coming to carry his academic work load gratis, a pleasant surprise. He was Head of Department for 10 years (1990-92 and 1998-2005).

Publications:

This erudite scholar and academic par excellence has to his credit over 60 scholarly publications in both national and international medical journals, in addition to four technical reports and two chapters in books. Most of the publications are very important pioneering research works, establishing basic and reference data for the Niger Delta region of Nigeria.

External Examiner:

In recognition of his status as a colossus, he has examined in 13 medical schools in Nigeria to date and is not tired.

He has been an examiner to the National Postgraduate Medical College of Nigeria since 1991 to date, and to the West African College of Physicians since 1994. He has been a member of the Faculty Boards of Pathology of the National Postgraduate Medical College of Nigeria, and the West African College of Physicians.

Human Capital Development:

With this immense attributes he has replicated himself, as success without successor is failure.

He has trained hundreds of medical students on yearly basis since 1986 in UNIBEN, UNICAL and UNIPOINT. He has trained and / or supervised 16 consultant haematologists for the fellowship programme, three of whom are now Professors, with me as one, two Associate Professors and some in the diaspora. This is the hallmark of a productive academic.

His role in the development of medical education and practice has also been tremendous. This he executed as a member of many accreditation panels to various medical schools / Teaching Hospitals for National Universities Commission (NUC), Medical and Dental Council of Nigeria (MDCN), National Postgraduate Medical College of Nigeria, and West African College of Physicians.

National / Professional / Civic Service

This accomplished academic and medical professional has been of service to his country and community in various capacities.;

- First medical doctor in his village in Ekpoma , Edo state.
- First consultant Haematologist from Esan land, Edo state.
- First Professor of Haematology in Edo state.
- First professor of Haematology in UNIPORT.
- The most senior Pathologist in UNIPORT / UPTH, and until recently the only Professor of Haematology East of the Niger.
- National President, Association of Pathologist of Nigeria (ASSOPON) for 5 years (2 terms, and longest serving in that position).
- Member, Medical and Dental Council of Nigeria 2004 – 2008
- Member of Senate, UNIPORT, 1990-92 and 98 to date.
- Member NUC Committee on Postgraduate Benchmark, Academic Standard in Medicine and Surgery, 2010.
- Member, National Technical Committee on The National Blood Transfusion Service, Federal Ministry of Health Abuja 2005 till date, that produced the National Policy on Blood Transfusion (2006), the Operational Guidelines for Blood Transfusion Practice in Nigeria (2007), and the Blood Safety Training Manual (2010) in press.
- Principal Investigator, National Programme on Antiretroviral Therapy, South-South Zone and Team Leader Antiretroviral Treatment Programme UPTH, 2001-2006.
- Member Nigeria Medical Association, 1977 to date.

- Vice Chairman MDCAN, UPTH, 2002- 2004
- National Vice President, Nigeria Society for Haematology and Blood Transfusion, 2003 – 2007.
- Senate Representative A & PC, SPATS, UNIPORT, 2001 – 2005.
- Professorial Assessor to four Medical Schools in Nigeria and internationally for University of Sierra Leone.
- Recipient of four Civil Society Awards in recognition of service to humanity and country.
- He has also served in various College and University Committees.

Private life:

Professor Ejele is happily married to Lady, Professor P.E. Ejele, of Linguistics and Communication Studies Department, UNIPORT, and are blessed with four surviving children. He is a Knight of St. John International, and has merit award from his traditional ruler at Ekpoma for service to community.

Mr. Vice Chancellor sir, on this epochal occasion, I have the pleasure to present an erudite academic, astute and productive Professor, a mentor, who is regarded as the father of Haematology and Blood Transfusion in UPTH/UNIPORT. So distinguished ladies and gentlemen, join me to welcome Professor Oseikhuemen Adebayo Ejele as he delivers the 85th Inaugural Lecture of the University of Port Harcourt.

Thank you

Professor C. A. Nwauche

(10th May, 2012)