

# UNIVERSITY OF ILORIN



## THE ONE HUNDRED AND SEVENTY- FIRST (171<sup>ST</sup>) INAUGURAL LECTURE

**“.... AND THE CHILD DIED, OH! NO! NOT AGAIN:  
ADVENTURES IN CHILDHOOD MORBIDITY  
PREVENTION AND MORTALITY  
REDUCTION”**

**By**

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**The Vice-Chancellor**

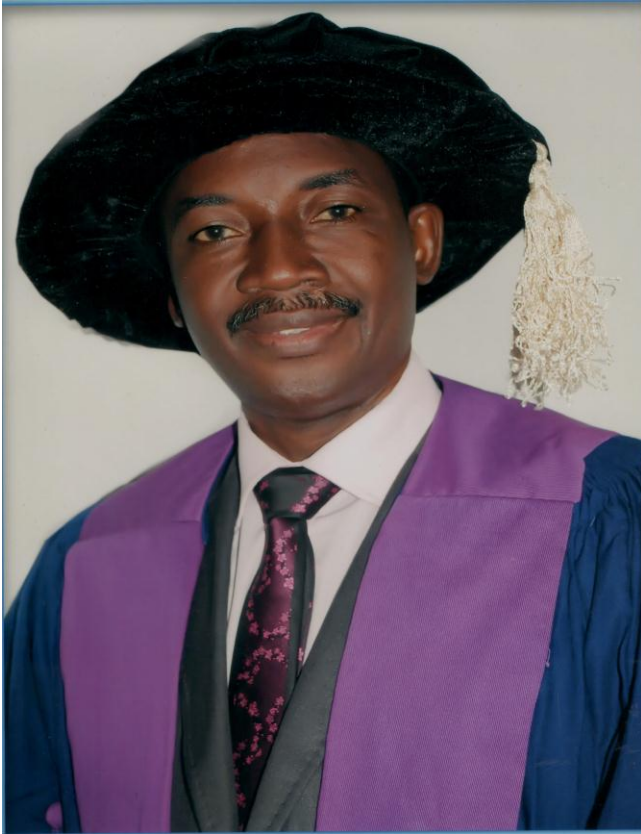
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Esteemed Invited Guests,  
Gentlemen of the Press,  
Friends, Family and Relations,  
Great students of the University of Ilorin,  
Distinguished Ladies and Gentlemen.

## **Preambles**

I give all the glory to our God the Father, the Lord Jesus Christ, Lord of Lords, and the Lord Holy Spirit for the guidance I received from cradle to the present and for the predestination for me to give my Inaugural Lecture today, all to his Greater Glory.

## **Introduction**

When I was about to start Secondary School in 1976, my father gave me a bottle of Aspirin containing 100 tablets with the instruction: “If the headache is mild take one, if severe, take two”. I obeyed the instruction to the letter because dad would audit the number of headaches and number of tablets left in the bottle on arrival home for holidays. There was no School Clinic and my set was the first set boarded on the school campus. I soon became the destination for both Form one classmates and Form 5 Seniors that were in the hostels when they had headaches. By the time I got to Form 2 and had a friend whose father was a Medical Doctor, I had settled in my heart that Medicine would be my future.

## **The Topic**

When I look back to imagine what child survival looked like when I was born, it was unbelievably low. It might have bothered them, but people just had no power (Medical, Social, Political, Financial powers) to stop the trend. Children’s deaths were things people anticipated. Look at this instance from the Holy Bible:

In 2 Kings Chapter 4 verses 12 to 20, the woman had infertility and her husband was old. Through divine intervention they had a boy. The boy grew up and one day he

cried out “My head! My head!?”; few hours later he died. Most people will agree in our contemporary days that the child probably died of cardiovascular accident (stroke) or had space occupying lesion among other differentials. And today children still get sick often, with many still dying. This Lecture, therefore is an overview of my adventure in preventing illnesses and reducing deaths among Children over the years; of my services to God and humanity.

## **Definitions of Terms**

### **1. Adventures:**

Adventure is an unusual, risky, exciting and typically hazardous experience of uncertain outcome. For me, my academic career has been an adventure.

### **2. Childhood and the Child**

Childhood is the age span ranging from birth to adolescence. Babies 1 day old to 28 days are called Neonates and from >28days to 12months, we call them Infants. While from >12months to 5years – Early childhood, >5 years – 12 years – Childhood (middle) and 13 years – 19 years – Adolescence. United Nations Children’s Fund (UNICEF) refers to childhood as:

“a precious time in which children should live free from fear, safe from violence and protected from abuse and exploitation. As such childhood means much more than just a space between birth and the attainment of adulthood. It refers to the state and condition of a child’s life, to the quality of those years.”

**Who is a Child?** There are many ways to define who a child is, depending on the prevailing circumstances.

- a. *Physiologic definition:* a Child is an individual human being that is still growing.

- b. *Political definition:* Most national constitutions in our world including that of our beloved Nigeria, opined that Children are individuals that are younger than 18years.
- c. *Economic definition:* Where there is differential payment for Adults and Children, Organisations tend to reduce the age of children so they could make them pay like adults. For instance, most Airlines put Children's age at 12 years. In our Hospital, UITH, age of Children was 18 years in 1991 when I joined the hospital, by 2007 it was 14 years and right now it is 12 years. That arrangement drastically increases the number of people that will pay as Adults.
- d. *International Labour Organisation (ILO)* puts Children's age at less than 15 years and says no such individual should be gainfully employed. This looks reasonable when one realises that children are naïve and unable to negotiate appropriate compensation for services rendered
- e. Other types of Child sub-set definitions are Indigo children, Rainbow children and Crystal children.

### **3. Morbidity**

This is a state of illness or ill health or the rate of disease in a population or the departure from a state of physical or psychological well-being, resulting from disease, illness, injury or sickness.

(<https://en.oxforddictionaries.com/definition/mortality>)

According to WHO, morbidity can be measured in terms of the number of persons who were ill, the illnesses these persons experienced and the duration of these illnesses ([www.who.int/topics/mortality/en/](http://www.who.int/topics/mortality/en/))



#### 4. **Morbidity Prevention**

This is the effort geared towards getting all children to remain healthy and not have any sickness. The quest for keeping all children healthy at all times requires the following:

- a. *In-utero*: God put fetuses in the wombs that hold the growing baby and liquor securely in a membrane. Inside is sterile and that is why you want to keep the baby there for as long as possible before delivery. Once the membrane ruptures then concerns about infections come to play and considerations for alternative care become necessary.
- b. *Intact skin*: The birth canal is usually colonised by microorganisms and as the baby passes through, those organisms also colonise the skin. Intact skin therefore helps secure the newborn from infection and illness.
- c. *Maturing Immune system*: Baby starts out by being immune-incompetent. Their immune systems mature over time. This is to ensure it has capacity to cope with invading organisms and injuries around.
- d. *Immunisation*: This is the process by which the body responds to the presence of an antigen either from an invading agent or one given (vaccination) by health care providers to produce antibodies that protect the body against illnesses. Protective immunity can happen after an infection. When it is transferred from mother to the developing offspring in-utero, it is passive immunity. However, when antigen is given intentionally to protect against an illness it is called active immunisation. For some of us, we really need

a vaccine that will protect the body against all forms of diseases, but this is still very far from being achievable.

- e. *The Levels of Prevention* is a relevant instrument: general health promotion, specific protection, early diagnosis and treatment, limitation of disabilities and rehabilitation.

The Table 1 below summarises the current immunisation recommendation of the Paediatric Association of Nigeria (PAN 2012)

**Table 1: PAN recommended Immunisation Schedules**

Age	Antigen (Vaccines)
Birth	BCG, OPV-0, Hep B-0
6 weeks	OPV-1, Penta-1, Rota-1, PCV-1
10 weeks	OPV-2, Rota-2
14 weeks	OPV-3, Penta-2, PCV-2
6 months	Penta-3, PCV-3, Vit A-1
9 months	Measles-1, Yellow Fever
12-15 months	OPV, DTaP, Vit A-2
18 months	Hep A, MMRV
2 years	Typhoid
5 years	OPV, DTaP, MMR
10-14 years	Tdap, Yellow Fever, HPV (Males & Females)
≥15 years	5 dose TT schedule (Females)

## 5. Mortality

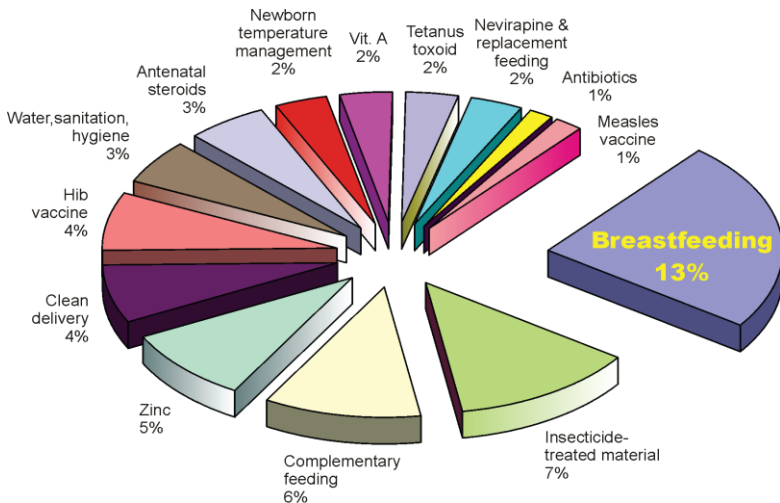
This is the state of being subject to death or the relative frequency of deaths in specific population or the death rate. The National Demographic and Health Survey

gave the following definitions: **Neonatal mortality** is the probability of dying within the first month of life. **Post-neonatal mortality** is the difference between infant and neonatal mortality. **Infant mortality** is the probability of dying before the first birthday. **Child mortality** is the probability of dying between the first and fifth birthdays. **Under-five mortality** is therefore the probability of dying between birth and the fifth birthday. There has been some improvement over the years but rates are still very unacceptably high. In Nigeria, **Neonatal Mortality Rate** was 201.6 in 1990 but fell to 102.3 in 2015. **Infant Mortality Rate** has not changed remarkably. It was 74.18 in 2000 rose to 98.8 in 2005 but fell back to 74.09 in 2014. Also **Under-5 Mortality Rate** was 120.9 in 2012 but fell marginally to 108.8 in 2015. But if you look at what happened when I was still under 5 year old, U-5 MR was 313.8 per 1000 live birth and has fallen to 108.8 since 2015 ([www.indexmundi.com/](http://www.indexmundi.com/)).

## 6. **Mortality Reduction:**

This is the effort made to reduce the rate of death from any and all causes of death among children. This will include but is not limited to:

- a. Reducing causes of foetal wastage and intrauterine deaths
- b. Reducing causes of death around delivery (peri-natal deaths)
- c. Reducing all causes of early and late Neonatal death
- d. Reducing the impact of childhood killer diseases as seen in the Figure 1 below



**Figure 1:** Proportion of global Under 5 Mortality that could have been prevented (UNICEF 2016).

Mr Vice-Chancellor, Sir on a general basis, to prevent most diseases and reduce deaths among children require among other things the following: regular health appraisals, remedial measures and follow up, prevention of communicable diseases, healthful environment, nutritional services, mental health, dental health, eye health, ear, nose and throat (ENT) health, health education, special education needs (SEN) for the handicapped children and school health programming.

## 7. Transition:

We are in a transition, Mr Vice-Chancellor, for 15 years we had Millennium Development Goals (MDG) from year 2000 – 2015 and Nigeria cannot truly boast of meeting any of those goals. Presently the world communities are on Sustainable Development Goals (SDG) from 2016 and

should last till 2030. While we must maintain our gains in the MDGs we must think SDG and truly make the transition like other countries.

#### **8. What makes children sick?**

The following top the causes:

- a. For babies: Perinatal Asphyxia, Jaundice, Sepsis, and Respiratory disorders.
- b. Among Children: Respiratory, Sickle Cell Disease, Sepsis, Diarrhea Diseases and Malaria.

#### **9. What is killing our children?**

- a. Killers of babies include: Preterm birth, Severe Infection and Perinatal Asphyxia.
- b. While among children, they are Sepsis, Pneumonia, Protein Energy Malnutrition and Severe Malaria. (World Factbook 2015)

### **My Contributions to Knowledge in Morbidity Prevention and Mortality Reduction**

#### ***1.0 National Service Adventures***

In 1989-1990, I was mobilised for the National Service (NYSC), posted to Plateau state and deployed to Shendam Local Government Secretariat. My place of primary assignment was the Maternal and Child Welfare Clinic in the centre of the Shendam township. No Doctor ever worked there. There I conducted antenatal clinics and initiated the delivery of babies in the centre. That was the beginning of my Independent Paediatric care. That singular act provoked several women in the community to come and deliver in the centre and reduced the deaths among newborns in Shendam. Hence the number of mothers crying “...and the baby died” drastically reduced. Snake bite was an everyday

affair in Shendam. From my work there, I published a paper on “Shendam Snakes” which was well celebrated. It earned me Second best member of the National Youth Service Corps of the year in the Local Government Area.

## **2.0 *National Micronutrient Survey***

In 1991 shortly after joining the Residency Programme, a National Micronutrient Survey sponsored by multi-national implementing partners was embarked upon. Professor Ayodele Ojuawo was the Team leader that covered Kwara, Kogi and Niger states. He invited me to join the team and together with a team of ophthalmic nurses and a laboratory scientist, we went from village to village taking blood samples determining Haemoglobin values of children’s blood on the field while keeping the samples according to Standard Operating Procedures for later analysis for micronutrients. It was a risky venture. We successfully carried out the survey. Today, Vitamin A has been introduced into the EPI Vaccine schedule for our children and several millions of children have been saved from Vitamin A Deficiency (VAD) and blindness. Also several children were rescued from compromised immune system and death. That effort was a shout of “Oh! No! Not Again” to sicknesses and death.

## **3.0 *Neonatal Conjunctivitis***

I did extensive work on Neonatal Conjunctivitis. This ranged from determination of its prevalence, the causes, the antibiotic sensitivity patterns of the organisms causing it to the efficacy of Breast milk and Sulphacetamide eye drops (Ernest et al 2001). We discovered that Chlamydia which was a leading cause of blindness in adults, was also one of

the leading causes of Conjunctivitis among neonates (Ernest et al 2002). I also established that Breast milk has effective antibacterial activities that may be useful in hard-to-reach places and refugee camps or internally displaced peoples (IDP) camps, where medical supplies run out temporarily. I also observed the rarity of Gonococcal Ophthalmia neonatorum in that series (Ernest et al 2001). Figure 2 shows copious purulent eye discharge from both eyes of an infant with conjunctivitis.



**Figure 2:** Newborn with conjunctivitis having copious eye discharge.

#### **4.0 *Acute Respiratory Infection***

For several years, diarrhea disease was the leading cause of death among the under-5- years old children globally. As the oral rehydration therapy (ORT) was being accepted and used, deaths due to diarrhea disease nose-dived. Acute Respiratory Infections (ARI) then took the lead and was killing more than 500,000 annually with more in developing countries like Nigeria. The motivation to prevent morbidity and reduce mortality led me to write a proposal to UNICEF Nigeria and that led to my first research grant. It was a small amount of \$3,800 to study the current status of

Acute Respiratory Infections (ARI) in Kwara state. Ernest and others evaluated Acute Respiratory Infections in the Middle Belt Region of Nigeria (Ernest et al 2015). The study had both community and hospital based components. We discovered that fast breathing, cough and fever were the leading presentation of pneumonia; Immunisation coverage of the study subjects was poor, and majority had pre-consultation antibiotics used. *Streptococcus pneumoniae* and *Staphylococcus aureus* were the leading organisms causing Pneumonia and were very sensitive to Quinolones, Gentamicin and Cephalosporin. Heart failure was the leading complication. The outcome of this has been used over the last several years to prevent morbidity and reduce mortality.

### ***5.0 The Care for Children with Sickle Cell Disease (SCD)***

Sickle cell disease is an inherited disorder associated with production of abnormal hemoglobin. There are more than 800 abnormal types of haemoglobin but only a few are clinically significant. The Table 2 below summarises some abnormal Haemoglobin and the points of genetic defects.



**Table 2: Haemoglobin variants and site of defect on the haemoglobin chain (Ganong 2005, modified)**

Haemoglobin	Positions on Beta Polypeptide Chain of Haemoglobin									
	1	2	3	6	7	26	63	67	121	146
A (Normal)	Val	His	Leu	Glu	Glu	Glu	His	Val	Glu	His
S (Sickle cell)	Val	His	Leu	<b>VAL</b>	Glu	Glu	His	Val	Glu	His
C	Val	His	Leu	<b>LYS</b>	Glu	Glu	His	Val	Glu	His
G <sub>San Jose</sub>	Val	His	Leu	Glu	<b>GLY</b>	Glu	His	Val	Glu	His
E	Val	His	Leu	Glu	Glu	<b>LSY</b>	His	Val	Glu	His
M <sub>Saskatoon</sub>	Val	His	Leu	Glu	Glu	Glu	<b>TYR</b>	Val	Glu	His
M <sub>Milwaukee</sub>	Val	His	Leu	Glu	Glu	Glu	His	<b>GLU</b>	Glu	His
O <sub>Arab</sub>	Val	His	Leu	Glu	Glu	Glu	His	Val	<b>LYS</b>	His

Complications of the disease cause significant morbidity and mortality, and are usually associated with poor quality of life if not properly managed. There are two major crises; Vaso-occlusive and Anaemic crises. Anaemic crisis has 4 major types: Hyperhaemolytic, Aplastic, Megaloblastic and Sequestration crises. Vaccines (PCV 7) in combination with penicillin prophylaxis and PPV23 booster vaccination improve protection against pneumococcal infection.



**Figure 3:** Some features of Sickle Cell Anaemia (Jaundice and Dactylitis).

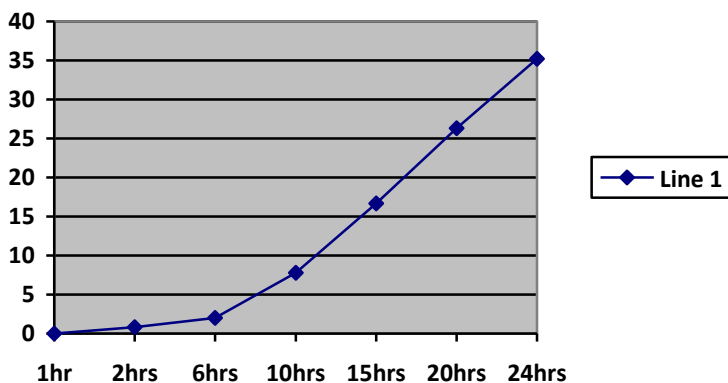
Several academics worked and left our department over the years. The responsibility of caring for children with Sickle cell disease (SCD) then fell on my shoulder. I have therefore led the Paediatric Haematology Unit to bring the care in the SCD clinic close to world class level with a mindset of global best practices. We moved from just giving routine medications to the use of Hydroxyurea (HU) and chronic transfusion programming. Our anecdotal experience showed that chronic transfusion programme was not favoured by most parents. The improvement ranged from decreased hospital admission, decreased hospital stay, reduction in frequency of crises, reduction in school

absenteeism, increased ability to cope with activities that normally were almost impossible before use of HU, to rapid growth and secondary sexual characteristic development (Ernest, 2016).

### **5.1 *Making Blood available for Transfusion:***

In our hospital SCD patients probably top the list of people utilising blood transfusion the most, as part of their routine care. However, donors are not easy to come by especially when the need for transfusion becomes frequent. Sources of donors included voluntary donors, students, special campaigns, friends of families, church members, etc. As the patients with SCD grow, the number of willing donors decreases.

The practice in our blood bank is to bring donors when there is need for transfusion. This standard of care increases the time interval between when a patient needs blood transfusion and when transfusion actually takes place and therefore increases mortality. Ernest et al reviewed the records of the Emergency Paediatrics Unit and published the outcome. There were about 600 children with severe anaemia over a period of 5 years. The outcome was staggeringly informative. (Ernest et al, 2002)



**Figure 4:** Emergency Response Interval for the Transfusion of patients with severe anaemia.

The publication was in the *West African Journal of Medicine*, and it revealed that mortality from lack or delayed blood transfusion could be drastically reduced or prevented if blood transfusion happens within 2 hours of diagnosis. At 2 hours critical point, mortality of patents requiring blood transfusion increases rapidly with the passage of time. This was presented during a UIITH seminar and the then CMD, Prof. Olurotimi Fakeye, made quick changes that required Laboratorians in blood bank to sleep-in so they could make blood available within 2 hours of diagnosis of severe anaemia. Mr. Vice-Chancellor Sir, this singular decision contributed to remarkable reduction in morbidity and mortality among SCD patient and we had less of cries “...and the child died”.

## 5.2 *Ilorin Sickle Cell Support Club (ISCSC)*

To expand involvement in the care of people with SCD, I established ISCSC with the following objectives: to provide moral and material support for patients, provide counseling support for the families, create an avenue for dissemination of information to patients and their families, enlighten public about the disease and advocate public support, link patient and family with cooperate bodies for help and assistance in areas of needs like Bone marrow transplantation etc. and to serve as referral for the patients. In one of our programmes, we showcased two successful legal practitioners who reached the peak of their profession in spite of SCA. The ISCSC is open to potential donors, individuals and corporate organisations that are willing to spend their resources on helping patients with SCD.



**Figure 5:** Poster for the Launching of Ilorin Sickle Cell Support Club in year 2013

## 5.3 *World Sickle Cell Day*

Nineteenth of June every year is World Sickle Cell Day. It is usually celebrated by WHO, UNICEF and all over the world by those concerned or caregivers to those affected. Since the inception of ISCSC we have been celebrating it. In

2013 “Know Your Status” was the global focus so we conducted a survey in three primary schools in Ilorin after due approval of all concerned authorities. Ernest et al, found the following; Genotype AA was 67.8%, Genotype AS was 25.5%, Genotype AC was 4.5% and Genotype SS was 1.4%, while Genotype SC was 0.6% and CC was 0.2%. This means the SCD gene carriage rate in Ilorin was 32% (Ernest et al, 2013). This was higher than the global average of 23%. We are still wondering whether there are concentrates of the abnormal gene in Ilorin or not. Renewed effort is on for another Survey.

#### **5.4     *Research in SCD***

For the past 17years, I have been involved in researching into various aspects of SCD. I looked at Childhood Osteomyelitis in SCD (Ernest, 2000a), Haematological parameters during SCD crisis (Owolabi, Ernest et al, 2006), Otological funding among them (Alabi, Ernest et al, 2008), Hepatitis B and C infections among children with SCD (Onuchukwu, Ernest, Ojuawo, 2012) , Iron status in SCD (Akintola, Ernest, Ojuawo, 2014) Zinc level in children with SCD during crises (Ahmed, Sheu, Ernest, Ibrahim 2016), G6PD deficiency among children with SCD (Ogunkanbi, Ernest, Adedoyin, 2016) , and more recently we undertook antimalarial chemoprevention drug trial among children with SCD (Olaosebikan, Ernest et al, 2016). Other works are going on presently like general Radiological findings among SCD and Transcranial Doppler to predict occurrence of cerebrovascular accidents. All these will further help our understanding of the SCD and hence help provide care for them. For more innovative research, I am collaborating with CHORI, University of San Francisco,

California on ability to diagnose SCD using breath air and African Research Innovation and Staff Exchange (ARISE), on Improving care for patients with SCD from UK, USA, Italy, Ghana, Zambia, etc.

## ***6.0 Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS)***

A paper was presented at the Paediatric Association of Nigeria conference (PANCONF 1999) in Sokoto where it was revealed that the prevalence of Childhood HIV Infection in Abuja was 50%, I became seriously concerned and returned home and started systematic data collection on Paediatric HIV Infection. We noticed a progressive increase in the incidence of HIV infection among children attending University of Ilorin Teaching Hospital: 1999 was 9%, 2000 was 11% 2001 was 13, and 2002 was 15% 2003 was 17% and 2004 was 19%. By 2006, I was on sabbatical leave with UNICEF Nigeria at Abuja to help in the setting up of a National programme on Paediatric HIV treatment, care and support together with other implementing partners.

Mr Vice-Chancellor Sir, I still want to express my gratitude to the University of Ilorin that granted me a Sabbatical leave of one year to attend to that. I resumed work in May, 2006 and by 2007 the National Guideline was ready, launched and presented for use. Thereafter, I together with other consultants started training all categories of healthcare workers for the implementation of the national Guideline and also developed a country proposal for Global Fund ATM Grants. In 2006, the Grant award to Federal Government of Nigeria was USD69 Million and USD180 million in 2007 for the treatment, care and support for children with HIV and AIDS. At Kwara state level, I assisted

the state in putting together a 5-year strategic plan for treatment, care and support for children with HIV Infection. As at 2008, the number of children with HIV infection who came for treatment in the hospital was smaller than expected and I then accessed a Grant from the Clinton Foundation for detecting children with HIV infection in Kwara state. I formed a team that went out to several towns in the state for screening, detections, and subsequently enrolled children with HIV infection for care. This yielded a lot of dividends. Local data was beginning to be available for use. Thereafter many implementing partners came and worked in Kwara state and they are still around till today. Mr. Vice-Chancellor Sir, my exploits in HIV and AIDS control were National in scope. The outcome of the exercise has appeared in the following publications:

- a. National Guidelines for Paediatrics HIV and AIDS Treatment and Care
- b. Standard Operating Procedures on Antiretroviral Therapy for Paediatric Patients
- c. Guidelines on Prevention of Mother to Child Transmission of HIV
- d. National Plan of Action for the implementation of Paediatrics HIV and AIDS in Nigeria.
- e. National Guidelines on Prevention of Mother to Child Transmission of HIV in Nigeria.
- f. Standard Operating Procedures for Prevention of Mother to Child Transmission of HIV
- g. Training Manual on Paediatric HIV and AIDS for Doctors
- h. Training Manual on Patient Tracking for Expert Patient trainers on HIV and AIDS



- i. Contributions to country adaptation of more than 15 other books on HIV, Integrated Management of Childhood Illness (IMCI) and Integrated Management of Adult and Adolescents Illnesses (IMAI)

### **6.1 *Youth-Friendly Centre for screening Youth for HIV Infection***

To address the challenges of the young people of Kwara state, I led a non-governmental organization, the African Network for Human Development (AFRIDEV) to start a Youth-friendly Centre within the state Library opposite the Central Bank of Nigeria in Ilorin. There, we provided health information, career counseling and HIV screening to young people who may not be willing to come to hospital for screening and then referrals made for those positive for the infection. That place was another point for systematic data collection. I undertook other departmental and interdepartmental collaborative researches that were published such as Childhood HIV and AIDS in Ilorin (Ernest, et al, 2000), Normal CD4<sup>+</sup> count among health Nigerians (Afolabi, Ernest et al, 2014). I also correlated clinical symptoms of HIV with CD4+ counts.

### **7.0 *Polio-Eradication Activities***

Since 1998, I have been involved in Poliomyelitis eradication campaign. First, I was appointed as UNICEF/WHO Consultant for Micro-planning of supplemental National Immunization Days, Training of health workers and supervisory visits to ensure quality vaccines were delivered to the children who were end users. I was Lead consultant to Bauchi state, Gombe state, Jigawa

state, Oyo state, Kano state and Lagos state at different times. Technical reports were developed for all this activities. Also during one of the exercises, I undertook a research on Injection Safety: Knowledge and Practice among health workers (Ernest, 2002a). It was concluded then that awareness on injection safety practices was low among health worker. It was also noted that their practices could put that at risk of needle stick injuries and hence the spread of HIV and other infections. A retraining on Injection safety was therefore recommended. Figure 6 shows immunization team with me (arrow) before setting out for house-to-house immunization campaign.



**Figure 6:** Immunisation Team wearing “Kick Polio Out of Nigeria” pullover jacket.

In Nigeria, we have made significant progress in reduction of the transmission of wild Polio virus (WPV), but the last phase toward its eradication was not progressing fast. There were evidences of fluctuating number of WPVs and circulating vaccine derived Polioviruses (cVDPVs). In addition, up to two-thirds of WPV cases have received three

or more doses of Oral Poliovirus Vaccines (OPV) (Cuba ISCG 2007) .These observations raised more questions than answers. Vaccine potency and low vaccine coverage were other issues. But, could there be other factors such as low immunogenicity playing major roles in our inability to eradicate poliomyelitis in Nigeria?

Nigeria also has a good proportion of immune-compromised children who do not only need protection from wild and vaccine polioviruses but also are at risk of shedding the virus for long period (CDC 2001, CDC 2009) Also, studies on efficacy of birth dose of OPV and Inactivated Poliovirus Vaccine (IPV) show variable results with superiority of IPV over OPV. This led to the introduction of IPV into the Nigerian populations. However, we observed the need for a trial to evaluate the seroconversion rates in subjects and comparison of seroconversion rate after 1 dose versus 2 doses of IPV as well as adverse reactions. Ilorin and Enugu became the sites for this National study supported by WHO, UNICEF, NPHCDA and GAVI but spearheaded by Paediatric Association of Nigeria (PAN). I was appointed to lead the Ilorin Team, serving as the Ilorin site Investigator and working with 28 other team members. **This is the first ever Vaccine Trial by WHO in Nigeria.** It was initiated in August 2016. We have finished sample collection and are doing laboratory analysis of samples collected now. We strongly hope the result will help push the eradication of poliomyelitis to the finish line.

### **8.0 *Breast feeding and Breast Milk***

The Core Child Survival strategies include Growth Monitoring, Oral Rehydration Therapy, Breast-feeding, Immunisation, Female Education, Family Planning Food

Supplementation and follow-up (known as GOBI FFFF). Breastfeeding is central to all this. UNICEF reported that 58% of all the deaths among under-5 children have a background of malnutrition. Breastfeeding is helping provide the first and adequate nutrition for the baby in the first 6 months of life. Breastfeeding is a process and it is the delivery of breast milk to the baby. Breast milk provides adequate nutrition and water/fluid needed to sustain a child for the first 6 months of life. Mothers may have challenges with producing breast milk or with the process of breastfeeding. Since 1991, when I was trained in the breastfeeding process and later got trained in breastfeeding counseling, I have trained several health workers and counseled several mothers who have challenges with breast feeding. The very unusual among them were:

- i. A doctor's wife who would not listen to her husband but insisted that baby formula be provided; I sorted them out and averted a midnight fight.
- ii. A woman that sustained burns and scarring over the breast, and was unable to produce adequate milk. Counseling and intervention did the job.
- iii. A woman with abnormally big nipples which were bigger than the mouth of the baby. The baby could not adequately breastfeed, in spite of adequate lactation. Expressed breast milk was given to the baby using cup and spoon.

Why all the troubles about Breast milk? The advantages are worth the trouble! Mother's milk is the healthiest food for the baby, simple to administer, safe for mother and baby, provides fresh easy to digest food, gives the baby natural protection against most childhood illnesses and is always available, reduces risk of allergies, does not need special

skill to prepare, makes most babies grow well for the first six months and saves the father the trouble of looking for money to buy “baby food”.

Mr. Vice-Chancellor, Sir, I served as the Chairman for BFHI/Breastfeeding Committee of our great hospital for seven years. I had to write the CMD to please find a replacement for me to continue to drive the process. Now that Nigeria is in a recession, Breast milk becomes more central to child survival. Now Paediatric Association of Nigeria is advocating for mothers to continue breastfeeding for three years to supply further the protein that the babies need for optimal growth and development that may not be available in the complementary food.

Breast milk is food. Breast milk is water or drink. Babies do not need any other food or drinking for the first six months of life. My wife breastfed our three babies exclusively for the first six months of life. I celebrate her today.

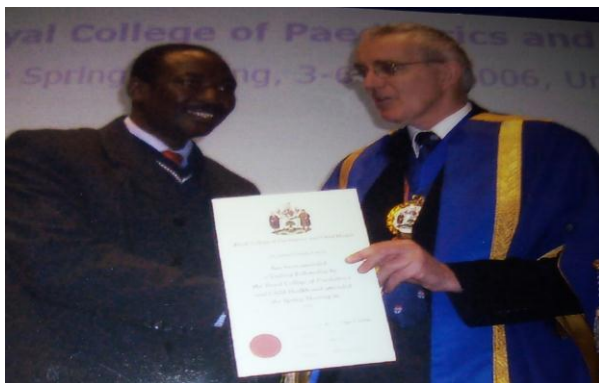


**Figures 7:** Mothers passionately breastfeeding babies, even twins!

## **9.0**     *Community Child Health*

In 2011, I was awarded the Donald Court Fellowship of the Royal College of Paediatrics and Child Health (usually

only one award is made per year) for Community Child Health. A Nigerian Specialist in Community Child Health, Dr. Ifeanyi Omenaka was my host in the Child Development Centre, Warrington, UK. On return, I started making preparations for the formation of the Nigerian Association of Community Child Health (NACCH) which was launched in September 2015.



**Figure 8:** Inaugural Lecturer and the President of the Royal College of Paediatrics and Child Health, UK.

NACCH was to focus on diseases that may not cause significant deaths but which do not allow optimal potential for growth in children. This includes; children in especially difficult circumstances, prevalent genetic disorders, and childhood diseases with high level of stigmatisation like HIV, Enuresis etc. Others include threats to child health like environmental hazards, child labour, poor housing, child and adolescent sleep hygiene and sexuality, and all conditions where the rights of the child is compromised. Presently I serve as the Founder and National President. We have given ourselves five years to make it an internationally reputed

Association that has influence over the social, cultural and economic circumstances of Nigerian children.

## **10.0 Malaria**

Mr. Vice-Chancellor, Sir, Malaria is the commonest cause of infection resulting in fever and accounts for the highest number of children visiting health facilities for treatment in tropical Africa and Nigeria particularly. It is caused by protozoa plasmodium. There five species that are presently known with capacity to cause the disease in man. *Plasmodium falciparum* usually found in tropical Africa Asia and Latin America, *P. vivax* found in both tropical and temperate zones, *P. ovale* mostly found in tropical West Africa, *P. malariae* with world-wide patchy distribution and *P. knowlesi*. It could be transmitted through mother-to-unborn fetus (congenital malaria) and through transfusion of infected blood. But the major way plasmodium is transmitted is through bites of mosquitoes that were previously infected. *P. falciparum* accounts for more than 80% of the malaria in man and accounts for most malaria illnesses and death among children.

## **10.1 Malaria Burden**

It was estimated that 262 million episodes of malaria occurred in 2000, 216 million episodes in 2010 and 214 million episodes in 2015. About 88% occurred in the African region, 10% in South East Asia and 2% in Eastern Mediterranean region. Also, the global death from malaria alone was 839,000 in 2000, 655,000 in 2010 and 438,000 in 2015. Although we noticed a decline of about 48% from 2000 to 2015, the figure is still unacceptably high. A critical look reveals, 438,000 deaths per year means 36,500 per

month, 1216 per day and 50 per hour. That means, within the one hour of this Lecture, 50 people would be dead from malaria. This is sheer human wastage.

In Africa, in spite of the reduction in the global incidence and deaths, malaria still accounts for 10% of childhood disease burden and 21% of childhood deaths. More than 60% outpatient visits in Nigeria are due to malaria. Malaria is imparting negatively on our economy. It is estimated that about 132 Billion naira is lost annually to the disease as cost of treatment and loss of man-power productivity. Close to 12% of our Gross Domestic Product is expended by Nigerian households on malaria treatment (Dondorp et al, 2010). Again, this is an unacceptable burden borne by Nigerian households.

Malaria is probably the only devastating infection that can be effectively treated within 3 days and yet it is still killing so many in this modern time. Malaria generally presents in two main forms as classified by World Health Organization. First is the uncomplicated (not simple) malaria and severe malaria. Severe malaria usually presents with evidences of threats to life. The uncomplicated one may become severe if left untreated and severe one will lead to deaths if nothing is done. The groups at risk of severe malaria infection include children 5 years old or less in areas of high endemicity; people of all ages in areas of low endemicity; people returning to high endemic areas after a prolonged absence; travelers from areas with little or no malaria; indigenous pregnant woman especially those with first pregnancy; patients with sickle cell anaemia; internally displaced people and patients who had splenectomy done for various reasons.



## **10.2 My Contribution to Malaria Prevention and Reduction of Malaria Deaths**

### **Research and Publications**

#### ***10.2.1 Malaria Vaccine***

Mr. Vice-Chancellor, Sir, when I thought about the fact that for almost a century malaria has been devastating. It killed lots of the missionaries and colonial masters and its devastation has not abated. My first ever publication after national service was a review article on Malaria vaccine. I opined that it would be the saving grace for our world, particularly Africa, from malaria. The article, was titled; *Malaria Vaccines: How far, how well*” (Ernest, 1994).

#### ***10.2.2 Malaria Case Management***

With a WHO travel grant, I went to Accra, Ghana in 2001, to advocate a research and adoption of Artesunate Suppositories to reduce parasitaemia in children. This would ensure that uncomplicated malaria does not become complicated while the children are being brought from rural areas to the treatment centres in West Africa or being transferred from one hospital to another.

In conjunction with Professor Olugbenga Mokuolu, we developed a training manual on case management of Malaria for Medical students that is used during COBES posting up until today (Mokuolu, Ernest, 2005). The manual revolutionised the mindset of the medical student to malaria in its entirety. We also jointly published a paper on “Recent Advances in children antimalarial chemotherapy to create awareness on new malaria treatment. (Ernest, Mokuolu, 2005)

Together with other researchers; Adedoyin, Sanya and Olarinoye, we correlated the Laboratory result and clinical diagnosis of uncomplicated malaria and found that malaria was over-diagnosed and over treated. The over diagnosis was more among children. Only 10.3% of diagnosis of malaria in children was substantiated with laboratory confirmation. Adults had a higher figure of 36.9%. (Adedoyin, Ernest et al, 2010)

### ***10.2.3 Congenital Malaria***

Through a grant provided by USAID, the ARCH project, I and other collaborators conducted a multi-center longitudinal study on nearly 2000 mother-baby pairs in Enugu, Kaduna, Ibadan and Ilorin in which baby's cord blood, the placenta and mother's peripheral blood were examined for malaria parasites. The study helped resolve the controversy in Nigeria about whether congenital malaria was a myth or was a reality. We reported incidence of 5.1% for congenital malaria. We also reported a 25% incidence of malaria parasitaemia among mothers which obviously contributed to the incidence of congenital malaria. Our series, apart from contributing to reducing morbidity among children revealed that malaria at parturition can cause reduction in the mean birth weight and increase incidence of Low Birth Weight babies. These findings increased the level of suspicion for malaria among newborn infants thereby reducing mortality and the cry "... and the child died." (Orogade, Ernest et al, 2008).

### ***10.2.4 Severe Malaria***

There are standard WHO criteria to identify children with severe malaria who are at risk of death. These include:

impaired consciousness, multiple convulsions, acidosis, hypoglycaemia, severe malaria anaemia, renal impairment, jaundice, pulmonary edema, significant bleeding, shock and hyperparasitaemia.

Mr. Vice-Chancellor, Sir, in order to stop mothers and families crying "... and the child died" we audited our Emergency Paediatric Unit admissions and evaluated those with severe anaemia and found that 80% of 5790 patients had malaria (Ernest, Anunobi, Adeniyi, 2002). This research was a watershed due to many reasons that came out of the findings including the following;

- i. It demonstrated that malaria was either directly causing or was associated with severe anaemia in 80% of our patients,
- ii. That PCV of  $\leq 5\%$  was not compatible with life in our environment,
- iii. That the risk of death from severe anaemia increased exponentially if transfusion was delayed beyond 2 hours of presentation,
- iv. That  $< 5$  years old patients were more affected as they constituted 85.8% of all children with severe anaemia; and
- v. That Mortality Risk Assessment Score (M-RAS) derived therefrom can be used to assess the risk of death in children with severe anaemia.

Table 3 below shows the Mortality Risk Assessment Score (M-RAS)

**Table 3: Mortality Risk Assessment Score (M-RAS) in Children with severe anaemia**

Response (Hours)	Interval	Risk of Death	Scores (M-RAS)
<2		R1 – Almost nil	1
>2 – 6		R2 – Low	2
>6 – 10		R3 – Moderate	3
>10 – 24		R4 – High	4
>24		R5 – Very High	5

Mr. Vice-Chancellor, Sir, I was part of a large team that compared the efficacy of Artesunate and Quinine in the management of severe malaria in African children. This took place in 9 African countries with 11 centres. The outcome was published in *Lancet* and it provoked a quick policy change by WHO. The study, without doubt, established the superiority of Artesunate over Quinine in management of severe malaria. Artesunate reduced death by 22.5% over Quinine in severe malaria. The implication of this was that globally 195,000 lives would have been saved if Artesunate were used instead of Quinine. By extension, close to 50,000 lives would have been saved in Nigeria alone. Since then, Mr. Vice-Chancellor Sir, we have been using artesunate and definitely averting several deaths (Dondorp, ... Ernest et al, 2010). This is a way to say “Oh! No! Not again”, to deaths of these children.

### **10.2.5 Chemoprevention**

To further prevent malaria infections among children with sickle cell anaemia especially when it looked like the drug we were using was not as trustworthy as we expected, a

randomised clinical trial to compare the safety, tolerability and effectiveness of 3 anti-malaria regimens was carried out in the SCD Clinic UITH Ilorin. It was a Wellcome Trust Supported study for a Master's degree programme of the London School of Hygiene and Tropical Medicine. Findings have been published (Olaosebikan, Ernest et al, 2015). We found that Mefloquine and Artesunate regimen was well tolerated and more effectively prevented malaria than daily Proguanil prophylaxis. We need a little more body of evidence to advocate policy change on this.

## **11.0 Other Contributions to Knowledge**

### **11.1 Antibiotic Sensitivities**

Though bacterial infection has been a major cause of illness and death among children, what has always been more crucial is the need to know which antibiotics to prescribe for such infections. A delay in initiating appropriate antibiotics may worsen morbidity and increase mortality. Therefore Mr. Vice-Chancellor, Sir, to avoid hearing "...and the child died" I, together with my partners we undertook studies to evaluate the types of microorganisms causing infections and their antibiotic sensitivity so that doctors making empirical choice for children could be well guided. We (Ernest, Adeniyi, Onile, 2000) investigated the sensitivity of bacterial agents causing conjunctivitis in newborn babies. The leading causes of bacterial conjunctivitis in neonates were *staphylococcus aureus* and *staphylococcus epidermidis* 22% each, *Coliforms* and *Escherichia coli* 14.6% each while *Klebsiella spp.* was 12.2%.

### ***11.2 Nutrition and Oral Health***

We (Ernest, Ernest & Alade, 2001) undertook the assessment of the nutritional and oral health status of U-5 children in Egbejila, a rural community suburb of Ilorin and found that 12% were underweight, 36% stunted and 20% were wasted. They also had very poor oral hygiene with a high rate of gum disease and deficiency in the structure of the enamel. This re-emphasized the need to incorporate oral health education into the standard health education presently being given in both the urban and rural settings in Nigeria. We (Bogunjoko & Ernest, 2007) also evaluated and published the outcome of the nutritional project of Canadian International Development Agency among Nigerien children at SIM Hospital Galmi, Niger Republic and concluded that the programme performance was good and sustainable.

### ***11.3 Student Evaluation***

Evaluation of Students in any institution is critical to academic progress and professional growth. I contributed 2 of the 26 chapters in the textbook “2000 Multiple Choice Questions in Paediatrics” (Isaac, Ernest et al 2012).

### ***11.4 Other areas of addition to Knowledge by Research***

These included: Effects of Snake bites (Ernest, 1990), Adverse Effect of Good Intention (Ernest, 2000), Packed Red Cell of Nigerian Babies (Mokuolu, Ernest et al 2000), Chlamydial infection (Ernest, 2002b), Measles in Ilorin (Ernest, 2004), We also correlated School Performance and Audiometry (Ologe, Ernest, 2004), Roles of Cytokines (Ernest & Adeniyi 2007), UITH Laboratory Performance Index (Ernest, Babatunde & Onile, 2008), Intestinal Helminthiasis and Ferritin levels (Adebara, Ernest, Ojuawo,

2011), Hepatitis B Virus Infection (Onuchukwu, Ernest, Adedoyin, 2012), Goalsetting and Self-improvement (Ernest, 2012) Hepatitis C Virus Infection (Onuchukwu, Ernest, Ojuawo, 2013)), and Blindness in a child with snake bite (Katibi, Adepoju, Ernest et al, 2015) among others.

## **12.0 Capacity Development**

### **12.1 Medical Students**

To date, Mr. Vice Chancellor, Sir, University of Ilorin College of Health Sciences has trained and graduated a total number of 4,337 medical Doctors. I have been involved in the training of 3,924 (90.5%) of them. I taught most of them Child Survival Strategies, Infectious Diseases, The Rights of the World's Children and Child Advocacy in addition to Paediatric Haematology and Community child health.. However, Nigeria has lost the services of many of them through medical migration but definitely majority of them are still in-country here doing great jobs, defending and advocating for children.

For the first time in the history of our College, during my tenure as Head of the Department of Paediatric and Child Health, a student had Distinction in the final Paediatrics and Child Health examination.

### **13.2 Breast Feeding**

For more than 10 years I have trained so many health care providers in the act of Breast feeding and Breast feeding counseling.

### **12.3 HIV and AIDS**

Since 2006, I have trained locally, at state and national levels all cadres of health care workers on different

aspects of HIV care. At the national level, I trained institutional and state level staff in early infant diagnosis (EID) of HIV, Integrated Management of Adult and Adolescent Illnesses, IMCI complementary course on HIV and more recently, I trained state level staff on Integrated Management of Childhood Illness (IMCI) and Immunisation Logistics.

#### ***12.4 Bilateral and Multi-lateral Agencies***

I served as training consultant to several multilateral and bilateral agencies mainly on HIV and AIDS. Such agencies included WHO, UNICEF, USAID, MSH, Global Fund ATM, Clinton Foundation, Institute of Virology, University of Maryland. Liverpool School of Tropical Medicine and Hygiene requested me to help supervise their Masters students' projects since 2011.

#### ***12.5 Telemedicine Training***

I led the first ever Telemedicine training for Kwara state Healthcare workers through a grant given by Kwara state government in 2007. My interest in Telemedicine was because it can help address children's health challenges so that medical advice may help prevent illnesses and reduce deaths.

#### ***12.6 National Funding***

Mr. Vice-Chancellor, Sir, as part of my adventures in preventing morbidity and reducing mortality, I was part of the team that developed, supported and executed proposals to access Global Fund grant for HIV and AIDS in 2006 and 2007. In Abuja, I was challenged to present a 240-page document in 10 minutes to the Country Coordinating



Mechanism (CCM) the following day. After the presentation of my synthesis, all parties in the UN House agreed to adopt me as a member of the Nigerian committee for Global Fund Grants. That singular act helped Nigeria to access funds in excess of US\$250 million as part of the funding for HIV and AIDS prevention, treatment and care. This effort geared towards stopping cries from families and individuals “... and the child died”. They were efforts shouting “Oh! No! Not Again”.

### **13.0 Conclusion**

In conclusion, Mr. Vice-Chancellor, Sir, my contribution to knowledge and professionalism is clearly a big shout of “**Oh! No! Not Again**” to devastation of the lives of the World’s children. Although childhood illnesses are still with us today and children still die for several reasons, I can say, I have stood on the platform of these great institutions, University of Ilorin and University of Ilorin Teaching Hospital, and made efforts that have contributed to reducing childhood illnesses and preventing childhood deaths. Just like normal life, when one challenge is solved another one shows up. But we are still able to do more for the World’s children.

### **14.0 Recommendations**

From my experience in the adventures of preventing childhood morbidity and reducing childhood mortality in the last 25 years, Mr. Vice-Chancellor Sir, I want to make the following recommendations.

- i. Further investment on vaccines and Immunisation. It is a fact that the cheapest way to prevent disease among children is through immunisation. Vaccine

- production locally will reduce the cost per head for each antigen. Immunisation still remains the most cost-effective way to prevent diseases in our world.
- ii. Public awareness and education on importance of vaccines should be heightened especially for vaccine preventable diseases.
  - iii. Adequate funding of the Primary Health Care will help reduce the burden of disease with propensity to kill children. PHCs are at the grass-roots and will attend to immediate health needs of children and reduce severity that can cause death.
  - iv. Training and retraining of Healthcare workers on Injection safety and other subjects that may confer personal protection on them in the workplace.
  - v. Research-To-Policy: There should be a National Research Synthesis group that will help the Federal Government of Nigeria collect, collate, synthesise and scrutinise the outcomes of researches on different subspecialties so that implementing them will be fast tracked.
  - vi. A more aggressive National campaign against SCD is needed to reduce the gene carriage from 22% to <10% in the next 10years
  - vii. A step up in the approach to HIV prevention should include community involvement. Attention to the mother's health and to improving the coverage of Prevention of Mother to Child Transmission (PMTCT) must be pursued.
  - viii. Increasing the duration of maternity leave to between 6 months to one year, so that babies can breastfeed without excuses within the first year of

- life. This has good implication on Sustainable Development.
- ix. Government should integrate the following into child health programming: Regular Health appraisals, Remedial measures and follow up, Prevention of communicable diseases, Healthful environment, Nutritional services, Mental health, Dental health, Eye health, Ear, Nose and Throat (ENT) health, Health education, Special Education Needs for the handicapped children and School health programming.
  - x. The Core Child Survival Strategies should continue to be prioritised. These include: Growth Monitoring, Oral Rehydration Therapy, Breastfeeding, Immunization, Food Supplementation, Family Planning, Female Education and Follow-up (GOBIFFFF). Also other strategies should not be neglected: IMCI, IMCI complementary course on HIV, National mandatory budgetary allocation to Health, National Ambulance and ambulatory services, Telemedicine and National Newborn care and Perinatal Home visits.

## **15.0 Acknowledgements**

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All glory, all honour, all adoration and thanksgiving to the Father of our Lord and Saviour Jesus Christ. I deeply value my Lord, Jesus Christ and my Lord Holy Spirit who led me into medicine and Paediatrics and for sustaining me through the adventures. I could simply have died during these adventures but I have been kept alive. I could have

been somewhere else, but I was led into the adventure and He finally made me what I am today. Glory, Glory to His Holy Name. I feel moved to sing our family choruses:

- 1. For this God is my God, Forever and ever,  
He will be my guide from now even unto the  
end (Psalm 48:14)*
- 2. I have set the Lord always before me,  
Because He is at my right hand I shall not be  
moved (Psalm 16:8)*

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- xii. ***African Network for Human development (AFRIDEV) Board Members:*** Dr Lois Odeigha, Dr Mrs Bisi Olawuyi, Mr David Alabi, Mr Opeyemi Owoeye and Sister Ronke.
  
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