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THE NINTH NEWBORN: THE TRAGEDIES AND IRONIES OF DYING IN THE FIRST FIVE YEARS OF LIFE IN NIGERIA

By

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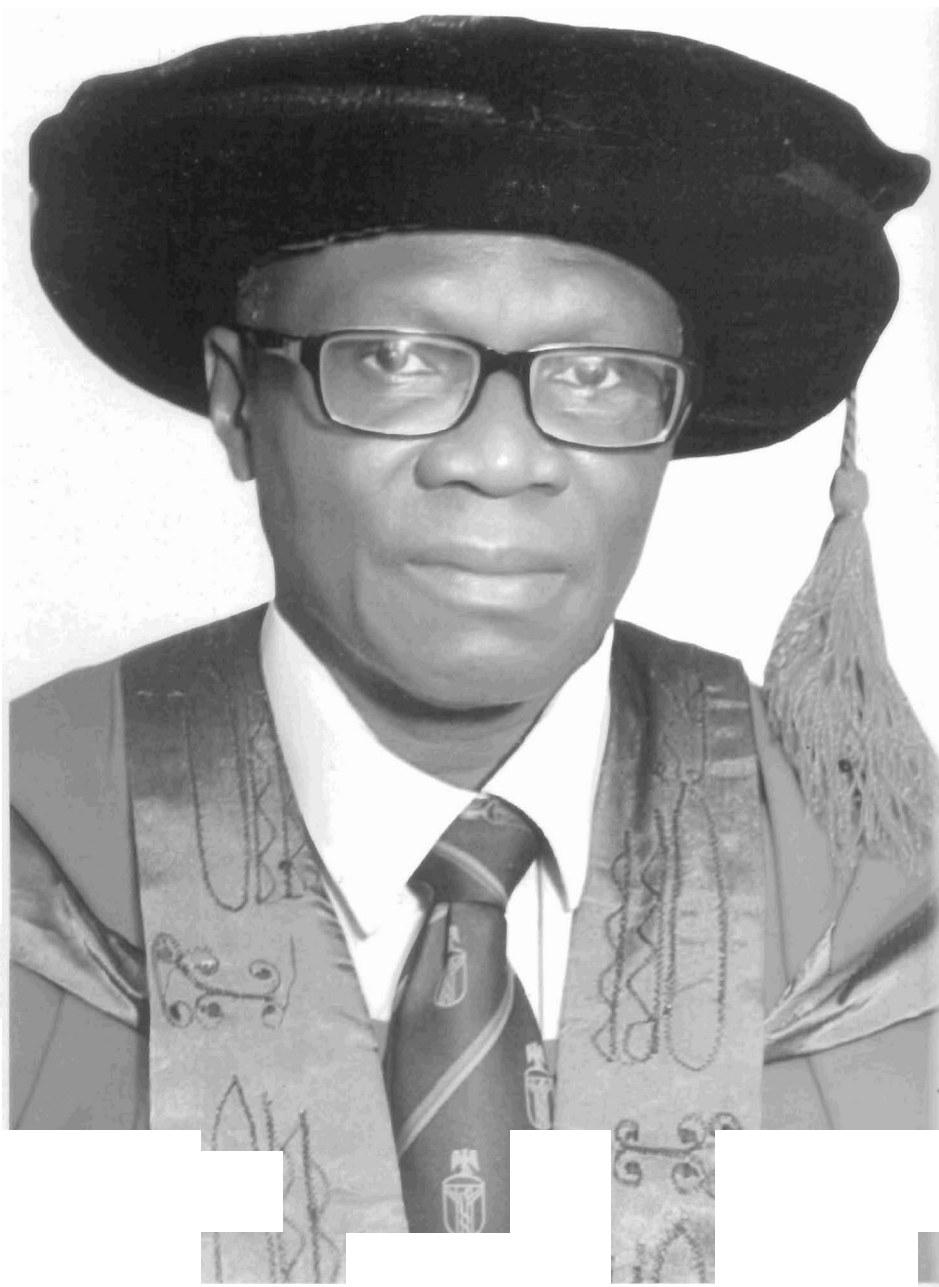

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Introduction

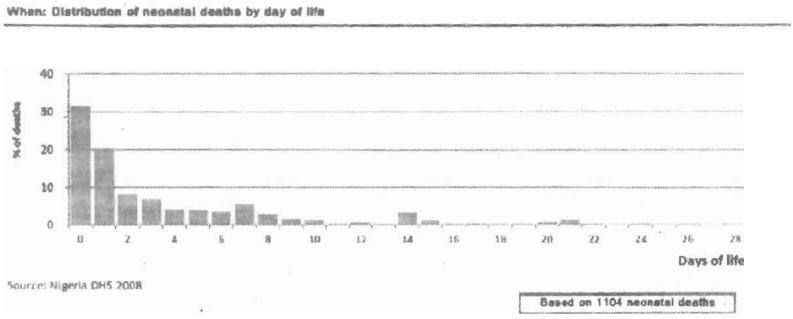
Mr. Vice-Chancellor Sir, it is with utmost gratitude to God Almighty that I stand before this distinguished audience to present the 285th inaugural lecture of this great university and 6th from the Department Community Health. Past lecturers from the Department are: Professors C. Adeniyi-Jones, Taiwo Daramola, D. A. Adelekan, E. O. Ojofeitimi and A.O. Fatusi.

When I was a child, I remember one of the common nursery rhyme frequently sang to pre-school children, five years of age or younger. Permit me Sir, to reminisce on my childhood experience as I recite my English translation of this rhyme. I apologise to Yoruba and English languages subject matter experts if my version or the translation therefrom is inaccurate.

My child Akuru-bete, Kube X 2
If you do not die, I will buy you beautiful clothes
If you do not die, I will buy you gold necklace
Gold necklace is beautiful on children
The unmarried can count only his slaves
Akuru-bete, Kube X 2

Let me disclose here that I never realised what this rhyme might mean to the mothers then; to me, it was just another nursery rhyme that was sang. One thing about this particular rhyme was that it was more frequently sang or chanted when a child was perceived to be unwell. Few years of working with sick children and their parents, I started to have insight that this rhyme perhaps had profound meaning to the parents at the time; that it probably unravels rooted beliefs about child deaths. Parents perchance believed that a child elected to survive or die and that the child could be enticed, or as it were, be bribed to elect to survive. Some names given to children in our environment – *Durojaiye* (stay to enjoy the life), Ayedun (the world is sweet) seem to support this theory.

Another mystery others have commented about that I am yet to confirm in literature is that the conventional 8th-day child naming rite is imaginably evidence-based as it perfectly aligns with the current epidemiologic knowledge of the timing of occurrence of newborn deaths (see figure below). Some have even suggested that the delay in naming a newborn might be to save the parents from investing emotionally in a child whose survival status is equivocal or 50-50. It then started to make sense to me why some parents, especially fathers, who had shown very little interest in caring for his wife during pregnancy or delivery and perhaps in the first seven days of life decides to throw a lavish party on the 8th day to name the child. Perhaps to him, the child does not really exist until he survives the first 7 days of life. Perhaps the rhyme expressed the mother's deep seated pessimism about her child and her helplessness to do something about whether he/she lives or dies.



Mr. Vice-Chancellor Sir, the death of a young child is painful and extremely distressing for the parents, the family and the community. Deaths of children in the first five years of life in developing countries are particularly tragic because they are mostly preventable. A country's under-five mortality rate (U5MR) indicates the probability of a newborn dying between birth and exactly five years of age at the country's current under-five mortality experience.[1] Under-five mortality rate is considered a leading indicator of the level of child health and overall

development of countries since it is sensitive to a wide range of inputs including level of immunisation, appropriate treatment of malaria and pneumonia, health knowledge of mothers, income, food availability, water and basic sanitation, etc. Consequently, reduction of under-five mortality rates is one of the more strongly and universally supported development goals.

Technically, U5MR is a simple cumulative incidence of deaths occurring among a cohort of newborns followed up for five years and it is conventionally expressed as the number of deaths of children in the first five years per 1,000 live births. This conventional expression however has weak "carrying" power. I have observed, in the more than fifteen years of facilitating and directing the Integrated Management of Childhood Illness (IMCI) in-service training courses in and outside of Nigeria, that it is less effective in bringing to fore the issues of child mortality in the developing countries. It really did not convey much meaning to my participants, many of whom were first level health workers and I wonder how much so to lay persons. I have therefore, preferred a conversion of U5MR to a ratio measurement *"under-five mortality ratio"*[*] **(*U5MRatio*)".**

Under-five mortality ratio as used in this lecture essentially describes the number of newborns that are predicted would survive the first five years of life for every newborn that is predicted would die before the fifth birthday. Derived by dividing 1000 by the U5MR, the *U5MRatio* (expressed as whole numbers), I hope would enhance an appreciation of the burden of under-five mortality in our nation by all persons, lay or technical. I also expect that by the end of today's lecture many would gain more insight to the issues of death in the first five years of life and perhaps become strong and informed advocates for under-five mortality reduction in homes, places of work and communities.

[*] This expression is not conventional but many authors have used it to express infant and U5M rates.

Let me warn however, that conversion of under-five mortality rate to ratio has a limitation since it does not provide a one-to-one conversion but rather collapses unequal intervals of U5MR for rates of 36 or more per 1,000 live births. For example, U5MR of 126 to 142 per 1,000 live births would all have six newborns surviving the first five years of life for each expected under-five death or **one of seven newborns dying before the fifth birthday**.

In 2015, Nigeria was estimated to experience an under-five mortality rate of 109[#] per 1,000 live births.[2] Converting this to ratio, for the year 2015, eight newborns were expected to survive the first five years of life for each expected under-five death. Alternatively expressed, **one of every nine newborns** delivered in 2015 would not live to celebrate the fifth birthday if nothing is done to change our 2015 under-five mortality rate experience. The loss of every ninth newborn when survivors and mortalities are serialised is a tragedy; hence the title of my lecture **"The Ninth Newborn: The Tragedies and Ironies of Dying in the First Five Years of Life in Nigeria"**.

Several reports have commented on the unacceptably high under-five mortality in Nigeria. UNICEF reported that Nigeria lost about 2,300 under-fives every single day in 2013 amounting to about 1 million under-five deaths for that year alone and thus making Nigeria the second largest contributor to global under-five deaths.[3] Nigeria is one of the countries making the slowest progress with under-five mortality reduction. In 2013, twelve countries had under-five mortality rate of more than 100 per 1,000 live births. By 2015, only six countries - Angola (157), Central African Republic (139), Chad (139), Somalia (137) Sierra Leone (120) and Nigeria (109) still had rates above 100 per 1,000.[2] Notwithstanding, it is probable that many attending this lecture think the loss of so many children before the fifth birthday is

[#] The Office of the Special Adviser to the President on MDGs reported U5MR of 89 per 1000 livebirth for 2014

incredible. This is nevertheless expected as I presume that many of us here this evening are socially privileged. The ninth newborn is a national average; it describes our national under-five mortality experience even though the deaths are not uniformly distributed across all population sub-groups.

While it is not impossible that many of us here this evening have never either experienced the loss of a child in the first five years of life nor known people who have, still, the deaths are occurring; they are occurring among families that are socially deprived. They occur more frequently among families with little or no education, with poorly paying or no employment, families with no political influence. The deaths are occurring more frequently in some geographic zones, in our rural areas where mothers have little access to health care and in the urban slums where the living conditions are harsh for child survival. This in itself has tragic implication; for example, for women with no education or those living in rural areas, the ratio may be as low as one in five newborns dying before the fifth birthday[4] (Figure 1).

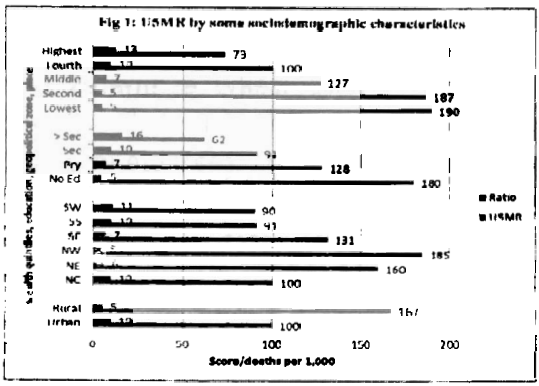


Fig 1: U5MR by some sociodemographic characteristics

While these deaths are rarely seen or known to the socially privileged, particularly those that can influence change, unfortunately and tragically, the deaths are occurring more frequently among a sub-group that places so much hope on surviving progenies. Among those that look up to their children as the insurance for the future, as guarantees for their sustenance in old age. To them, having surviving children to support the family and particularly the parents in old age is crucial. Consequently,

they tend to have as many children as possible in the hope that some would survive to support the family soon and care for them in old age. The response to the loss of a child is to have another pregnancy as quickly as possible to replace the lost child. Tragically, this seemingly logical response reduces the chance of survival of her other surviving children and increases the risk of her losing her own life - perhaps the height of all the tragedies associated with death in the first five years of life.

Causes of Under-five Mortality

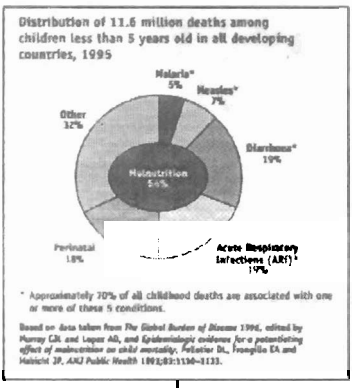
Pregnancy, childbirth and nurturing a child drains significant personal, community and national resources; if it were possible to reckon and charge the physical, emotional, psychological and financial losses of a single under-five death, the loss of over 2,000 children daily would amount to a colossal loss of personal, family, community and national resources. Ironically, estimates from several sources observe that 70% of under-five mortality globally and in Nigeria is due to easily preventable or treatable infectious diseases such as malaria, pneumonia, diarrhoea, measles and HIV/AIDS with malnutrition as an associated factor in 50 to 60% of the cases[3].

The World Health Organisation estimated that around 700,000 children died before their fifth birthday in Nigeria in 2010, 60% of the deaths were ascribed to malaria (20%), pneumonia (17%), prematurity (12%) and diarrhoea (11%)[5]. Incidentally, not only are these infections easily preventable and treatable, they also mostly present with easily recognisable symptoms or signs (table 1) hence they are frequently referred to as "common childhood illnesses". Ironically, in the first *State of the World Children's Report* (1980-81), James Grant, the

Table 1: Symptoms/signs of common childhood illnesses

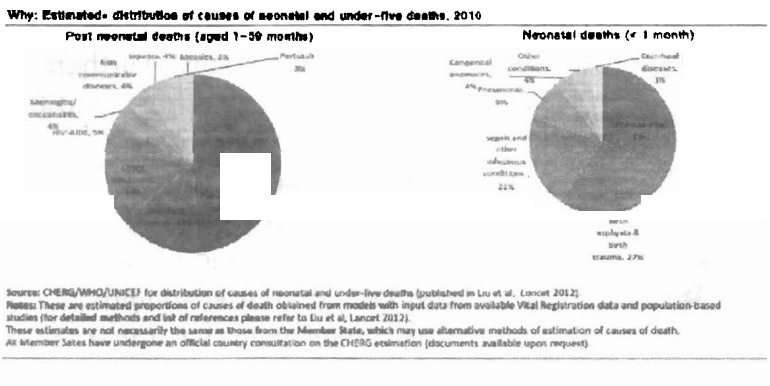
Illness	Symptoms or signs
Acute Respiratory Infections	Cough Running nose Fever Difficult breathing (fast breathing)
Diarrhoea	Diarrhoea
Malaria	Fever Lethargy or unconscious
Measles	Fever Generalised rash
HIV/AIDS	Any of the above

first Executive Director of the UNICEF, identified these conditions as accounting for 70% of global under-five deaths[6]. Furthermore, in 1995 and 2010, fifteen and thirty years respectively after the first UNICEF report, analysis of the distribution of causes of under-five deaths globally and in Nigeria were ascribed to these conditions. It is tragic and ironic that for three and half decades since the impact of these few "common" or "ordinary" illnesses as causes of death of children in the first five years of life was brought to global and national consciousness, they continue to kill many children in Nigeria and indeed in many countries of sub-Saharan Africa.



Mortality among Neonates and Older Under-fives

In the context of under-five mortality, under-fives can be categorised into two – newborns in the first month of life (neonates) and the older infant and young children from 1 month to 59 months because the causes of mortality are somewhat different and so also the interventions to mitigate them. Figure below describes the causes of mortality in the two age categories. Estimates of the major causes of deaths among neonates in Nigeria include prematurity (33%), birth asphyxia and birth trauma (27%) and, sepsis and infectious diseases (21%). Though deaths among neonates require higher technical skills to prevent, it nevertheless presents unique opportunity as was shown earlier that close to 70% of the deaths
occur within the first seven days of life and with the greatest risk on the day of birth.



Source: CHERG/WHO/UNICEF for distribution of causes of neonatal and under-five deaths (published in Liu et al, Lancet 2012).
Notes: These are estimated proportions of causes of death obtained from models with input data from available Vital Registration data and population-based studies (for detailed methods and list of references please refer to Liu et al, Lancet 2012).
These estimates are not necessarily the same as those from the Member State, which may use alternative methods of estimation of causes of death.
All Member Sates have undergone an official country consultation on the CHERG estimation (documents available upon request).

Global, Regional and National Commitments to Under-five Mortality Rate Reduction

Several international conferences and summits including World Summit for Children (WSC) held in 1990, the International Conference on Population and Development (ICPD) held in 1994, the Fourth World Conference on Women (FWCW) held in 1995, the World Summit for Social Development (WSSD) held in 1995, and the United Nations Millennium Summit (UNMS) held in 2000 adopted quantitative goals for the reduction of under-five mortality rates[7].

The 1990 World Summit on Children[8] regarded as the largest gathering of world leaders as at the time it held on September 29 – 30, 1990, identified the enhancement of children health as a first duty of nations and asserted that the solutions or means to achieve improvement of child health were within reach. It proposed major goals for the reduction of infant and under-five mortality between 1990 and the year 2000 by one third or to 50 and 70 per 1,000 live births respectively or whichever was less. Some of the supporting sectoral goals for achieving this child survival, development and protection revolution as articulated by the meeting included:

- Reduction of severe as well as moderate malnutrition among the under-fives by half of the 1990 levels;

- Reduction of the rate of low birth weight (2.5kg or less) to less than 10%;
- Virtual elimination of vitamin A deficiency and its consequences, including blindness;
- Empowerment of all women to breastfeed their children exclusively for four to six months and to continue breastfeeding with complementary feeding into the second year;
- Growth promotion and its regular monitoring to be institutionalised in all countries;
- Dissemination of knowledge and supporting activities to increase food production to ensure household food security;
- Global eradication of poliomyelitis by the year 2000;
- Elimination of neonatal tetanus by 1995;
- Reduction of measles cases by 90% and measles death by 95% compared to pre-immunisation levels by 1995.
- Maintenance of high level of immunisation coverage among infants less than one year by 2000;
- Reduction of deaths due to diarrhoea among under-fives by 50% and 25% reduction rate in the diarrhoea incidence; and,
- Reduction by a third of deaths due to acute respiratory infections among under-fives.

Meanwhile, the International Conference on Population and Development (ICPD), held in Cairo, Egypt, (1994)[9] and the Fourth World Conference on Women (1995) [10] approved the infant and under-five mortality reduction goals adopted by WSC (1990) and further recommended that all countries should aim to achieve infant and under-five mortality rates of below 35 and 45 per 1,000 live births respectively by the year 2015. In 2000, the United Nations Millennium Summit (September 6-8, 2000) adopted the Millennium Declaration[11] at which the world leaders present committed their nations to a new global partnership to reduce extreme poverty. They also approved a series of time-bound targets or goals - with a deadline of 2015. Millennium

Development Goal 4 (MDG 4) on child health encouraged countries to reduce their 1990 under-five mortality rates by two-thirds by 2015. For Nigeria, this meant a reduction to 71 under-five deaths per 1,000 live births.

Other regional and national summits with commitments to under-five mortality rate reduction among other targets were held at various times between 1990 and 2015. These include the African Summit on Roll Back Malaria held in Abuja, Nigeria (2000), the Kampala Summit on Promoting Maternal, Infant and Child Health and Development in Africa, held in Kampala, Uganda (2010)[12], "Saving one million lives (by 2015)" (2012)[13] and the Nigerian Presidential Summit on Universal Health Coverage (UHC) (2014) among others. In the same period, no fewer than 15 Policies and Plans of Actions for child health were developed. In spite of these summits, commitments, policies and plans of action, it is ironic that Nigeria did not keep track with any of the under-five mortality reduction targets in 2015.

Global and National Trends in Under-five Mortality Reduction

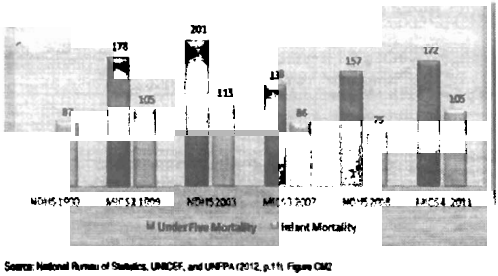
Several sources have reported that substantial progress has been made in reducing under-five deaths globally since 1990. The World Health Organisation estimated that the global number of under-five deaths declined from 12.7 (12.6, 13.0) million in 1990 to 5.9 (5.7, 6.4) million in 2015. In 2015, 16,000 children aged less than five years died every day compared with 35,000 in 1990. Overall, the global under-5 mortality rate dropped by 53%, from 91 (89, 92) deaths per 1,000 live births in 1990 to 43 (41, 46) in 2015. Even in sub-Saharan Africa where most of the deaths occurred, substantial progress was made in accelerating the decline in under-five mortality. For the region, the World Health Organisation estimated that the annual rate of reduction increased from 1.6 % in 1990s to 4.1% in 2000 to 2015. It further reckoned that the remarkable decline in under-five mortality has saved the lives of 48 million children age less than five years since

2000[14]. Nigeria made sustained albeit slow progress and failed to achieve the Millennium Development Goal 4 target of 71 (64) deaths per 1,000 in 2015.[3] Umar and Osinusi reported in 2014 that at Nigeria's average annual rate of under-five mortality reduction (AAUMR), it would reach the MDG goal 4 target in 2022.[14]

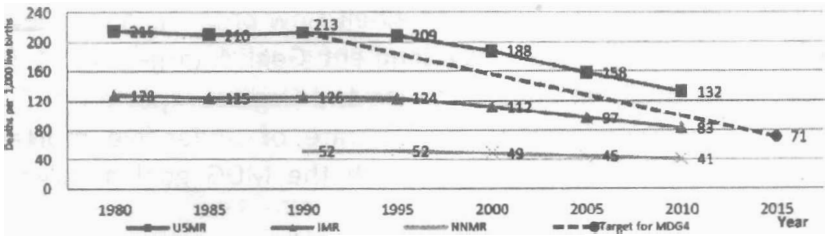
In-country Under-five Mortality Rate Estimates

One challenge following trends of under-five mortality reduction in Nigeria using in-country generated data is the multiplicity of sources reporting on under-five mortality in the country. As Doctor[15] observed, monitoring the MDG goal 4 in Nigeria was a difficult task because under-five mortality estimates varied tremendously by source (Figure 5). With such fluctuating in-country national estimates, I opted for trend estimates provided by United Nations Inter-Agency Group for Child Mortality Estimation (UN-IGME). The figure below shows the UN-IGME under-five mortality trend graph for Nigeria from 1980. Let me draw attention to the fact that from 1980 to 1995, a period of fifteen years, under-five mortality rates remained unchanged with one of four Nigerian newborns not surviving to celebrate the fifth birthday. This fact influenced my research and service interests in child survival. Even today, it is tragic and ironic that in spite of our natural endowment - human, financial, material, etc. many of our newborns still die from largely preventable or easily treatable conditions or causes!

Figure 5: Child Mortality in Nigeria



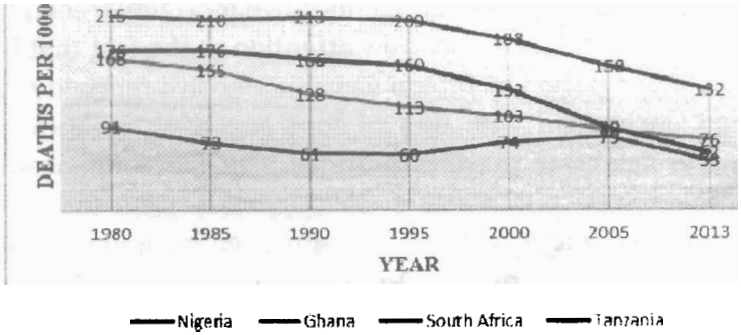
Source: National Bureau of Statistics, UNICEF, and UNFPA (2012, p.11) Figure CM2



Source: UNICEF/WHO/The World Bank/UN Pop Div. *Levels and Trends in Child Mortality Report 2013*

Currently, it is posited that of 79 countries that have U5MR above 25 per thousand; 47 will not meet the proposed Sustainable Development Goal (SDG) target of 25 deaths per 1,000 by 2030 if they maintained their current under-five mortality reduction trend. Nigeria obviously is one of the countries with U5MR of more than 25 per 1,000. It is also one of those that failed to achieve MDG4 target on account of relatively slow progress. We must accelerate our under-five mortality rate reduction to achieve the Sustainable Development Target of 25 under-five deaths per 1,000 live births by 2030. Compared to some other African countries, Ghana, South Africa and Tanzania, the need to increase our rate of under-five mortality reduction becomes very exigent (Figure 7).

Fig. 8: Trends in under-five mortality reduction 1980 - 2013: Nigeria, Ghana, South Africa and Tanzania



First Global Response to Under-five Mortality Rate Reduction in Developing Countries

From the early part of the 1980s, UNICEF advocated the promotion of growth monitoring (GM), oral rehydration therapy (ORT), breastfeeding, immunization, family planning, female education and food and appropriate nutrition education (GOBIFFF) as appropriate, relevant and low cost strategies for health promotion, specific protection and disease prevention in the under-fives.[16-17] These interventions, tagged the Child Survival and Development Revolution,[18-19]" received strong support from the World Health Organization (WHO) and many development partners and national governments as essential components of community based maternal and child health care activities.[16-18] Morley[20] advocated that the promotion of GOBIFFF offered a judicious way of utilizing scarce resources to the best advantage of the under-fives in the light of the world-wide economic recession and scarcity of funds of the 80s. He identified the strategies as priority strategies for developing countries and expressed his belief that they could be made universally available and accessible to all the children in Africa by the year 2000.

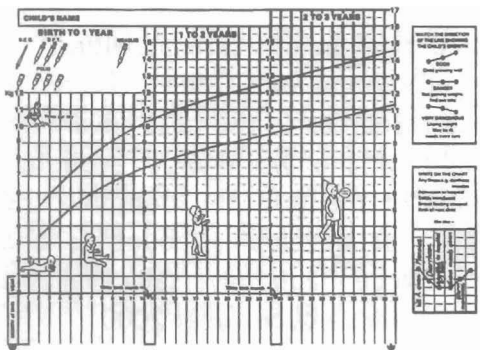
Child Survival: My Research Thrusts

Mr. Vice-Chancellor Sir, when I joined the services of the university in February 1995, one of four Nigerian newborns died before his or her fifth birthday (U5MR 209/1,000 live births). Prior to this, during my youth service year from 1980 to 1981, I served at the Morbid Anatomy department of the Lagos University Teaching Hospital, Idi-Araba, where most of the autopsies I performed were on under-fives whose lives had been taken very prematurely and the hopes, plans and aspirations of the parents on the child extinguished as a consequence of one or a combination of the common childhood conditions or illnesses. Later, as a Medical Officer in the General Outpatients Department of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, (1983 to 1988) and Senior Registrar in the Department of

Community Health (1988 – 1995), I mostly attended to children. Standing before you this evening, I still remember vividly the intense sorrow of mothers whose children died. These experiences influenced my decision to apply myself to maternal and child health.

Growth Monitoring/Growth Monitoring and Promotion.

Growth monitoring (GM) is the monthly weighing and charting of the child's weight on an appropriately designed "weight for age chart". In the mid-1980s when complaints that weighing and charting a child weight did not really achieve anything became rife, the concept of Growth Monitoring and Promotion (GMP) which linked GM results to action to be taken for the child based on the direction of the child's growth curve emerged.[21] Growth, increase in physical size, is well recognized domestically and scientifically as an important indicator of good health in young children.[22-23] Conversely, growth failure, whether due to dietary malnutrition, infection, emotional deprivation or a mixture of these and other causes, is regarded as an early measurable indication of ill-health.[23] In paediatric practice, growth failure is mainly diagnosed by weight measurements though sometimes with other measurements especially height, and by clinical judgement.[16,23]



In the late 1950s, Morley and colleagues working in Nigeria utilised GMP for promotive and preventive child care in a Child Welfare Clinic (Under-five Clinic) in Ilesa and Imesi-Ile, Osun State, with emphasis on its utilitarian value to assist paramedical staff with limited education diagnose and manage sick children using

few items of information from the child to make clinical decisions.[16] Based mostly on the Imesi-Ile experience, GMP gained prominence as an important component of the child survival strategies in developing countries. Charts designed for use in many countries became more detailed as more clinical, developmental and social information about the child including, recent illnesses, developmental milestones, socio-demographic circumstances, etc. were recorded on them. Since the ultimate goal of growth monitoring is the promotion of adequate growth, the need to start monitoring as early as possible after birth when breast milk is still adequate for baby's need and the baby's growth is rapid were underscored.[24-25]

Controversy about GMP began soon after its global promotion for child health care started as some commentators expressed doubts that it positively impacted child survival. Gopalan and Chaterjee[26] presenting the final report of Nutrition Foundation of India's review of global experiences with the use of growth charts challenged some of the widely held views on the usefulness of growth monitoring under primary child care working conditions. Similarly, Nabarro and Chinnock[16] expressed an opinion that effective growth monitoring activities were not easily implemented under routine primary care working conditions and thus queried the basis for its widespread advocacy. Nevertheless, since 1987, GMP has been an important element of UNICEF's overall nutrition strategy.[21]

Reflecting on my experience working in the children's outpatient that contrasted documentary evidence in the literature on GMP at the time, I noted that GMP compared to the other strategies of the child survival revolution had been subjected to very minimal scientific evaluation under routine primary health care (PHC) working conditions. Many of the studies showcased in the literature were special projects with special funding and highly motivated staff. Notwithstanding the controversy, a national commitment to GMP was expressed in the launching of the national GMP

programme. As a young community health physician, I decided to be "unbiased" and investigated the role of GMP as a child survival strategy under routine PHC conditions in Ife Central Local Government Area.

Ife Central LGA at the time of this study was by no means a typical local government. It was one of the Federal Government's model LGAs and it enjoyed support for health care from a number of international and non-governmental development partners including UNICEF, USAID's Combating Childhood Communicable Diseases (CCCD) initiative, World Bank supported Bamako Initiative on essential drugs, Directorate of Food, Road and Rural Infrastructure (DIFFRI), WHO, Rotary Club, etc. Thus, the LGA had a number of vertical programmes that these partners supported.

The growth monitoring study[27] enrolled 582 mother-child pairs from their homes and 49 clinical staff of the Ife Central Local Government. Highlights of the findings were:

- More than 80% of the mothers sought care for their under-fives in government health facilities (Government facilities were highly patronised for childcare);
- Almost all the mothers (95.5%) had seen and 90.5% owned a card for the index child. However, about a third (36.4%) could show the interviewers the index child's card. (Considerable resources must have been expended on printing and distribution of the cards; but they were rarely used beyond the first year);
- About a tenth of the children had their growth adequately monitored in the first year of life and subsequently practically none (This really was an over-estimation because the study accepted very lenient definition for adequate monitoring and mothers visited more frequently for immunization in the first year);

- Mothers and clinical staff demonstrated poor knowledge of the purpose of the growth chart. Most mothers and even health care providers reported that it was an immunization record; and,
- Four-point-six percent of mothers and 7.7% of clinical staff correctly interpreted all four typical growth curves tested.

The findings of the study demonstrated misconception and poor implementation of GMP that precluded under-fives from obtaining the optimal benefits of the intervention. Similar observation of the failure of GMP in routine PHC service had been documented in the literature. Interestingly, prior to 1987, the idea of monitoring the growth of every child in the developing countries was regarded as impractical for logistics and other reasons and unnecessary because there were other more visible problems to be tackled[20]. Nevertheless, UNICEF in 1987 opined (and obviously had the day in global health politics) that these earlier views were outdated in the light of advances made in nutritional knowledge and organisational capacity. More importantly, UNICEF convinced the world that growth monitoring was probably the most essential step towards the eradication of child malnutrition. It therefore proposed that every child born in the developing world should be weighed regularly (monthly) and that its growth be monitored and promoted up to the age of at least 36 months by the child's own parents supported by the health services.[20]

Be this as it may, the importance of eradicating malnutrition to reduce under-five mortality cannot be over-emphasized. Malnutrition was and remains an underlying factor in 50-60% of child deaths; malnutrition in the early stages is invisible so parents may remain unaware; many children with malnutrition come from homes that are relatively food secured hence poor child care practices and infection were often the main determinants of malnutrition. In addition, infection and malnutrition are related in a vicious cycle in which one exacerbates the other. I was, and I am

persuaded even now, that growth monitoring remains the only means of helping mothers visualise their children growth and GMP remains perhaps the only means of making this happen before malnutrition becomes manifest.

I strongly believe that GMP in principle has potential to contribute to child health, survival and development if it is community-based, mother-initiated with auxiliary health care workers (community health extension workers) providing the needed support in terms of counselling and referral of children at risk. Community-based growth monitoring in addition offers opportunities for influencing positively other community practices, such as cultural, agricultural and child rearing practices that enhance child health. For example, I observed in the background to the study area that cash crops were emphasised over food crops this had implications for household food security all year round. Growth of the community's children plotted on a chart could be used to advocate for a reallocation of efforts on cash and food crops.

As a follow up the study, I experimented the idea of setting up community-based GMP sites in selected rural communities of the local government area using local adaptation of the Teaching Aid at Low Cost (TALC) direct recording scale that was designed for the use by mothers at home. Needless to say that the experiment failed on account of some technical issues that I would not bother to elaborate on in this lecture. I should disclose however that I have not foreclosed the idea. The lesson of the findings of the study was that huge resources were committed including health workers time and for printing and distribution of cards that were hardly used for the purpose. More importantly, it uncovered the danger of scaling up an intervention following limited field experience.

Breastfeeding

Breast-feeding remains the most important of the child survival strategies as it is intimately related to all the other strategies. Globally, it was estimated that about one million infant deaths

could be prevented annually by the adoption of correct breastfeeding practices.[28] A World Summit for Children held in Florence, Italy, in 1990, adopted the Innocent Declaration for the promotion, protection and support for breast-feeding through the establishment of the Baby Friendly Hospital Initiative (BFHI). The Initiative proposed the *"Ten Steps to Successful Breastfeeding"* that health facilities needed to attain in order to successfully promote, protect and support breastfeeding. Hospitals that adequately satisfied the provisions of the *"Ten Steps"* after a highly structured assessment were designated as Baby-Friendly Hospitals.

The Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife (OAUTHC) under the leadership of Professor R. O. A. Makanjuola was one of the first set of teaching hospitals to be designated. Designated hospitals promoted the ideals of the initiative in their coverage area. Two broad objectives of the initiative were: (a) the promotion of exclusive breastfeeding for the first six months of life and (b) continuation of breast-feeding with adequate and appropriate locally available complementary foods until the age of two years. From the outset, the OAUTHC BFHI Steering Committee recognised the need for a strong community promotion based on locally derived evidence. I led the research effort of the hospital as a member of the Steering Committee and we conducted studies to (a) assess knowledge, attitudes and practices of nursing mothers (b) validate the legitimacy of the global BFHI recommendations and (c) derive local data for breastfeeding advocacy.[29]

Evidence from several studies suggested that exclusive breastfeeding for the first six months of life supported optimal growth with the lowest risks of infection and ill health.[30-34] The acquisition of the many anti-infective agents in colostrum and breast milk provides protection for the young infant against infective agents while the elimination of exposure to

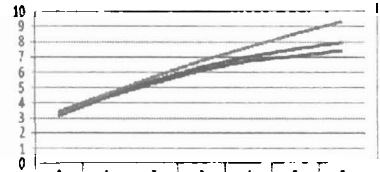
ntaminated foods and drinks provides added advantage.[35] wever, several studies had shown that practices that prevented nts from benefitting maximally from breastfeeding were valent. For example, one study reported that although almost Nigerian mothers breastfed their infants, only about 2% of nts younger than 2 months were exclusively breastfed east-milk only), while 57% of them were fully breast-fed east-milk and water) and the rest received other plements apart from water.[36] In addition decrease in the valence and duration of breast-feeding in Nigeria and several er developing countries were reported in the 1990s.[37-38] vies-Adetugbo reported that exclusive breast-feeding for the t six months of life and the feeding of colostrum conflicted h local knowledge.[39] In addition, some of the hospital's health rkers who were expected to implement the breastfeeding ommendations expressed reservations about them. Some ubted the ability of many mothers in our environment to vide sufficient breastmilk to support adequate growth during first six months of life because of perceived poor nutritional tus.

rking with colleagues, we studied the relevance of astfeeding for child health, survival and development in the th-west of Nigeria and particularly in Ile-Ife. We assessed the owledge, attitudes and practices of women in Ile-Ife concerning astfeeding at the inception of implementation.[29] This study vided some important insights to breastfeeding practices in local environment. It revealed that *"breastfeeding on nand"* was common (90.3% breastfed on demand) and astfeeding was of prolonged duration (76.2% breastfed for at st 12 months). However, initiation of breastfeeding was ayed (58.3% initiated breastfeeding after 6 hours) and use of ressed breastmilk was unacceptable then to all the mothers; lusive breastfeeding was rare (almost all respondents gave ter or other fluids or drinks before 6 months). Our assessment

thus confirmed that though breastfeeding was universally practised, yet practices that prevented children from obtaining the full benefits of breastfeeding were prevalent. More importantly, the study confirmed that some of the global recommendations contradicted local knowledge and therefore lacked local legitimacy. These were addressed by our health promotional activities.

In order to derive additional evidence of the appropriateness of some of the BFHI global recommendations, others studies were conducted to examine the appropriateness of exclusive breastfeeding;[40-41] the dangers of early introduction of complementary feeding[42] and relevance of other global recommendations for child health.[43] I earlier remarked that exclusive breastfeeding posed the greatest conflict between the BFHI recommendations and local knowledge. Locally, concerns were raised about the ability of nursing mothers with borderline or poor nutritional status; those who considered their diet inadequate in terms of nutrient intake or women who perceived their breasts as too small to produce sufficient breastmilk to support adequate infant growth for the first six months of life. Responding to these concerns, we assessed weight gain of normal birth weight infants (aged less than 14 days), weighing 2.5 kg or more, delivered to a sample of 352 mothers. Mother-infant pairs were serially recruited into the study provided that they met other eligibility criteria and gave informed consent. All the mothers were counselled to breastfeed in line with the global breastfeeding recommendations for ethical reasons. The findings revealed that exclusively breastfed infants were heavier than those who commenced complementary feeding before 6 months among both sexes.[41] (Figures 9 and 10).

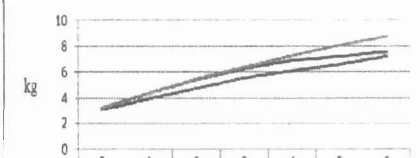
Fig. 9. Mean monthly weight of boys in the first 6 months



	0	1	2	3	4	5	6
—<4	3.16	4.38	5.27	6.11	6.73	7.08	7.44
—4>6	3.4	4.56	5.46	6.35	7	7.51	7.94
—6	3.24	4.57	5.73	6.73	7.63	8.5	9.28

months

Fig. 10. Mean monthly weights of girls in the first 6 months



	0	1	2	3	4	5	6
—<4	3.03	3.96	4.73	5.54	6.11	6.58	7.22
—4>6	3.25	4.4	5.4	6.26	6.88	7.23	7.57
—6	3.2	4.41	5.48	6.42	7.29	8.06	8.76

Months

another bigger cross-sectional study that recruited 2,466 ther-infant pairs, we assessed the prevalence ratios of non-npliance with some of the BFHI recommendations – no pre-teal feeding, feeding of colostrum, exclusive breastfeeding and bottle feeding on two-week prevalence of some of the mmon childhood illness – acute respiratory infections, rrhoea and fever. The prevalence ratios ranged from 3.4 for non-exclusive breastfeeding and fever; to 32.3 for use of feeding bottles and acute respiratory infections (table 2).[43] The findings of our studies provided local evidence of the appropriateness of the global breastfeeding recommendations and our findings were made available to the relevant ional programmes for policy formulation, local advocacy and motion of breast/infant feeding in Nigeria.

ble 2: Prevalence ratios of ARI, diarrhoea and fever in children of non-compliant mothers

commendation	Illness	Prevalence Ratio
e-lacteal Feeding	ARI	3.8
	Diarrhoea	5.4
	Fever	4.1
n-use of colostrum	ARI	6.3
	Diarrhoea	5.3
	Fever	3.6
t breastfeeding clusively	ARI	4.3
	Diarrhoea	5.3
	Fever	3.4
e of feeding bottles	ARI	32.3
	Diarrhoea	16.7
	Fever	9.1

When Nigeria crossed the HIV sero-positivity threshold level of 5% and knowledge that the human immunodeficiency virus (HIV) could be transmitted from a mother to her infant through the breastmilk became widespread; we reckoned that this perhaps posed the greatest challenge to breastfeeding promotion for optimal infant nutrition. We reckoned further that for women in Nigeria and perhaps other developing countries, this created a dilemma because replacement-feeding options may not be culturally acceptable, feasible in terms of availability of clean water, affordable, safe or sustainable (AFASS).

We thus conducted a qualitative assessment of acceptability, feasibility and affordability of infant feeding options for HIV positive women in our environment. The findings confirmed the difficulty of replacement feeding options for HIV positive mothers in an environment where not breastfeeding at all was considered a taboo and cost of replacement feeding was beyond the means of many individuals and families. Even for those who were wealthy enough to afford replacement feeding, not to breastfeed their infants at all would raise suspicion about their HIV status.[44] At the time of this study, infant feeding options for HIV positive mothers promoted by WHO/UNICEF were viewed with suspicion as they appeared to endorse double standards – different recommendations were made for developed and developing countries. The findings of our study perhaps contributed to moderate such sentiments as it was derived locally.

Mr. Vice-Chancellor Sir, the findings of our studies underscored fundamental issues with compliance with breastfeeding as a child survival strategy. While the failure of growth monitoring was probably technical, failure to adopt improved breastfeeding practices is probably related to failure of our health promotional messages or these practices are entrenched in strong social or cultural elements. Poor compliance with exclusive breastfeeding is still a challenge in Nigeria as many other reports have confirmed. It is no surprise then that opportunities for

breastfeeding to contribute maximally to under-five mortality reduction could hardly be achieved. In summary, breastfeeding though extensively practiced, yet practices that had implications for morbidity and mortality among the under-fives were common. One thing though, the breastfeeding promotion was donor-driven and when the funds stopped, efforts waned.

Immunisation

Immunisation was extensively researched by others. Professor D. A. Ogunmekan, my undergraduate (1974 – 1979) and postgraduate (1987 – 1988) Communiy Health teacher at the College of Medicine, University of Lagos, presenting the first Faculty Day lecture of the Faculty of Public Health, National Postgraduate Medical College of Nigeria, titled "Pebbles, slings and giants" in 2002[45], related the achievements of immunisation over communicable diseases to the biblical contest between David and Goliath. Vaccines are the pebbles; slings represent the mode of delivery via effective Public Health service and giants are the vaccine preventable diseases that killed millions of people including children for many years before the evolution of vaccines. Among the giants are smallpox that has since been eradicated globally, poliomyelitis and measles that are on the verge of eradication and other vaccine preventable communicable diseases that have been eliminated from the developed and some developing countries. Incidentally, the scope of immunisation is widening to include the control of some non-communicable diseases like carcinoma of the cervix and primary liver cell carcinoma.

Immunisation against childhood communicable diseases is one of the most cost effective interventions of the child survival strategies. By enabling resistance in the immunised person, immunisation not only contributes to reducing morbidity and mortality from the specific disease but also from other conditions that may complicate the disease. More importantly, a high

proportion of immunised persons protect the unimmunised by a phenomenon referred to in Public Health as "herd Immunity". Immunization thus holds great promise to contributing substantially to reduction of under-five mortality and the achievement of under-five mortality reduction targets adopted by the various summits.[46]

When the World Health Organisation established the Expanded Programme on Immunization to deliver basic vaccines to developing countries in 1974, global immunisation rate was about 5%. Consequently, WHO/UNICEF initiated the Universal Childhood Immunisation campaign and by 1990, 80% of the world's children were being immunised with six Expanded Programme on immunisation (EPI) vaccines – BCG, diphtheria, tetanus, pertussis, measles and polio. Sadly, in 1990, the progress ground to a stop as child immunization was over taken by other donor priorities. Regrettably, developing counties were no longer able to sustain the campaign and the pharmaceutical companies had no incentives to invest in vaccine supply to the poor countries.[47]

Arising from this development, serious concerns about the future of immunization compelled the convening of a summit of WHO, UNICEF, academics, health ministers, international agencies and the pharmaceutical industries in 1998. In 1999, existing major players in global immunization - key UN agencies, leaders in vaccine industries, representatives of bilateral agencies and major foundations agreed to work together through a new partnership: The Global Alliance for Immunization. The Alliance received a huge financial pledge (USD 750 million) from the Gates Foundation for five years. The Global Alliance for Vaccines and Immunizations (Gavi) was thus established in 2000 with focus to expand access to immunization programmes in developing countries. The alliance also made possible accelerated research into the development of new vaccines and immunizations.[47] Over the years, the number of vaccines provided by the Nigerian

National Programme on Immunization has increased and may even increase in the nearest future. Vaccines currently administered in Nigeria include Bacillus Calmette-Guerin (BCG), PENTA – diphtheria, pertussis, tetanus toxoid, Haemophilus influenza type B and Hepatitis B; Oral Polio Vaccine, measles, meningitis and yellow fever.

Oral Rehydration Therapy

Oral rehydration therapy (ORT) is an inexpensive lifesaving treatment for dehydration. Comprising of a mixture of salt, sugar and water in carefully formulated proportions, ORT revolutionised the treatment of all diarrhoeal diseases including cholera drastically reducing diarrhoea case-fatality to almost zero if it is started early in the onset of the disease.[48] With diarrhoeal diseases accounting for one in five deaths in the first five years of life, the global promotion of ORT is unarguably justified. Since 1990, other low-cost lifesaving interventions - Vitamin A supplementation, use of insecticide treated nets by pregnant women and children, appropriate treatment of malaria and skilled birth attendance were added as high-impact, low-cost interventions.

Integrated Management of Childhood Illness

In 1992 WHO and UNICEF in collaboration with academic institutions and individuals developed the Integrated Management of Childhood Illness (IMCI) strategy in response to high under-five mortality rate in the developing countries. Integrated Management of Childhood Illness was conceived as a holistic approach to address the management of selected major childhood illnesses, aspects of nutrition, immunisation and some other issues related to disease prevention and health promotion to enhance optimal growth and development thereby ensuring reduction in under-five morbidity and mortality.[6]

The strategy has three components:

- Improvement of case management skills of first level health workers through the provision of locally adapted integrated management guidelines on of the locally prevalent common childhood illnesses including activities to promote their use. The Nigerian guidelines focused on signs of severe illness (general danger signs), cough or difficult breathing, diarrhoea, fever, ear problem, malnutrition, anaemia and HIV.

  Improvement in the health system required for effective management of childhood illness at first level health facilities.

  Improvement in family and community practices that promote child health, development and survival.

In 1997, the Nigerian National Council on Health ratified the implementation of the IMCI strategy as the main thrust of her child survival agenda. From 1997 to 2003, the Federal Ministry of Health with support from donors and partners, particularly the World Health Organisation (WHO), built national capacity to implement the strategy and commenced implementation in 6 early-use local government areas (LGAs) - one from each of the six geo-political zones. Integrated Management of Childhood Illness has since been scaled up to more States and Local Government Areas. The third component, improvements in family and community practices that promote child health, development and survival, commenced a little later in 2005 and Nigeria adopted the promotion of eighteen key household and community practices for the child survival, growth and development efforts. These practices were to be promoted by trained non-stipendiary Community Oriented Resource Persons (CORPS) in an arrangement that was consistent with a suggestion that several home care practices provided by the families with the help of a community health worker (CHW) can enhance newborn and child survival.[49] The eighteen key practices adopted by the component are grouped into 4 domains; however, for impact they

must be integrated and adopted by a significant proportion of the target population. The key practices adopted by the national programme and their coverage in the 2013 NDHS are shown in table 4.
Integrated Management of Childhood Illness by adopting a holistic approach to promotive, preventive and curative care for the under-fives at home, in the communities as well as at the first level health facilities offers unique opportunities to accelerate reduction of child morbidity and mortality but its coverage has remained low. Coverage of the key family and community practices captured in 2013 NDHS similarly revealed low adoption of the practices by families and households.

Integrated Maternal, Newborn and Child Health Strategy
In 2007, two years after c-IMCI commenced, the Federal Ministry of Health with support from the Global Partnership for Maternal, Newborn and Child Health launched the Integrated Maternal, Newborn and Child Health (IMNCH) strategy. The specific objectives were:

- improve access to good quality health services;
- ensure adequate provision of medical and laboratory supplies, drugs, bundled vaccines, reproductive health (RH) commodities, insecticide- treated nets, and the provision and maintenance of basic equipment;
- strengthen the capacity of individuals, families and the community to take necessary MNCH actions at home and to recognize when to seek appropriate health care;
- improve capacity for organization and management of MNCH services;
- establish a financing mechanism that ensures adequate funding, affordability, equity, and the efficient use of funds from various sources;

Table 4: Key household and community practices adopted by IMCI third component and coverage in 2013 NDHS.

Category	Practice	Coverage (%)
Growth promotion and development	Exclusive breastfeeding for 6 months	17.0
	Appropriate complementary feeding from 6 months whilst continuing breastfeeding for up to 24 months	10.0
	Adequate micronutrients through diet or supplementation	41.3
	Growth Monitoring	-
	Promote mental and psychosocial development	-
	Birth Registration	29.0
Disease Prevention	Proper disposal of faeces, hand washing, etc.	-
	Child sleeps under Insecticide Treated Nets (had ITN; slept under ITN.)	50.0; 18.0
	Prevention and care of HIV/AIDS (received information on HIV/AIDS during pregnancy)	36.0
	Prevent child abuse/neglect & taking appropriate action	
Home Management	Continue to feed and offer more food and fluids when child sick (for children with diarrhea) (food; fluid)	2.0; 10.0
	Give child appropriate home treatment for infections	
	Take appropriate actions to prevent and manage child injuries	
Care seeking and compliance	Take child to complete full course of immunization before the first birthday	21.0
	Recognize when child needs treatment outside home and take to health worker • Appropriate care seeking and treatment of acute respiratory infection • Appropriate care seeking and treatment of fever • Appropriate care seeking and treatment of diarrhoea (care seeking; ORS; Zinc)	 34.5; 36.5 48.9; 36.9 28.9; 38.1; 2.3
	Follow health worker's advice about treatment, follow up and referral	
	Antenatal clinic attendance and tetanus toxoid vaccination during pregnancy	60.6 40.0 40.1
	Active participation of men in childcare and reproductive health activities	

*In 2005, essential home care for the prevention of newborn deaths was not popular hence their absence from the table above.

- strengthen supervision, monitoring and evaluation systems, to assess the progress towards achieving the maternal and child health MDGs; and,
  establish and sustain partnerships to support the implementation of the IMNCH strategy.

The strategy was to be implemented in three phases of three years and to result in incremental increases in coverage and spending to meet MDG 4 and 5 by 2015; It selected 61 of 72 interventions identified by the Lancet study and Cochrane Review for accelerated implementation. The new strategy was broader in scope but came barely 2 years after c-IMCI started.

In summary, eighteen years after the National Council on Health adopted the implementation of IMCI as the main thrust of the national child survival strategy, training of first level health workers and strengthening of the health systems are both below 10% coverage whereas IMCI recommends a critical mass of 60% of health workers managing sick children in first level facilities to be trained. In addition, adoption of the key family and community practices assessed by the 2013 NDHS were below 50% in all instances.

Health input indicators

According to the statistics provided by the World Bank, an infant delivered in Nigeria in 2015 has 1.8, 2.2 and 2.7 times chance of dying before the fifth birthday compared to an infant delivered in the same year in Ghana, Tanzania and South Africa respectively. To put the increased risk experienced by Nigerian newborns into perspective, it might be worthwhile to review some health input indicators of the four countries as shown in table 3. If these indicators were all to go by, we should have comparable if not lower child mortality rate. We have made slower progress compared to these neighbours because low coverage of the low-cost, high impact interventions.

Table 3: Some health input indicators, Nigeria, Ghana, South Africa and Tanzania

	Indicators	Countries			
		Nigeria	Ghana	South Africa	Tanzania
Availabil of National Policies	Post-natal visit in the first week	Yes	Yes	Yes	No
	Low-osmolar ORS and Zinc	Yes	Yes	Yes	Yes
	Community treatment of Pneumonia	Yes	Yes	No	No
	International Code for marketing breast milk substitutes	Yes	Yes	Partial	Yes
	Costed MNCH Plan	Yes	Yes	Yes	Yes
Human resource for Health	Physicians/10,000	4	0.9	7.6	0.1
	Nurses-Midwives/10,000	16.1	10.5	-	2.4
	Community Health workers /10,000	1.4	1.9	-	-
	Hospital beds/10,000	-	9	-	7
Health Expenditure	Per capita government expenditure on health (USD)	29	42	329	15
	Government Health expenditure as % of total expenditure	7.5	11.9	12.7	11.1
	Out of pocket payment for health as as % of total health expenditure	60.4	31.4	7.2	32.5

Source: http://www.who.int/maternal_child_adolescent/epidemiology/profiles/neonatal_child/[50]

Health Care System in Need of Care

Discourses on the challenges of under-five mortality reduction or indeed on the persistently poor health indices of Nigerians usually identify funding constraints, weak health systems, poverty, poor utilisation of services, sub-optimal immunisation, poor human resources for health, etc. as the major challenges.[14,51-53] The World Health Organisation describes a health system as consisting of all organizations, people and actions whose primary interest is to promote, restore or maintain health. It is made up of six building blocks of leadership and governance, health care financing, health work force, medical products and technology, information and research and service delivery[51]. Akande presenting an inaugural

lecture in Ilorin simply described the Nigerian health system as "sick".[52]

Indeed, the health system today has "multi-organ failure" or which of the building blocks of the health care system is healthy? At leadership and governance level, gross underfunding of the Ministry of Health had led to a situation where policy direction and programme implementation are influenced (determined) by the development partners whose agenda might not align with our national priorities. For example, one observer lamented how the heavily funded Polio Eradication Initiative led to a neglect of our routine immunisation and silently "killed" the primary health care centres.[54] Health care financing is heavily dependent on private sources, especially household out of pocket (HOOP) spending with inequitable access.[55] Since its establishment 10 years ago, the National Health Insurance Scheme has only covered 3% of the target population.[56] Inter-cadre rivalry, over-emphasis of curative over preventive health care in training and resource allocation, etc. have negatively affected ability of the health system to deliver quality services to Nigerians.

Every document on the organisation of the Nigerian Health System describes a system that, in principle, is decentralised into a three tier structure with responsibilities of federal, state and local government levels.[57,58] This arrangement is becoming blurred and I am particularly concerned about some state governments that are yet to provide quality secondary health service venturing into medical education and tertiary health service. At present, very few state secondary health facilities are sufficiently adequately staffed and equipped to provide internship opportunities for fresh medical graduates with well-known consequences – many medical graduates now stay for 2 or more years to secure internship position. Furthermore, many Nigerians travel unacceptable distances to access any form of specialist care as a result of neglect of the secondary level of care. The state of many primary health facilities is sordid. The Federal Ministry of Health reported in 2007

that 71% of Nigerians had access to primary health care facilities within 5 km radius but these facilities were not functional because of lack of equipment, essential supplies and qualified staff. It further noted that 64% of these facilities had not received any drugs from government in the preceding 2 years.[57]

Scaling-up Community-based (Family and Household) Child Survival Interventions

To avoid any contradiction, let me reiterate that IMCI ideally and by design should be implemented and scaled up in an integrated manner. However, scaling up to achieve a critical mass of 60% trained first level health care providers through the current in-service training approach may take a long time in view of high cost of training and inadequate funding. It is estimated that since IMCI was adopted in 1997, about 10 - 15% of the first level health workers in government facilities has been trained. Unfortunately, the implementation of pre-service training has not fared better; very few schools of nursing and health technology currently teach IMCI. The second component conceived to strengthen the health system for IMCI case management is plagued with the challenges within the health system that have existed for decades and with no real guarantee of appreciable improvement in the very near future.

The urgency to accelerate U5MR reduction requires innovative perhaps vertical approaches. Scaling up the third component using Community Oriented Resource Persons (CORPs) under supervision of the Community Health Extension Workers in rural areas and urban slums is perhaps a model worth exploring in the short term. The objective would be to raise adoption of key family and household intervention packages articulated in the IMNCH strategy. I recently learnt that Integrated Community Case Management (iCCM) of pneumonia, diarrhoea and fever is using a similar model with favourable results. On the long run, the goal must be to strengthen local government health department to

provide quality primary health service. The department must be headed by an appropriately trained Medical Officer of Health with relevant competencies and skills.[59]

Local Government Medical Officer of Health

My colleague, Adesegun Fatusi, while presenting his inaugural lecture highlighted the major difference between Public Health and Community Health and by implication Public Health Physician and Community Health Physician.[60]The Medical Officer of Health of a local government area (LGA) is a typical Community Health Physician who is expected to play a central role in assessing the health of the people of the LGA; he must be competent to set health priorities, plan, implement and evaluate health programmes for the LGA based on sound and scientific knowledge of the health and related issues in the LGA. His medical training should provide him basic clinical knowledge, skills and experience to identify and mobilise response to health threats including disease outbreaks and epidemics. In the interest of improved health status for Nigerians, it is desirable that every local government engage an appropriately trained (minimum qualification of Master of Public Health) LGA MOH. Where funding is a constraint, one MOH could serve two or three contiguous LGAs. I have made no reference to other nomenclatures such as Primary Health Care Coordinator intentionally.

Contribution to Community Health in Ife: Outbreak Investigation

Mr. Vice-Chancellor Sir, since joining the services of the hospital and later the university, I have frequently bridged the gap created by the absence of appropriately trained LGA Medical Officer of Health by committing myself to keeping close watch on and responding to health threats in "my defined community" although the definition of "my community" changes with the prevailing health threat. During the Ebola epidemic of 2014, my community was restricted to Ife-Ijesa zone of the State while during the Lassa epidemic of late 2015 and early 2016, I made myself available to

the entire State. Permit me, Mr. Vice-Chancellor Sir, to highlight a few of my activities in preserving the community's health and how I have contributed to preventing morbidity and mortality.

1. Rabies outbreak investigation

In February 1992, an Environmental Officer with the Ife Central local government reported "widespread rumour of unprovoked dog attacks"; his concern was that there was a 'rabies epidemic'. He had information that there were two clinical suspect cases with one death from rabies. The two cases were admitted at the Ife State Hospital where the death had also occurred.

Consequent upon this report, I led an investigation team to contain the outbreak. Cases and deaths observed during the outbreak are as shown in the table of outbreak analysis below. New rabies cases and deaths were probably prevented by the provision of updated management guidelines for dog bites, post-exposure anti-rabies immunisation as well as other essential public health actions. Mr. Vice-Chancellor Sir, since that investigation I have not heard of another rabies death in Ile-Ife.

Table 2: Number of Cases of Dog -bite and Clinical Rabies seen in the Accidents and Emergency Department, OAUTHC, Ile-Ife, January 1991 to December 1992.

YEAR	CASES	MONTHS												TOTAL
		J	F	M	A	M	J	J	A	S	O	N	D	
1991	DOG-BITE	1	2	4	2	3	1	2	4	2	3	12	7	43
	CLINICAL RABIES	0	1	0	0	0	0	0	0	1	0	0	0	2
1992	DOG-BITE	3	9	9	10	5	3	5	6	10	4	3	3	70
	CLINICAL RABIES	0	4	1	0	0	0	0	0	0	0	0	0	5

2. Cholera outbreak investigation

In 2010 the department was invited to see a case of cholera in the Accidents and Emergency department of the Ife Hospital Unit, Ile-Ife. Cholera is a water-borne disease of rapid onset that presents with profuse dehydrating diarrhoea. It is endemic in Nigeria (constantly present) but epidemic-prone

(outbreaks involving many people occur from time to time). It has four important characteristics that can be exploited to an advantage in epidemic control:

- It is easy to diagnose symptomatically by the presence of signs of dehydration in an adult with diarrhoea and vomiting.
- For every clinical case that warrants seeking care outside the home or getting admitted, there would be up to 10 cases with mild or no symptoms.
- The cholera agent does not cause direct damage to any vital organ except that it produces a powerful toxin that interferes with water absorption in the gastro-intestinal tract.
- Dehydration and complications arising therefrom can be prevented with oral rehydration using appropriate oral rehydration salt solution.

Persuaded the patient was a highly probable case of cholera, we assessed the situation of the Accidents and Emergency department where the victim was admitted and decided it was more expedient that no other case be admitted in that unit to prevent possible dissemination of cholera to other areas.

Consequently, we visited the victim's community to search for other cases and as expected there were others but fortunately they had sought care in a nearby private health facility on their own. We thus took advantage of this, subtly took over with the facility (collaborated) to manage the cases – correcting the intravenous fluid being used and emphasising on oral rehydration. Resident doctors in the department were mobilised to visit (do rotation) and assist in the management of the cases while the Department of Microbiology was invited to assist with laboratory confirmation. Careful steps were taken to prevent movement of cases outside the community for care so as to prevent possible spread of cholera to other areas of the town. Water from the water wells in the community were taken for water analysis, all

wells were chlorinated and public enlightenment about cholera was started. With the approach, the department under my leadership succeeded in containing the outbreak to the victim's community. The lesson for future cholera outbreak response is to establish a treatment centre as close as possible to the source of the epidemic if the first identified cases are from the same or few circumscribed communities. Consumables and other equipment needed to manage cases are few and any modest accommodation would easily serve for community-based treatment centre provided attention is paid to water supply and waste (faecal) disposal.

3. Ebola and Lassa Haemorrhagic Outbreak

"Working in the valley of the shadow of death: emerging epidemic communicable diseases and the health worker" was the title of my sensitisation lecture delivered to doctors in Ekiti and Osun States. The lecture was to bring to health workers' consciousness the realities of the health care working environment in the context of emerging epidemic communicable diseases. It was predicated on observation of poor compliance with standard precautions during the Ebola outbreak of 2014/2015 in Nigeria and West Africa. The lecture had three objectives to (i) encourage health care workers to continue to provide quality health service in spite of higher health-worker-specific-mortality compared to the general population; (ii) encourage compliance with standard precautions in the management of all sick persons; and (iii) to prevent collateral deaths from other diseases. Of course, the lecture was a minor part of my overall response that included demonstration of leadership by example throughout the period. At this juncture, Mr. Vice-Chancellor Sir, let me acknowledge Dr. A. J. Olowookere, Family Physician in Wesley Guild Hospital, Ilesa, one doctor who demonstrated exceptional courage when others feared and panicked and abandoned patients.

All working environments have hazards but frequently these are predictable and quantifiable. However, within the health care environment, the risk of an emerging epidemic communicable disease is unknown but worse still taken for granted by the health care worker when he fails to use his personal protective equipment (PPE). The reality of today in health care practice is that though Ebola Virus Disease is dreadful, there are other equally or even more dreadful emerging epidemic communicable diseases and we must not ignore the possibility of their sudden unannounced appearance in a health facility. These agents like the biblical "thief in the night" are waiting to originate or sneak into the country, into a health facility unannounced. The only protection against these threats is compliance with standard precautions. Standard precautions including use of basic personal protective equipment must be complied with at all times when interacting with patients and specialised protective equipment for suspected cases. My prayer and psalm adapted for all health care providers at this period is:

> ***Even though you work in the valley of the shadow of death, you shall fear no evil, for strict compliance with Universal Precautions, and Consistent and Appropriate Use of Personal Protective Equipment should give you comfort. The Lord's goodness and mercy shall preserve you, and follow you all the days of your active health care practice, and forever. Amen!***

Contribution to Community Health Training in and outside of my Department.

1. **Training of Residents in Community Health**

   I was one of a cohort of five residents who did residency training under Dr. I. O. Abayomi. At the completion of our residency training in 1994/1995, I was the only one of the cohort that stayed back to support him to reposition the department and lay the foundation on which the department

stands today. In this regard, I mentored, co-supervised or supervised the first set of community physicians who came after my cohort; two of them have been established as *pima facie qualified* for professorship in the department. I reckon that after my cohort, 28 residents have completed their training so far in the department; of these, I supervised 17 (61%). I feel extremely glad when I discovered that the two consultants in the Federal Medical Centre, Owo are my supervisees; that of five academic staff in the Department of Community Health, Ekiti State University, Ado-Ekiti, three are my supervisees. When Professor Fola Lasisi, as first Vice-Chancellor, University of Uyo, Akwa Ibom State, needed to strengthen the Department of Community Health in that university, I was approached through the hospital to train one resident. I accepted, and I not only trained her, but since she returned, I have supervised two other residents with her as co-supervisors. She had been Head of the Department and I think she should soon be promoted to the rank of Associate Professor. Today, of the academic staff in that department, three are my supervisees.

2. **Departmental Teaching and Physical Infrastructure**

During my terms as Acting Head and later as Head of department, I committed a lot to improving teaching and teaching facilities in the department. I developed an integrated undergraduate teaching curriculum as acting Head of department, upgraded the Public Health Laboratory to a befitting (not yet standard) status. Perhaps, my greatest contribution and one that gladdens my heart most is the acquisition of a befitting vehicle for the department and I will comment a little more about this without any intention to be immodest.

3. **Departmental Vehicle**

Mr. Vice-Chancellor Sir, I already commented on department activities to identify and respond quickly to health threats in the community, and by implication the need for a good vehicle. Besides, Community Health is learnt in the community; it is in the community that medical and postgraduate students appreciate the interplay of social, economic, cultural and environmental factors as determinants of health and disease. **A Department of Community Health without an appropriate functional vehicle is like a Department of Surgery without a surgical theatre.** In the last year of my headship, I was faced with the prospect of losing accreditation of residency training programme in the hospital and perhaps embarrassing the college during Medical and Dental Council of Nigeria (MDCN) accreditation of our undergraduate medical programme on account of lack of appropriate vehicle for community health activities. Having exhausted all possibilities of assistance to provide a suitable vehicle for the department, I had no other choice but to loan the department over 50% of the cost of a brand new Toyota Hiace bus. Today, I feel happy when I see undergraduate medical and postgraduate students go for field trips in relative comfort and safety. Let me add Sir, that the department has repaid a significant part of the loan. I must here acknowledge the support of my wife – Mrs. Temitope Onayade who frequently tolerates my "financial recklessness".

4. **Faculty of Public Health, National Postgraduate Medical College**

I am currently rounding up my term as Faculty Secretary of Public Health, National Postgraduate Medical College of Nigeria. Since becoming secretary, I have embarked on innovations to raise the standard of training and improve the examination process. I have worked with the Faculty Board to establish linkages with related external examination bodies and through this we have had as

observers to two separate examinations Fellows of the South African College of Public Health and the American College of Preventive Medicine (ACPM). Through this we intend to open our faculty and college to eternal visibility and ensure the organisation and conduct of our examinations are among the "best practices" globally.

5. Nigerian Journal of Community Medicine and Primary Health Care.

Since my election as Editor-in-Chief of the journal in 2010, I have transformed the journal from a comatose state to one of vibrancy. For many years before I took office as Editor-in-Chief, publication was erratic. Since 2011, the journal has gone to print regularly bi-annually and on time. It is also available online.

Other Contributions

Let me briefly highlight a few other contributions to health care in and out of Nigeria:

Course Director and Facilitator (IMCI): As trained Course Director and Facilitator, I have directed several IMCI training courses in Nigeria and facilitated at courses in Nigeria, Ghana and The Gambia and Sierra-Leone, (1997-2005)

Epidemiological Survey of Snake-bites in Nigeria (1994).

This survey was conducted by the Federal Ministry of Health and Social Services to assess the magnitude of snake-bite as a medical problem in Nigeria. I was the consultant epidemiologist to the project planning and implementation committee, coordinated the survey in Enugu State as associate researcher and I was a member of the report writing sub-committee.

Clinical trial of a new mono-specific anti-snake venom "Echitab" in Nigeria (1994).

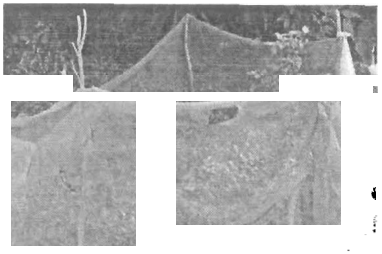
This clinical trial was conducted by the Federal Ministry of Health in collaboration with experts from the United Kingdom. I participated as a consultant epidemiologist in the planning of trial. I was an investigator during the trial which took place at the General Hospital, Kaltungo, Bauchi State. I was also a member of the National Report Writing Sub-Committee.

- Health Facility Survey on Management of Diarrhoeal Diseases (CDD) (1997)
  This survey was conducted by the Zambian Ministry of Health in association with the World Health Organization (WHO) to assess health facility management of diarrhoeal diseases. I participated as a trainee WHO regional consultant.
- Health Facility Survey on Management of Diarrhoeal Diseases (CDD) (1997)
  This survey was conducted by the Sudanese Ministry of Health in association with the World Health Organization (WHO) to assess health facility management of diarrhoeal diseases. I participated as a WHO short term consultant.
- Standard of Practice/Service Protocols for Child Survival Service Delivery (2005). A document I developed for Community Participation for Actions in the Social Sector (COMPASS), Abuja.
- National Environmental Sanitation Policy and Policy Guidelines (2004). I was Lead Consultant in the development of the draft of the policy and policy guidelines.
- National Guidelines and training Manuals on Food Sanitation (2005). A series of documents developed with other consultants on Food Sanitation for the Federal Ministry of Environment, Abuja
- Evidence, Impact and Strategies to Control Green Tobacco Sickness among Tobacco Farmers in the Tobacco Growing

Areas of Oyo State, Nigeria. (2006). A study I conducted on behalf of British-American Tobacco Company.

Closing Remarks and Recommendations

While travelling through the South-South states of Nigeria, I noticed a disturbing development that calls for investigation. Long lasting insecticide treated bednets that are provided for malaria control are being used for protecting vegetable gardens. My concern is, does this imply a conflict between programme objectives and local priorities? I have requested our colleagues in the zone to investigate and proffer solutions else the huge resources expended on the nets might just be another waste.



Mr. Vice-Chancellor Sir, I have described how a few, easily recognisable, easily preventable or treatable, childhood illnesses account for the dismal under-fives mortality rate in Nigeria; I have provided evidence that a number of evidence-based, high-impact, low-cost interventions that can avert most of the deaths are available but low coverage of these interventions militates against the desired impact. Challenges to achieving high coverage are diverse but I have proposed that significant improvement in the health of the under-fives might still be achieved if we empower families and communities to adopt practices within their control. We must nonetheless, continue to advocate for accountable leadership with commitment to maternal and child mortality reduction, strengthen the local government health department and ensure it is headed by appropriately trained Medical Officer of Health who takes responsibility for the health of the entire people of the local government area. With full a complement of supporting staff, the

LG health department should be able to provide annual data on the health of the people aside from responding to health threats.

In closing, let me express my sincere gratitude to God Almighty who spared my life and granted me the grace to stand before you this evening to give this lecture. I thank the Vice-Chancellor, other Principal Officers and the university and teaching hospital communities for the extreme love and kindness shown to me and my family when our house was gutted by fire. Mr. Vice-Chancellor Sir, I also thank you for other supports you have shown to my family.

I thank the entire staff of the College of Health Sciences and I particularly wish to acknowledge the support I received from late Professor Solomon Ogunniyi. I thank my siblings, members of my extended family and my in-laws on the two sides for their love and support at all times. They have been wonderful to me. I remember today, as always, my late wife, Dr. Mrs. Olubunmi Abiodun Onayade (nee Sontan); were 'Bunmi to be alive today, she probably would have insisted that we give our inaugural lectures back to back, but she has since gone to be with the Lord. I also remember with affection all my departed loved ones - my parents Papa and Mama Moses and Ayinke Onayade, my elder sister, Mrs. Olufemi Olusanya, my brothers, Messrs. Olumuyiwa, Adewale and Adekunle Onayade. May their souls rest in peace.

I acknowledge with great gratitude Baba Dr. I. O. Abayomi who taught, mentored and supervised my dissertations for the two postgraduate colleges. My sincere appreciations to Professors A. B. O. O. Oyediran and M. C. Asuzu, University of Ibadan, for co-supervising my dissertations for the West African College of Physicians and the National Postgraduate Medical College of Nigeria respectively. To these special people that God sent to me and my family - Drs. Oluwatoyin Salawu, Ayotunde Adegboyega and his wife, Ngeri Benebo and her husband, and Olukunle

Onifade and his wife, Professor O. Olusile and his wife and Pastor Tunde Bakare and his wife, please accept my warmest appreciations. I appreciate the IMCI family, especially the previous and current Directors, with whom I have worked for many years; the IMCI experience has added immeasurably to my passion in child survival.

My sincere appreciations to all my residents, past and present, the entire staff of the Department of Community Health Nursing Services, OAUTHC and especially, Mrs. O. A Thomas, - I thank you all. To the clergy and members of the Methodist Church Nigeria, Ife Circuit, thank you for the moral and spiritual support. To my children, the Mo-os, thank you for being there. To my darling wife, Mrs. Temitope Oluwaseyi Onayade (Nee Adeyeye), thank you so very much for everything.

Where do I go hence? I will remain committed to research and service in child survival until no woman in Nigeria ever again needs to "negotiate" survival with her child – when no woman ever recites again this nursery rhyme in Yoruba or any other language; when U5MR comes to a level befitting our Great country.

Yoruba	English Translation
Omo mi o Akuru bete, Kube X2	"My child Akuru-bete, Kube X 2
Bi o ku o, ma ra aso fun e	If you do nSot die, I will buy you beautiful clothes
Bi o ku o, ma ra egba orun	If you do not die, I will buy you (gold) necklace
Egba orun l'a mu s'omo loge	Gold necklace is beautiful on a child
Eru m'o ra l'apon o ka	The unmarried can count his slaves
Akuru bete, Kuru bete X 2	Akuru-bete, Kube X 2"

I thank you all for coming.

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