HEALTH SERVICES FOR THE POOR BY THE POOR

Lessons for addressing the diverse social problems in Nigeria

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By

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The delivery of health care to the poor often fails on the last lap. Whilst more fortunate individuals and families have access to life saving technologies and health improving services, the poor often have to do without essential health care. The case studies...provide a systematic...and logical framework for devising feasible solutions to improving access for the poor. – Adetokumbo O. Lucas, 2008.

INTRODUCTION

Permit me, Mr. Vice-Chancellor, to introduce this lecture with a note of appreciation and some acknowledgements. This is important; every academic accomplishment takes its impetus from many players who give energies and resources to create opportunities, lend support, and provide guidance. This process often unfolds over many years. In my case, the many players include institutions—academic and professional—and people—my own professors, my students, and many others too numerous to identify here. I will, however, attempt to share with you my gratitude toward some of the people and places that exercised the greatest influence on me.

After my acknowledgements, the rest of this lecture is organized in five sections. Section II, in a preamble, looks at developmental concerns in Nigeria, especially economic and health challenges, and appraises our progress towards the millennium development goals (MDGs). Section III examines the public health concerns given our level of economic development. Section IV examines the issues of access to health interventions among poor people, including a theoretical analysis of strategies for promoting access to health interventions. Some case studies are presented to provide practical context for the theoretical propositions. I also include testimonies from communities where the case studies were done to illustrate at the personal level the challenges that motivate my work. Section V concludes the lecture with lessons from the provision of health services for the poor by the poor. In other words this section gives hints on how to address the many social problems, such as kidnapping, armed robbery, militancy, human trafficking, drug abuse and addiction, domestic and non domestic violence, high level fraud, scamming, among others, which are bedeviling our societies today. The lecture ends with an *epilogue*.

First, in terms of appreciations, this University, the greatest of its type, with the unassailable vision to 'Restore the Dignity of Man', offered me a rare opportunity and a head start in life, and has continued to provide fertile grounds for me to grow and excel even as I approach the zenith of my career. When I took the bold step of choosing the great University of Nigeria, for my Joint Admission and Matriculations Board (JAMB) Examinations in 1983, ignoring the discouraging counsels of my peers, who were filled with apprehension about how difficult it is to get admission into University of Nigeria, Nsukka (UNN), little did I know that today I would be standing here to deliver an inaugural lecture, and professing some discipline in the Den of roaring Lions and Lionesses. More than this, the University has also been instrumental in my modest accomplishments, which are today documented as testament of my academic life and represented in this inaugural lecture. Just recently, I was privileged to visit and study at the great Harvard University, under some of the greatest minds in academia and development—all thanks to the University of Nigeria.

My first childhood impressions of the University of Nigeria were from my father. In admiration of the Great Zik of Africa and his rich academic heritage, my father told me glowing stories of the University of Nigeria and of the great minds it attracted and developed. For my father, the University of Nigeria was virtually impregnable, accepting into its ranks only the very most elite. My father is long gone today, although he did live to see me earn a doctoral degree at the University of Nigeria, the University where he dreamed of sending his only son. He never could have imagined that I would stand here today, robed in the awesome academic regalia of the great University of Nigeria, delivering one of its inaugurals. I dedicate this lecture to the memory of my beloved father and to my mother, who to the Glory of God is here to witness this day. For many reasons, mama stands out for me as the greatest to have walked this earth. I would not be here today, if mama did not take the vital first step that put me on the pathway of academics in Koko, nor without her continued support as I sojourned in the University of Nigeria, Nsukka.

As a student, the University of Nigeria offered me rich opportunities to acquire knowledge both in the academic curriculum and in leadership. I participated very actively in student politics, which in itself provided me with the opportunity to interact at high levels with University and Government officials, learning the rules of leadership early in life. As a faculty, the University gave me the latitude to excel in the academic world, traveling across the continent; from Kadoma in Zimbabwe to Sally Portudal in Senegal; Buea in Cameroon to Cairo in Egypt and of course to many countries beyond Africa, doing what the University taught me to do: research for global development. Many more thanks are due to this great institution than can be conveyed here. While my trips were funded by many and different international and multilateral organizations including WHO, UNICEF, USAID to mention a few, the University authorities at all times encouraged me with permissions to travel. I wish that this tradition be kept alive.

Second, my deepest appreciation and gratitude go to my former lecturers and colleagues for not only shaping my early career, by challenging and encouraging me, but also tolerating my many absences from teaching while I traversed the universe doing research and rendering services to the international community, proudly with the University imprimatur. My special thanks go to my lecturer late Professor Felicia Ekejiuba, one woman who, early in my graduate days, identified the potentials in me and did all to encourage me to remain faithful to academics as a

profession. May her gentle soul rest in peace! I remember, under her headship of the Department of Sociology/Anthropology, the Department caused my mentor and supervisor to send me a letter by speed post, encouraging me to return to the University and pursue academics as a career. Before this I was looking towards Lagos—"the land of legendry opportunities"—yet of many unknown to join the teeming labour market in search of non-academic employment.

I remain particularly grateful to Professor C.C. Nwanunobi. Towards the end of my undergraduate days, I suffered what may be described as a setback, having earned myself a three-month suspension from the University, only 28 days before the commencement of my degree examinations because of ideological difference between the student leadership, under the late Ubani Chima and the authorities of the University and the Federal Ministry of Education under the late Professor Chimere Ikoku and Professor Jubril Aminu. Professor Nwanunobi encouraged me, as did other lecturers in my Department and indeed the Faculty. But he particularly reminded me of the risk of having the suspension live with me, if it affected my performance in the examinations, when they were eventually administered. I am here today, because I heeded his admonition and did not allow the suspension to affect me. I quickly put it behind me and pushed on.

I am also grateful to other lecturers in the Department of Sociology/Anthropology: Professor Azuka Dike, the late Dede Nkpa, Professor Kamene Okonjo, Professor Emma Igbo, Dr. E. Uwakwe, Professor Chris Ukaegbu, Dr. Peter Nwakaeze, Mr. I. Chukwukere, Mr. Barth Chukwuezi, Dr. B.N. Iffih, the late Dr Chris Ekpe, and Reverend Father Dr Onyeneke. I remember also the late Monsignor Akukwe and Reverend Father Anigbo of blessed memory, among others. Father Anigbo was my academic adviser, as an undergraduate. I remember the day he challenged me for referring to him as my adviser, because while Shagari paid his advisers I paid him nothing, at least in Naira, as my adviser. He was full of humour and fatherly love for his students.

I also appreciate lecturers in the Faculty of the Social Sciences who contributed in no small way in moulding the person you listen to, and see today. They include but are not limited to the late Professor Austin Okore, who was a friend, lecturer, and fellow Demographer; Professor A.E. Okoroafor, Professor Okwudiba Nnoli, Professor Miriam Ikejiani-Clark, Professor Humphrey Nwosu, among others too numerous to mention here. I appreciate in a special way, Professor Okey Ibeanu. He was a role model. Back in 1983–4 when he assisted Professor Nnoli as a very young graduate assistant, I asked myself, 'why people outside UNN lectured me on how frustrating it can be to school in UNN'. The day I saw Okey, I told myself I would be like him, an academic. There were others like him, outside the Faculty of the Social Sciences, who motivated me with their academic demeanour. These included Professor Chidi Akujor, then of Physics and Astronomy, Dr Nnamdi Ezekwesili and of course the dreaded Carl, now Professor Okezie, reputed then for laughing only twice a year—during the Almighty June and September bye-conference examinations. It is a pleasant surprise to see him laugh more often these days. I wonder if this is attributable to the abolition of those bye-conference examinations.

I am grateful also to other great minds outside the University of Nigeria who contributed to my academic development, including Professor Brieger of the Johns Hopkins University Bloomberg School of Public Health, Baltimore, Dr Hans Remme of the World Health Organization (WHO),

Dr Uche Amazigo of WHO/APOC, Johannes Somerfeld of WHO Geneva, Professor Obioma Nwaorgu, Professor Rich Umeh, Professor Adenike Abiose, Professor Eka Braide, Professor Mahmoud Homeida and my many other colleagues in the fight against the diseases of the poor in Africa, particularly the team referred to as the CDI Study Group. It is from the outcome of our collaboration that I garnered some of the materials used in this lecture. These include Professor Oladele Akogun, Professor Oladele Kale, Professor Joshua Adeniyi, Dr O.S. Arulogun, Dr Elizabeth ElHassan, Professors Samuel Nwanji and Innocent Takuganng from Cameroon, Dr. Richard Ndyomugyenyi from Uganda, William Kisoka from Tanzania among others. I am also grateful for the influences of other great minds I met in Harvard University. My advisor in Harvard School of Public Health, Günther Fink sharpened my technical skills, especially in statistical analysis for programme evaluation as well as econometrics for health policy, Michael Reich, Till Bärnighausen, Barry Bloom, Marcia Castro, Kenneth Hill, Jesse Bump, Amy Levin and my colleagues in the Takemi 10/11 group. Jesse Bump particularly went the extra mile to make my stay in Harvard University memorable. He also made unquantifiable contribution to the codification of this inaugural lecture by reading every line to ensure all 'T's are crossed while the 'I's are dotted. In the World Bank I also received some influences from Jumana Qamruddin, Nuel Chisaka, Drs Chudi Okafor, Dinesh and Ramesh, among others. My list of indebtedness is very long and I do not intend to bore you with too many of them.

All the same, Mr. Vice Chancellor, those who know me well will wonder at the conspicuous absence of the name of one so significant in my life in my unending list of appreciation. I have deliberately reserved the best for Professor Dan S. Obikeze. One paragraph will not be enough in conveying my appreciation of what Obikeze did for my overall development; permit me in the following space to tell you a little of what Obikeze is to me. Beyond God and my parents, Obikeze is the next most influential phenomenon in the making of me. Meeting Professor Obikeze was another bold step I took in 1986. When my colleagues dreaded the prospects of being assigned to Professor Obikeze as their project supervisor, for what they described as his extreme thoroughness, I prayed to be assigned to him because of the way he taught Social Statistics and Demography. Once filled with phobia for the quantitative science, I fell in love with the subject of numbers after attending Obikeze's classes. With this experience, I walked up to him, when I was assigned to another, and pleaded with him to supervise my project. He obliged and ended up supervising not only my BSc project but also my MSc project and PhD dissertation. Obikeze influenced me into Quantitative and Health Sociology.

Obikeze practically raised me from a budding Sociologist to what we may now refer to as a Sociologist robust in the theory and methods of the discipline. Professor Obikeze was more than a teacher, supervisor or mentor to me. He has remained a faithful friend and father. He showed love and interest in my academic and professional growth. Obikeze placed me on a payroll, first paying me ₦40.00/month, out of which the University took ₦1.00 as tax. This money was more than enough then to keep me on my studies, before Obikeze gradually increased my Naira worth as he received more research grants. He introduced me early in my academic career to rigorous field work and research. Obikeze never compromised quality and principles with me. He taught me that there is no alternative to hard work and going through the process systematically, which is the essence of science. I recall the rigour I underwent to arrive at my PhD topic, titled *Intergenerational Trend in Age-at-first Marriage and Fertility Change.* After all the tedium of writing up the paper, I was rewarded with the Social Science Council of Nigeria Award at the

first attempt and finally with the Vice Chancellor's prize. More thanks are due to Professor D.S. Obikeze than can be conveyed as I stand here to give my inaugural. He introduced me to public health, the topic of my inaugural. I remember the day he called me up and said, "Joseph there is an 'oncho' project I will want you to work on". That day I wondered what is 'uncle project again?', but did not ask questions. Little did I know that that would mark the point of departure for my career path and focus in public health as an academic, even as a Sociologist! As a child watching my mother when she battled with some maternal-related health problems I wished I were a doctor so that I could ensure my mother never suffered health problems again. However, with time my focus shifted to examining more issues of society and relationships. Thus, when I thought I had lost that dream of protecting the health of my mother as a medical doctor, I now found myself in the business of promoting not just my mother's health but global health, all thanks to directions I got from Professor Obikeze.

While I may not be able to thank my teachers enough, this is dedicated to remembering those who inspired me. It is their lessons I carry forward in my own teaching and hope to inspire others as I was inspired by those before.

I must also thank my Baby, and the mother of my wonderful children, Pope (My Oga), Divine (Super Daughter), Angel (Queen of China), Olaedo (Original Daughter), and Ure (Beautiful), for her immense emotional, moral and intellectual support. She read every line to make sure I turn out right with my inaugural lecture.

May I also quickly thank all those present at the inaugural to give me your audience of inestimable value and of course those who could not make it here but who make out time to review this little testament of my sojourn in the academic world. Your time is highly valued.

I count myself very privileged to be giving my inaugural lecture today. I say this, as I recognize the transition that has taken place in this University, from the days when it was marked by conflicts and inadequate facilities. In my days as a student in the University, Professors were very few. The announcements of professorial appointments were rare and widely spaced. Many were announced Professors when they are only a few months away from retirement, not because they did not work hard enough but because of the very oppressive system that obstructed promotions. The few who were lucky to be named 'Professors' were already too tired by the time they were so called. Coupled with the technological handicap and instability, many were not privileged to give their inaugural before taking the bow. But today, we find many young Professors, equipped with computers, lap- and palm-tops working on the move. Furthermore, we now have the internet, face book, twitter, blogs, kindle e-books, iPads', and an environment conducive to work and reflection. All of these gadgets and the healthy environment promote access to current knowledge, facilitating cutting edge scholarship in an increasingly globalized and competitive world. The technological development of our University, with the relative peace afforded me the rare privilege also of networking and getting more involved in interdisciplinary enterprise. Thanks to the new crop of humane and development oriented Vice Chancellors we have been blessed with, in the past few years. We are all witnesses to Professor Bartho Okolo's commitment and actions to elevate UNN to the Ivy-League Class of Universities by developing the required infrastructure and fostering the appropriate environment for academic excellence.

Today, I am giving my inaugural lecture of this University from the Department Sociology/Anthropology. Some of you may have come to listen to a lecture in Sociology/Anthropology. I want to let you know that it is practically impossible to provide a complete talk of Sociology/Anthropology because it is one twin discipline with awesome breadth and depth that cannot be covered in one sitting. Luckily, I do not have to, as I am not inaugurating the Department of Sociology/Anthropology, as long before me, the great Professor Ikenna Nzimiro, the Sociological Iroko in the forest of Sociologists, who happened to have started from the den of Lions and Lionesses did that in 1976, as the debutant inaugural lecturer in UNN.

All the same, it will suffice to note here that Sociology/Anthropology is a twin social science discipline with enormous potential for moving Nigeria to the next level, if practised within the paradigm enunciated by the founding fathers. According to Auguste Comte, the mandate of Sociology is to ensure an interpretative understanding of the indispensable course of history so as to promote the realization of a new order. Coming out of sociopolitical challenges that the Nation faced with the end of the civil war as well as the near anomie engendered by sudden wealth from oil boom, Sociology/Anthropology in the University of Nigeria, which was at the centre of the sociopolitical theatre of Nigeria then, played a prominent role in proffering theories that responded to the needs of academics trying to understand the prevailing issues. I will not bore you here with the theories and practice of Sociology/Anthropology. Since then, though, there has been an era of ferment and transformation in doing Sociology/Anthropology, which was led by the Professors Nzimiro, Eteng, B.I.C. Ijomah and others, from the University of Nigeria, after the civil war. The details of this ferment both in epistemology and praxis were graphically captured in the inaugural lecture by Professor Okechukwu Ibeanu (2008).

In terms of practice, however, Sociology/Anthropology, as a discipline in University of Nigeria, has since experienced some advancement. It is now, more than ever before assuming its prime place as the *Queen of all Social Sciences* and extending to make its marks with respect to other disciplines. More than any other discipline it is a meeting place of the sciences and the humanities, combining its own ideas and methods with insights from history, archeology, economics, political science, and psychology as well as other fields of human study in an extended examination of the ways societies work or fail to work.

A good number of Sociologists are now working with the civil societies, doing practical work in pursuit of community development. The interface between scholars in Sociology/Anthropology and the civil societies, whose activities cut across disciplines, has enabled these scholars to become more interdisciplinary, develop new skills, literature, and develop organizational theories, among others. This has improved significantly over what existed in the past. Interdisciplinary knowledge in the Sociology/Anthropology is increasing and opens discourse on methodology. Now we have been able to incorporate the communities as part and parcel of research and not just object of study. The communities are now involved in action research, seeking solutions to social problems on how to improve their access to social dividend and not just targets of delivery systems. The whole discourse has enriched Sociology/Anthropology.

Another area of strength is the increased access to Internet resources. This has exposed us to a variety of data, theoretical knowledge, and new concepts. Some Universities in the developed world have their entire course materials on the Internet. As part of the whole process, we are

beginning to reconnect with the international research community in more productive ways than three decades ago. This may be due to the opening of the democratic cyber space.

Furthermore, because of increased engagement in practical work, the successful Sociologist/Anthropologist is expected to acquire multidisciplinary skills and approaches. This should be and has been pursued in the University of Nigeria, and indeed everywhere else. Scholars in Sociology/Anthropology are encouraged to acquire multidisciplinary skills. Recently, in Harvard School of Public Health, I had to take courses in Econometrics, which is essential in making policy recommendations on health care and service delivery.

Another area that is being pursued in Sociology/Anthropology is community work. Community level work is now being pursued at the methodological level. Opposed to previous practices where communities were mere recipients of development from the top, communities are now viewed as part and parcel of the process of developing research and knowledge sharing. This has empowered communities to help themselves as will be shown shortly in this lecture. Communities are being given voice to become advocates for themselves.

Yet another set of issues that is recently becoming of interest in Sociology/Anthropology concern the environment. The interests shown in the environment in the 1960s and 1970s were lost as land based resources were exploited without consideration to the environment, causing tremendous cases of environmental degradation and its adverse consequences on humanity, particularly in the developing world. The environment has thus not produced the kind of animation of society, which such issues as gender and class have produced in recent times. We find a cross-cutting and unifying issue for Sociology/Anthropology and other social sciences and humanities here. This is increasingly becoming an area of focus for Sociology/Anthropology. We are now investigating how the environment affects the things we eat, illness, crime, and other elements of social relationships.

All the same, the discipline has had its fair share of controversies. One of the controversies is the gulf within the discipline based on claim to regular scientific exercise. There is often the debate on the superiority of methods: positivist or action approach. Quantitative and qualitative Sociology/Anthropology can reinforce each other. This should not be either/or, and the growth of eclectic and multi disciplinary approaches is helping to resolve this controversy.

The whole question of our roles as scholars is another source of controversy. What is our role? As Sociologists/Anthropologists, are we just there to explain and understand our realities or should we act as change agents as well? It is my humble submission that we should be involved in the application of our findings to solving the umpteen social problems else there will be misinterpretation of the results and of misapplication of same. We employ a number of methods, which are beyond the reach and competence of other disciplines, while studying society. To achieve amity of epistemology and praxis the Sociologists/Anthropologists should go beyond explaining and understanding to acting.

Yet another point of controversy is the question of relationship between gender and class and how they should structure our work in the social sciences. Some now think gender, not class, is the fundamental issue to understand.

These controversies notwithstanding, the disciplines of Sociology and Anthropology have advanced tremendously to elucidate the problems of society and to address some of the challenges listed above. I will take us through aspects of Sociology and Anthropology that deal with global health and development, and which are also at the heart of the discipline as a science of society. It will not be surprising if some of you ask what a Sociologist has got to do with health because even in The Harvard, it was not a common phenomenon. I was in the Department of Global Health and Population, Harvard School of Public Health instead of the Department of Sociology or Department of Anthropology, Harvard University.

First, let me remind us of the definition of health put forward by the World Health Organization.

> *Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity* (WHO, 1948)

The definition recognizes the important role of Social Sciences, including Sociology/Anthropology, as the professional disciplines saddled with the responsibility of systematically understanding and elucidating on the multiple factors that underlie social behaviour, including health in society. This definition has not changed since 1948 but has recently gained tremendous boost with the growing relevance of Sociology as a discipline. Writing on a key issue, "access", which forms the crux of my academic enterprise and by implication the major thrust of my lecture today, Frost and Reich (2008:xi) noted that

> *Just because a good health intervention technology exists does not mean that it will be delivered, used, or achieve its potential to bring good health, especially for poor people in poor countries. Over the past several years, this realization has gained increasing acceptance around the world. Acceptance has grown with many organizations in global health – including the Bill and Melinda Gates Foundation, which has invested huge sums of money to support the development of new technologies for global health.*

It is no longer acceptable to subscribe to "a narrowly conceived understanding of health as the product of technical interventions divorced from economic, social, and political contexts" (Birn, 2005). The major challenge to good health and by implication global development, today, is that of ensuring the adoption and proper utilization of effective scientific innovations, technologies and interventions for complete physical, mental and social wellbeing as well as elimination of disease and infirmity in our societies. Attainment of this noble goal calls for the systematic exploration of the economic, political, and sociological contexts of health behaviours.

For some time now, stakeholders in global health have become increasingly aware that developing technology alone is not sufficient to improve health conditions and keep disease and infirmity at bay in poor countries. This recognition is reflected in the concerted efforts made by stakeholders to make sure life saving advances in health reach those who need them the most. Efforts are now made to promote effective access of these technologies for good health. Effective access is in this sense conceptualized to include the adoption and proper utilization of the technology. This therefore raises concerns for the multiple social, cultural and behavioural

factors that could impede effective access. It is my belief and that of this lecture that access to good health technologies can be addressed and assured for poor people in poor countries, including Nigeria, and can produce tangible benefits for all if we understand the dynamics and potentials of the poor and their communities.

The world is faced today with the emergence of new diseases and the re-emergence of previously controlled diseases such as Guinea Worm, Tuberculosis, HIV/AIDS, Leishmaniasis, Schistomiasis, Onchocerciasis, and Poliomyelitis, among others. There is also the unholy reign of malaria in varying forms that are resistant to many drugs. All these and more constitute major challenge to the social and economic development of people in poor countries. Ironically however, there has been tremendous and continuous development of effective technologies meant to control these diseases. Too often, these technologies are either not adopted widely enough or used improperly and are therefore insufficiently effective. It is hoped that if these interventions enjoy adequate acceptance and proper use, many of the health problems of the poor people in poor countries will be resolved. This will also promote global peace and prosperity.

I have devoted a substantial part of my academic career to employing and applying carefully crafted sociological tools to studying and understanding different aspects of social life, including health, resource mobilization and allocation in communities, among the poor on the continent of Africa and beyond. In doing this, I have also had to work with experts from other disciplines for a comprehensive understanding of communities and to arrive at pragmatic recommendations on ways of ensuring access to effective health products in the fight against the diseases of the global poor.

I have therefore, chosen to speak on *"Health Service for the Poor by the Poor"*. The lecture draws lessons from the field on ways of making health interventions accessible in the poorest corners of the world. The investigation of the approach was what took me to Harvard University and it has earned acclamation from many stakeholders in global health.

PREAMBLE: THE DEVELOPMENT DILEMMA IN NIGERIA

I do not refer to real estate, or to personal property or to cold cash, but rather to that in life which tends to make these tangible substances count for most in the daily lives of people, namely, goodwill, fellowship, mutual sympathy and social intercourse among a group of individuals and families who make up a social unit... If he may come into contact with his neighbor, and they with other neighbors, there will be an accumulation of social capital, which may immediately satisfy his social needs and which may bear a social potentiality sufficient to the substantial improvement of living conditions in the whole community.- Hanifan (1916)

I declared 2010 to be the year of development. We need to focus attention and accelerate the process to achieve, to realize, the goals of the MDGs by the target year, 2015. We have only six years left before 2015. - UN Secretary-General Ban Ki-moon, December 2009

Despite improved growth performance, most sub-Saharan African countries are off track to meet the MDGs. - World Bank Development Committee Communiqué, April 2008

September 2000 saw a significant step toward the promotion of global development, when 189 member states of the United Nations adopted the Millennium Declaration. The Millennium Declaration encapsulated concrete commitments and targets for poverty eradication, development, and protecting the environment. In line with the declaration, the UN member states, which included Nigeria and other African countries, established the following targets:

- ☐ To halve, by the year 2015, the proportion of the world's people whose income is less than one dollar a day and the proportion of people who suffer from hunger and, by the same date, to halve the proportion of people who are unable to reach or to afford safe drinking water.
- ☐ To ensure that, by the same date, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling and that girls and boys will have equal access to all levels of education.
- ☐ By the same date, to have reduced maternal mortality by three-quarters, and under-five child mortality by two-thirds, of their current rates.
- ☐ To have, by then, halted, and begun to reverse, the spread of HIV/AIDS, the scourge of malaria and other major diseases that afflict humanity. (Source: United Nations Millennium Declaration (resolution 55/2), paragraph 19)

Ever since the crafting of these goals and targets, the UN has invested substantial time and resources towards formulating and tracking MDG action plans and results frameworks. First, the UN Secretary-General's Road Map for implementing the Millennium Declaration was unveiled in 2001. This included the original eight goals supported by 21 time-bound targets and 60 indicators to track and measure progress.

According to Leo and Barmeier (2010:3), research fellows at the Center for Global Development, "these indicators track everything from the proportion of fish stocks within safe biological limits to the official development assistance received in landlocked developing countries as a proportion of their gross national incomes. Some indicators are closely linked to the core Millennium Declaration commitments, while others are more loosely or tangentially related". Though, this Road Map was not formally endorsed by UN member states, the UN has used and continues to utilize a slightly adapted version of this framework for its yearly reporting on progress toward the Millennium Development Goals (MDGs). The World Bank's Global Monitoring Report also provides yearly updates on the MDGs, as it does on other development issues, though in the case of the MDGs certain clear objectives were developed to ensure objective monitoring.

However, some critics have noted that the MDGs are unrealistically ambitious for some regions or countries (see Easterly, 2009; Clemens, Kenny and Moss, 2004). They argued that the instruments for defining "success" and/or "failure" on the MDGs targets were poorly and arbitrarily designed. Essentially, they contend that the MDG methodology sets up sub-Saharan Africa for failure – even if countries make significant progress (Easterly, 2009). Clemens, Kenny, and Moss (2004) also argued that the required rates of progress for achieving many of the MDGs exceed achievements recorded anywhere in history. For example, they stressed that the typical African country would need to grow at an average rate exceeding 7 percent over a twenty-five year period to succeed in halving poverty rates. "Only two African countries (Botswana and Equatorial Guinea), which account for only 0.3 percent of Africa's total population, had achieved that feat previously" (Leo and Barmeier, 2010:3). These critics of the MDG targets were anxious that the unrealistic MDG targets could inaccurately recast impressive development achievements as failures by holding them against unrealistic standards, which could undermine future government efforts.

All the same, these targets provide a very useful basis for measuring the performance of different countries on these development indices, for many reasons. First, several of the MDGs are made up of absolute targets, such as the commitments to achieve 100 percent primary education completion rates and full gender parity for school enrollment rates. For countries starting off a low base, as are many in sub-Saharan Africa, meeting this goal is a monumental task. But still, one is able to compare countries with similar development realities on the basis of these targets. It gives one some basis for comparing similar countries

Many of the MDG targets measure progress in terms of development outcomes, such as reducing maternal mortality rates rather than development outputs like number of women served and quality of care or inputs such vaccines distributed, condoms made, etc. We know in general terms, that achieving outcomes is a longer and more difficult process than achieving output targets. Similarly, developing countries can reduce or eliminate school fees to achieve dramatic increases in school enrollment output targets. This differs from achieving concrete learning outcomes (that is, better performance in examination subjects). In this example, a wide range of environmental, social, health, economic and even political factors confound educational outcomes. According to Leo and Barmeier (2010) the school enrollment target may actually undercut learning outcomes. Class sizes may increase dramatically, which places a significant burden on teachers' ability to provide quality instruction and monitor student progress.

Third, the Millennium Declaration measures development progress against a baseline year of 1990. Thus, prior to adoption of the targets, countries already had a full decade of performance factored into whether they were making progress to achieve the MDGs. As a result, the MDGs have a design bias towards countries with records of good performance well in the 1990s. It would favor countries that had an uncharacteristically bad 1990 measure and/or solid progress since. It would penalize countries, such as those in the east block, that were better in 1990 and declined since. Importantly, this has the additional effect of chastising many African countries conflict, post conflict and/or slow economic growth zones during this time period. In a DFID conference on Millennium Development Goals, Shantayanan Devarajan (2010: http://blogs.worldbank.org/africacan/africa-and-the-millennium-development-goals, accessed January 24, 2011) argued that Africa can meet the MDGs, if not by 2015 then soon thereafter and he posited the following reasons for his optimism:

 □ Although most African countries are off-track on most of the MDGs, Africa has, since the mid-1990s, arguably been making the greatest progress towards the goals
 □ Africa's progress in the MDGs since the mid-1990s was due to economic growth and improved service delivery

Thus strengthening arguments of the critics of the targets set for the Millennium development commitments. For these critics, it will be unfair to compare countries on the basis of these global development targets without giving due consideration to the peculiarities of the different countries.

These seeming shortcomings, notwithstanding, the MDGs continue to play a vital role in global development. They have been an important tool for mobilizing resources in new development assistance for low-income countries and should in this context, be given credit for helping to reverse the declines in the volume of aid witnessed in the 1990s following the end of the Cold War. Though this change in orientation and paradigm shift remain challenges for many donor agencies, the MDGs deserve credit for their role in stimulating this institutional and programmatic rethinking. They also provide us the basis for assessing the efforts of our national institutions since the declaration of the MDGs and the increased funding they brought. I also find them useful so long as they clearly define our needs for sustainable development. We shall attempt some comparison with other low income nations.

Nigeria, Other Countries, and the MDGs

Before world leaders assembled in September 2010 to review progress towards the MDGs, Leo and Barmeier examined how individual countries were faring versus the ambitious targets. The working paper that resulted from their efforts formed part of the framework for the global assembly. It will also inform our analysis of the performance of Nigerian institutions. They outlined a new MDG Progress Index, which compares country performance against the core MDG targets on poverty, hunger, gender equality, education, child mortality, health, and water. Overall, they found evidence of dramatic achievements by many poor countries such as Burkina Faso, Cambodia, Ghana, Ethiopia, Honduras, Laos, Nepal, and Nigeria was conspicuously absent

from the list of countries they categorized as MDG Trailblazers, despite the prominent presence of several African countries with similar if not worse realities. The "Trailblazer" countries—led by Honduras—achieved a MDG Progress Index score of at least 6.0. An additional 10 poor countries achieved an MDG Progress Index score of 5.0 or greater (see Table 1 below). It was also noted that based on observed trajectories, all of these countries would achieve at least half of the examined MDG targets. Sub-Saharan Africa accounts for the largest number of star performers with five countries; East Asia follows with four countries, Latin America with three countries, Europe & Central Asia with two countries, and South Asia with one country.

 It was noted that the performance of Ghana and Uganda suggests that they may achieve most of the highly ambitious MDGs, which currently seems like a mirage in Nigeria, the Giant of Africa. Understandably, the list of poor performers consists largely of countries devastated by conflict over the last few decades, including Afghanistan, Burundi, the DRC, and Guinea-Bissau. But it is hard explain the presence of Nigeria in this list, as it is not included in the countries known for persistent social conflict. Thus, Nigeria is guilty of outright inefficiency.

While Burkina Faso, Ethiopia, Ghana, Malawi and Uganda are recorded among the trailblazers, scoring between 5.5 points and 5.0 points, Nigeria leads the laggards with just 1.7 points. The African countries listed among the trailblazers also performed above expectation on 4 to 5 indicators and showed good potential for doing better on others.

The laggards include Afghanistan and Guinea-Bissau, which stand out as the worst performing countries—each with a MDG Progress Index score of zero. Burundi, DRC, Papua New Guinea, Tanzania, and Zimbabwe are nearly as far behind with scores of 1.0 or less. With the exception of Tanzania and Nigeria, most of these laggard nations are post-conflict countries or fragile states. It is also instructive that three-fourths (9 of 12) of the low performers are located in sub-Saharan Africa.

Leo and Barmeire's (2010) analysis also revealed that in terms of regional representation compared with the total sample of countries, East Asia and Latin America have the greatest percentage of countries performing at or near the top, with 36 and 33 percent, respectively. Given that African countries account for half of the country sample, its representation (14 percent) would suggest weaker regional performance overall. Nonetheless, the number of African star performers does show pockets of significant progress, thanks to Burkina Faso, Ethiopia, Ghana, Malawi and Uganda.

Table 1: MDG Progress Index Performer

Top Performing Countries	MDG Progress Index Score	MDG Progress Score (Adj)	Indicators Above Achievement Trajectory	Indicators with ≥50% Progress	Indicators Covered
Honduras	7.0	7.0	6	2	8
Kyrgyz Republic	6.0	6.0	6	0	8
Vietnam	6.0	8.0	6	0	6
Laos	6.0	6.0	5	2	8
Cambodia	6.0	6.0	5	2	8
Nepal	5.5	5.5	4	3	8
Burkina Faso	5.5	5.5	5	1	8
Ethiopia	5.0	5.5	4	3	8
Armenia	5.0	5.0	5	0	8
Bolivia	5.0	5.0	5	0	8
Nicaragua	5.0	5.0	4	2	8
Ghana	5.0	5.0	4	2	8
Malawi	5.0	5.0	4	2	8
Mongolia	5.0	5.7	4	2	7
Uganda	5.0	5.0	4	2	8
Low Performing Countries					
Central African Republic	1.5	1.7	1	1	7
Cote d'Ivoire	1.5	1.7	1	1	7
Haiti	1.5	2.4	1	1	5
Liberia	1.5	1.7	1	1	7
Nigeria	1.5	1.7	1	1	7
Zimbabwe	1.0	1.1	1	0	7
Tanzania	1.0	1.1	0	2	7
Papua New Guinea	1.0	2.0	0	2	4
Burundi	0.5	0.5	0	1	8
Congo-DRC	0.5	0.7	0	1	6
Afghanistan	0.0	0.0	0	0	4
Guinea-Bissau	0.0	0.0	0	0	6

Adapted from: Leo and Barmeier (2010)

While a linkage may be hypothesized between development outcomes and institutional quality, economic growth and levels of incomes, it is hard to explain the realities of Nigeria, which has enormous resources but has made little progress toward the MDG outcomes (see North, 1995; Rodrik, Subramanian, and Trebbi, 2004; and Acemoglu, Johnson, and Robinson 2001 and 2004) Many scholars have analyzed the relationship between institutions and development, and contested that there is a direct relationship between both. For them, societies with strong political and economic institutions would necessarily have good development outcomes. Similarly Barro (1991 and 2000), Birdsall (2007), Kraay (2006), and Ravallion (1997 and 2001) argued that the high income levels promote development.

Table 2: MDG PROGRESS INDEX PERFORMANCE, BY LOW INCOME COUNTRIES

Country	MDG Progress Score	MDG Progress Score (Adj)	Population Below $1.25/day	Prevalence of Under–Nourishment	Primary Education Completion Rate	Girls : Boys Ratio in Primary and Secondary Education	Child Mortality Rate	Maternal Mortality Ratio	HIV/AIDS Prevalence Rate	Access to Improved Water Sources
Afghanistan	0.0	0.0	-	-	-	0	0	0	-	0
Angola	2.0	3.2	-	1	-	-	0	0.5	0	0.5
Armenia	5.0	5.0	1	1	0	-	1	0	1	1
Azerbaijan	4.5	4.5	1	1	1	0.0	1	0	0	0.5
Bangladesh	2.5	2.9	0.5	0.5	0	-	1	0.5	-	0
Benin	3.0	3.4	-	1	0.5	1	0.5	0	0	0
Bhutan	3.5	5.6	-	-	1	1	0.5	1	-	0
Bolivia	5.0	5.0	0	0	1	1	1	1	0	1
Bosnia-Herzegovina	2.5	4.0	-	0	-	-	0.5	1	-	1
Burkina Faso	5.5	5.5	1	1	0	1	0	0.5	1	1
Burundi	0.5	0.5	0	0	0	0.5	0	0	0	0
Cambodia	6.0	6.0	1	1	1	1	0.5	0.5	0	1
Cameroon	3.5	3.5	1	1	0.5	0	0	0	0	1
Cape Verde	3.0	4.0	-	0	1	-	1	1	-	0
Central African Republic	1.5	1.7	1	0	0	-	0	0	0	0.5
Chad	3.0	3.4	-	1	0	1	0	0	0	1
Comoros	3.5	4.0	-	0	1	1	0	0.5	1	0
Cong-DRC	0.5	0.7	-	0	0.5	0	0	0	-	0
Congo, Republic of	2.5	2.9	-	1	0	0.5	0	0	1	0
Cote d'Ivoire	1.5	1.7	0	0	0	-	0.5	0	0	1
Djibouti	3.0	3.0	0	1	0	0.5	0.5	0	0	1
Dominica	2.5	4.0	-	0	0	1	0.5	1	-	0
Eritrea	2.5	2.9	-	0	0.5	0	1	0.5	0	0.5
Ethiopia	5.5	5.5	1	1	0.5	1	0.5	0.5	0	1
Gambia, The	4.5	4.5	1	0	1	1	0.5	1	0	0
Georgia	4.5	4.5	0	1	1	0	0.5	0	1	1
Ghana	5.0	5.0	1	1	0.5	1	0.5	0	0	1
Grenada	3.0	4.0	-	0	1	0	1	0.5	-	0.5
Guinea	4.5	4.5	1	0.5	0.5	1	0.5	0	0	1
Guinea Bissau	0.0	0.0	0	0	-	-	0	0	0	0
Guyana	3.5	3.5	0	1	1	0	0.5	0	0	1
Haiti	1.5	2.4	-	0	-	-	1	0.5	0	0
Honduras	7.0	7.0	1	1	1	1	0.5	0.5	1	1
India	4.5	4.5	0.5	0	1	1	0.5	0.5	0	1
Kenya	3.0	3.4	1	0	1	0.5	0	0	-	0.5
Kiribati	4.5	7.2	-	1	1	1	0.5	-	-	1
Kyrgyz Republic	6.0	6.0	1	1	0	1	1	0	1	1
Laos	6.0	6.0	1	1	0.5	0.5	1	1	0	1
Lesotho	3.5	3.5	1	0	0.5	1	1	0	0	0
Liberia	1.5	1.7	-	0	0	1	0	0	0	0.5
Madagascar	2.0	2.0	0	0	0.5	0	0.5	0	1	0
Malawi	5.0	5.0	0.5	1	0.5	1	1	0	0	1
Maldives	4.5	6.0	-	0.5	1	1	1	1	-	0
Mali	4.5	4.5	1	1	0.5	1	0	0	0	1
Mauritania	4.5	4.5	1	0.5	0.5	1	0	0.5	0	1

Country	MDG Progress Score	MDG Progress Score (Adj)	Population Below $1.25/day	Prevalence of Under-Nourishment	Primary Education Completion Rate	Girls : Boys Ratio in Primary and Secondary Education	Child Mortality Rate	Maternal Mortality Ratio	HIV/AIDS Prevalence Rate	Access to Improved Water Sources
Moldova	3.5	3.5	1	0	0	1	1	0.5	0	0
Mongolia	5.0	5.7	1	0	1	1	1	0.5	-	0.5
Mozambique	3.5	3.5	0.5	1	0.5	1	0.5	0	0	0
Nepal	5.5	5.5	1	0.5	0.5	1	1	0.5	0	1
Nicaragua	5.0	5.0	1	1	0.5	1	1	0	0	0.5
Niger	2.5	2.5	0	0.5	0	1	0.5	0.5	0	0
Nigeria	1.5	1.7	0	1	-	0.5	0	0	0	0
Pakistan	3.5	4.0	1	0	0	-	0.5	0.5	1	0.5
Papua New Guinea	1.0	2.0	-	-	-	-	0.5	0.5	0	0
Rwanda	3.0	3.0	-	0	0	1	0.5	0.5	1	0
Samoa	4.0	5.3	-	1	1	1	0.5	0.5	-	0
Sao Tome and Principe	2.5	3.3	-	1	0	-	0	0.5	-	1
Senegal	3.0	3.0	1	0	0	1	0.5	0	0	0.5
Sierra Leone	2.0	2.3	0.5	0	-	1	0.5	0	0	0
Solomon Islands	3.5	5.6	-	1	-	1	1	0.5	-	0
Sri Lanka	4.0	5.3	0	0.5	1	-	1	0.5	-	1
St. Lucia	2.0	2.7	-	0	0	1	0.5	0.5	-	0
St. Vincent & Grenadines	3.0	4.8	-	1	1	0	0.5	0.5	-	-
Sudan	2.5	2.9	-	1	0	0.5	0	0.5	0	0.5
Tajikistan	3.5	3.5	1	0.5	0	0	0.5	0.5	0	1
Tanzania	1.0	1.1	0	0	0.5	-	0.5	0	0	0
Timor-Leste	3.0	4.0	1	0	1	-	1	0	-	0
Togo	3.0	3.4	-	0.5	0.5	1	0.5	0	0	0.5
Tonga	2.0	3.2	-	-	1	0	0.5	0.5	-	-
Uganda	5.0	5.0	1	0.5	0	1	0	0.5	1	1
Uzbekistan	2.5	2.5	0	0	0	1	0.5	0	1	0
Vanuatu	2.5	4.0	-	1	0	0.5	0.5	0.5	-	-
Vietnam	6.0	8.0	1	1	1	-	1	1	-	1
Yemen, Republic of	2.0	2.3	0	0	0	1	0.5	0.5	-	0
Zambia	2.0	2.0	0	0	1	1	0	0	0	0
Zimbabwe	1.0	1.1	-	0	0	1	0	0	0	0
AVERAGE	**3.3**	**3.7**	**0.63**	**0.49**	**0.48**	**0.73**	**0.50**	**0.33**	**0.23**	**0.47**

Source: Leo and Barmeire (2010)

However, there is no clarity on the relationship between development outcomes and aid volumes. Existing literature on this is mixed and rather debatable. Scholars such as Burnside and Dollar (2000 and 2004), Hansen and Tarp (2001), Easterly, Levine, and Roodman (2004), Clemens, Radelet and Bhavnani (2004), White (1992), and Paul Collier, et al. (2001, 2001 and 2004) hold different opinions on the relationship between aid volumes and development outcomes. For instance, Burnside and Dollar (2004) argued that the interaction of aid and institutional quality has a positive relationship with development outcomes. All the same they could not support the hypothesis that aid has the same positive effect everywhere. Such confusion led Alvi, et al (2008) to comment that the belief that the link between foreign aid and development outcomes in the recipient countries has been controversial for many years, specifically, the effectiveness of

aid in promoting development, for them remains highly contested. Thus the difference in the performance of such countries that are heavily dependent on aid and Nigeria with enormous natural resources cannot be explained on the basis of the aid flow to the countries. What is more, performance analyses of the different Millennium Declaration targets present Nigeria as truly lagging in her pursuit of the MDG targets (see Tables 2 and 3 below).

Table 3: MDG TARGET 1A - halve the Proportion of Population below $1.25/Day

Country	Proportion of population below $1.25/day				# of Observation Year	Required Improvement (% of change for observed Period)	Actual Performance		MDG Progress Score
	Baseline	Year	Current	Year			% Change	Versus Required Improvement (%)	
Afghanistan	-	-	-	-	-	-	-	-	-
Angola	54.3	2000	-	-	-	-	-	-	-
Armenia	17.5	1996	3.65	2007	11	-22	-79	360	1.0
Azerbaijan	15.6	1995	2	2005	10	-20	-87	436	1.0
Bangladesh	66.8	1992	49.6	2005	13	-26	-26	99	0.5
Benin	-	-	47.3	2003	-	-	-	-	-
Bhutan	-	-	26.2	2003	-	-	-	-	-
Bolivia	4.0	1991	11.9	2007	16	-32	198	-617	0.0
Bosnia-Herzegovina	2.0	2001	2	2007	6	-	-	-	-
Burkina Faso	71.2	1994	56.5	2003	9	-18	-21	115	1.0
Burundi	84.2	1992	81.3	2006	14	-28	-3	12	0.0
Cambodia	48.6	1994	25.8	2007	13	-26	-47	180	1.0
Cameroon	51.5	1996	32.8	2001	5	-10	-36	363	1.0
Cape Verde	-	-	20.6	2001	-	-	-	-	-
Central African Republic	82.8	1993	62.4	2003	10	-20	-25	123	1.0
Chad	-	-	61.9	2003	-	-	-	-	-
Comoros	-	-	46.1	2004	-	-	-	-	-
Cong-DRC	-	-	59.2	2006	-	-	-	-	-
Congo, Republic of	-	-	54.1	2005	-	-	-	-	-
Cote d'Ivoire	17.8	1992	23.3	2002	10	-20	31	-154	0.0
Djibouti	4.8	1996	18.8	2002	6	-12	292	-2431	0.0
Dominica	-	-	-	-	-	-	-	-	-
Eritrea	-	-	-	-	-	-	-	-	-
Ethiopia	60.5	1995	39	2005	10	-20	-36	178	1.0
Gambia, The	66.7	1998	34.3	2003	5	-20	-49	486	1.0
Georgia	4.5	1996	13.4	2005	9	-18	198	-1099	0.0
Ghana	51.1	1992	30	2006	14	-28	-41	147	1.0
Grenada	-	-	-	-	-	-	-	-	-
Guinea	92.6	1991	70.1	2003	12	-24	-24	101	1.0
Guinea Bissau	41.3	1991	48.8	2002	11	-22	18	-83	0.0
Guyana	5.8	1993	7.7	1998	5	-10	33	-328	0.0
Haiti	-	-	54.9	2001	-	-	-	-	-
Honduras	43.5	1990	18.2	2006	16	-32	-58	182	1.0
India	49.4	1994	41.6	2005	11	-22	-16	72	0.5
Kenya	38.4	1992	19.7	2005	13	-26	-49	187	1.0
Kiribati	-	-	-	-	-	-	-	-	-
Kyrgyz Republic	18.6	1993	3.42	2007	14	-28	-82	291	1.0

Country	Proportion of population below $1.25/day				# of Observation Year	Required Improvement (% of change for observed Period)	Actual Performance		MDG Progress Score
	Baseline	Year	Current	Year			% Change	Versus Required Improvement (%)	
Laos	55.7	1992	44	2002	10	-20	-21	105	1.0
Lesotho	56.4	1993	43.4	2003	10	-20	-23	115	1.0
Liberia	-	-	83.7	2007	-	-	-	-	-
Madagascar	72.5	1993	67.8	2005	12	-24	-6	27	0.0
Malawi	83.1	1998	73.9	2004	6	-12	-11	92	0.5
Maldives	-	-	-	-	-	-	-	-	-
Mali	86.1	1994	51.4	2006	12	-24	-40	168	1.0
Mauritania	42.8	1993	21.2	2000	7	-14	-50	360	1.0
Moldova	17.0	1992	2.38	2007	15	-30	-86	287	1.0
Mongolia	18.8	1995	2.24	2008	13	-26	-88	339	1.0
Mozambique	81.3	1997	74.7	2003	6	-12	-8	68	0.5
Nepal	68.4	1996	55.1	2004	8	-16	-19	122	1.0
Nicaragua	32.5	1993	15.8	2005	12	-24	-51	214	1.0
Niger	72.8	1992	65.9	2005	13	-26	-9	36	0.0
Nigeria	49.2	1993	64.4	2004	11	-22	31	-140	0.0
Pakistan	64.7	1991	22.6	2005	14	-28	-65	232	0.0
Papua New Guinea	35.8	1996	-	-	-	-	-	-	1.0
Rwanda	-	-	76.6	2000	-	-	-	-	-
Samoa	-	-	-	-	-	-	-	-	-
Sao Tome and Principe	28.4	2001	-	-	-	-	-	-	-
Senegal	65.8	1991	33.5	2005	14	-28	-49	175	1.0
Sierra Leone	62.8	1990	53.4	2003	13	-26	-15	58	0.5
Solomon Islands	-	-	-	-	-	-	-	-	-
Sri Lanka	15.0	1991	14	2002	11	-22	-7	30	0.0
St. Lucia	20.9	1995	-	-	-	-	-	-	-
St. Vincent & Grenadines	-	-	-	-	-	-	-	-	-
Sudan	-	-	-	-	-	-	-	-	-
Tajikistan	44.5	1999	21.5	2004	5	-10	-52	517	1.0
Tanzania	72.6	1992	88.5	2000	8	-16	22	-137	0.0
Timor-Leste	52.9	2001	37.2	2007	6	-12	-30	247	1.0
Togo	-	-	38.7	2006	-	-	-	-	-
Tonga	-	-	-	-	-	-	-	-	-
Uganda	70.0	1992	51.5	2005	13	-26	-26	102	1.0
Uzbekistan	32.1	1999	46.3	2003	4	-8	44	-553	0.0
Vanuatu	-	-	-	-	-	-	-	-	-
Vietnam	63.7	1993	21.5	2006	13	-26	-66	255	1.0
Yemen, Republic of	4.5	1992	17.5	2005	13	-26	289	-1111	0.0
Zambia	62.8	1991	64.3	2004	13	-26	2	-97	0.0
Zimbabwe	-	-	-	-	-	-	-	-	-
AVERAGE	**46.7**	**-**	**39.3**	**-**	**10.5**		**-5**		**0.63**

Source: Leo and Barmeire (2010).

These unsettling realities of Nigeria's performance on the MDG targets have compelled voices to rise against the performance of previous governments. According to Kalu Idika Kalu (2010) Nigeria has the highest number of school age children that are out of school estimated at about 25 million; Nigeria has one of the highest infant mortality rates; Nigeria also has the highest rate

of maternal mortality. For him, these are issues that should engage our minds. He further noted that Nigeria has one of the lowest life expectancy rates of about 47 years, so people die before they reach 50, which is barely half the life expectancy in Asia. He also stressed that unemployment, both disguised and open, is probably around 70 percent. In areas of access to water, housing, good roads, Nigeria is among the lowest in the world. Manufacturing contributes about 3 to 3.5 per cent to GDP, among the lowest even in Africa, let alone more advanced regions. Educational standards have been falling and up to 80% - 90% of students fail school exit examinations. We have many endemic diseases in this country that have been eliminated in other countries, including polio, Cerebrospinal Meningitis, Cholera, Guinea Worm, Onchocerciasis, and Tuberculosis, and more; in environmental hygiene, we are among the lowest in the world.

According to the United Nations 2010 *Human Development Report*, Nigeria's Human Development Index (HDI), a meager 0.423, ranked our country 142 out of 169 countries with comparable data. Nigeria was placed among the lowest ranking nations in the Low Human Development category. According to *Sunnews* Editorial (December 19, 2010), many African countries are better than we in this regard. "This is not surprising, as the critical sectors that impinge on health are in total disarray. Our roads are about the worst in the world. Power supply is epileptic. Water supply is seriously inadequate. The education sector is highly under-funded while the health sector is in a comatose situation. Social anomie is steadily on the increase while health care personnel are perpetually on strike due to poor conditions of service".

Several explanations have been advanced for the poor economic development of Nigeria. These explanations derive mainly from socio-demography and politico-economy. Demographically, the country's development dilemma is blamed on the structure of the population. Those in this school of thought advance the Malthusian argument of the relationship between population size and resources in society. They argue that failing nations, almost without exception, have population growth rates and total fertility rates (the average number of children born by a woman over her lifetime) substantially higher than global averages. High fertility rates are often associated with high maternal and infant mortality rates and with poor health outcomes for mothers and infants. High population growth rates may also make it more difficult to provide adequate schooling, nutrition, immunization, and other essential services. Population pressures can also lead to environmental degradation, food insecurity, and even conflict. All of these are in line with Malthusian predictions, that when population out-strips food production human misery will result.

Those who reject this theory argue instead that large population is necessary for development. They cite the enormous development of countries such as the USA and China, which have huge populations. Rather than hinder development, they argue, population, as Durkheim postulated, breeds division of labour, specialization and greater production. In view of this, argument is shifted to the structure and quality of the population. Not all large populations support development. In a report on the assessment of the prospects of Nigeria harnessing its demographic dividend, the British Council and Harvard School of Public Health (2010) noted that given the structure of the Nigerian population, it will have growing numbers of restless young people frustrated by the lack of opportunity; increased competition for jobs, land, natural resources, and political patronage; cities that are increasingly unable to cope with the pressures placed on them; ethnic and religious conflict and radicalization; and a political system discredited by its failure to improve lives. The report further noted that demography is pushing Nigerian states and regions onto widely different economic trajectories, and could further

increase inequality if measures are not taken to promote social cohesion. This supports Leahy's (2006) calls to examine the development issues of countries through the age structure lens.

The population age structure, that is, the proportional size of different age groups within a population, has been proposed as a useful tool for better understanding Nigeria's development and its many social problems, such as youth unemployment, restiveness, and militancy. According to Leahy (2006)

> *age structures reflect a country's present and past mortality and fertility trends, which can be extrapolated to broader health and development dynamics. Age structures also yield insights into national political and economic challenges, now and in the future*

The population of Nigeria is firmly within the category of a very youthful age structure, with nearly three-quarters under the age of 30. A very small proportion is older than age 60. Nigeria is thus classified as one of the countries still in the early stages of the demographic transition: the shift from large families and short lives to small families and longer lives. Nigeria's population has actually grown more unbalanced in recent decades. Between 1975 and 2005 the share of young people in the country's population increased while the share of older adults decreased though slightly, meaning that Nigeria reversed course along the path of the demographic transition, which is highly unusual.

Fig. 1: Nigeria Population Structure 1975 – 2005
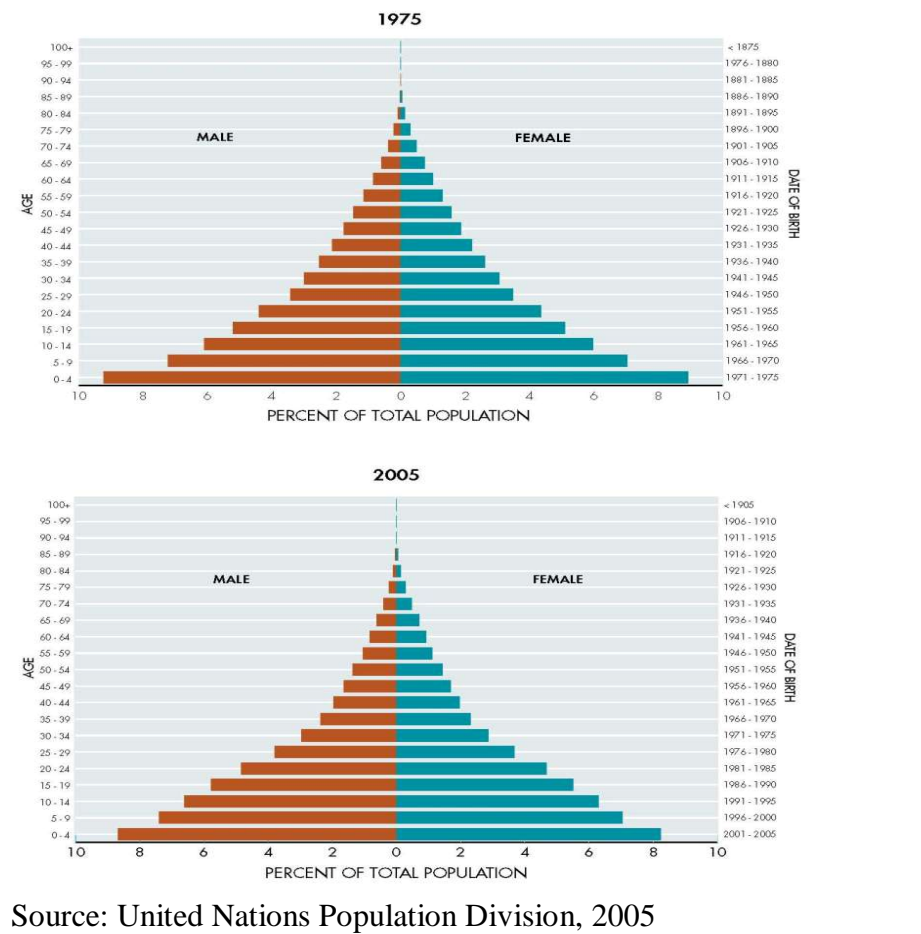
Source: United Nations Population Division, 2005

The two population profiles in Figure 1 above compare the size of different age groups in Nigeria's population in 1975 and in 2005. The bars along the left side represent males, the right side, females; each bar shows the relative size of a five-year age cohort in ascending age from 0-4 years to 100 years and over. In both of the graphs shown, Nigeria's population maintains the classic pyramid shape of a very youthful population with a broad base, which is progressively larger proportion among each successively younger age group. The population of Nigeria is growing rapidly due to high fertility in the population. The population structure in 2025 is envisaged to take the structure of the pyramid in Figure 2 below.

FIGURE 2: NIGERIA'S POTENTIAL AGE STRUCTURES, 2025
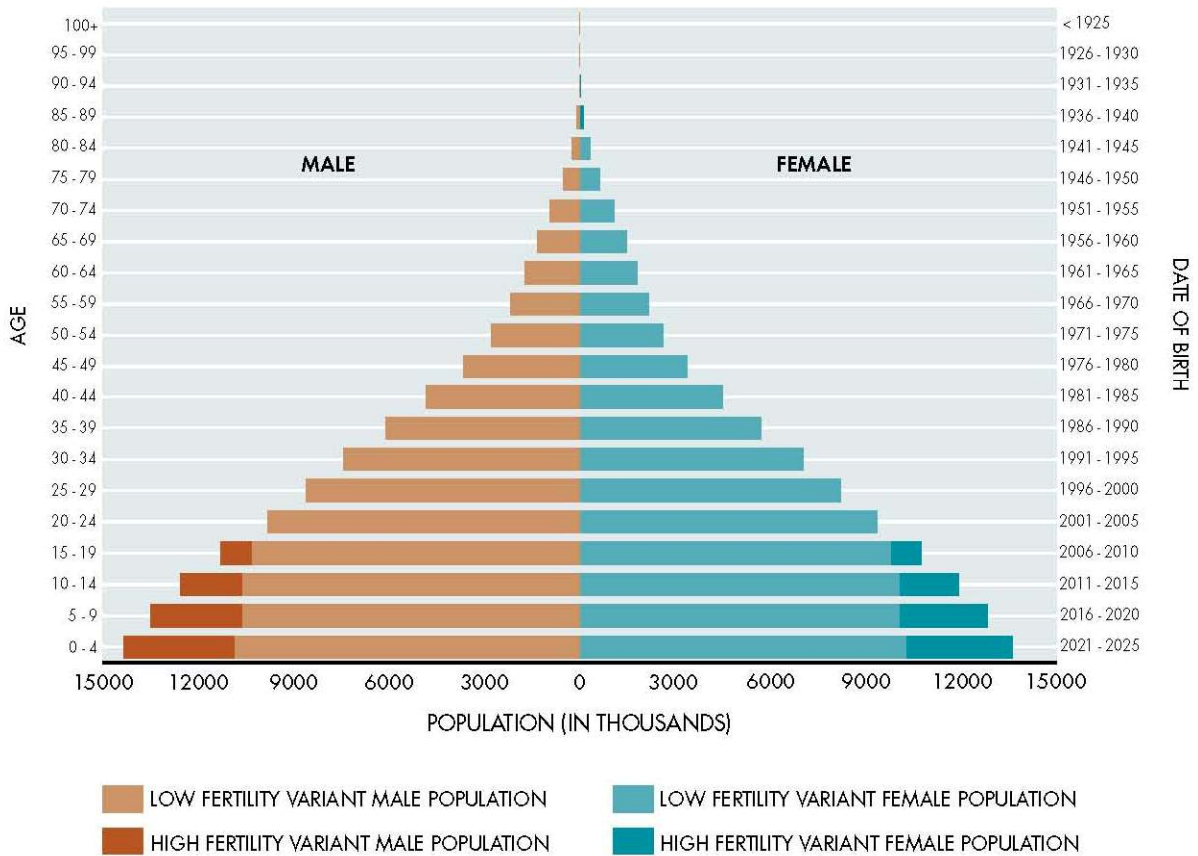
Source: United Nations Population Division, 2005

Even a modest decline in Nigeria's current fertility rate will not dramatically change its age profile within the short term (Leahy, 2006). Given this structure of population, some scholars have expressed concern about the ability of Nigeria to develop. The World Development Indicator in 2008 revealed that the Nigerian economy has stagnated largely due to high fertility. Figure 3 compares Nigeria to other parts of the world.

Fig. 3: Nigeria Economy Compared with World Regions

GDP per capita, PPP (constant 2005 int'l $)

Legend:
- Nigeria
- East Asia & Pacific
- Sub-Saharan Africa
- World

Years: 1980, 1990, 2000, 2006
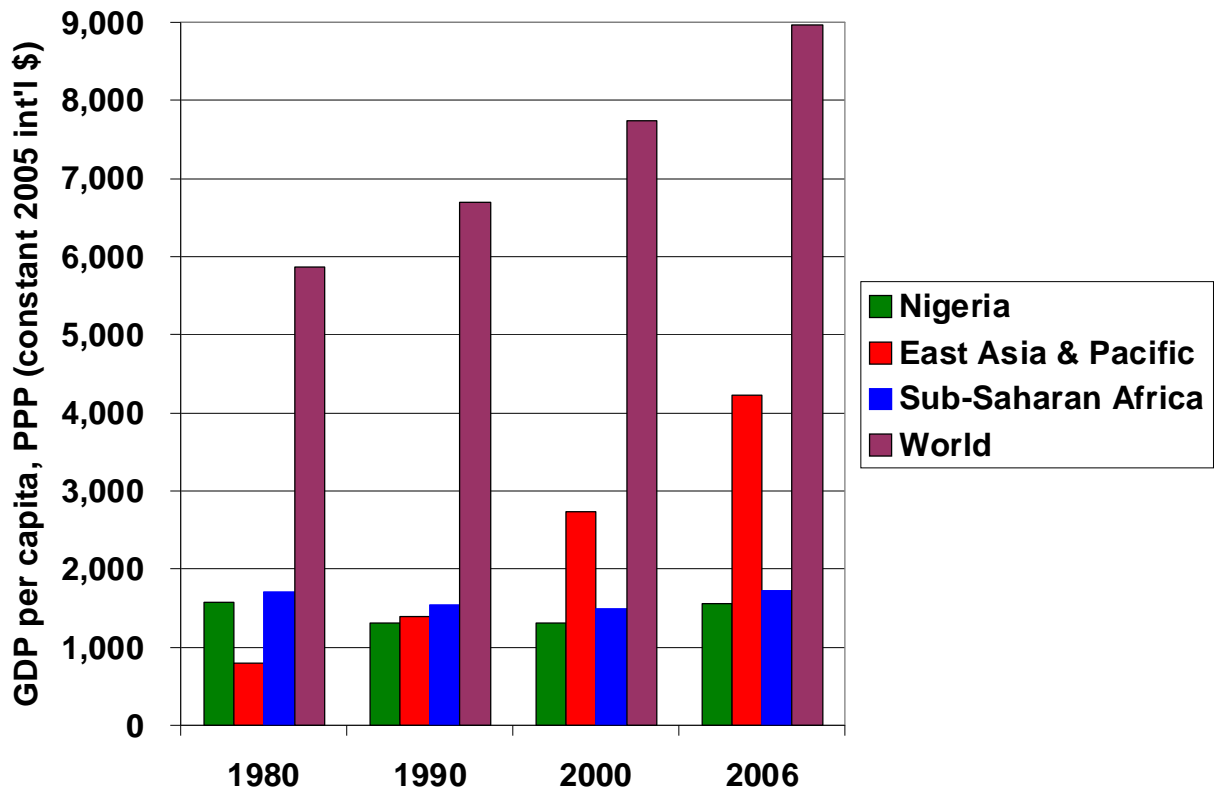
Source: World Development Index. 2008

A World Bank team in 2010 reported that alongside the demographic experiences of rapid population growth, high fertility, a large population of young people, and a high dependency ratio, there is a low level of income, high inequality, and little or no economic growth. Those who argue the population theory for economic growth in Nigeria thus advocate reduction in fertility.

Other explanations for Nigeria's economic development come from politico-economy. In this group, we have the early contributors from Walter Rodney (1982), Claude Ake (1982), Nnoli (1981) and Onimode (1981 and 1983) among others. In his contribution, Rodney blamed the problem of development in Africa, including Nigeria, on colonial factors. According to him, colonialism brought about a form of unbalanced relationship between the colonial masters and their colonized people. There was a structural dependence, where the African countries were made to depend on the colonizing countries, and only developed to satisfy the economic wishes of the masters.

According to Claude Ake (1982), Africans were unwillingly tricked and/or forced into this arrangement that saw them depending on the colonial masters without being able to develop their local economy. The colonizing powers achieved the deceit and imposition through the

introduction and superimposition of their culture over African ways. They monetized the economy by introducing taxation, wage labour, and other things. With the structural dependence of Africa on the metropoles, there was no question of African countries existing for themselves, hence lack of development culture. However, with the global social and political changes, African countries have been independent for over 50 years now. Nigeria, for instance gained independence in 1960 and has been crawling on her stomach for over five decades.

Another variant of the politico-economy school of thought posits that the problem is domestic, not lying with the former colonial masters, but with poor leadership and corruption in Nigeria. Writing on Nigeria, Chinua Achebe listed the problems of leadership and corruption among others as the major challenges to the development of Nigeria. While these issues have been identified by others, Achebe (1983) stressed that the corruption in Nigeria has passed the alarming and entered the fatal stage. According to him, *"Nigerians are corrupt because the system under which they live today makes corruption easy and profitable…"*

Writing on the same concerns, Ibeanu (2008) stressed an aspect of corruption that affects sections of the population disproportionately. In his inaugural lecture he discussed the unjust exploitation and allocation of resources to different segments of the population. For instance the resources from the Niger Delta is exploited but disproportionately distributed in the different zones if the country and the people from the Niger Delta languish in penury and environmental degradation. Situations like that, for him are a recipe for crisis.

In the same vein, Olaniyan and Lawanson (2010) revealed disproportional allocation of resources biased against rural areas using criteria independent of health needs, for instance. Daniel Smith (2007) also stressed that typical Nigerians, particularly those in the rural areas, experience corruption in their daily life. According to him, the ways the elite ensured privileges for themselves under the guise of development were largely perceived as corruption by the public. He noted for instance programmes like "Better Life for Rural Women (BLRW)" founded by Mrs Babangida as the then First Lady was labeled "Better Life for Rich Women (BLRW)". Generally, it has been concluded that corruption constitutes a major challenge for the delivery of primary health care.

Funding Health Care in Nigeria

In the UN report on health care expenditures, the nation's public health expenditure was put at 1.7 percent of its gross Domestic Product (GDP) and its under-five mortality stood at 186 of every 1,000 live births due to poor health care delivery (see Figures 4-7). There is nothing to cheer about in this year's report. Nigeria as a nation has virtually failed in all indices of human development; the UN's report confirms this sad, unnecessary fact.

Figure 4: Government Health Care Funding and DPT3 Coverage in Selected Countries and Nigeria	Figure 5: Government Health Care Funding and Infant Mortality Rate
Source: BR Bloom's Lecture, Harvard (2010)	
Figure 6: Countries, Regions and Change in Health Care Financing in Response to MDG Targets	Figure 7: Percentage Change in Government Health Expenditure
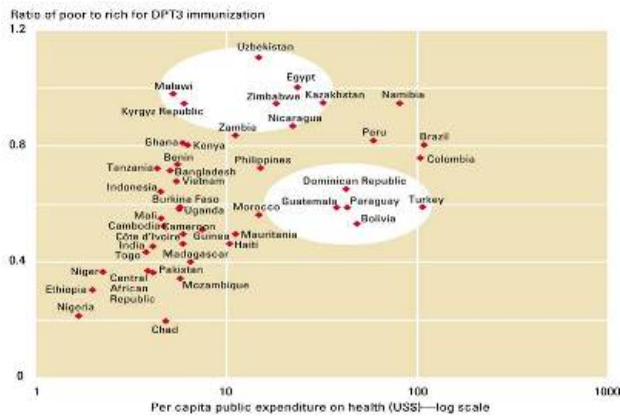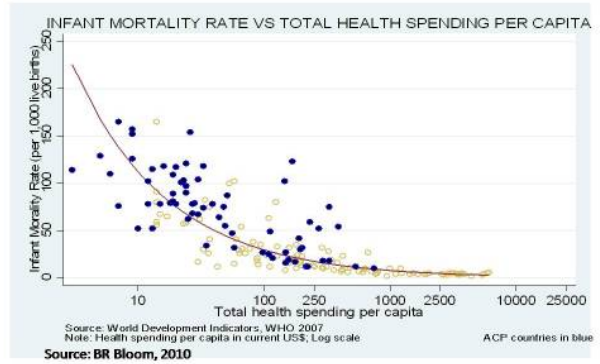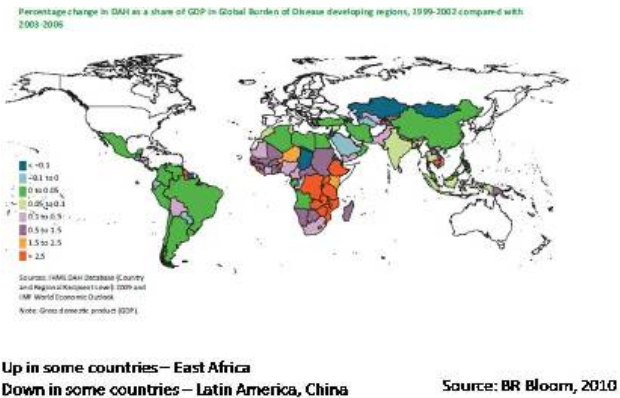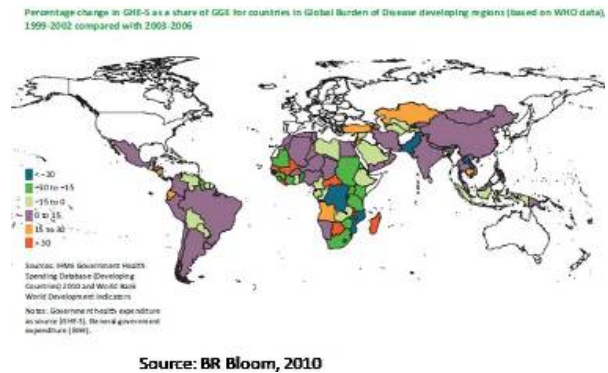
The latest report from the UN is perhaps a clarion call to the government that the Nigerian situation needs to be reviewed and more pragmatic and innovative approaches adopted. The report shows the parlous state in which Nigerians are living and the inaccessibility of development intervention among those needing them. According to a *Sunnews* newspaper editorial (December 19, 2010), "it is an indictment on government for its low performance in critical areas of human development. With statistics like this, we do not need a soothsayer to tell us that we are fast degenerating to the Hobbesian state of nature where life is nasty, brutish and short".

Despite the recent economic growth witnessed, between 2002 and 2006, in Nigeria the investment in health out of the total government expenditure was kept at a low level (5%–7%). Instead public revenue leaked to the privileged elites due to corruption. Recent Tribune publication, reported the Global Financial Integrity as showing that Nigeria lost US$130 billion to corruption in 8 years (Tribune Reporter, January 28, 2011). The report, entitled "Illicit Financial Flows from Developing Countries: 2000–2009,'' revealed that Nigeria had the 10th

highest measured illicit outflows in the developing world, an average of 15 billion U.S. dollars per year.

Table 4: Distribution of Per Capita Health Expenditure by Region by Sources [$m] (% in Parenthesis)

Sources	NORTH ($)			SOUTH($)		
	2003	**2004**	**2005**	**2003**	**2004**	**2005**
Fed.Government	2.01(6.4)	1.97(6.1)	2.22(5.5)	5.39(12.1)	5.39(11.7)	6.17(10.8)
State Government	2.68(8.5)	2.96(9.2)	4.00(9.9)	3.17(7.1)	4.15(9.0)	5.56(9.8)
Local Government	2.11(6.7)	2.55(7.9)	2.98(7.4)	1.87(4.2)	2.23(4.8)	2.58(4.5)
PUBLIC	**6.80(21.7)**	**7.48(23.3)**	**9.20(22.9)**	**10.43(23.4)**	**11.77(25.5)**	**14.31(25.1)**
Households	24.53(78.1)	24.45(76.2)	30.58(76.0)	32.97(73.9)	32.87(71.2)	41.11(72.2)
Firms	0.03(0.1)	0.03(0.1)	0.04(0.1)	1.00(2.3)	1.19(2.6)	1.20(2.1)
Donors	0.04(0.14)	0.13(0.4)	0.44(1.1)	0.23(0.5)	0.30(0.7)	0.34(0.6)
PRIVATE	**24.60(78.3)**	**24.62(76.7)**	**31.06(77.1)**	**34.21(76.6)**	**34.37(74.5)**	**42.65(74.9)**
Total	31.41	32.10	40.26	44.64	46.14	56.95

Source: Olaniyan and Lawanson (2010)

According to Olaniyan and Lawanson (2010) government plays a very weak role in the funding of health care in Nigeria, contributing less than one-quarter of total health expenditure and much less than the contributions of other sectors. There is significant variation across levels of government (see Table 5). While the contribution of the federal government is generally lower in the North relative to the South, the State and Local Governments in the North contribute higher share than their counterpart from the South, though their contributions are smaller in absolute terms. The per capita amount sourced from the federal government is generally higher than contributions from the States and Local governments in the South, while the reverse is the case for the North.

Government contribution to health falls short of global targets. For instance, the World Bank (1993) recommended per capita government expenditure of US$12.00 to fund basic health package. This recommendation is not met in Nigeria, particularly within the Northern region. Incidentally, the core health indicators for the country still remain very poor in both the North and South of the country. This implies that beyond adequate funding, there is also the issue of resource utilization. While inadequate funding could be advanced in the North as the core reason for poor health, the case in the South is different and could be a situation of relative inefficiency of resource use within the health care systems of the region rather than absolute inadequacy of resources.

Figure 8 shows the linkage between oil revenue, total government expenditure (TGE) on one hand, and government expenditure on health (GEH). It revealed that GEH did not correspond to the change in GDP growth, which is mainly triggered by the oil industry in Nigeria, nor with the change in TGE.

Figure 8: Comparison between oil revenue, GGE, THE and GEH
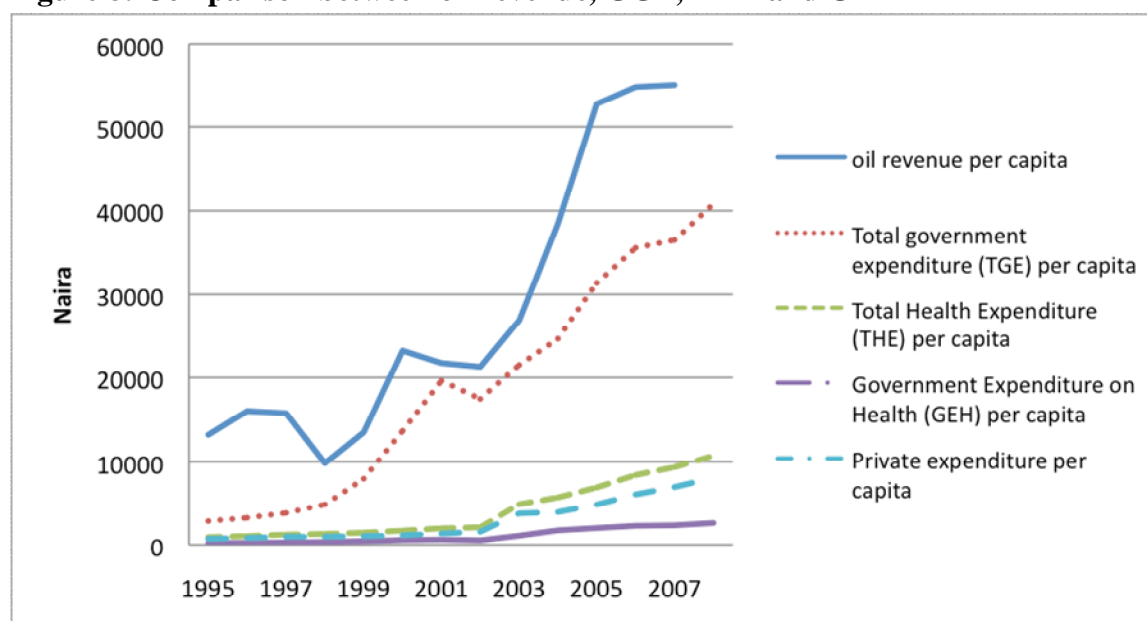
Source: Oil price and oil reserve data from British Petroleum 2008; other data from WHO 2010.

Government expenditure on health has been kept at a low level since 1995 and was not boosted by the growth in TGE, which is generally influenced by increasing oil incomes. The increase in public revenue was absorbed by other sectors, such as education, pension, and basic infrastructure, indicating that health investment was not prioritized in public financing. While GDP has more than doubled from 2,828,660 NCU to 7,128,200 NCU from 1998 to 2002, the proportion of government expenditure on health (GEH) to total government expenditure (TGE) declined from 7% to 3%. While Nigeria experienced economic growth with 2.5% annual growth rate from 2002 to 2006, the investment in health out of TGE was kept at a low level, around 5% to 7%. Another possible situation was that public revenue leaked to the privileged elites due to corruption. Debt relief from the Paris group of creditors in 2005 could be considered as a natural experiment to test the impact of exogenous shock in TGE on GEH (Su, 2011).

Foreign aid constituted only a small proportion of total health expenditure (THE) in Nigeria, ranging from 0.2% of THE in 1998 to 16% of THE in 2000. An important point is that after 1989 a large amount of foreign aid has been assigned to international NGOs, who collaborated with local governments, rather than to the recipients' government, as a rejection of the military dictatorship at the time. The foreign support was channeled instead to the NGOs for greater accountability. Since the introduction of democracy in the country, however, foreign donors have resumed relationships with government and assistance for health is duly channeled through the government again.

According to National Health Accounts (NHA) of Nigeria, health care funding depends largely on household expenditures, amounting to 67% of total health expenditures (THE), in 2005. Government, development partners, and firms contributed 26%, 4%, and 3%, respectively (Soyibo et al, 2009). Generally, health financing system in Nigeria features high out-of-pocket expenditures and limited risk pooling.

Figure 8 reveals that private expenditure is the major component of THE. Out-of-pocket (OOP) expenditure and private insurance, which comprise private expenditure, are options more available to the rich than the poor. Studies demonstrated that the poor experienced barriers in access to health care because of user fees (ESA-NHA Network, 2001). This is further worsened by the failure of a community health insurance system.

Social insurance was embedded in overall socioeconomic development, but is unfortunately not mature enough in developing countries such as Nigeria (Roberts et al, 2004). WHO (2010) reported that social security funds had no share in THE in Nigeria. Because social insurance applies only to formal sectors, community insurance was pursued in Nigeria, even though geographical inequality and shallowness of benefit package are considered as short-comings identified by health financing experts (Roberts et al, 2004). Onyejekwe et al (2010) noted that less than 40% of Nigerians were willing to pay for community based health insurance (CBHI) schemes for themselves or other household members. The proportions of people who were willing to pay were much lower in the rural communities, at less than 7%. This is largely due to ignorance of the health insurance system and poverty. The average amount the people were willing to pay (WTP) as a monthly premium for themselves ranged from ₦250.00 (US$1.7) in a rural community to ₦343.00 (US$2.9) in an urban community. The higher the socioeconomic standing of the person, the higher the stated amount they are willing to pay. Meanwhile, only the rich in urban areas were enrolled in private insurance, which enhanced vertical inequality between income quintiles.

PUBLIC HEALTH CONCERNS IN NIGERIA

Unfortunately, as we approach 2015, the target year set for the attainment of the Millennium Development Goals (MDGs), Nigeria has made little progress. As we march closer to the deadline, concerns mount.

Maternal and child health provides key indicators of a society's level of development and the performance of its health delivery system (NDHS, 2003), and I am using the maternal and child health statuses as points of entry to appreciating the concerns over the performance of Nigeria on the global development targets. The World Health Organization (WHO, 1977) defined maternal mortality as the "death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of pregnancy, from any cause related to or aggravated by pregnancy or its management but not from accidental causes". With this definition, efforts to promote maternal health and reduce maternal mortality have been circumscribed to providing family planning and contraceptive services. Child mortality, on the other hand refers to the death of children before their fifth birthday. The reduction in maternal and child mortality is a top priority on the agenda of many global efforts such as the safe motherhood initiatives. Today, maternal mortality constitutes one important element of the MDGs. The MDGs on maternal health target the reduction of maternal mortality ratio (MMR) to 125/100,000 life-births in 2010 and to 75/100,000 life-births in 2015. Similarly, the child health targets include the reduction of infant mortality rate (IMR) and child mortality rate to 35/1,000 in 2015 and 45/1,000 in 2010 respectively (UN, 2008). Unfortunately, MMR in Nigeria remains disquietingly high at 545/100,000 live births in 2008, less than seven years to the target year 2015.

Maternal mortality is a vital indicator with the greatest disparity between developed and developing countries (Cham, Sundby and Siri Vangen, 2005). Maternal deaths are disproportionately high in the developing countries due to a number of causes that have for long missed the focus of researchers, professionals and activists interested in controlling the phenomenon. According to the estimates of World Health Organization (WHO), United Nations Children's Funds (UNICEF) and United Nations Funds for Population Activities (UNFPA), 515,000 women die, each year, of pregnancy related causes. Over half of these take place in Africa, 42 per cent in Asia, 4 per cent in Latin America and Caribbean, and less than 1% in the more developed countries. In other words, over 99 per cent of maternal deaths take place in developing countries (WHO, 2001).

The menace of malaria in pregnancy is highly involving health reality with grave implications for complications during pregnancy and delivery. Although concerns for malaria in pregnancy were first flagged in the medical literature approximately 70 years ago it had been a neglected area of research, until recent development of drug resistant malaria syndromes (Greenwood, et al., 2007). According to Costa et al (2006:1525), "some cases of *Plasmodium* falciparum infection progress to the deadly forms of the disease responsible for 1 to 3 million deaths annually. *P.* falciparum-infected erythrocytes adhere to host receptors in the deep microvasculature of several organs. The cytoadhesion of infected erythrocytes to placental syncytiotrophoblast receptors leads to pregnancy-associated malaria (PAM). This specific maternal-fetal syndrome causes maternal anemia, low birth weight and the death of 62,000 to 363,000 infants per year in sub-Saharan Africa, and thus has a poor outcome for both mother and fetus".

Furthermore, the situation of antenatal clinic services in Africa leaves much to be desired. According to Cham (2003), the risk of dying in pregnancy, childbirth or shortly after delivery is now very rare in industrialized countries but remains tragically high in large parts of Africa, Asia and Latin America. The wide gap in maternal mortality ratios in the industrialized and the developing countries is a striking reality of the world's maternal health linked to the great disparity in antenatal care services. Skilled care at delivery is one of the key elements necessary to reduce maternal mortality. Though all regions show improvement, only 46 percent of deliveries in sub-Saharan Africa, where almost half the world's maternal deaths occur, are assisted by skilled attendants compared with Latin America with 88 percent of child birth assisted by trained attendants (UN, 2006).

Nigeria's maternal deaths rose from 37,000 in 2000, when the targets were set, to the 59,000 mark in 2005 with a population of 140 million. India with a population of over one billion reduced its maternal mortality from 136,000 to 117,000 between 2000 and 2005. With an estimated annual maternal death of 59,000, Nigerian maternal deaths ranked only after India's 117,000 maternal deaths, on absolute terms. The Federal Ministry of Health (FMoH) and World Health Organization (WHO) estimate that over 50,000 women die each year in Nigeria due to complications of pregnancy and child birth. This, in relative terms, is the worst in the world (Abdul'Aziz, http://ipsnews.net/africa/nota.asp?idnews, 2008). Nigeria contributes nearly 10 percent to the global burden of maternal mortality, despite accounting for less than 2 percent of the world's population (Okonofua, 2010). Similarly, more than one million children under five

years die each year due to preventable causes (Abdul'Aziz, 2008). Figures 9 and 10 reveal very poor child health outcomes over the last decade in Nigeria (NPC and ICF Macro, 2009).

*Fig. 9: Trends in Nutritional Status of Children Under Five in Nigeria*
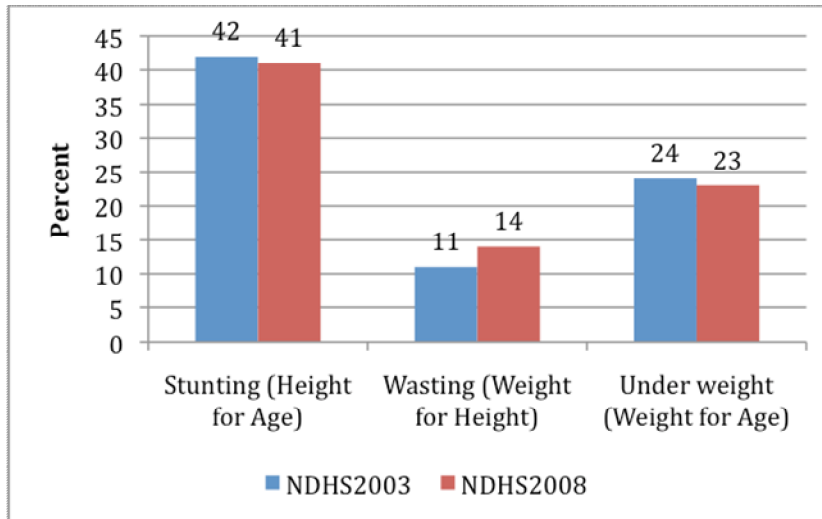
These sorry measures of the health of mothers and children in Nigeria persist in spite of numerous effective interventions. To date, Nigeria has some of the lowest uptake of evidence-based interventions for improving maternal and child health in the world. The contraceptive prevalence rate is abysmally low (<10%); only 60 percent of pregnant women go for antenatal services in health clinics and of this, only 30 percent do so more than once; only 30 percent of the pregnant women have access to skilled birth attendants (Okonofua, 2010).

Malaria remains a primary health concern worldwide. According to the latest estimates, 250 million cases of malaria are recorded each year, with an estimated associated annual death toll of up to 1 million deaths (WHO, 2007). This is in spite of over 254 million ITNs delivered to sub-Saharan Africa, enough to cover 66% of the 765 million persons at risk, in less than 3 years between 2008 and 2010 (WHO, 2010). The majority of the burden of the disease caused by malaria is borne by the populations in the highly endemic areas of Sub-Saharan Africa. The populations at highest risk within the endemic areas are pregnant women and infants (Houggenhegen, *et al.*, 2003). Malaria infection in pregnant women is not only a major risk factor for mothers, who appear substantially more susceptible to complications from malaria (Shane, 2001), but also substantially increases risk to the child from miscarriage, stillbirth and low birth weight which increases the chances of death in the first months of their lives (Steketee *et al.*, 2001). Malaria is estimated to cause up to 15% of maternal anemia and about 35% of preventable low birth weight as the leading cause of neonatal mortality (CDC, 2007).

Fig. 9: Trend in Mortality of Children in Nigeria

Malaria is a major killer of children and women, particularly during pregnancy. The effect of malaria parasitemia has been documented from different scientific efforts. This tragedy continues in spite of effective insecticide treated nets (ITNs). The NPC and ICF Macro (2009) report of very low ITN ownership and even lower usage rate in Nigeria.
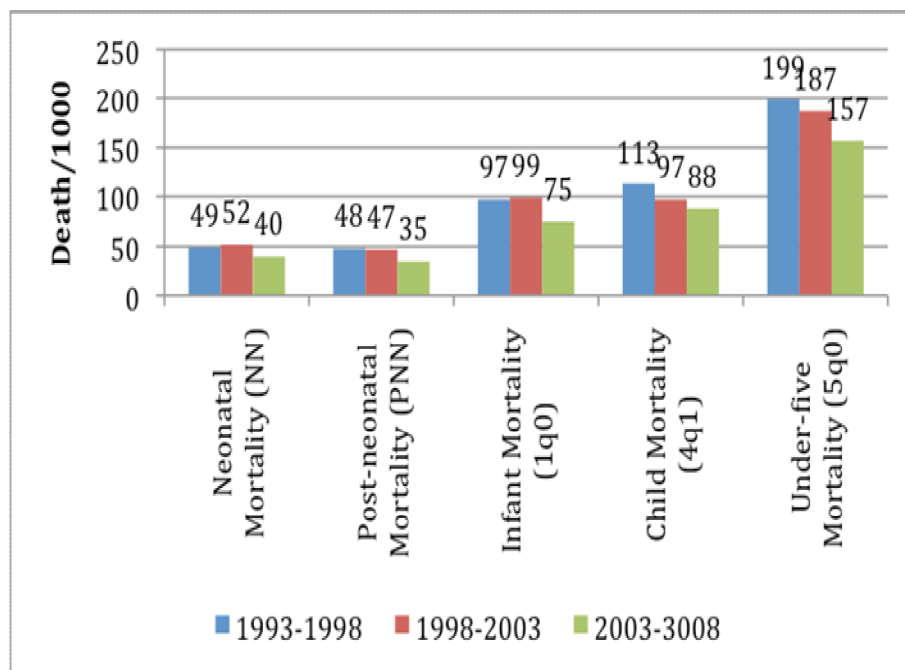
We do have interventions such as insecticide treated nets (ITN) and intermittent preventive treatment of pregnant women (IPTp) with SP, both of which are directed at controlling the menace of malaria for pregnant women and children, but uptake remains very low. Anecdotal evidence blamed the situation on the poor access to these interventions because of poverty, ignorance, and difficult geography. Some of the explanation for the poor health indicators is found in the poor health infrastructures in Nigeria. The situation is further aggravated by poverty and ignorance, which account for women's inability to access critical ANC services and drugs (Daily Sun Editorial, 2007). In many cases, medical facilities are few and thinly spread. In the hard to reach rural areas, with difficult terrain and inadequate road networks, modern health facilities are simply unavailable. With inadequate transport facilities to get women who experience complications during pregnancy to hospitals in the urban centers, many pregnant women die of preventable health problems such as malaria infection.

These health realities in Nigeria call for a rethinking of the mechanisms and channels of providing appropriate interventions. Previously, the orthodox health system determined and directed health care delivery in Nigeria, as in most other African countries. For many years, under this orthodox health system, health services and NGOs distributed health commodities to communities—Immunizations, Vitamin A, Bed Nets, Ivermectin, Guinea Worm filters, Condoms, Antiretroviral and Tuberculosis drugs among others.

Unfortunately, the health status of the country worsened or at best remained constant due to inadequate access to the interventions. For instance, only 15.7 percent of children received all basic immunization in the 2008 NDHS and the childhood mortality rate in Nigeria remained high at 194 per 1000 births (WHO, 2007), and this is largely due to pneumonia, diarrhea, malaria and measles, which are easily prevented through simple interventions (United Nations, 2008). The potentials of the insecticide treated bednets (ITN) in enhancing child survival have been well

documented in randomized controlled trials. Fegan et al (2007) demonstrated that ITN was associated with 44 percent reduction in childhood (1-59 months) mortality with the level of protection corresponding to 7 deaths averted for every 1000 ITN distributed in Kenya. However, in spite of the efforts to promote ownership and use of ITNs in households less than 2 percent of households in Nigeria own an ITN (NPC & ICF Macro, 2009).

Similarly, measles and pneumonia infection, and vitamin A deficiency remain childhood killers in African countries yet the proportion of suspected cases receiving adequate care remains very low (UN, 2008). Measles can be effectively prevented with a relatively inexpensive vaccine but only few cases are reached with the vaccine due to logistic problems that overwhelm the health systems.

Worse still, antenatal care attendance, which is an essential safety net for healthy motherhood and childbirth, is low due to low access to health care facilities in poor countries, like Nigeria. Adolescent pregnancy also contributes to the cycle of maternal and childhood mortality. According to the Millennium Development Goal Report for 2008 (UN, 2008), "very early motherhood not only increases the risk of dying at childbirth, it also jeopardizes the well-being of surviving mothers and their children. Young mothers frequently miss out on educational and socio-economic opportunities". Many very early pregnancies can be controlled with appropriate family planning interventions. All of these point to issues with the health service and development intervention delivery systems.

Given the weak service delivery system in Nigeria, it is not surprising that the nation did not fare well in the recently unveiled 2010 United Nations *Human Development Report*. Though it recorded a slight increase in life expectancy at birth from the previous year's 47.7 years to 48.4 years, Nigeria is still far below world averages with respect to life expectancy and other quality of life indicators.

In spite of the small rise in life expectancy, there is nothing much to celebrate. Nigeria is still in the doldrums as far as health care delivery system is concerned. We have problems at the primary, secondary and tertiary levels of our health care system and our wealthy citizens seek care in other countries.

Though government total expenditure on health has been negligible, other partners in global health have made significant contributions to the promotion of health in Nigeria. In September 2005, the Africa Region translated the World Bank's Global Strategy and Booster Program for Malaria Control (MBP) into an outcomes-driven assault on malaria in Africa, supporting country-level efforts to deliver concrete and measurable results. During the first phase, the Bank committed approximately US$470 million of country resources to support the Booster Program for Malaria Control in approximately 20 countries. This amounts to a nine-fold increase in financing for malaria control in Africa since 2005 (from approximately US$50 million prior to 2005). The second phase of the program will provide additional support (approximately US$ 1.1 billion) for regional and country-specific lending operations in malaria and health systems. Nigeria was a beneficiary of these funding supports. Similarly, within the last three years of the last decade, over 254 million ITNs have been delivered to sub-Saharan Africa, enough to cover

66% of the 765 million persons at risk (WHO, 2010). This brings out the issues of access to existing interventions and technologies.

PROMOTING ACCESS TO HEALTH INTERVENTION FOR POOR PEOPLE

In the light of the foregoing, one locates the major challenge to realizing good health, particularly among women and children to be access, rather than in developing new interventions, for instance. Thus, at this point, I will focus more systematically on the issues of access to these technologies for good health. This is because we find that despite the tremendous investments and progress in the provision of the technologies for good health, the health statuses of women and children in particular fall short of global targets due to the complex issue of access. Within the following sections some efforts at resolving the problem of access to effective interventions will be highlighted. I will also show the effectiveness of these efforts citing some case studies as well as my most recent works in this direction. But, first, let us clarify access as a definitional issue.

According to Frost and Reich (2008:xi), "just because a good health technology exists does not mean that it will be delivered, used, or achieve its potential to bring good health, especially for poor people in poor countries". They further argued that health technologies and programmes can only impact positively on the lives of people in poor countries if access to these commodities and technologies is enhanced. Access to health interventions, here, is defined as people's ability to obtain and appropriately use good quality health technologies and commodities as and when needed. Access does not just entail the logistics of moving commodities from manufacturers to end-users, it also involves the realities of the commodities and services as well as the links to how health systems perform in practice. Frost and Reich (2008) conceptualized access as a process involving many activities and actors over time, and it contains a substantial normative dimension. This implies the need to look for innovative approaches to creating access to the numerous interventions to promote good health.

When addressing the World Health Assembly in 2005, Bill Gates (2005) called on the major players in global health to devote more thinking and funding to delivering interventions as they are discovered. This in essence refers to the entire chain in the discovery, development and delivery of interventions and highlighting the critical importance of bringing health commodities to the people who need them. Putting this more succinctly, Frost and Reich (2008) devised a framework to guide the promotion of access to intervention among resource poor people needing the interventions for their good health. See Figure 11.

Fig. 11: Access Framework

Source: Frost and Reich (2008)
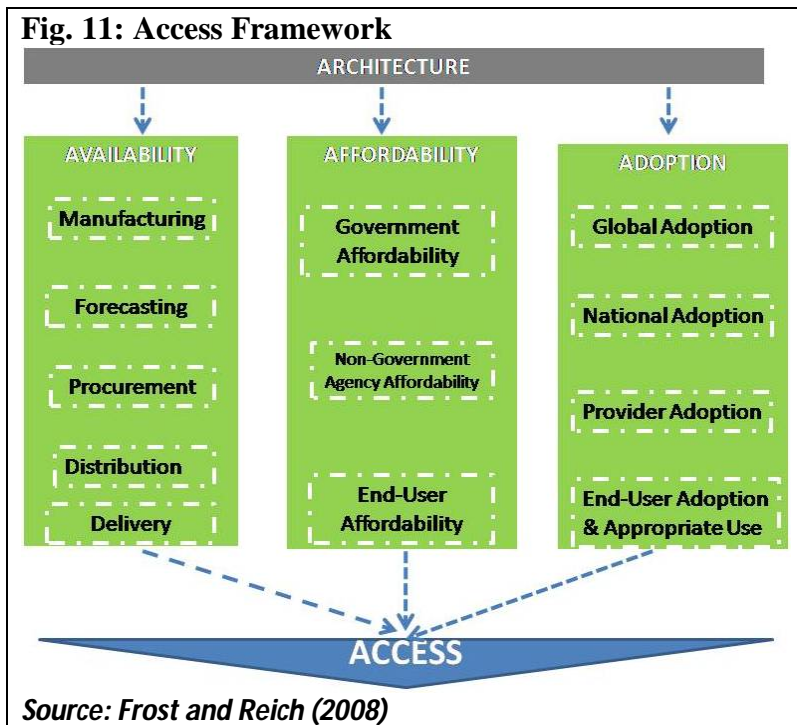
Certain approaches to community involvement in the delivery of health services have thus been proposed. Some of these include Community case management and community directed interventions.

A key lesson from the Roll Back Malaria partnership is that scaling up basic interventions through the existing health system is a challenge. Coverage for prompt and appropriate case management with artemisinin-based combination therapy (ACTs) or intermittent preventive treatment for pregnant (IPTp) women is far from the 2005 target of 60%, let alone the 80% goals for 2010 (World Malaria Report 2009). As health interventions are being scaled up to meet millennium development goals, lessons are also being learned about the need for and role of the community in health service delivery. For example, community approaches are needed to address the large coverage gaps of key malaria interventions (WHO, 2009; UNICEF/PATH, 2010). It is hypothesized that the more involvement of the people the more accessible the intervention among the poor.

Two broad approaches to community delivery of health services include the use of volunteer village or community health workers (CHWs) as espoused by the Alma Ata Declaration as the model for community case management (CCM) and the community directed interventions (CDI) approach with its community directed distributors (CDDs) which has been developed and implemented as the primary strategy for Ivermectin distribution by the African Program for Onchocerciasis Control (APOC) and its partners.

Community Case Management

The more common volunteer CHW model has been the basis for several CCM studies. What is important about CCM is that there is attention to several of the common diseases of children in particular. The research community has recognized that community delivery is especially important for achieving malaria targets. At the same time they do not wish that CHWs focus on malaria to the exclusion of other major causes of mortality in children such as pneumonia and diarrheal diseases. I am however going to dwell more on the CDI approach, which I participated very actively in testing and implementing at large scale.

Community Directed Interventions

CDI is a strategy for realizing the same dream that was promoted by the landmark 1978 Alma Ata declaration "Health for All", barefoot doctors, and so on. Its effectiveness is presented herein. The review concludes with suggestions for future research to find the best ways of involving communities in the delivery of their own programs to control the endemic diseases of the poor.

CDI took form from 1995 onwards as community directed treatment with Ivermectin (CDTI). The UNDP/World Bank/UNICEF/WHO Special Program for Research and Training in Tropical Diseases, best known as TDR, was commissioned to compare two approaches to Ivermectin distribution in communities "beyond the end of the road." The study had just one research question, namely can communities themselves design and implement Ivermectin distribution in their own areas? The multi-country study was based on the goal of ensuring that Ivermectin supplies reached these endemic communities in a timely and efficient manner. The comparison was between two mechanisms to achieve this goal: outreach distribution by the health system to the villages and a community directed system where villagers would plan and implement their own distribution with training and commodity support from the nearest health facility. The study found that Ivermectin coverage was better when the community took charge. Subsequently, since its founding in 1996, APOC has promoted CDTI as the main delivery mechanism for Ivermectin and has reached more than 100,000 villages with consistently adequate coverage for nearly 15 years. Amazigo et al (2007) reported that over 33 million people are treated annually with Ivermectin in the APOC countries. The CDTI strategy was used by 95,000 communities in 16 sub-Saharan countries to distribute more than 98 million Ivermectin tablets in 2005. By 2009 the number of treatments annually had risen to 55,000,000 in Africa. Other studies in north, West and South-south Nigeria as well as Uganda demonstrated the effectiveness of reaching the previously underserved populations with health interventions (Homeida, 2002; Akogun, et al, 2001; Katabarwa, 2000; Braide et al., 1990; Dao, et al, 1994)

Over time, questions arose as to whether this CDTI mechanism could be used to deliver other basic health services. An exploratory study (Okeibunor et al. 2004) documented that in fact, district health teams were using the CDTI process to scout for guinea worm, provide vitamin A, mobilize for immunizations, provide water and sanitation services, agricultural extension services, HIV/AIDS sensitization and awareness creation, provision of family planning services and a combination of other community development services. This led to the design of a structured and systematic study that tested whether additional health interventions (malaria case

management, ITN distribution, Vitamin A distribution and Monitoring of DOTs for TB) could be incorporated into the CDTI process. With these additions, the process was renamed CDI. The key element of this distribution mechanism was community decision making, not community volunteer distributors per se. The community made the decisions about the need for and number of volunteers they wanted and what tasks each would perform in this expanded distribution program (CDI Study Group, 2010).

The basic design was based on a systematic addition of the four additional tasks to the basic role of Ivermectin delivery in four districts at each site in differing orders. A fifth or control district continued to distribute Ivermectin at the community level as usual, while the other four commodities were available at the nearest health facility as would be the 'normal' practice.

The three-year multi-center CDI study reported in 2008 that not only was coverage and use of malaria treatment, ITNs and Vitamin A better in the intervention districts, but Ivermectin coverage was not adversely affected. In fact, Ivermectin coverage was better in the intervention areas, thus showing that communities could handle multiple interventions. Only the DOTS part of the intervention did not work, in part because of social stigma issues and health worker fears of trusting villagers with TB drugs.

Since that time, other studies have tested the CDI model for other health services. In Uganda researchers pointed out that IPTp coverage targets were difficult to meet even when there was good antenatal care attendance (Mbonye, 2007). This could be due to the fact that no one motivated the women to take the drugs. Sometimes too, women merely report for ANC eith too early in the pregnancy or when it is time for delivery. A study was designed to see if IPTp tasks could be incorporated into existing CDTI efforts (Mbonye, 2007), which has the capacity of monitoring compliance and given the necessary motivation to comply with IPTp prescriptions. In CDI, treatment is taken under the direct observation of the distributor. The researchers reported that there are indications of the effectiveness of the process in not only promoting access to ITNs among pregnant women but also increasing ANC attendance in Uganda.

Although not organized under the rubric of CDI, two other studies have reported the use of community based volunteers to deliver IPTp. In Malawi Msyambosa, et al. (2009) reported that community-based distribution of SP for intermittent preventive treatment of malaria during pregnancy improved coverage, but expressed fears that it could reduce antenatal attendance. Another study in Uganda, Ndyomugenyi et al. (2009) corroborated the earlier Ugandan study in confirming that CDI improves both uptake of malaria in pregnancy (MIP) interventions (ITN and IPTp) and ANC attendance.

TDR News (2008) reported that community delivery of under-utilized health interventions in an integrated manner, using the CDI approach can dramatically improve access to vital drugs and preventive treatments, particularly for malaria, in remote African communities. In the report captioned CDI improves primary health care, the TDR News (2008) noted that the CDI approach was shown, in a remarkable study covering some 2.35 million people in three countries to be much more effective than currently used delivery approaches for all studied interventions except DOTS treatment for tuberculosis (TB). The problem with DOTS was linked to the stigmatization associated with the disease. People with prolonged cough would rather seek treatment in

communities far removed from their own, where no one will recognize them as receiving treatment for TB. Early in 1999, Daniels et al. (1999) hinted the effectiveness of the community directed approach in diabetes prevention and control in a rural Aboriginal population in British Columbia, Canada.

In addition to positive coverage results from CDI studies, there are important findings on the management challenges of community delivery. The CDI strategy empowers communities to take ownership of the intervention as well as work towards its sustainability. For instance in the three year TDR study some critical lessons on management challenges were learnt and documented. It was noted for instance that community participation and uptake of the interventions is greatly influenced by the perception of the disease as an important health problem that affects all sections of the community. This is in agreement with the health belief models of Rosenstock (1974). In a study of health problems confronting pregnant women in Akwa Ibom State, for instance, the respondents were quick to list malaria, second only to fever. The following quote from the husband of a woman who just delivered a baby, less than six months preceding the survey, in a focus group discussion (FGD) in Esit Eket typifies the perception of health problems of pregnant women in the communities. According to him,

> *Their sickness during pregnancy includes malaria. It caused so many women death in this community after and during the delivery, the placenta (obiod) is out of its tracings. Unfortunately after delivery the person dies and leaves the baby….*

Malaria is one of the common problems associated with pregnancy in the study area. According to a grandmother in an FGD session in Eket, *"what I know is that pregnant women like having malaria".* Another grandmother in Eket enumerated how the malaria in pregnant women affects their babies. According to her,

> *The problem it carries is that even a baby in the womb if delivered immediately is affected. In the hospital you will hear the nurse will mention different type of malaria that the baby is born with. It comes with death….*

Yet another grandmother from Eket noted that,

> *When the mother is pregnant she does not receive treatment for the malaria to finish, it affects the baby from the womb because the baby feed from the mother. If it is a different type of malaria that affects the mother, it will affect the unborn baby as well.*

These perceptions no doubt influence the willingness of the people to participate in programmes to control malaria in the community. Qualitative data show CDI as having greater impact on ITN distribution and access among community members. In Kaduna, the ITN programme manager noted that

> *…it (CDI) has impacted positively on our program. Now there are designated centres where the target groups can buy at subsidized price. More partners are coming in to distribute these ITNs to the target population. It has improved*

coverage of activities, improved communication amongst stakeholders effective monitoring. It has no negative impact that I am aware of.

Another factor responsible for the success of the CDI process is the availability of the commodities. CDI gives voice to the people. CDI created demand for the intervention commodities. It follows therefore that the supply angle needed fulfillment in other to meet the demands else the programme would fail in reaching the desired coverage. For instance, Shortage of ITN became very noticeable and people made demands. In Kaduna a distributor said,

> *…I had difficulties with people who would not get nets due to shortage of nets accused me of keeping their nets. ITN is difficult because of the shortage, it creates many problems and people quarrel with me.*

Beyond making the commodity available, people became more conscious of the right to own nets and put pressure on the system for the supply of nets. They demanded nets that were perceived to be theirs. This way demand is created unlike the traditional system where people perceived the intervention to belong to government. In the latter scenario the people reluctantly sought interventions.

It is also important that the people perceive the benefits of the interventions. Where people fail to see the benefits of taking the intervention commodities they are more reluctant to seek the intervention. Since malaria is perceived as a very serious malaise in the society, and they know the efficacy of nets in preventing malaria, the people became anxious to access the nets and prevent malaria. A typical statement from a community leader from Kaduna State, attests to the influence of the perceived benefits of intervention and the success of the CDI process. According to him,

> *…we got involved because we know the importance of these drugs and nets. We are involved in awareness creation and ensuring coverage.* (**Community Leader, Community of Ungwar Masara, Jemaa District**)

The success of CDI is also linked to the relative simplicity of the implementation of the interventions. Distribution of nets and distribution of vitamin A require very simple techniques. The requirements of technical expertise are minimal in each case. Community members are easily trained to deliver the commodities and diagnosis is simple. With the community members in charge of distribution, it becomes easy to promote community ownership and sustainability. When the communities are adequately engaged in the programme, they work assiduously to promote its success. For example,

> *…we got involved in the CDI activities through awareness creation, we ensure coverage and people are available to receive treatment…. "My committee got involved in the CDI process…. We were mandated by the community to ensure supply and distribution of Ivermectin to all community members. Two years ago we got additional responsibility when other CDI interventions were introduced. Our role is to ensure that the supplies are received in our community and distributed based on the agreed criteria. We also indirectly supervise distribution*

of the commodities. It is our responsibility to get involved because it concerns the health of the community. Our role in the partnership is to ensure that our community gets it share of the commodities and that the commodities are distributed. We ensure implementation at the community level." **(Leader, Community Based Organization, Kurmin Baba community, Kachia LGA)**

When we expect the drugs and fail to get it we can go to the officer and ask why has the drug not been given to us. ...My people who fail to get net also complain and the CDD will go and collect their own **(Leader, Yorro LGA)**

*I am very happy doing the work because it is helping my people. And you see that because I am doing this work many people know me in this community and even you people know me. When NID, RBM and HIV come with their programmes they also involve me (**CDD, Bali LGA**)*

The community-directed intervention (CDI) approach demonstrates that communities can effectively carry out the tasks of reaching the needy populations with basic health services and proven interventions. The logic and values of CDI distinguishes it from other community-based interventions (CBI) or interventions directed at, or focusing on alleviating health problems of communities. In the latter case the health system designs and implements interventions in the communities focusing on specific community needs. In doing this, the peculiar realities of the communities could be factored into the design. However, this is often dependent on how much the health system knows about the community. Compliance with prescription is often epileptic. Worse still, sustainability of such interventions is only assumed but never realized. The intervention collapses as soon as the initiators depart from the communities. Community ownership of such interventions is lacking among the members of the communities and their leadership structures.

CDI happens when communities take charge of distributing health commodities themselves with guidance from the health service. It is the process in which community itself directs the treatment process (Remme, 2004; Okeibunor, et al, 2004). Community, is here, conceptualized as a group of people living together within a defined territory, practicing common ownership with a system of social organization based on small self- governing structures. The community decides collectively whether they want any intervention, how the intervention will be collected from the medical store at the health centre, when and how it will be distributed, and who in the community will be responsible for the distribution. In a nutshell, communities take charge and make choices for organizing distribution. For example, they can decide to adopt central place, house-to-house or a mixed approach to distribution. In this arrangement, the health services and its partners take on participatory approach in introducing possible intervention(s) and the concept of Community-Direction highlighting community ownership from the onset. From then on, the community takes charge of the process, usually through a series of community meetings for decision-making on implementation and how to carry out its roles in the implementation process. The CDI strategy emphasizes the need to empower communities to take ownership of their health interventions.

Each partner, namely the community, the health services and others (local and international development agents) have varying roles in CDI. CDI is based on the principle of community involvement and participation (Brieger, 2000). Communities are empowered to take all major decisions on what and how to deliver interventions and also make contributions to support the implementation of the interventions. This process combines effectiveness in coverage with ownership and sustainability. The health system merely performs facilitating roles to build the capacity of the community implementers.

Commitment to community empowerment process is of primary importance in CDI and it is critical that all partners demonstrate commitment to this process. Partners, especially health system should not dominate but rather contribute according to their roles and responsibilities to empower the communities, and that they share a common objective. As a process, CDI involves the following:

1. Community entry and meeting with chiefs and the leadership structures
2. Community orientation and facilitation meeting
3. Community selects distributors
4. Community volunteers trained
5. Community conducts census
6. Community plans dates, approach
7. Community collects intervention commodities
8. Community distributes intervention commodities
9. Monitor, treat and/or refer reactions
10. Community submits treatment records

CDI and Onchocerciasis

CDI was first tested for use in the control of onchocerciasis, which was made possible with the availability of Ivermectin for annual mass treatment of endemic communities in Africa. A major challenge for onchocerciasis control is to deliver Ivermectin treatment to all target communities and to sustain high treatment coverage over a very long period of time (Okeibunor, et al, 2004). In most of Africa, where 99% of those infected live, the principal treatment strategy is Community-Directed Treatment with Ivermectin (CDTI) in which it is the community itself that directs the treatment process (Remme, 2004). In a generic sense this is referred as community directed intervention, where communities decide collectively on the adoption of any intervention. CDI is thus the product of a systemic and persistent search for a system of carrying service to all communities in onchocerciasis endemic areas, most of which were in the hard to reach areas, on a sustainable basis for many years. These communities are characterized with extremely difficult terrain and bad road network. Modern health facilities do not exist in these areas, and when, very rarely they are nearby, they remain so unaffordable to poor communities that their presence makes no difference.

The Special Programme for Research and Training in Tropical Diseases (TDR) first tested the utility of CDI for African Programme for Onchocerciasis Control (APOC). The research was conducted to learn if communities could deliver the Ivermectin more effectively than agency

outreach had done in the past. When CDI proved successful, it was adopted as APOC's official strategy. There are now thousands of communities throughout Africa benefiting from annual onchocerciasis control through CDI (Amazigo, et al, 2007). By 2009 CDI for onchocerciasis control was operating in 19 Countries, 111 Projects, and 120,000 Villages with at least one CDD per village and 55,000,000 Ivermectin treatments provided annually.

By the turn of the century, studies revealed that CDI was used to promote guinea worm control, immunization programs, Vitamin A distribution, water and sanitation projects and schistosomiasis control as well as other health and development activities in many communities.

Table 5: List of Additional Tasks for the CDI System	
Additional Activity	Percent of Communities
Immunization	55%
Community Development	49%
Water and Sanitation	44%
Agriculture	10%
HIV/AIDS	6%
Family Planning	6%
Guinea Worm	2%
Vitamin A supplementation campaign	2%
Other	27%
Mix	82%

The availability of community directed distribution encouraged other programs to involve communities and community directed distributors (CDDs) in other health interventions (Okeibunor *et al*., 2004). The question arose as to whether additional Tasks added to the CDI Structure were a Threat or Strength. APOC funded a preliminary assessment which indicated that a large number of CDDs are already involved in other health and development (H&D) activities (e.g., distribution of vitamin A, malaria treatment, polio immunization, Guinea worm eradication, nutrition, water protection, serving as community health workers etc) (Homeida et al., 2002).

According to Okeibunor, et al (2004), the success of CDI in onchocerciasis control drew attention from other disease control programmes and there were various attempts to use the CDI system with its CDDs for other health interventions. Confronted with ambivalence on the implications of additional tasks on the CDI system, APOC/TDR conducted a study to examine the levels of involvement of CDDs in other health and development activities, its relationship with the performance of CDTI, and the attitudes of CDDs and health workers towards greater involvement of CDDs in additional activities. The results showed that performance of CDDs in the distribution of Ivermectin increased with increase in the number of tasks each CDD took on. The treatment coverage per community increased significantly with increase in the mean number of additional activities of the CDDs in the community (linear regression, Intercept: 67.7%, slope 2.5%, R=0.238, P<0.05). See Figure 12.

Figure 12: Treatment Coverage and CDD Involvement in Additional Tasks
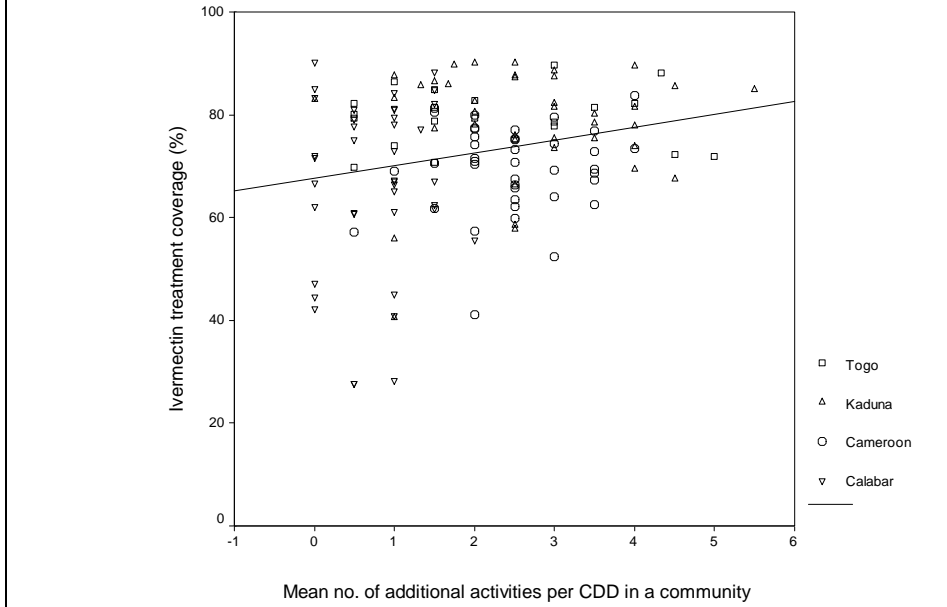
The results also revealed that CDDs and health workers had a positive opinion on adding other health & development activities (See Figures 13 and 14).

Fig. 13: CDD opinion on adding other health & development activities

Fig. 14: Health worker's attitude towards adding other health & development activities for the CDDs
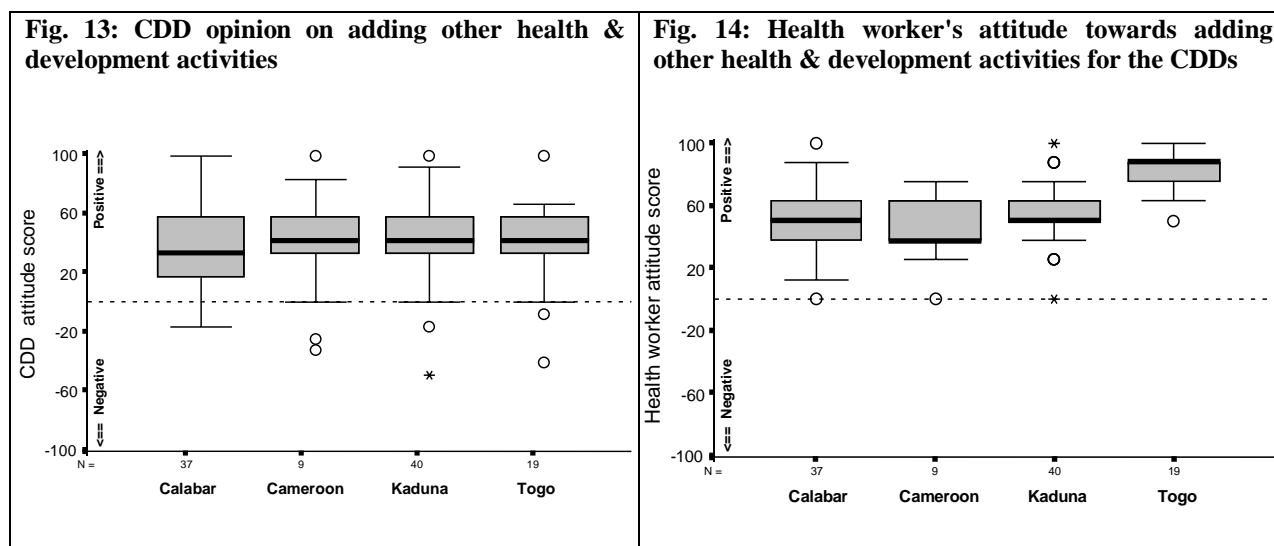
The next step in the research process was testing intentional add-on of other interventions to Ivermectin distribution in a logical and systematic way. Choice of interventions was based on an analysis of complexity of each additional intervention as well as the complexity of the package of interventions.

Following these results, and with support from WHO/TDR we designed a study to systematically add interventions to be delivered along with the Onchocerciasis control programme. Here, we were interested in determining the threshold for the CDTI strategy as well as the complexity of interventions that could be delivered using the CDI strategy.

CASE STUDIES

1: Community Directed Intervention on Major Health Problems in Africa

Table 6	
Complexity of Combination	Complexity of Individual Interventions
	☐ Effort needed to deliver at community level
	☐ Skills needed by community implementers
	☐ Cost of intervention to the end-user
	☐ Monitoring and supervision requirements
	CDTI < Vit. A < ITN < DOTS ~ Home Mgmt Malaria

The Study Design involved the implementation of the following additional interventions in communities where there was already CDI for Ivermectin distribution: Vitamin A, Insecticide Treated Nets, Directly Observed Treatment Short-course (DOTS) for tuberculosis, and Home Management of Malaria. These were added in a phased manner, in four study districts in seven study sites. Each site also had a control district where CDI for Onchocerciasis control continued but the additional interventions were delivered through the normal health care system as seen in

Table 7. The full report can be found on the web (TDR 2008; www.who.int/tdr/publications/.../pdf/cdi_report_08.pd).

Table 7: CDI Study Design					
Study Phase	Interventions delivered through the CDI process				Comparison District
	CDI District 1	CDI District 2	CDI District 3	CDI District 4	
Year 1	CDTI + *Vit. A*	CDTI + *DOTS*	CDTI + *ITN*	CDTI + *HMM*	Traditional delivery of the 5 interventions
Year 2	CDTI + Vit. A + **ITN**	CDTI + DOTS + **HMM**	CDTI + ITN + **Vit. A**	CDTI + HMM + **DOTS**	Traditional delivery of the 5 interventions
Year 3	CDTI + Vit A + ITN + **DOTS** + **HMM**	CDTI + DOTS + HMM +**ITN + Vit A**	CDTI + ITN + Vit A + **DOTS +HMM**	CDTI + HMM + DOTS +**ITN +VitA**	Traditional delivery of the 5 interventions

The study involved 7 multi-disciplinary research teams from 5 countries in West, Central and East Africa, and represented both Anglophone and Francophone Africa. Nigeria was strongly represented with 4 teams from the Northern and Southern parts of the country.

Among the selection criteria for health districts/LGAs to be included in the study were that all five intervention programmes (CDTI, DOTS, ITN, HMM and Vit. A) should be operating in the district or be planned to be implemented in the coming year. Other criteria were the performance of CDTI (treatment coverage at least 65% of the total population) and that the district/LGA should have at least 50 communities to allow for randomization at the evaluation stage. The study covered 45 health districts/LGAs in 5 countries. The average population for one health district/LGAs in these countries is about 100,000 people, and the total study population was around 4.5 million people.

One operational unit (Ward, Sub-district, Health area, Canton, full LGA) was selected, from the five District/LGAs, where all the five intervention programmes (CDTI, DOTS, ITN, HMM and Vit A) are implemented in the traditional health system model. The selection took account of the degree of operation of interventions.

For evaluation purposes 10 communities were randomly selected from the 50+ communities in each operational unit (district/LGA). Five households were randomly selected from each of the ten communities in each unit, giving a total of 50 evaluation villages and 250 evaluation households per study site and 1759 household in the entire study covering countries in the different zones in Africa. The importance of this large sample size is that it did not only enhance the statistical power of the data collected but ensured that typical and not ideal household and communities were included in the study.

Addition of these 4 interventions required additional steps, which actually served as critical factors for a successful setting up of CDI at national and district level beyond the community CDI steps outlined previously. These are seen in Figure 15.

Fig. 15: Additional Steps in Implementation of CDI at the District and National Levels

Source: CDI Study Group (2010)

The steps involved meetings with partners at the National and District levels of the health system. This includes the private health care providers in the project focus. Objectives of such meetings are to plan, define and agree upon a CDI strategy, and the roles and responsibilities of the different partners in the selection of interventions to be offered through the CDI package. Partners also used the opportunity of the stakeholders' meetings to plan for continuous advocacy and health education using appropriate IEC strategies and materials at all levels. Another key issue covered during the meetings at these levels is the training of health personnel at all levels on CDI and available interventions. The staff trained at the National and District levels proceeded to introduce the first line health facility staff to the CDI process and its effectiveness as well as train them on available CDI interventions as required.

Framework for the Implementation of the CDI Process

To implement CDI process for the delivery of intervention or programmes in any community the following steps must be observed. These steps were successfully applied in the scale up of the CDI approach in onchocerciasis control in 19 countries and tens of thousands of communities in Africa. The first major step in the CDI process is approaching the community. The success of the step goes a long way to determine the success of the CDI process in the delivery of interventions in the community. In approaching the community with CDI, the facilitator should adopt the following protocol

a. Discussion of target diseases and interventions:
  i. Definition of the health problems and discussion of community experiences with the diseases;
  ii. Information on the benefits of the available interventions;
  iii. Availability of help from health service and contributions of other partners for the interventions.

b. Discussion on roles and responsibilities of the community:

Community members collectively decide whether they want the proposed interventions to be delivered at the community level. If this is agreed, they then decide how, when, where and by whom the interventions are to be implemented; decide what support to provide to implementers; and how to supervise and monitor the process, including the specific steps below:
  i. Identification of specific tasks and resources;
  ii. Collective selection of community implementers;
  iii. Authority to make decisions on timing of intervention
  iv. Decisions on suitable methods for intervention delivery;
  v. Flexibility to change the timing and methods of delivery of the interventions if found to be necessary;
  vi. Collection of intervention materials;
  vii. Supervision of implementers by community members;
  viii. Management of side effects (if any) and referral of serious cases to the nearest health posts;
  ix. Decisions on support (financial or otherwise) to implementers.

The next challenge is to approach and meet with the entire community. This includes:

a. Health education of entire community on the interventions and their benefits, conducted annually prior to beginning of intervention activities.

b. Discussion of roles and responsibilities of the community in the CDI process (repeat the steps described above).

c. Community decision-making on how, when, where and by whom the intervention is implemented.

d. Collective selection of community implementers.

Having entered the community and introduced the interventions and the CDI approach, the next set of tasks include:
a. Census-taking for information on quantity of intervention materials required.
b. Collection of intervention materials.
**c.** Delivery of the interventions.

Finally, there is the need for:
a. Supervision and monitoring by community and health care services.

b. Reporting by community implementers to the health services.

**Effectiveness of the CDI Approach**

Vitamin A Coverage
The ultimate aim of CDI approach is to attain sustainable increases in the number of eligible persons receiving interventions. Annual Ivermectin distribution continued in all the intervention and comparison districts. Vitamin A supplementation improved in the intervention districts more than the comparison districts (see Figure 16). Coverage with vitamin A supplementation was significantly higher in the Districts using CDI approach than those using the traditional approach (P<0.01).

Fig. 16: Vitamin A Coverage in the intervention and comparison Districts
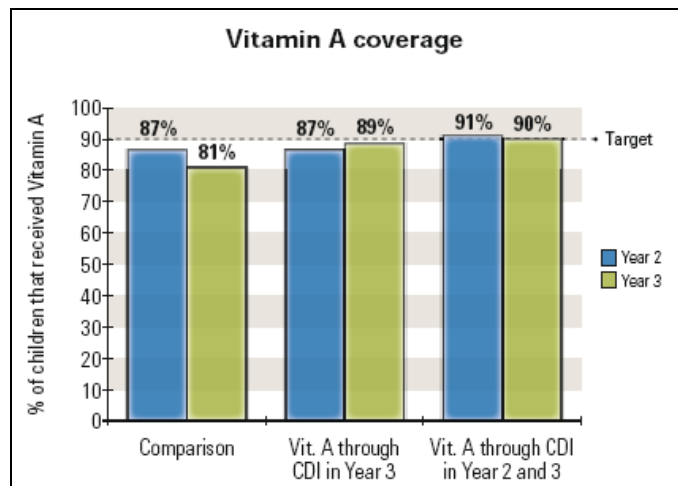
Source: CDI Study Group (2010)

Malaria Intervention

Figure 17 shows that more households in the intervention districts, where the CDI approach was employed in the promotion of ITNs than the comparison districts, where access to ITNs was ensured only through the health facilities got closer to the RBM targets of at least one net per household.

Fig. 17: Household with at Least 1 ITN in the Intervention and Comparison Districts

Households with at least 1 ITN
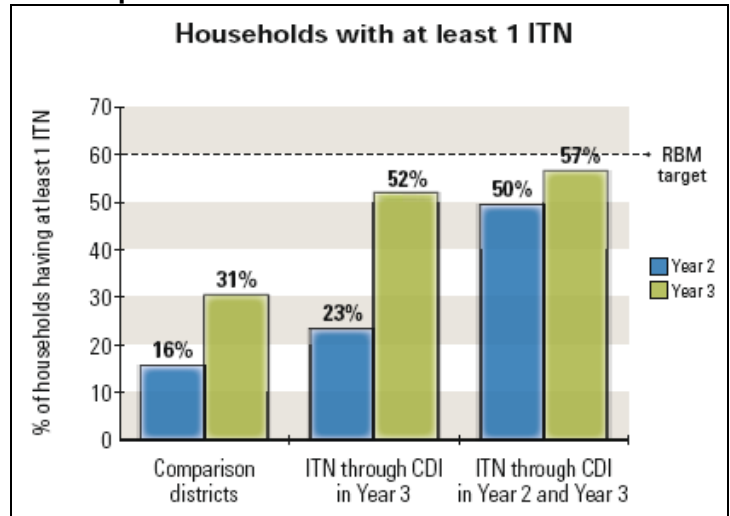
Source: CDI Study Group (2010)

Similarly, Figures 18 and 19 revealed that ITN use among children and pregnant women increased in the intervention districts than the comparison districts.

Fig. 18: Children Sleeping under ITN

Children sleeping under ITN

Fig. 19: Pregnant Women Sleeping under ITN
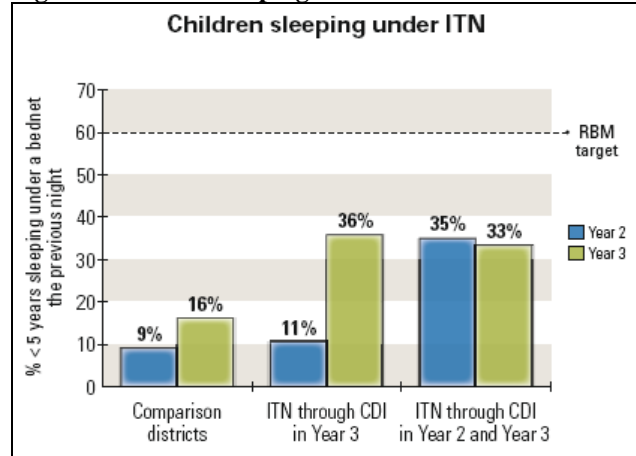
Pregnant women sleeping under ITN
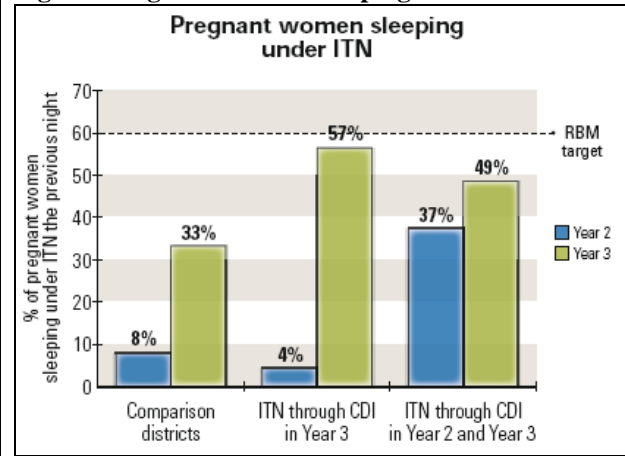
On appropriate treatment of malaria Figure 20 revealed that generally there were greater tendencies to appropriate treatment of malaria in the intervention districts than the comparison. In both years 2 and 3, the districts where CDI approach was used had higher proportion of children with fever managed according to the RBM prescriptions.

Fig. 20: Appropriate treatment of children with fever in the Intervention and Comparison Districts
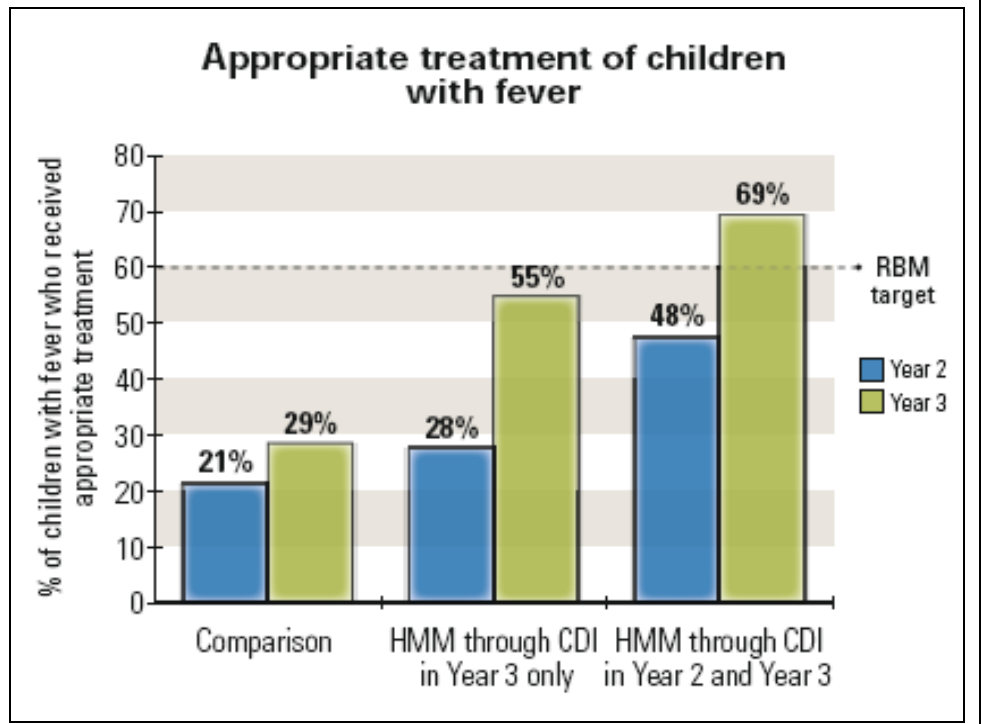
The findings also revealed that the longer the application of the CDI approach the better the compliance with the RBM prescriptions in the management of childhood fevers. For instance, greater proportion of children in the districts that implemented the management of childhood fevers using the CDI approach for three years managed childhood fevers appropriately than those who had it for only two years (see Figure 20).

Cost of Implementation
Generally, the integrated implementation of health interventions using the CDI approach cost about 33 percent less. At the District health care level, for instance, the multi-country CDI study revealed a significantly higher cost of delivery of interventions using the traditional (health system centered) approach than the CDI approach (p=0.007). See Figures 21 and 22.

However, there was no significant difference at the frontline health facility level, which may be attributed to the fact that traditionally, the health worker at this level implemented intervention activities in an integrated manner.

Fig. 21: Cost of Intervention at District Level

Mann-Whitney U Test (P=0.007)
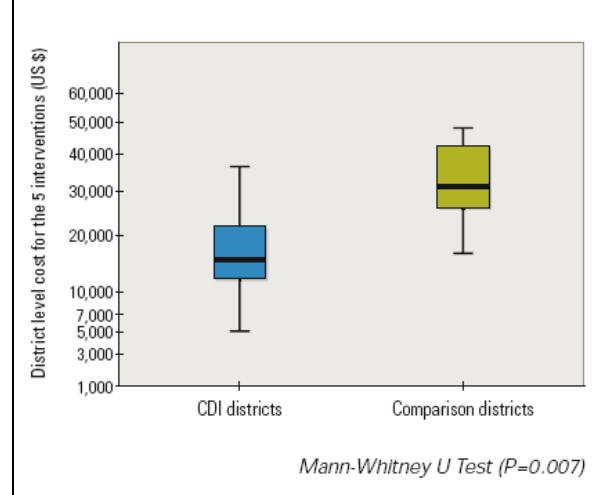
Fig. 22: Cost of Intervention at District Level
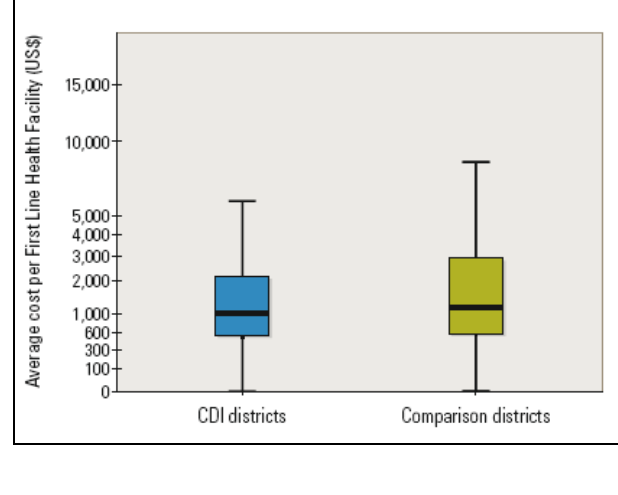
In terms of the opportunity cost, the recently concluded CDI study revealed that the cost, at the community level was slightly higher (p=0.24) when interventions are delivered in an integrated manner using the CDI approach than when they implemented vertically with the health system dominating (CDI Study Group, 2010).

Fig. 23: Opportunity Cost at Community Level

Mann-Whitney U Test (P=0.24)
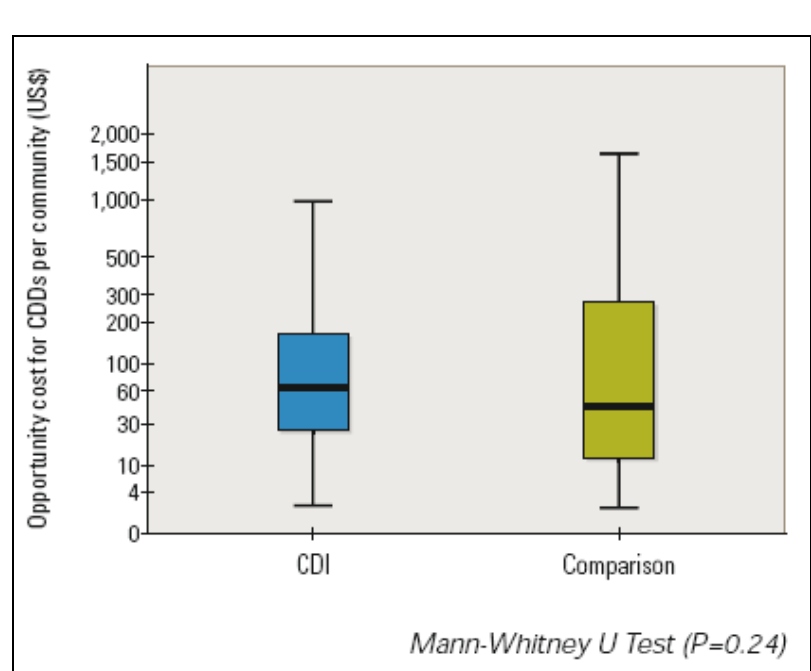
All the same, a critical analysis of the data revealed that, when this is spread over many people covered over a long time, the opportunity cost at the community level has the likelihood of dropping in the CDI system than the traditional system.

2: Preventing Malaria in Pregnancy through Community Directed Intervention

In Sub-Saharan Africa alone, approximately 25 million pregnant women are at risk of *Plasmodium falciparum* infection every year, with one in four women showing evidence of placental infection at the time of delivery, with a large fraction of infection remaining undetected and untreated (Desai, et al., 2007). Malaria induced low birth weight is estimated to be responsible for between 62 000 and 363 000 infant deaths every year in Africa, which translates to 3-17 deaths per 1000 live births (Murphy, et al, 2001). Guyatt et al estimate that 11.4% of neonatal deaths and 5.7 percent of infant deaths in malaria-endemic areas of Africa are caused by malaria in pregnancy (Guyatt, et al., 2001), resulting in approximately 100 000 infant deaths per year (Guyatt, et al., 2004). A meta-analysis of intervention trials suggests that successful prevention of these infections reduces the risk of severe maternal anemia by 38%, low birth weight by 43% and perinatal mortality by 27% among paucigravidae. Garner *et al.* (2006) estimate that effective prevention of malaria with chloroquine prophylaxis or IPT reduces the risk of low birth weight by as much as 43%.

In the light of the high burden of disease associated with malaria, the WHO reports from 2006 and 2008 recommend a multi-pronged approach based on both curative (effective case management) and preventive (insecticide treated nets and preventive chemotherapy) strategies for controlling malaria in pregnancy (WHO, 2006 and 2008). In particular, WHO's recommended Focused Antenatal Care (FANC) approach in malaria endemic areas recommends that each pregnant woman receive and use an insecticide- treated net (ITN) as early in pregnancy as possible and a minimum of two treatment doses of sulphadoxine-pyrimethamine (SP) after quickening, at monthly intervals as intermittent preventive treatment in pregnancy (IPTp). In 2007, the Technical Expert Group meeting on Intermittent Preventive Treatment in Pregnancy continued to recommend SP-IPTp as strategy to combat malaria in sub-Saharan African countries, with a proper dosing of 2 or 3 doses of SP expected to substantially lower the incidence of malarial anemia in primi- and secundi-gravidae women as well as the risk of low birth weight in babies born to primi- and secundi-gravidae and HIV positive mothers (WHO, 2008).

For Nigeria, malaria is estimated to account for 11% of maternal mortality and 12-30% of mortality in children under five (FMoH and NMCP, 2009). Prevalence of malaria among pregnant women has been estimated to be around 48 percent by the Nigerian government (FMOH, 2004). This figure appears low compared to the estimates based on more detailed facility based studies. A study of two hospitals and a traditional birth home (TBH) in Abeokuta, Nigeria, reports malaria prevalence rates of 37.5, 47.3 and 47.5 percent in the first, second and third trimesters, respectively (Idowu *et al.*, 2006).

In pursuit of the MDG targets of reducing maternal mortality ratio in 2015 (UN, 2008), the World Bank and Federal Ministry of Health designated Akwa Ibom State as "orphan state", triggering a substantial inflow of malaria control resources through the Roll Back Malaria (RBM) initiative sponsored through the World Bank Assisted Booster Program started in 2006. Despite these inflows of long lasting insecticide treated nets (ITNs) and drug supplies, effective access to malaria prevention in pregnancy remains limited. In Akwa Ibom State, the 2008 Nigeria Demographic and Health Survey (NDHS) showed that the average number of ITNs per

household in the State was 0.2 and the proportion of children under five and pregnant women sleeping under ITN were put at 13.5 percent and 5.7 percent respectively. Only 18.9 percent of pregnant women took two doses of SP (NPC & ICF Macro, 2009).

These multiple survey results indicate that antenatal care alone is not meeting the malaria prevention needs of pregnant women. Despite the intense campaign at promoting ANC attendance in many African countries, relatively few pregnant women receive intermittent preventive treatment (IPTp) with sulfadoxinepyrimethamine (SP) (WHO 2005). Coverage remains below the Abuja target and the Roll Back Malaria goal of 60% and 80% respectively (Hill & Kazembe 2006, Msyamboza, et al, 2009). Primary health care (PHC) not only extends basic health services into the community, but also actively involves community members in planning, delivery and evaluation of health services. The community directed distribution of Ivermectin (CDTI) program of the African Program for Onchocerciasis Control epitomizes the philosophy and approach and has been expanded into the Community Directed Intervention (CDI) approach which has also been found successful in improving coverage of malaria interventions, for example, increasing ITN use by pregnant women. Could a partnership between communities and health services also enhance access to and use of IPTp by pregnant women?

Fig 24: Malaria Transmission in Nigeria
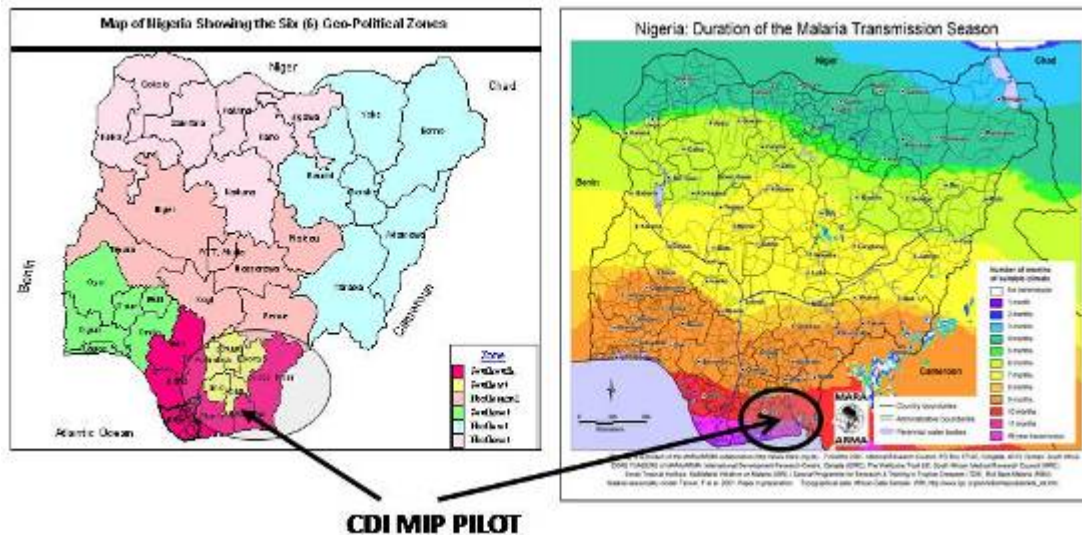
In an attempt to assess methods for improving effective access, we launched a project to prevent malaria in pregnancy (MIP) in Akwa Ibom State with funding support from JHPIEGO Corporation (an affiliate of Johns Hopkins Bloomberg School of Public Health) and ExxonMobil Foundation in 2008. The main objectives of the project were to test methods for increasing net use by pregnant women as well as the uptake of IPTp among pregnant women. The project also aimed at increasing ANC attendance and quality improvement of health services. To reach this objective, a two-pronged approach was adopted based on a combination of additional resources and training of front line health workers particularly on health education and the promotion of ANC as well as CDI as described in detail below.

Study Design and Methods

The study used a pre-post parallel group design, with group assignment implemented at the local government area level (LGA). Each LGA comprises an average population of approximately 5000 households. Three LGAs were assigned to the treatment, and three LGAs were assigned to the control group. Independent random samples of women with recent pregnancies were interviewed pre and post intervention to measure change in the outcome variables of interest.

Participants

Target population of the program was all pregnant women residing in the six program LGAs. 1280 women aged 15-45 with recent pregnancies in the study were randomly selected for an interview at baseline. A second, independent sample of 1380 women was randomly selected for a follow-up interview at the end of the study. Target populations of both surveys were women who had given birth within a 6 months window prior to the survey. Up to four communities were randomly selected in the catchment area of each health facility for these interviews. Two data collectors were assigned to cover each cluster. Each field assistant covered an average of eight women. Two supervisors, who were trained along with the field assistants, supervised the process of data collection and reviewed the questionnaires as well as the adherence to the study protocol on a daily basis.

Figure 25: Pre-post Parallel Group Design
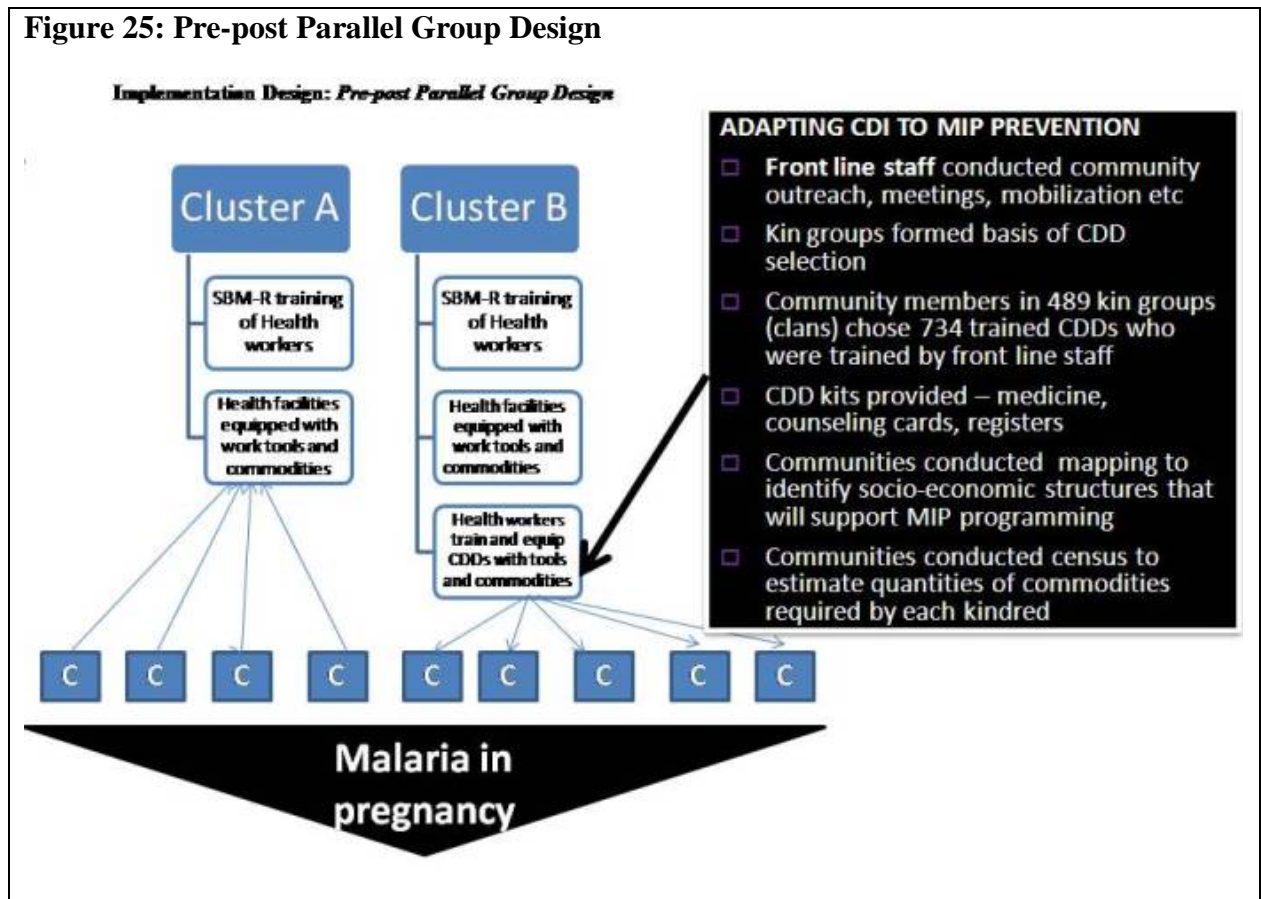
Study Settings

The study was conducted in the Eket Senatorial Zone. Eket Senatorial Zone is one of three senatorial zones within Akwa Ibom State, and the principal area of operation of ExxonMobil. Akwa Ibom State is located in Nigeria's South and covers a landmass of approximately 8000 square kilometers, with an estimated population of 3.9 Million (NPC, 2006). The exploitation of crude oil in the area has resulted in massive in-migration, and resulted in a highly ethnically diverse population. Local climate is tropical, with two major seasons which include dry season (November – March), and wet season (April – October). The average temperature ranges from $23^{o}c – 31^{o}c$, providing an ideal climate for malaria transmission throughout the year, and making Akwa Ibom State the area with the highest malaria transmission in the whole region (http://www.mara.org.za/). Although only 2.5% of Nigeria's population lives in the state, Akwa Ibom state accounts for over 11% of malaria-linked maternal mortality and 12-30% of under-5 mortality in the country (Jhpiego, 2008).

Fig. 26 Map showing Study Sites

As illustrated in Figures 26, the target area of the study covers six local government areas (LGAs) within the Eket Senatorial zone along the coastal belt of Akwa Ibom State: Eket, Esit Eket, Ikot Abasi, Mbo, Mkpat Enin and Onna. Each of the six local government areas is served by at least one state government hospital for referrals in case of pregnancy referrals. All areas

Intervention LGAs Eket = 172,557; Esit Eket = 63,701; Onna=123,373
Control LGAs Ikot Abasi =134,023; Mkpat Enin = 178,036; Mbo = 104,012

had at least four additional health clinics or health posts.[1] Overall, there were 20 Local Government Primary Health Care facilities in the treatment, and 19 health facilities in the control area affected by the program. The catchment area of each facility comprises several local communities and a multitude of kindreds clustered around the respective health center.

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[1] Four out of the six LGAs have exactly one state government hospital each; Eket has two, and Mkpat Enin is served by three such facilities.

Interventions

To make treatment and control arms as comparable as possible and to minimize equity concerns, increased resource and training support was provided to both treatment and control areas. All public health clinics in the program area were provided with drugs, functional equipment and other supplies to enhance their functionality. Health workers were trained using standard based management and recognition (SBM-R)[2] practices approach, with a particular focus on pregnant women, the delivery of ANC services at public health clinics in general, and on improving MIP services in particular. MIP performance standards were developed and health workers from health facilities in the control and intervention arms were trained on these standards to improve MIP services in the area. Maybe mention ethical clearance here.

Ethical approval was obtained through the Committee on Human Research at Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA and the National Malaria Control Programme (NMCP), Abuja approved the study protocol for implementation. A formal MOU was set up between Jhpiego and LGA as well as State authorities. Informed and written consent was obtained from all persons who voluntarily agreed to be interviewed.

Fig. 27: Geo-Coded Communities in the Study LGAs

In addition to these common interventions, a CDI program was implemented in the three treatment LGAs. Selection of the CDDs was delegated to each kin group within a given community. Priority in the selection of CDDs was given to women from each local kin group with prior child bearing experience in order to minimize the communication barriers between pregnant women and the CDDs. Overall, 700 volunteer community directed delivery agents (CDDs) were selected from more than 450 kin groups. With an estimated total population of 100,000 in the treatment area, this implies that approximately one CDD was trained for every 150 residents, with an average number of 6 births per year and CDD.

CDDs were trained to deliver ITNs and SP (IPTp1 and IPTp2) to eligible women in the communities as well as on basic counseling services for women. CDDs were also instructed to refer pregnant women to health facilities to

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[2] SBM-R approach translates scientific and technical reference materials such as guidelines and protocols into operational tools containing performance standards that can be used as job-aids or guides by frontline providers and managers in their daily work. In this way, SBM-R helps in the implementation of evidence-based health care and dissemination of of best practices.

obtain additional ANC services. Conditional on successful completion of the training, CDDs were equipped with counseling card, medicines (SP) and ITNs, as well as village register, monthly tally sheet and referral forms. The CDDs used the monthly tally sheets as reporting notes that contained summary of monthly service statistics such as number of pregnant women that received IPTp, ITNs and other MIP control services in the communities. All training and supervision of the CDDs was conducted by staff of the closest health facility to ensure continued collaboration between health facility staff and local communities.

The implementation of the program was closely followed by an independent monitoring team comprised of staff members of *Community Partners for Development* (CPD), Jhpiego and senior members of the State Ministry of Health as described in further detail in Figure 2 below.

The study was registered with the Federal Ministry of Health in Abuja. Prior to the rollout of the program, a consensus building meeting was held with senior members of the State Ministry of Health to agree on the services CDDs would provide. In addition, health workers engaged with community stakeholders in community meetings to seek their approval, sensitize them towards the importance of their role in promoting maternal health, encourage shared learning and create a supportive environment for the program.

Fig. 28: Sampling Overview

Baseline October 2007	Females 15-49 40,740	→	Recently pregnant 11,019	→	Selected for interview 1,280
Endline February 2010	Females 15-49 42,636	→	Recently pregnant 11,532	→	Selected for interview 1,380
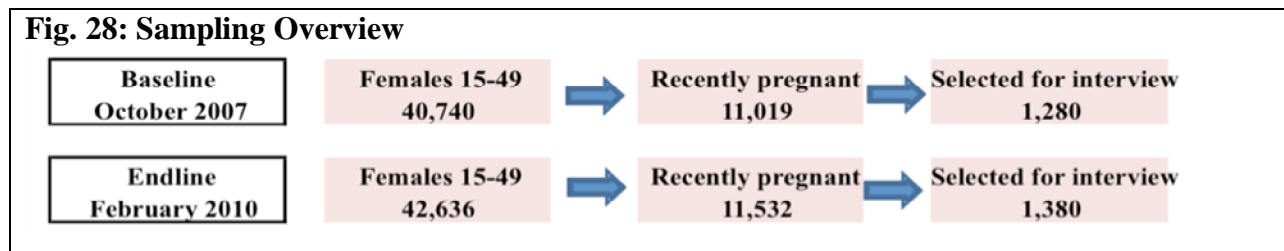
Outcomes

The primary target of the intervention was to increase the effective access to malaria prevention among pregnant women, with particular focus on increasing ITN use and correct dosing of IPT drugs. In both baseline and endline surveys, five health access variables related to women's health behaviour during pregnancy were collected; the probability of a woman: (1) reporting to visit an ANC during her pregnancy at least once; (2) reporting to have slept under a ITN during pregnancy; (3) reporting to have slept under a ITN the night before the interview; (4) having taken any malaria prevention drugs; (5) having taken the correct 2 doses[3]. Two independent randomly selected samples of 1280 and 1380 women were interviewed at baseline and end line.

The primary endpoints of the study were the probabilities of pregnant women sleeping under ITNs and taking both IPTp1 and IPTp2, respectively. Secondary outcomes included ANC visits, ITN use post-pregnancy, and other malaria prevention activities. In a first step, we estimate pre-

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[3] Each dose of SP consists of three (3) tablets.

post group mean comparisons. In order to verify that the observed mean differences are not driven by differences in sample composition across groups and surveys, we also estimate the treatment effects of interest in a standard multivariate model of the following type in a second step:

$$y_{ijt} = a + b\,POST_{ijt} + g\,POST_{ijt} * CDI_j + X_{ijt}f + r d_j + e_{ijt} \qquad (1)$$

where Y is the outcome of interest for woman i in local government area j and period t. $POST$ is a binary indicator, which equals 0 for baseline (PRE) observations, and 1 for end line (POST) observations, and which captures the average increase in the outcome variable of interest in the control group. The $POST*CDI$ interaction term captures differences in changes across the two groups, and thus our treatment effects of interest. X is a vector of control variables, including respondent's age, education, marital status, ethnicity, religion, occupation and household wealth. Last, d_j are LGA fixed effects, which capture all time-invariant characteristics specific to the local government areas. All empirical analysis was done using the Stata© 10 statistical software.

Table 8: Intervention Plan

	Intervention Activity	Exposure Type	Primary Intervention Providers	Supportive Roles/supervision	Target Areas	Time Frame (months)			
						00-06	07-12	13-18	19-24
Activity Level	Baseline survey	Individual & Group	External Consultant	JHPEIGO management team	**All**	●➤			
Health system	Train State health staff on standard MIP and ANC services; introduce CDI programme.	Group	Jhpiego team and local (NGO)	Jhpiego management team	**All**	●➤			
	Train LGA health staff on standard MIP, and ANC services	Group	Trained State level health staff	NGO	**All**	●➤			
	Equip Health facilities with intervention commodities	Facility based	Jhpiego team and local NGO through State health system	Jhpiego management team	**All**	●━━━━━━━➤			
Community	Meet community leaders to introduce CDI	Personalized	Health worker in community (CHW)	Higher levels' health staff, NGO and Jhpiego	**Treatment**	●➤			
	Community meeting to introduce CDI	Group	CHW	Higher levels' health staff, NGO and Jhpiego	**Treatment**	●➤			
	Communities select Community Directed Distributors (CDDs)	Group	Community		**Treatment**	●➤			
	Train CDDs	Group	CHW	Higher levels' health staff, NGO and Jhpiego	**Treatment**	●➤			
	Equip CDDs with intervention commodities on continuous basis	Individual CDD	CHW	Community leadership, NGO and Jhpiego	**Treatment**	●➤			
	Provide health workers with SP and free ITNs. Setup of health education and other ANC services	Personalized	Staff of health facilities in communities	State health team, NGO and Jhpiego	**All**		●━━━━➤		
	CDDs give SP1 &2 under direct observed treatment (DOT); free ITN, MIP education and refer women to ANC for more services	Personalized	CDDs	CHW, NGO and Jhpiego	**Treatment**		●━━━━➤		
	CDDs monitor use of MIP services	Personalized	CDDs	CHW, NGO and Jhpiego	**Treatment**		●━━━━➤		
	Follow up survey	Individual & Group	External Consultant	JHPEIGO management team	**All**				●➤

Population Characteristics

Table 9 summarizes the socio-demographic characteristics of the sample population. The average age of the women in the sample is 25.5 years. The dominant ethnicity in the study area is Ibibio, with a slightly higher degree of ethnic diversity in the control areas relative to the treatment LGAs. Some differences in population characteristics are also apparent in terms of marital status and schooling, with a higher fraction of non-married women in the control areas, and on average slightly higher educational attainment in the treatment areas. Following the methodology proposed in Filmer and Pritchett (2001), we used principal component analysis to compute an asset index, and divide households into five asset quintiles. Households in the treatment area appear on average slightly wealthier; the differences in wealth distribution do not appear to be significant, however.

Table 9: Respondent Demographic Characteristics

LGAs	Treatment		Control	
	Baseline	*Endline*	*Baseline*	*Endline*
Number of respondents	711	753	566	627
Age	25.53 (5.96)	26.12 (10.63)	25.14 (6.24)	25.09 (5.97)
Ethnicity Ibibio	0.87 (0.34)	0.94 (0.24)	0.61 (0.49)	0.64 (0.48)
Ethnicity Anang	0.05 (0.21)	0.03 (0.16)	0.05 (0.22)	0.02 (0.15)
Ethnicity Other	0.03 (0.17)	0.02 (0.15)	0.30 (0.46)	0.32 (0.47)
Catholic	0.04 (0.18)	0.05 (0.22)	0.13 (0.34)	0.07 (0.25)
Protestant	0.48 (0.50)	0.50 (0.50)	0.45 (0.50)	0.50 (0.50)
Single	0.12 (0.32)	0.18 (0.38)	0.22 (0.41)	0.22 (0.41)
Married	0.87 (0.33)	0.81 (0.39)	0.75 (0.43)	0.78 (0.42)
No schooling	0.04 (0.18)	0.03 (0.17)	0.08 (0.27)	0.07 (0.25)
Primary Schooling	0.37 (0.48)	0.29 (0.45)	0.39 (0.49)	0.32 (0.47)
Secondary schooling	0.50 (0.50)	0.60 (0.49)	0.47 (0.50)	0.55 (0.50)
Tertiary schooling	0.09 (0.29)	0.08 (0.27)	0.05 (0.22)	0.06 (0.24)
Working	0.52 (0.50)	0.51 (0.50)	0.51 (0.50)	0.47 (0.50)
Wealth quintile	3.01 (1.47)	3.36 (1.36)	2.59 (1.39)	2.93 (1.33)

Standard deviations in parentheses

Differences between women in the treatment and control groups were also apparent with respect to the effective access to health services at baseline. As Table 8 shows, women in the treatment areas were more likely to have visited an ANC clinic during pregnancy, and also to have received a tetanus vaccine and iron supplements. Similar patterns appear with respect to malaria preventions: women in the treatment group were more likely to sleep under an ITN and having taken at least one dose of SP prior to the intervention.

Table 10: Baseline Health Practices

	Treatment	Control
Health Access		
Any ANC visit	0.69 (0.46)	0.50 (0.50)
Number of ANC visits	2.80 (2.65)	1.80 (2.35)
Months pregnant at first visit	4.66 (1.76)	4.71 (1.52)
Received tetanus vaccine	0.55 (0.50)	0.43 (0.50)
Received iron supplements	0.79 (0.40)	0.67 (0.47)
Malaria Prevention		
Took malaria prevention drug	0.68 (0.47)	0.50 (0.50)
Took SP	0.20 (0.40)	0.15 (0.36)
Took at least two doses of SP	0.09 (0.29)	0.06 (0.24)
Slept under ITN while pregnant	0.27 (0.45)	0.18 (0.39)

Standard deviations in parentheses

Program Impact

Table 11 compares the unconditional group means for these five outcome variables for the treatment and control areas pre and post intervention. As the table shows, all five outcome measures improved in both the treatment and control areas over the observation period. The most substantial improvements were observed in terms of ANC visits and IPT. In the control group, uptake of the proper two doses of IPT increased from 6 percentage points to 27 percentage points; in the treatment group, the percentage of women taking a least two doses of SP during pregnancy increased from 9 percentage points to 66 percentage points. The fraction of women visiting an ANC center at least once increased from 0.50 to 0.72 and from 0.69 to 0.9 in the control and treatment areas respectively. The improvements for ITN use were more moderate, and only significantly different from zero in the treatment group.

Table 11: Pre-Post Group Mean Comparison

	Control				Treatment			
	Pre	Post	Post-Pre	p-value	Pre	Post	Change	p-value
At least one ANC visit	0.50	0.72	0.22	0.00	0.69	0.90	0.21	0.00
Slept under net during pregnancy	0.18	0.21	0.03	0.17	0.27	0.38	0.11	0.00
Slept under net before interview	0.08	0.10	0.02	0.31	0.18	0.28	0.10	0.00
Took malaria prevention drug	0.50	0.67	0.16	0.00	0.68	0.87	0.20	0.00
Took at least 2 SP doses	0.06	0.27	0.21	0.00	0.09	0.66	0.57	0.00

Table 12 shows the CDI treatment effect as measured by the differences in the observed changes in outcomes measures between treatment and control group. CDI appear to have the largest effect on IPT, increasing the fraction of women taking at least 2 doses of SP by 66 percentage

points, more than twice the increase experienced in the control group. The CDI treatment also led to significant increases in the likelihood of women reporting to sleep under an ITN both during and after pregnancy, though the progress made with respect to ITN use were smaller, with only 38% and 28% of women indicating to have slept under a net during pregnancy in the treatment and control groups, respectively.

Table 12: CDI Treatment Effects

	Change		Difference	
	Control	Treatment	□	p-value
At least one ANC visit	0.22	0.21	-0.010	0.761
Slept under net during pregnancy	0.03	0.11	0.077	0.025
Slept under net before interview	0.02	0.10	0.083	0.004
Took any malaria prevention drug	0.16	0.20	0.033	0.345
Took at least 2 SP doses	0.21	0.57	0.358	0.000

In Table 13, we show the difference in estimates based on the multivariate model outlined in section 2.8 above. The estimated program impact is virtually identical to the group mean comparisons displayed in Table 11, which suggests that the compositional differences across the two groups and over time has no major impact on the estimated effect size. The inclusion of multivariate controls increases the efficiency of the estimation, however, and results in smaller standard errors as well as marginally smaller p-values. To allow for correct inference in the presence of spatial correlation within the sampling areas, all standard errors are clustered at the LGA level.

Table 13: Multivariate Difference-in-differences Estimation

	At least one ANC visit	Slept under net during pregnancy	Slept under net before interview	Took malaria prevention drug	Took at least 2 SP doses
Pre	0.436***	0.0721	0.0449	0.713***	0.1
	(0.12)	(0.05)	(0.06)	(0.07)	(0.08)
Post	0.184***	0.0298***	0.0133	0.143**	0.203***
	(0.04)	(0.01)	(0.01)	(0.05)	(0.03)
Post*CDI	-0.0203	0.0719***	0.0840***	0.0371	0.352***
	(0.04)	(0.02)	(0.02)	(0.06)	(0.03)

Notes: Results displayed reflect coefficients from a linear probability model. Numbers in parentheses are standard errors clustered at the local government area (LGA) level. Multivariate controls include age, ethnicity, religion, marital status, respondent's educational attainment, occupational status and household wealth as measured by a principal-component based asset index.
Based on a sample of 2656 observations

Given that the baseline and endline respondents differed slightly in their characteristics, we report the results of a multivariate regression model in Table 14, where we estimate the treatment

effects conditional on a large set of individual (woman) characteristics as well as LGA fixed effects. The estimated program impact is virtually identical to the group mean comparisons displayed in Table 12, which suggests that the compositional differences across the two samples and over time has no major impact on the estimated effect size. The inclusion of multivariate controls increases the efficiency of the estimation, however, and results in smaller standard errors and correspondingly smaller p-values. Given the binary nature of our dependent variables, we also report the results (as odds ratios) generated by a logistic model in the lower half of Table 14. Odds ratios between 1.3 and 3.2 suggest that the addition of the CDI increases effective access to the ANC and IPT between 30 and 220 percent.

Table 14: Multivariate Results

	At least one ANC visit	Slept under net during pregnancy	Slept under net before interview	Took malaria prevention drug	Took at least 2 SP doses
Panel A : OLS					
Post	0.177***	0.0301***	0.0134	0.139**	0.203***
	(0.04)	(0.01)	(0.01)	(0.05)	(0.03)
Post*CDI	-0.0163	0.0731***	0.0845***	0.039	0.353***
	(0.04)	(0.02)	(0.02)	(0.05)	(0.03)
Panel B : Logistic Regressions					
Post	2.357***	1.225***	1.192	1.854***	6.022***
	(0.44)	(0.03)	(0.15)	(0.43)	(1.17)
Post*CDI	1.467*	1.342***	1.521***	1.712**	3.159***
	(0.30)	(0.14)	(0.22)	(0.42)	(0.58)

Notes: Results displayed in Panel A reflect coefficients from a linear probability model, while results displayed in Panel B reflect odds ratios based on a logistic regression model. Numbers in parentheses are standard errors clustered at the local government area (LGA) level. Multivariate controls include age, ethnicity, religion, marital status, respondent's educational attainment, occupational status and household wealth as measured by a principal-component based asset index. Based on a sample of 2655 observations

The results suggest that the addition of CDI programs was associated with substantial increases in the effective access to malaria prevention among pregnant women. The degree to which these additional increases reflect the causal effect of CDI programs is contingent on the validity of the common trend assumption underlying the empirical model. While the basic group mean difference approach used in the analysis does not require identical baseline characteristics for accurate causal inference, the observed differences in independent and outcome variables at baseline could, at least in theory, affect outcome trajectories over the program period. One could argue that the treatment areas are on average wealthier and more educated, and thus more responsive to the overall program. Alternatively, one could argue that treatment areas fare better in terms of all five outcome variables at baseline, so that improvements are more restricted from above in the treatment areas, and the true impact was underestimated. To deal with these concerns, we performed two separate robustness checks. First, we restricted our analysis to the four LGAs most comparable in terms of their baseline socioeconomic characteristics, which

turned out to be the neighboring LGAs of Esit Eket and Onna in the treatment, and Mbo and Mkpat Enin in the control areas, respectively. If it was true that baseline socioeconomic characteristics drive the results, we expected to observe smaller estimated effects in this sub-sample. As the results in the top panel (Panel A) show, the coefficients do indeed change in the expected direction. However, the magnitude of these changes was small, so that the observed coefficients are not significantly different from the full sample coefficients reported in Table 14.

To ensure our results were not driven by differences in effective access at baseline, we performed a second robustness check where we re-run our empirical model in the most comparable subsample available. That is, we selected the two LGAs most comparable in terms of their baseline access characteristics for each outcome variable, and then re-estimated the multivariate model used in Table 14. For example, we compared Onna with baseline access to IPTp of 8.3% to Mkpat Enin with baseline IPTp access of 7.3%, and women in Eket to women in Mbo for bed net use during pregnancy (baseline 17.1% vs. 17.5%). The results reported in Panel B of Table 6 are quite striking. Compared with the main results presented in Table 14, all coefficients display increased magnitude and significance, suggesting that the observed access differences at baseline suppress rather than inflate the average impact of the CDI program.

Table 15: Robustness Checks

	At least one ANC visit	Slept under net during pregnancy	Slept under net before interview	Took malaria prevention drug	Took at least 2 SP doses
Panel A: Bordering LGAs only					
CDI Effect	-0.047	0.0504*	0.0888***	-0.002	0.328***
	(0.06)	(0.02)	(0.02)	(0.07)	(0.05)
Observations	1735	1735	1735	1735	1735
R-squared	0.236	0.078	0.087	0.148	0.318
Panel B: Non-bordering LGAs only					
CDI Effect	0.0864***	0.0905***	0.0478**	0.166***	0.401***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
Treatment LGA	Onna	Eket	Eket	Ikot Abasi	Ikot Abasi
Control LGA	Mbo	Mbo	Mbo	Onna	Onna
Observations	934	914	914	940	940
R-squared	0.184	0.048	0.041	0.122	0.319

Notes: Results displayed reflect coefficients from a linear probability model. Numbers in parentheses are standard errors clustered at the local government area (LGA) level. Multivariate controls include age, ethnicity, religion, marital status, respondent's educational attainment, occupational status and household wealth as measured by a principal-component based asset index.

The results still suggest that the addition of CDI strategy was associated with sizeable increases in the effective access to malaria prevention among pregnant women. However, given that the

treatment areas fare better in terms of all five outcome variables at baseline, one could argue that improvements are more restricted from above in the treatment areas (in which case the reported coefficients would be biased downwards), or, alternatively, that behavioral change had a head start in treatment areas, in which case the reported coefficient would over-estimate the true effects. To make sure our results are not affected by baseline differences, we re-estimate the empirical model described above under the exclusion of those treatment areas with the highest baseline scores; the changes in results are only marginal.

Overall, the effect of the CDI strategy appear to be largest for IPT, which are relatively easily available, and can be administered directly at the home of pregnant women in the presence of the CDDs. While ITN uptake was also increased through the CDI program, the progress made with respect to bed net use during pregnancy was more subtle. This difference appears to be partially driven by limited availability of ITNs in some study areas; it appears to also reflect the slow pace at which local behavior can be changed even if health goods are freely provided, and even if free distribution campaigns are supported by educational programs.

From a policy perspective, two things appear important: first, the additional costs generated by the CDI strategy at the level of the community appear rather small when compared to larger health campaigns. The total first year program cost exclusive of research and research management was US$ 60,100 for a target population of over 100,000 people. Given that a majority of this cost was due to training, costs were substantially lower in the subsequent years, with a total cost of US$ 27,000 or about US$ 0.30 per person. To put this into perspective of larger malaria campaigns, a comprehensive ITN program for the area would cost approximately US$ 3 per person in the first year (assuming a distribution price of US$ 5 per net, and 3 nets per household of 5), with a similar cost recurring every 2-5 years, depending on the durability of the nets. Clearly, these numbers should not be directly compared, as CDI interventions would not be nearly as effective as in the case study presented here if the formal health system was not equipped to handle the additional demand generated by CDDs.

The second point worth highlighting is that CDI programs do not prevent formal health care visits. One of the fears frequently voiced at the beginning of the program was that the home-based delivery of health services through CDDs could reduce attendance to antenatal health clinics. This clearly was not the case; in fact, one of the most positive changes induced by the program rollout overall was the pronounced increase in ANC visits across all program areas. The likelihood of a pregnant woman visiting an ANC center at least once during her pregnancy increased from 0.50 to 0.72 in the control, and from 0.69 to 0.90 in the treatment area. It is hard to assess the degree to which these increases were triggered by increasing availability of resources and by better trained health staff, respectively. However, given similar increases in the absolute fraction of women attending health services despite a higher baseline attendance in the treatment areas, the results presented here strongly suggest that thinning out of ANC visits is not a necessary side effect of increased supply of community based services.

The endline results reveal that more people are now knowledgeable of malaria transmission, with 66.0 percent mentioning mosquito bites. Increase in knowledge is witnessed in both arms of the study (see Figure 29). All the same, the proportion with correct knowledge in the intervention arm is statistically higher than those demonstrating correct knowledge in the control arm

(p<0.001). The qualitative data from the endline assessment also support the increased knowledge seen in the quantitative data. People are now more aware of the vector that transmits malaria.

Fig. 29: Distribution of Respondents by Malaria Transmission Knowledge in Pre and Post intervention Periods

P<0.001
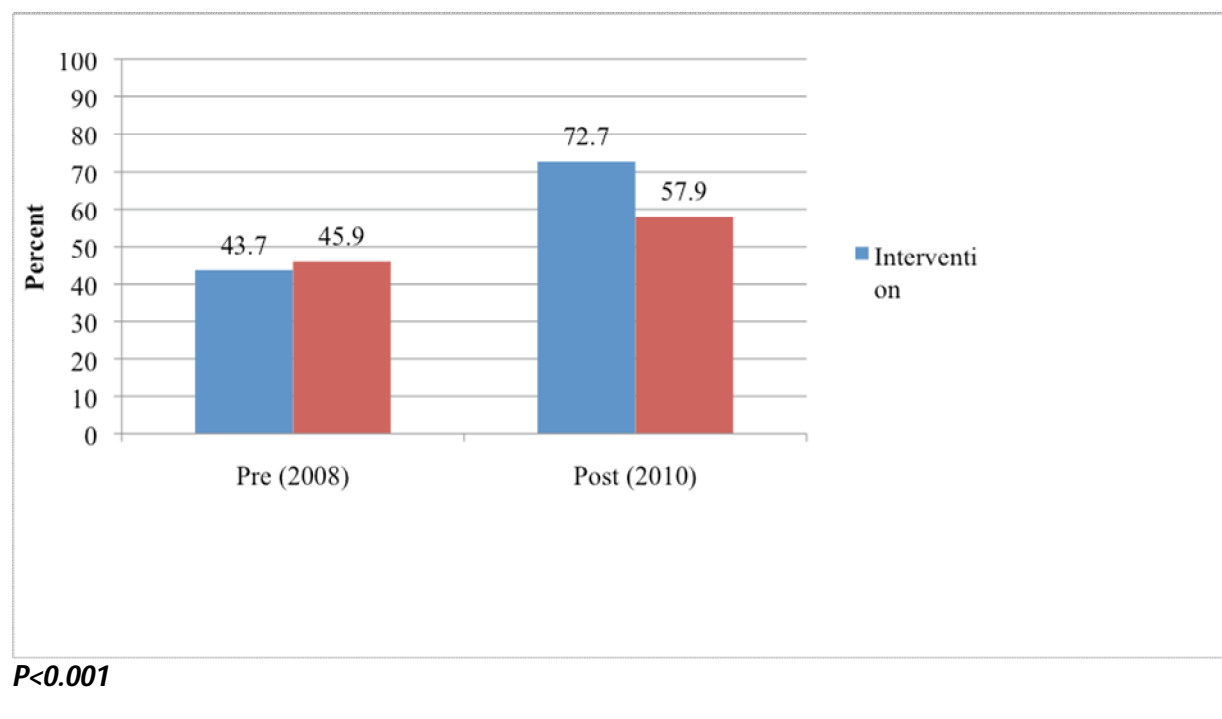
In terms of the effects of malaria on a pregnant woman, there were general increases in recognition of the effect of malaria in pregnancy over the situation at baseline. Similarly slightly smaller proportion (0.4%) of the respondents in the endline assessment compared to 0.7 percent at baseline indicated that malaria in pregnancy has no effect on the woman.

The change in knowledge on effect of malaria in pregnancy was also captured in the qualitative data. Here are samples of quotations that typify expressions of respondents to the qualitative study.

> *…when malaria affects a pregnant woman it causes them cold, which causes her to lie down always and not doing anything for herself…. It makes the baby look weak.* **[Participant: FGD, Female community member, Esit Eket]**

Further comparison between the baseline and endline assessment periods employed the box plot**.** It compared the knowledge scores between the intervention and control arms during the baseline and endline assessments. The results are contained in Figure 30 below.

Fig. 30: Knowledge Score on Ways of Preventing MIP by Arm of Study and Assessment Stage
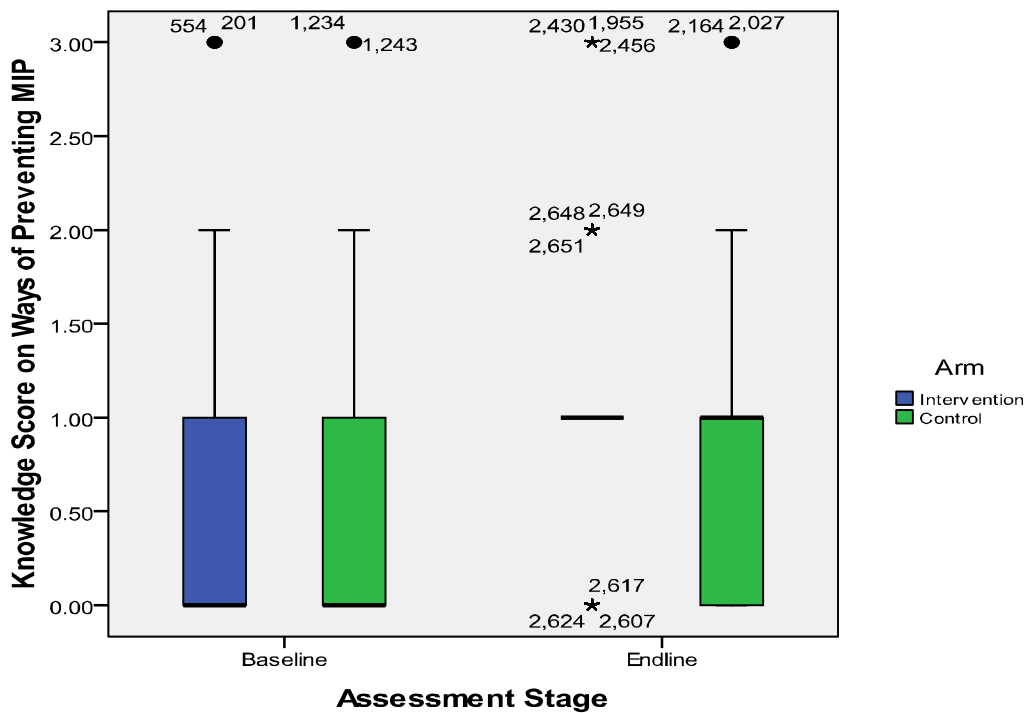

F=236.052; P<0.0001

Figure 30 revealed a substantial change in the knowledge score of the respondents during the two periods of assessment as well as between the study arms. For instance, at baseline the median knowledge score was 0 for the intervention and control arms. During the endline assessment, the median score for the intervention and control rose to 1.00 point. The ANOVA (F-test) for the difference between the baseline and endline knowledge score revealed that the difference is statistically significant *(F=236.052; p<0.0001).* However, the intervention arm converged on 1.00 and above with few outliers scoring less than 1.0 point. Much of the improvement is noticed in the intervention arm. Only 25 percent of those in the control arm scored above 1.0 point, while more than 50 percent scored between 0 and 1 point.

The qualitative data revealed even worse community perception of ways of preventing malaria in pregnancy, at baseline. Most of the participants in the different FGDs conducted with husband and mothers of the just delivered women in the three LGAs, namely Onna, Eket and Esit Eket betrayed some level of ignorance. However, qualitative data from the endline assessment revealed changes in knowledge on how to prevent malaria in pregnant women among husbands and mothers of the women under study. This is reflected in a sample of quotation taken from the FGD session.

They keep their compound clean, because if your compound is clean, things like that (mosquito) will not like to come around because it causes sickness…. They also collect drugs from the CDDs and drink so that they will not get malaria. They also collect nets too…. If some have the means, they use to take it, there are some who, when they want to take it they don't have money to buy drugs so they would wait for the CDDs to come and give it to them and they will take it. There are some that go to hospitals to get these drugs too…. The one that CDDs are giving are three tablets. They will bring it to your house and give it only to the people that are pregnant **[Participant: FGD; Female; Grandmother, Esit Eket]**

Statistically more (87.7%) of the women from the control LGAs than women from the intervention LGAs (75.4%) received ANC from the local clinic (Government Health facility) *(χ^2=16.88; p<0.00001)* during the baseline assessment. However, the situation was reversed during the endline assessment, as 85.9 percent of the women in the intervention arm received ANC services from the local clinics, while only 79.1 percent of the women in the control arm did so *(p=0.0036).* A comparison of the intervention arms in the baseline and endline assessments also showed a statistically significant improvement in the endline over the baseline *(p<0.0001)*. This implies that the implementation of the intervention pushed up the utilization of the local clinics for ANC services among pregnant women in the intervention arm (see Figure 31)

Fig. 31: Attended ANC at Local Clinic
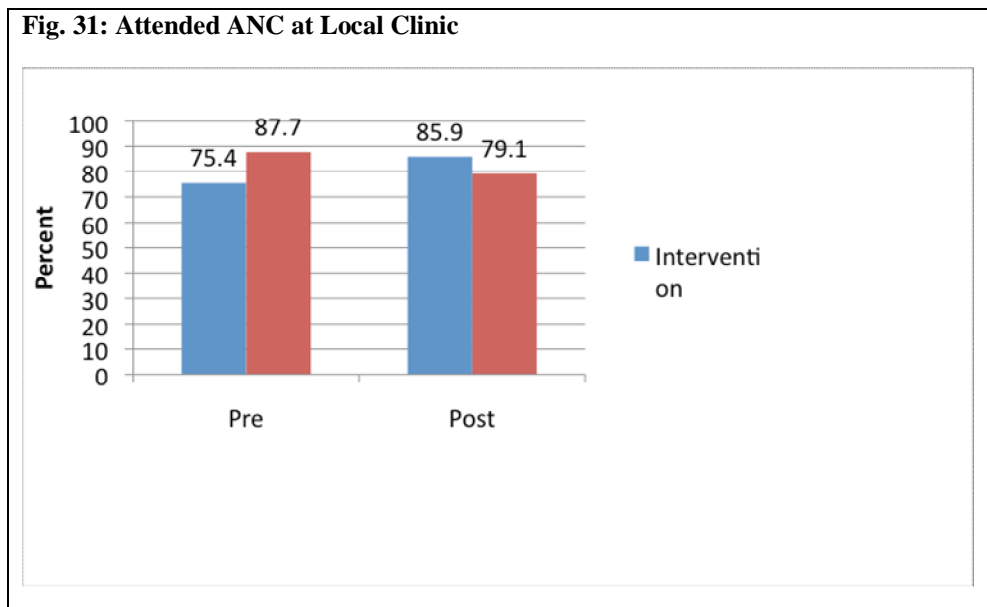
There was also a significant decrease in the number of women in the control arm who used local clinics for ANC services *(p=0.003).* On the other hand, the number of the women in the control arm using other means for ANC services rose from what it was during the baseline assessment. A good number of them now use services available in homes and faith based organizations. Apparently, the motivation to use the local clinics was not sustained.

Result of the qualitative study, during the endline assessment also attested to the improvement in the use of ANC services during pregnancy among the women in the intervention arm of the study. The following quotes from the qualitative study are sample of expressions to illustrate the improvement in the use of ANC services, which is largely attributable to the activities of CDDs engaged and trained to deliver part of the Jhpiego MIP intervention.

The woman after listening to the CDD will go with a piece of paper [referral card] from the CDD to the health center. It is really good within the past year because of this Jhpiego programme. It has really helped our pregnant women. The CDD now will talk to our pregnant women and give them paper to take to the health center **[Participant: FGD, Husbands of new delivered women, Onna]**

We go from house to house and see these pregnant women. We tell them that malaria is bad, ask them to go to the health center.... We also give them drugs [SP] and also see if they are sleeping under the nets that were given to them and give them advice on how to stay free of malaria **[IDI, Female CDD, Onna]**

There are some people when they are pregnant, they do not go to the hospital but since this programme came and we advise them with instances. They heard and were told the reasons why they should start going to the hospital **[IDI, Female CDD, Onna]**

...identify pregnant women, tell them importance of ANC, and refer them to the health center, I also give drugs if they eligible for it **[IDI, Female CDD, Onna]**

They (CDDs) identify the pregnant women and refer them to attend ANC. ...if they know that the woman has a problem, they (CDD) refer the woman to the health centre, after giving the drug (IPT1 and IPT2). In the clinic other services are rendered; like taking of B.P and checking the baby's positioning..., palpating her and other things.... She is tested for HIV so that she can be given the IPT3 because they (CDDs) are not allowed to give them (pregnant women) the IPT for more than two times with one month interval. It has helped in the functioning of the health facility especially here that we did not use to have the pregnant women coming to register. Now we are getting about 88% of pregnant women coming to the hospital to book **[IDI, Female Health worker, Onna]**

The respondents, who sought and used ANC services, gave different reasons for their choice of place for ANC services. Some of the reasons were different for the control and intervention arms. For instance, more than 27.4 percents of the respondents in the intervention arm indicated that they chose the local clinics because they were recommended while only 19.1 percent of the women in the control arm mentioned the same reason *(p=0.0018).* Under the MIP intervention using the CDI approach, community volunteer counseled pregnant women to go to the local clinic for other ANC services, after delivering ITN and treating them with SP.

Figure 32 below showed great improvement in the number of women who took SP twice during their last pregnancy. Whereas at baseline only 27.7 percent of the women in the intervention arm

took SP twice, this number almost tripled (76.7%) during the endline assessment. Similarly, a comparison between the intervention and control arms, during the endline assessment revealed that more women (76.7%) in the intervention arm than women in the control arm (50.0%) received SP twice during the last pregnancy *(p<0.001).*

Majority (73.3%) of the respondents, who received SP in the endline assessment from the intervention arm received SP from community volunteer. On the other hand, more (81.5%) of the respondents from the control arm, who received SP in the endline assessment, received SP from the health facilities during ANC visit. It is important to note however, that even in the intervention arm pregnant women also received SP from the health facilities during ANC visits. All the same, the results showed significant difference between the intervention and control arms with respect to sources of SP during the last pregnancy *(p<0.001).*

Fig. 32: IPTp - Took SP Twice during Last Pregnancy

P<0.00001 between the two intervention arms
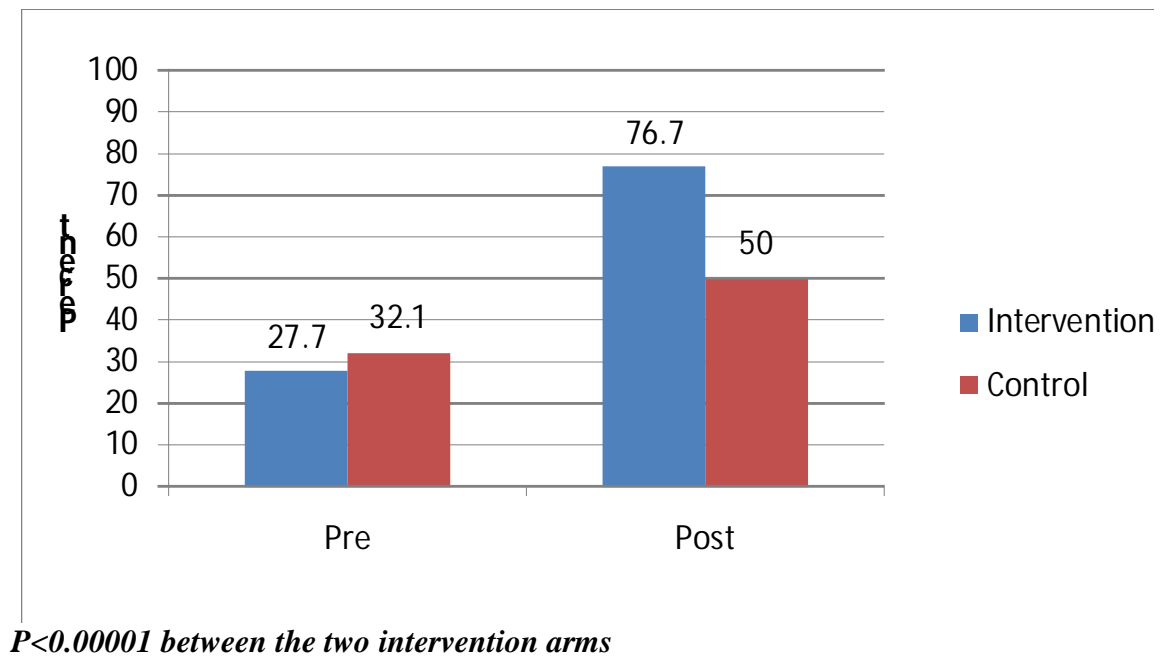
The qualitative data showed that awareness has been created in the communities on the use of SP/Fansidar for the prevention of malaria in pregnant women. Even women who are past their reproductive ages and men expressed sentiments in this direction during FGDs and IDIs in the communities. The following quotes typify the awareness of SP/Fansidar for prevention of MIP.

> *…they say that it will make the woman that is pregnant not to get malaria. Before, I thought it is not good for human beings …but the pregnant women who took the drugs from the CDDs did not have any problem.* **[Participant: FGD, Grandmothers, Esit Eket]**

…the nurses showed the CDDs the drugs to give and how to give the drugs to the pregnant women [**Participant: FGD, Grandmothers, Eket**]

Fansidar is the drug that CDDs are giving pregnant women. So, if Government and health center give the drugs to CDDs to give to pregnant women it must be good for them. [**Participant: FGD, Grandmothers, Onna**]

Fig. 33: Used ITN during Last Pregnancy
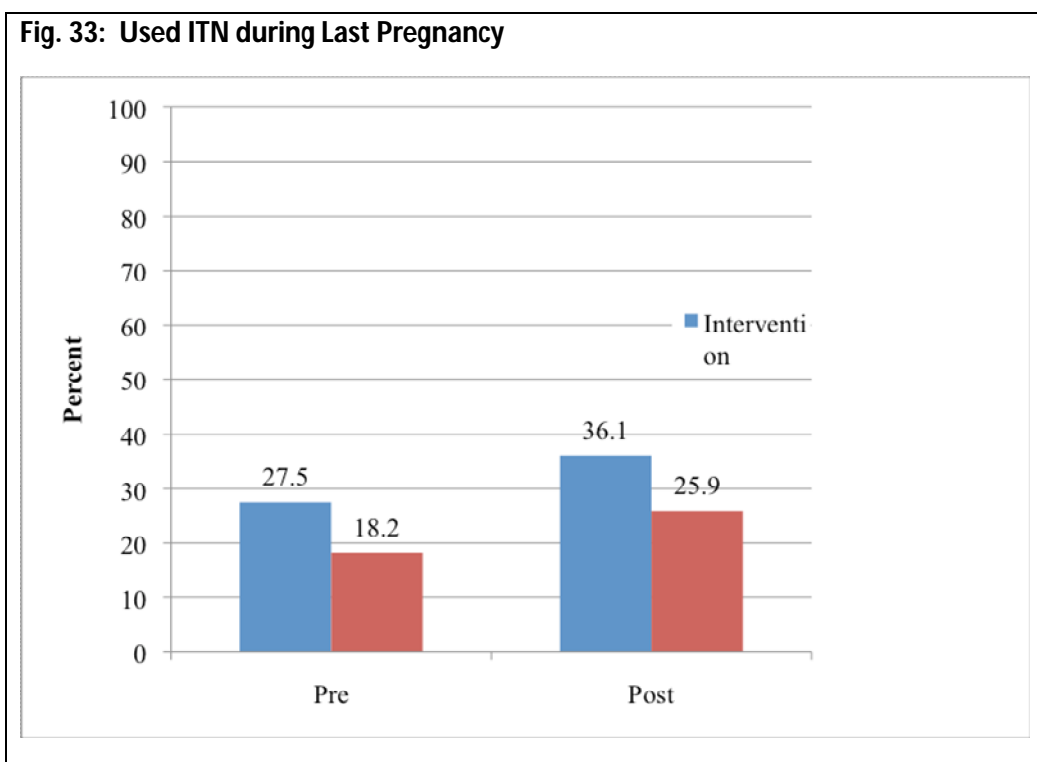
Further comparison looked at the intervention arms in the baseline and endline assessments. The comparison revealed that on all counts, the respondents in the intervention arm had better access to ITN and used ITNs more in the endline assessment than the baseline. For instance, significantly more respondents in the intervention arm, during the endline assessment than those in the baseline assessment slept under ITNs during their last pregnancy *(p<0.0004).* See also Figure 33. Similarly, more of the intervention arm respondents in the endline assessment than their counterparts in the baseline assessment started using ITNs within the first two months of their last pregnancy *(p<0.00001).*

KEY LESSONS FROM CDI AS A STRATEGY FOR SOLVING DIVERSE SOCIAL PROBLEMS IN NIGERIA

While there are many community approaches, the community directed intervention (CDI) approach is fundamentally distinct in its level of community involvement and success in neeting targets of many health and development interventions. The CDI approach has been the bedrock

for ivermectin distribution through the African Program for Onchocerciasis Control (APOC), ensuring annual treatment of over 120,000 endemic communities with high coverage. The CDI platform which has worked well for filariasis control has been demonstrated to be useful for the delivery of intervention. Furthermore, the WHO multi-country studies demonstrated the effectiveness of the strategy in the delivery of multi-disease interventions such malaria control, vitamin A supplementation, among others (CDI Study Group, 2010, Amazigo et al, 2007; Okeibunor, et al, 2005).

According to Amazigo, the immediate past Director of the African Programmes for Onchocerciasis Control (APOC), the members of the target communities are the heart-beat of health systems and the community is a critical partner for realization of primary health care. Citing the experience of the APOC, Amazigo noted that communities compelled APOC to increase its responsiveness to country needs and the needs of communities. Thus, the communities are not mere recipients of development or compelled to make their contribution, unwillingly, they became empowered with voice the demand what rightfully should be theirs. For her, communities exemplify accountability and transparency, yet the community potential is poorly understood and often overlooked in planning, analysis and policymaking for delivery of health intervention. This unit explores and documents the key community potentials that would drive successful delivery of health interventions in Africa.

From the foregoing there are a number of lessons to be learned from the CDI strategy. These include the benefits of the participatory nature CDI, community ownership and sustainability. Others include the process empowering communities, giving them voice to realize and go for what is rightfully theirs. Another important lesson is that there must be adequate supply of commodities to leverage the full advantages of the CDI strategy.

Despite the massive increase in resources for the prevention and treatment of malaria, effective access to malaria prevention remains low in large parts of Sub-Saharan Africa today. Part of the challenge lies in the fact that MIP control services are nested within ANC and not under the direct control of national malaria control programs. With limited health system capacities and lack of knowledge and resource demand at the household level, national malaria campaigns across the sub-continent struggle to deliver resources to large parts of the often most exposed populations. The results of this study suggest that CDI strategy may offer a simple and rather effective way to increase take-up of malaria prevention. The appointment of CDDs through local communities does not only appear to have a large impact on women's behavior, but likely also to increase local support for larger national health campaigns in the long run. These findings appear consistent with the results from a recent multi-country study conducted by the WHO, which found that, conditional on sufficient training and support, community implementers can effectively deliver essential health care to women of reproductive age, and support the delivery of IPT and ITN services as well as counseling to communities (The CDI Study Group, 2010).

While the CDI strategy may be beneficial to a region or country even in the absence of malaria prevention resources—by strengthening the ties between the formal health sector and local communities, for example—major improvements in malaria prevention are clearly only possible if sufficient resources are available at health facilities, which is still not the case in many parts of the Sub-Saharan continent. In the context of malaria, the main idea for CDI programs should

thus not be to substitute for other anti-malaria programs, but rather to complement and support larger programs by increasing the effective access to, and use of, distributed resources. Given the sluggish adoption of nets and preventive treatment in many areas with massive distribution campaigns, CDI campaigns definitely appear a highly attractive option to improve the efficiency of many national and regional campaigns.

More generally, the training and involvement of community volunteers through health facility staff seems to have the potential to strengthen the ties between the formal health sectors and to increase the reach of the formal health sector into often underserved rural or marginalized communities. In the case of Akwa Ibom State, the CDI program was considered a success both by health authorities and local communities and their leaders, and was, as a result of the positive feedback, expanded to all six study LGAs in 2010. A larger scale-up of the CDI program to seven states supported by the World Bank Booster Programme is currently under review by the Nigerian National Malaria Control Programme (NMCP) and the World Bank.

The CDI study revealed some key lessons that helped in realizing the success story for the respective interventions. It was noted for instance that community participation and uptake of the interventions is greatly influenced by the perception of the disease as an important health problem that affects all sections of the community. This is very true of the level of community participation when the disease in question is malaria. For many people interviewed, malaria is the topmost health problem in the communities. In a study of health problems confronting pregnant women in Akwa Ibom State, for instance, the respondents were quick to list malaria, second only to fever. The following quote from the husband of a woman who just delivered a baby, less than six months preceding the survey, in an FGD in Esit Eket typifies the perception of health problems of pregnant women in the communities. According to him,

> *Their sickness during pregnancy includes malaria. It caused so many women death in this community after and during the delivery, the placenta (obiod) is out of its tracings. Unfortunately after delivery the person dies and leaves the baby....*

Malaria is one of the common problems associated with pregnancy in the study area. According to a grandmother in an FGD session in Eket enumerated how the malaria in pregnant women affects their babies. According to her,

> *The problem it carries is that even a baby in the womb if delivered immediately is affected. In the hospital you will hear the nurse will mention different type of malaria that the baby is born with. It comes with death....*

Yet another grandmother from Eket noted that,

> *When the mother is pregnant she does not receive treatment for the malaria to finish, it affects the baby from the womb because the baby feed from the mother. If it is a different type of malaria that affects the mother, it will affect the unborn baby as well.*

These perceptions no doubt influence the willingness of the people to participate in programmes to control malaria in the community. Qualitative data show CDI as having greater impact on ITN distribution and access among community members. In Kaduna, the ITN programme manager noted that

> *…it (CDI) has impacted positively on our program. Now there are designated centres where the target groups can buy at subsidized price. More partners are coming in to distribute these ITNs to the target population. It has improved coverage of activities, improved communication amongst stakeholders effective monitoring. It has no negative impact that I am aware of.*

Another factor responsible for the success of the CDI process is the availability of the commodities. CDI gives voice to the people. CDI created demand for the intervention commodities. It follows therefore that the supply angle needed fulfillment in other to meet the demands else the programme would fail in reaching the desired coverage. For instance, Shortage of ITN became very noticeable and people made demands. In Kaduna a distributor said,

> *…because of the CDI I had difficulties with people who would not get nets due to shortage of nets accused me of keeping their nets. ITN is difficult because of the shortage, it creates many problems and people quarrel with me.*

Beyond making the commodity available, people became more conscious of the right to own nets and put pressure on the system for the supply of nets. They demanded nets that were perceived to be theirs. This way demand is created unlike the traditional system where people perceived the intervention to belong to government. In the latter scenario the people reluctantly sought interventions.

It is also important that the people perceive the benefits of the interventions. Where people fail to see the benefits of taking the intervention commodities they are more reluctant to seek the intervention. Since malaria is perceived as a very serious malaise in the society, and they know the efficacy of nets in preventing malaria, the people became anxious to access the nets and prevent malaria. A typical statement from a community leader from Kaduna State, attests to the influence of the perceived benefits of intervention and the success of the CDI process. According to him,

> *…we got involved because we know the importance of these drugs and nets. We are involved in awareness creation and ensuring coverage.* (**Community Leader, Community of Ungwar Masara, Jemaa District**)

The success of CDI is also linked to the relative simplicity of the implementation of the interventions. Distribution of nets and distribution of vitamin A require very simple techniques. The requirements of technical expertise are minimal in each case. Community members are easily trained to deliver the commodities and diagnosis is simple. With the community members in charge of distribution, it becomes easy to promote community ownership and sustainability. When the communities are adequately engaged in the programme, they work assiduously to promote its success. For example,

...we got involved in the CDI activities through awareness creation, we ensure coverage and people are available to receive treatment.... "My committee got involved in the CDI process.... We were mandated by the community to ensure supply and distribution of Ivermectin to all community members. Two years ago we got additional responsibility when other CDI interventions were introduced. Our role is to ensure that the supplies are received in our community and distributed based on the agreed criteria. We also indirectly supervise distribution of the commodities. It is our responsibility to get involved because it concerns the health of the community. Our role in the partnership is to ensure that our community gets it share of the commodities and that the commodities are distributed. We ensure implementation at the community level." **(Leader, Community Based Organization, Kurmin Baba community, Kachia LGA)**

When we expect the drugs and fail to get it we can go to the officer and ask why has the drug not been given to us. ...My people who fail to get net also complain and the CDD will go and collect their own **(Leader, Yorro LGA)**

I am very happy doing the work because it is helping my people. And you see that because I am doing this work many people know me in this community and even you people know me. When NID, RBM and HIV come with their programmes they also involve me **(CDD, Bali LGA)**

The core of the CDI concept is to empower communities to take responsibility for their health and health outcomes. It empowers communities to take major decisions that affect their health. Such decisions are made in a participatory manner within the context of community meetings where everyone is invited and given the opportunity to speak. CDI gives the communities the voice and power to demand good health. This also creates the grounds for the sustainability of the health programme.

The involvement of all stakeholders in the health of the community members promoted ownership of the interventions. Studies have also shown that involvement and participation of stakeholders and community members create not just ownership but sustainability of programmes long after the initiator of the programme exits (Amazigo, et al., 2007). The involvement of all stakeholders in the implementation of CDI ensured that all stakeholders are carried along. The stakeholders get good understanding of the problems as well as the available solutions and options. The stakeholders also understand the resource constraints as well as local resources that would support the implementation of the programme. An understanding of the various dimensions of the programme act as motivator of the community volunteers who were ready to work without incentives in many cases. A community volunteer once said "*it makes me happy to distribute the commodities because I am serving my community*" **(A Woman CDD, Imo State, Nigeria).** This is a typical expression of CDDs in different countries when asked why they are distributing Ivermectin. Similarly, **a community leader in Ruvuma Region,** in Tanzania, queried, "*why should I pay my child for running errands for me. This is his (CDD's) contribution to the community. Others have their own contributions to make...*" In another interview with a community Leader in Cameroon, the leader argued that,

we did not assign more CDDs to be trained because that would deny the community of too much manpower for other assignments.... Any person we set aside for the distribution of health commodities is exempted from other community work.

In Kaduna a CDD said

I am willing to carry out these activities because I want to assist people and it is part of my duty. The community feeds us when supervise; it is not adequate. Govt. provides transport allowance for supervision it is adequate. I am motivated by service to the people and my God.

While engaging communities in the decision-making process, is important to the success of CDI, the TDR study on CDI for major health problems in Africa found that the engagement of stakeholders and decision-makers at the regional and national levels, particularly government and health system officials was equally crucial and germane for successful CDI. It follows therefore, that plans for the adoption of the CDI strategy for the delivery of interventions must develop steps for engaging the critical stakeholders at all levels in the process of planning and implementation.

While it may seem that government is abdicating its responsibilities to the people by having the people deliver health interventions that are supposedly the responsibilities of government, CDI actually provides a rallying point for the communities to reflect on their health realities and decide on how to address them. In line with its philosophy, CDI empowers the communities with voice to demand what is due to them. Communities have been known to go to the health facilities to demand explanation for late and inadequate supply of intervention commodities. Community self monitoring (CSM) is an aspect of the implementation of the CDI process. Through the CSM the communities monitor the implementation of the interventions and ask questions when it is necessary. The communities are only required to reach out, collect their allocations of intervention commodities and distribute among themselves.

With respect to costs to the health system, CDI was also more efficient than the traditional delivery systems. Without any significant increase in costs to the health district and first line health facility (FLHF) level, the CDI process ensured higher coverage for different interventions. The interventions reached many hard to reach areas. At the community level, there was an increase in 'opportunity costs' with CDI, no doubt. This is a reflection of greater time commitment from community implementers who generally volunteered their time, thus forgoing other opportunities for earning incomes with their time. Intrinsic incentives, such as recognition, status, knowledge and skills gain, as well as altruistic satisfactions, were generally perceived as more powerful motivators in the process than material incentives.

In conclusion, while designing the CDI strategy our primary target were the poor and hard to reach populations. While its effectiveness in this direction has been proven among rural populations, studies are underway to test its workability in other hidden populations in Africa. WHO/TDR is currently supporting studies to test CDI among the urban and non onchocerciasis endemic as well as in nomadic populations and populations in conflict in many Africa countries

including Nigeria. It is hoped that in the next 3 to 4 years, results will begin to come in to confirm the applicability of CDI to these populations.   Meanwhile, anecdotal information from some focused studies show that it can work among the urban populations of both the rich and poor. The study on the control of malaria in pregnancy in Akwa Ibom, was implemented using the CDI approach in both rural and urban population of Eket senatorial zone of the state. The results show that it has effectively increased access of pregnant women to ANC services, intermittent preventive treatment of malaria in pregnancy (IPTp) and ensuring that pregnant women and children under five years sleep under ITN.

Government at all levels should prioritize health and give it the desired attention in terms of funding, infrastructure and manpower. Jetting abroad at the slightest emergency by our political elite and a few privileged individuals is never a solution to the crisis in the health sector. The way forward is for government to address fundamentally all the grey areas in our health care delivery system and also fix the problems in all the critical sectors that have direct impact in ensuring efficient health care delivery for all Nigerians.

Finally, and perhaps the most important lesson is that we can also advance solutions to the many problems that plague us today in Nigeria by applying the same model of empowering the poor populations and communities to manage problems prevalent in their environment. We found that communities are capable of treating diseases that are endemic in their environments. In the same way, communities in Nigeria could be empowered to address the problems of terrorism, kidnapping, armed robbery among others. One may say we know this but, there is a difference between knowing and doing. According to Johann Wolfgang von Goethe, *"knowing is not enough; we must apply. Willing is not enough; we must do".*

Vice Chancellor, sir, we have developed and applied this model of problem solving and demonstrated that poor communities, in partnership with health professionals, can manage the treatment of selected diseases prevalent in their environments; CDI is of proven effectiveness and efficiency as a means of bringing multiple health and development interventions to the poorest communities, especially in remote areas; CDI can be used to strengthen government institutions as it engages communities to manage and account for their own health and development where resources and infrastructure are insufficient especially in remote areas; CDI contributes also to building confidence of communities in government by involving them in health delivery systems

EPILOGUE

Mr. Vice Chancellor, I have tried in this inaugural lecture of mine to simply summarize selected aspects of my academic endeavour since joining the University of Nigeria as a faculty member. It has not been easy squeezing my accomplishments, though modest, into these few pages. I have had to struggle with very difficult decision points on what should be ruled in and what should be ruled out, just to ensure that the lecture is academic and not a personal eulogization. At the same time, I had to battle with the blend of theoretical rigor, required in an academic environment and empiricism that makes the story more realistic. It bears reiteration that I trained principally as a Sociologist, but with bias for Population Studies. Population Studies like the

parent discipline covers a wide range of disciplinary concerns, including health and illness; living and dying among others. I have thus, also done some work in other areas of global health and population. These can be viewed in some of my publications or my webpage at http://www.hsph.harvard.edu/research/joseph-okeibunor/. However, I decided to zero into the global current health concerns, which my recent fellowship in Harvard University emphasized.

I did mention that Sociology/Anthropology provides a nexus and meeting point for other disciplines. For this reason, I have had to come in contact with people from other disciplines while conducting my researches. Thus some of the materials presented in this lecture as evidence are results of collaborative work with scientists from other disciplines and institutions. Some of these have also been published or are in the process of being published in internationally reputed academic journals.

Let me also mention that the area I focused on in this lecture is a contemporary concern in global health. The availability of interventions for good health has not translated into good health especially for the poor in the poor corners of the world. In spite of the advancement in the development of technologies for enhancing global health, many people in developing countries with preponderance of poor corners lack access to these life saving devices or at best these interventions are underutilized. A recent study revealed that methods to protect pregnant women from malaria are still under-utilized in sub-Saharan Africa. Specific strategies for malaria control in pregnant women were extracted from national malaria policies and the most recent national household cluster-sample surveys recording IPTp and ITN use were reconciled to sub-national administrative units to compute the numbers of protected pregnancies (http://www.medicalnewstoday.com/articles/214767.php).

The focus of my contributions to knowledge, therefore, has been to find ways of improving access to good health technologies especially for poor people in poor countries, including Nigeria. The University of Nigeria can take a lead on this and cut itself out as a centre of excellence in evolving ways for providing critical resources to people in the hard to reach and poor points of the world.

I am currently working on ways of enhancing access to technologies that make for good health among another group of the underserved – the nomads. The nomads are a significant group of our population. They contribute to the economic and nutritional growth of the society, yet nothing is done about their health needs. My current concern, with support from the World Health Organization is to see how the CDI approach could help delivery of health interventions among this population. The successful delivery of intervention among this population will not only enhance their productivity and contribution to the nation's economy but will also protect the health of the sedentary populations among which health interventions are successfully delivered. A failure in the management of the health of this population will create an unfortunate human reservoir of infections, which will become a scourge for the sedentary populations.

There are also other populations—those in conflict and post conflict areas—where the University of Nigeria could take a lead as promoter of regional and/or global health. Research into these concerns would not only bring the University to the limelight but could be resource earners for the University.

Global health is changing and knowledge on global health is demand from both nations in the North as it is of nations in the South. There is increasing demand for shared knowledge across countries. Gone are the days when we assumed a flow of risks from South or developing countries to the developed countries in the North. Evidence now point to the flow of risk from the North to the South. For example the three greatest producers of tobacco are in the United States of America, Britain and China. These are very big sources of tuberculosis and other diseases associated with smoking. In the past too we assumed the flow of solutions from the North to the South. This is also changing because there are innovative approaches to problem solving in the face of resource constraints coming from the South and which could be applied to problems in the North. One of them is finding innovative approached to promoting access to life saving interventions in the world. The University of Nigeria could be a significant force in the discovery and propagation of such innovative approaches to be shared with the rest of the world. We can do this with our Senate Research Grants.

Finally, I want to thank you once again, and the University for providing me with a very favourable condition to do the work embodied in this inaugural lecture as well as those other projects not described in the lecture for want of space.   THANK YOU

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