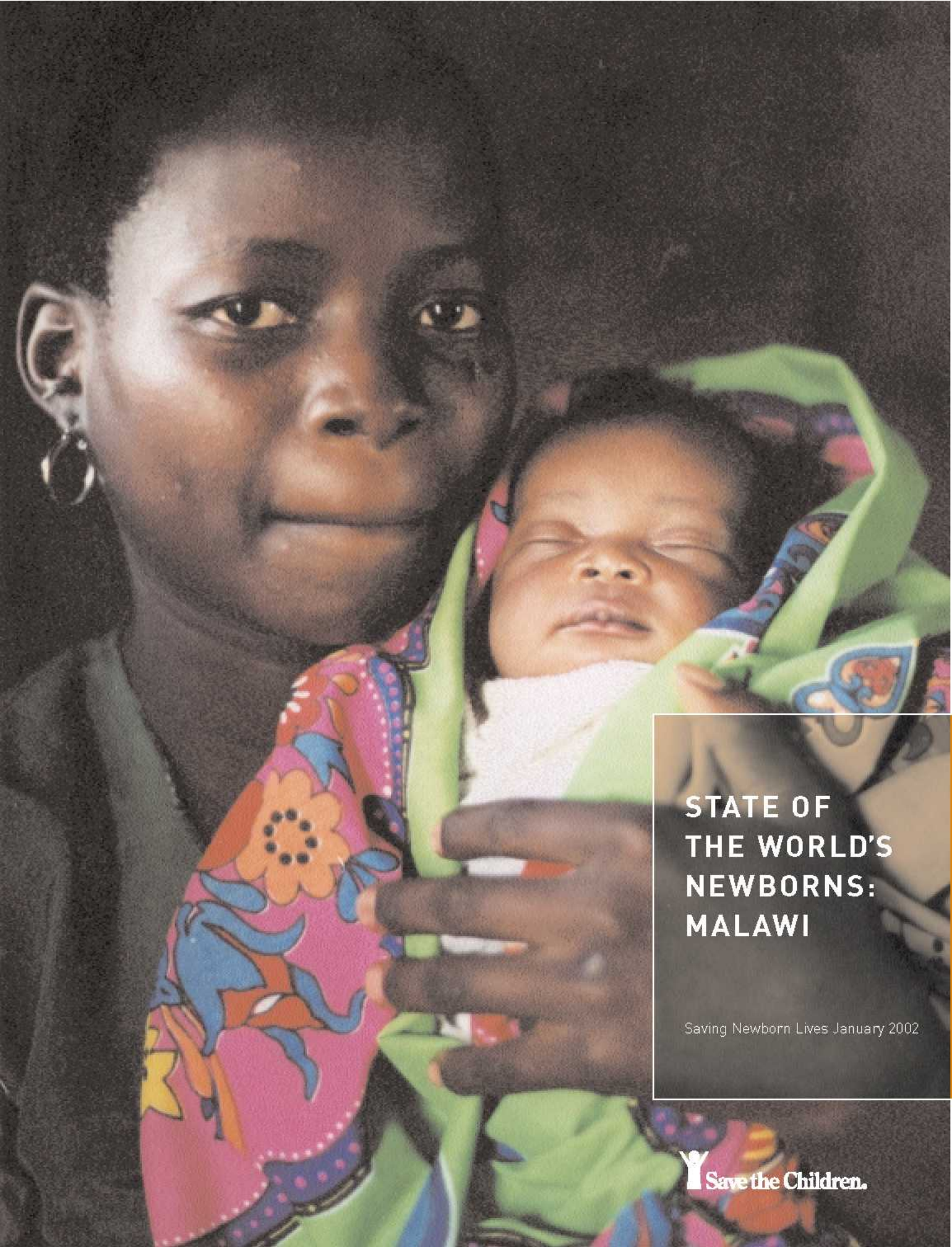


STATE OF THE WORLD'S NEWBORNS: MALAWI

Saving Newborn Lives January 2002

Save the Children.

Save the Children

This report was prepared in collaboration with the Government of the Republic of Malawi and Save the Children US and was published with support from the Bill & Melinda Gates Foundation.

SAVE THE CHILDREN is a leading non-profit child-assistance organization working in more than 45 countries worldwide, including the United States. Our mission is to make lasting, positive change in the lives of children in need. Save the Children is also a member of the Save the Children Alliance, a world-wide network of 30 independent Save the Children organizations working in more than 100 countries to ensure the well-being of children everywhere.

SAVING NEWBORN LIVES (SNL) INITIATIVE, led by Save the Children US, is funded through a generous grant from the Bill & Melinda Gates Foundation. SNL promotes affordable and sustainable solutions for maternal and neonatal health care in communities and countries where neonatal death rates are highest and people have limited access to known, life-saving interventions.

For more information, please contact:

Saving Newborn Lives
Save the Children US
PO Box 30374
Lilongwe 3, Malawi
011-265-753-888

Saving Newborn Lives
Save the Children US
2000 M Street NW, Suite 500
Washington, DC 20036
202 293-4170
www.savethechildren.org

Photography Credits Brian Moody

©2002 Save the Children Federation

PRINTED WITH SOY INK

STATE OF THE WORLD'S NEWBORNS: MALAWI

SAVING NEWBORN LIVES
SAVE THE CHILDREN

January 2002

CONTENTS

List of Abbreviations 4

Acknowledgements 5

Executive Summary 7

Introduction 11

Chapter 1 Status of Newborn and Maternal Health 17

Chapter 2 Community and Family Practices 25

Chapter 3 Health Service Delivery System 29

Chapter 4 Policy Environment 41

Chapter 5 Future Prospects and Challenges 45

Appendices

A. Bibliography 50
B. Selected Demographic, Maternal, and Child Health Indicators 51
C. Summary of NGOs and PVOs in Malawi 52
D. Summary of Neonatal Research in Malawi 54

Tables

1. Malawi's Economic Indicators 13
2. Selected Infant Health Indicators 17
3. Selected Maternal Health Indicators 20
4. Maternal and Child Health Activities among International Donors 30
5. Antenatal Services 37
6. Results from Community-based Safe Motherhood Trainers Project, Chiwamba Lilongwe District 55

Figures

1. Services According to SES Quintiles 14
2. Causes of Neonatal Deaths in Developing Countries 18
3. Neonatal Health Workers by Cadre 34
4. Method of Information Dissemination to Health Providers 36

LIST OF ABBREVIATIONS

ADB	African Development Bank
ADRA	Adventist Development and Relief Agency
ANC	Antenatal care
BFHI	Baby-Friendly Hospital Initiative
BHA	Better Health in Africa
CBD	Community-based distribution (workers)
CBSMAs	Community-based safe motherhood advisors
CHAM	Christian Health Association of Malawi
CHAPS	Community Health Partnerships
DA	District assemblies
DHO	District health offices
DFID	Department for International Development
ENC	Essential newborn care
EHP	Essential health package
ENP	Essential newborn practices
EOC	Essential obstetric care
EU	European Union
GOM	Government of Malawi
GDP	Gross domestic product
HRD	Human resource development
HSA	Health surveillance assistant
IEC	Information, education, and communication
IMCI	Integrated Management of Childhood Illnesses
JICA	Japan International Cooperation Agency
JHPIEGO	Johns Hopkins Program for International Education in Gynecology and Obstetrics
KCN	Kamuzu College of Nursing
KMC	Kangaroo Mother Care
lb	Live births
LGA	Local government assembly
MCH	Maternal and Child Health
MMRP	The Mangochi Malaria Research Project
MLG	Malawi Ministry of Local Government
MOHP	Malawi Ministry of Health & Population
MTCT	Mother-to-child-transmission
NGO	Nongovernmental organization
OR	Odds ratio
QECH	Queen Elizabeth Central Hospital
QAP	Quality Assurance Project, University Research Corp.
RN	Registered Nurse
RR	Relative risk ratio
SES	Socioeconomic status
SNL	Saving Newborn Lives initiative
STI	Sexually transmitted infection
SP	Sulphadoxine-pyrimethamine
TBA	Traditional birth attendant
UK	United Kingdom
UNICEF	United Nations International Children's Fund
UNFPA	United Nations Population Fund
VCT	Voluntary counseling and testing
VHC	Village health committee
WHO	World Health Organization

ACKNOWLEDGEMENTS

Creating *State of the World's Newborns: Malawi* involved the considerable skills of a number of individuals. First and foremost, we would like to give special thanks to our primary authors: Annette Bongiovanni, Dr. Michael Mbvundula, Mrs. Lennie Kamwendo, and Dr. Valentino Lema. Their fine work laid the foundation on which this analysis rests.

Contributing authors Patricia Daly, Joseph De Graft-Johnson, Karen Waltensperger, and Nazo Kureshy made important additions to early drafts, and the final draft benefited from a close review by and additional suggestions from Anne Tinker, Judith Moore, and Gary Darmstadt.

Final editing and polishing were the work of Robin Bell, Charlotte Storti, and Rebecca Lowery.

EXECUTIVE SUMMARY

Malawi is one of the poorest countries in the world with 65 percent of the population living in poverty and a per capita income of $210. In the past quarter century, modern health services have become more accessible for most of the population, but the health of the average individual has improved only minimally. Malawi's neonatal mortality rate—at almost 42 deaths per 1,000 live births—is 35 percent higher than the average rate for less developed countries. Forty percent of all infant mortality in Malawi occurs among newborns (in the first 28 days after birth).

Malawi's health system struggles with a range of problems which directly and indirectly undermine the quality of health care for the general population. Inefficient management, the poor use of scarce resources, inadequate supervision of and incentives for health personnel, and low institutional capacity for planning and deployment have all severely limited health care delivery and caused an inevitable decline in a wide range of health indicators. Not surprisingly, the dedication and performance of health workers continues to fall, reflected in generally low skill levels and low enrollment in medical and nursing programs. The general public, meanwhile, which tends to be poorly informed, resistant to user fees, and lacking means to demand better service, are inadvertently complicit in this downward spiral. When the devastating impact of the HIV/AIDS epidemic is added to this already bleak picture, the crisis in Malawi's health system begins to assume its true dimensions.

Care During Pregnancy

Despite systematic efforts in the area of primary care, there has been only limited progress in reducing maternal mortality in Malawi. A woman's economic status is a key variable in whether or not she will receive care from a skilled attendant (doctor, nurse, nurse-midwife) upon delivery. While both rich and poor women seek and have access to antenatal care, women in the richest sector of the population are 75 percent more likely to receive care from a skilled attendant at birth than women in the poorest sector. The total fertility rate reported in the 2000 Demographic and Health Survey is 6.3 children per woman, a slight decrease from 6.7 children in 1992. Frequent pregnancies and closely spaced births contribute to poor maternal and neonatal outcomes.

On the whole, antenatal coverage in Malawi is strikingly good, with almost 94 percent of all pregnant women reporting at least one visit, albeit relatively late in pregnancy, and over 80 percent receiving at least one tetanus toxoid vaccination. Several other indicators, however, need improvement: many pregnant women are not receiving or not taking the recommended two doses of sulfadoxine/pyrimethamine against malaria (a risk factor for premature delivery which is often dangerous for a newborn); syphilis testing is not done routinely; and other lab tests, such as hemoglobin and urinalysis to screen for anemia and infection, are the exception rather than the rule, largely due to lack of trained staff, supplies and equipment.

Care of the Newborn

Studies have identified the leading causes of neonatal death in Malawi as infection, complications during delivery (leading to birth asphyxia and birth injury), and complications of prematurity—a set of conditions, it should be noted, that can be readily addressed through relatively low cost, low tech improvements in the quality of antenatal, intrapartum, and postpartum care of mothers. While over 55 percent of women deliver their babies in health facilities, the quality of newborn care in these facilities varies greatly, depending on such factors as the presence of well-trained staff and the

availability of supplies and equipment. Many facilities have no suction equipment, for example, to treat newborns with asphyxia, and in those facilities that have the equipment, it is often broken.

Many women still choose to deliver at home with help from traditional birth attendants (TBAs) or family members. Whether a woman delivers at home or in a health facility, what matters most is following essential newborn care practices, such as the provision of warmth, initiation of immediate breastfeeding, and proper umbilical cord care to prevent infection and bleeding—practices which on the whole are difficult to ensure in the home.

Traditional practitioners play an important role in maternal and newborn care in Malawi, with almost 23 percent of home deliveries assisted by TBAs; indeed, many people feel they provide better service than what is available in the formal health system. TBAs, herbalists and healers are available and accessible, attentive, warm, and culturally sensitive while, in contrast, the health facility may be far away, is often closed, and health personnel may be uncaring and disrespectful. Many Malawians even prefer to be seen by untrained TBAs rather than by trained ones, as the latter are often perceived to be more "government-like" and less responsive in their approach. For all their popularity, traditional and otherwise untrained practitioners cannot be depended on to know or pass on the basics of sound newborn care.

A number of traditional practices and beliefs regarding pregnancy and the newborn are widely observed in Malawi. While some of these may be beneficial (or at least harmless), others contribute to poor maternal and neonatal health. In some areas, the mother and baby undergo a traditional confinement period of ten days or until the baby's umbilical stump falls off. Babies are not always dried and warmed immediately, or they may be washed before being put to the breast. It is common to cut the cord with a sugarcane peel and then to cover the umbilical stump with such things as soil, ashes, pumpkin flower juice, root extracts, or cow dung. Many newborns between one week and three months are fed with water or flour and water mixtures which can greatly increase chances of infection and contribute to poor growth and development. Some traditional beliefs prevent women from disclosing pregnancy and seeking antenatal care.

Strategies to Improve Essential Newborn Care

Many of the problems of the newborn in Malawi are the result of the poor national health system, with the lack of trained personnel standing out as one of the key challenges facing the government (and in particular the Ministry of Health and Population, MOHP). In urban areas, health facilities are understaffed and overcrowded, creating a high client-to-provider ratio that is further exacerbated by a chronic lack of supplies and equipment. In the rural areas, meanwhile, health care delivery suffers from the lack of infrastructure and poor provider skills.

Even so, improving newborn health and reducing newborn mortality are still possible in Malawi thanks to a number of proven, affordable solutions, including clean delivery practices, skilled care at delivery, warmth and drying, and immediate and exclusive breastfeeding. Save the Children will vigorously pursue and support the pursuit of these solutions through a four-part initiative in collaboration with the Government of Malawi and other assistance agencies.

- *Essential Newborn Care in the Community:* Save the Children will assist several nongovernmental organizations to improve essential newborn care in three districts in the Southern and Northern regions of Malawi. Since over 55 percent of deliveries in Malawi take place in a health facility, the program will target newborn care delivery in these facilities in order to strengthen community confidence in and access to facility-based care. The program will also aim to strengthen ties between the traditional (e. g., TBAs) and the formal health sector, with

a key goal of encouraging TBAs to motivate and accompany women for early postpartum care.

- *Training:* Improving newborn health is in large part a matter of improving the skills of health care providers, including doctors, nurses, midwives, Health Surveillance Assistants (HSAs), and TBAs. Save the Children will help the MOHP improve provider skills by creating a newborn care training network, based on a South African model (the Perinatal Education Program) which will be adapted to the needs of Malawi. Among other things, this training will focus on the technique known as Kangaroo Mother Care, a simple, inexpensive, and effective method for reducing mortality among low birth weight newborns. Training in Kangaroo Mother Care has already been introduced in one hospital in Malawi and will be expanded to others and introduced at the community level. Other TBA training will focus on promoting clean deliveries, educating new mothers on the newborn's need for warmth, hygiene, and immediate and exclusive breastfeeding, and teaching families and healers to recognize danger signs, such as rapid breathing or infection, and feel comfortable in seeking outside assistance. To address the shortage of skilled providers, Save the Children will support efforts to strengthen midwifery training.

- *Behavior Change Communications:* Improving newborn health and survival will require changes in current behavior and practices during pregnancy, delivery, and postpartum periods. Specifically, the behavior change communications (BCC) strategy aims to integrate the essential newborn care package with safe motherhood to promote better birth preparedness, better recognition of danger signs and swift, appropriate care-seeking behavior, and improved ENC skills and practices at the facility, community, and household levels. The strategy will combine public relations, community participation, advertising-based techniques, advocacy, and community norms changes. Using participatory approaches, these strategies will target mothers, family members, influential community members, health providers, and traditional practitioners. Messages will be crafted and materials developed and tested in collaboration with the MOHP and other partners. Once adopted nationally, these materials will be available to all 27 districts through government channels and those of the partner organizations.

- *Research:* Designing appropriate interventions will depend in part on good data from formative and operations research conducted at health facilities and in the wider community. To this end, Save the Children will support research to expand Kangaroo Mother Care to the community level, to examine using non-laboratory technicians to use test strips to diagnose syphilis among pregnant women during antenatal care, and to expand quality assurance systems to newborn care at the health facility level. In addition, Save the Children is considering supporting a trial intervention in Malawi and Zambia on using community mobilization to improve newborn health.

The Newborn as a Health Priority

The newborn needs to become a priority for Malawi's policy makers. Although Malawi has made improved maternal and child health one of its three priority health goals, programs aimed at mothers and children often do not have a specific newborn component. But in a country where 40 percent of *all* infant mortality occurs among newborns, this kind of piecemeal, nonspecific support will not be enough. Newborns need targeted support; they need to be the focus of efforts aimed specifically at their own unique circumstances and vulnerabilities. Such efforts can certainly be part of a broader initiative, but they must at a minimum include interventions designed expressly to address the risks of poor maternal health, of prematurity and low birth weight, of delivery, and of the first 28 days of life.

There can be little doubt that in the short run the much-needed improvements in newborn care will place an even greater burden on Malawi's already overburdened health system. But we should not lose sight of the fact that a good part of that very burden is the legacy of illness and disease resulting from poor newborn care. In due time, healthier newborns will mean healthier children and adults—and a more productive society.

INTRODUCTION

Why Focus on Neonatal Health?

Malawi is one of six Saving Newborn Lives focus countries due to the unacceptably high newborn mortality rate burdening this African nation—nearly 42 deaths per 1,000 live births. Among infants (over one month of age), the mortality rate reaches 113 deaths per 1,000 live births. While the alarming number of neonatal deaths is perhaps the most compelling reason to focus on newborns, another is the fact that healthy newborns are likely to enjoy better health in childhood and later in life. Newborns who get off to an unhealthy start, especially low birth weight (LBW) and preterm babies, are particularly vulnerable to illness and death during their first year. They may also develop disabilities and are generally less likely to reach their full potential, with unfortunate consequences for themselves, their families, and for society as a whole. As Malawi faces the challenges of economic and social development, its progress may be hampered by a population suffering from ill health and poor nutrition. Clearly, Malawi needs to invest in healthy babies.

In Malawi, where the costs of health care are spread thin across many sectors of the population, Saving Newborn Lives has observed many areas where it would be possible to make significant improvements in family and community practices in caring for pregnant women and newborns. Many of these improvements would be relatively low-tech and inexpensive, such as providing immediate and exclusive breastfeeding, ensuring warmth, and providing traditional birth attendants with a simple clean delivery kit. But as simple as these interventions are, they are far from being standard practice in Malawi. The challenge will be to reach the many influential partners—from mothers-in-law to nurses to policymakers—and break through the barriers to sound newborn care. Each partner has a role and responsibility to make each new life count.

The Saving Newborn Lives Approach

The Saving Newborn Lives initiative (SNL) is funded through a generous grant from the Bill and Melinda Gates Foundation to improve policies and expand programs to reduce newborn deaths in developing countries. SNL works to reduce neonatal mortality and supports adapting and expanding successful model programs that improve newborn care practices by families. SNL collaborates with local organizations and research institutions to test effective approaches and introduce new, low-cost technologies that will impact newborn survival. In addition, SNL is developing new tools and methodologies to understand the causes of neonatal death, improve mortality reporting, and identify and manage sick and vulnerable infants. SNL also provides nongovernmental organizations, governments, and donors with current information about the nature and magnitude of the problem of neonatal mortality and what can be done to address it. Through awareness-raising and advocacy, SNL works to generate political and social will to initiate changes in policy and behaviors that will reverse the high rates of newborn deaths in six focus countries in Asia, Africa, and Latin America. To achieve its goals, SNL partners with a wide range of institutions in developed and developing countries, including universities, nongovernmental organizations (NGOs), Ministries of Health, and development assistance agencies.

The Saving Newborn Lives Program in Malawi

With newborn mortality of almost 42 deaths per 1,000, Malawi was targeted from the very beginning as one of SNL's six focus countries. After an exploratory visit to Malawi in March 2001,

SNL staff identified a team of local consultants to research and draft a situation analysis of newborn health. The results of this analysis were presented to key stakeholders at the local level, who identified strategic options for programming, advocacy, and research. Based upon those findings, a strategic plan was developed to guide SNL program activities.

The strategic plan identifies specific opportunities for program activities and research in collaboration with local partners. The primary focus of program activities would be to improve the quality of services provided in the essential newborn care (ENC) package, namely: 1) key components of antenatal care, such as presumptive treatment of malaria and syphilis screening and treatment, 2) birth preparedness planning, 3) prevention of hypothermia, 4) infection prevention, 5) early and exclusive breastfeeding, 6) addressing danger signs in mothers and infants, 7) resuscitation of newborns with asphyxia in health facilities, and 8) postpartum follow-up. A second focus of program activities would include an ENC training component to improve the practical skills of health staff, primarily through the development of a training network to support midwives at the district level. The third focus includes a behavior change component to sharpen understanding of behavioral determinants, as well as economic, sociocultural, and logistical barriers to providing, seeking, and receiving newborn care. Once the formative research is completed, behavior change interventions will be developed, tested, and disseminated.

As noted, the stakeholder meetings and the strategic plan for Malawi also highlight research as an opportunity for SNL intervention. The situation analysis identified a number of areas for operations research at the local level, such as 1) Kangaroo Mother Care (KMC), 2) syphilis screening by non-laboratory technicians, 3) introducing and expanding vaginal cleansing during delivery, and 4) improving quality assurance in newborn health.

Overview of the Report

State of the World's Newborns: Malawi targets three fundamental levels for intervening in a newborn's life: at the community level and more specifically in the home environment, at the service delivery level, and at the policy level. An overview of the socioeconomic context in the Introduction is followed by a discussion of the key issues influencing public health in Malawi. Chapter 1 discusses neonatal and maternal health in Malawi and reviews selected indicators for the antenatal, intrapartum, and postpartum time periods. The last section in this chapter provides a brief description of the more important infectious diseases influencing neonatal and maternal health, specifically HIV/AIDS, sexually transmitted infections, and malaria.

Chapter 2 offers an assessment of newborn practices at the household and community level through a discussion of decision-making and health-seeking behavior and demand for services. The last section of this chapter explores strategies and programs, including behavior change interventions, that might best improve newborn care in the home and community. This chapter draws upon the findings from two ethnographic studies recently conducted in Malawi.

Chapter 3 reviews the health service delivery system, beginning with the roles of government and the private sector. Next, both community and facility-based programs are described, followed by profiles of the various health providers who care for newborns. Issues such as the quality of care and efficiency of service delivery are considered, concluding with potential strategies to enhance service delivery.

The policy environment is reviewed in Chapter 4, beginning with current strategies, policies, and plans as they reflect the decentralization process, and goes on to discuss financing services, the

National Health Plan, the National Safe Motherhood Task Force, and lastly, guidelines, standards, and protocols.

The final chapter of the analysis, "Future Prospects and Challenges," defines the arguments for making newborn health a national priority in Malawi and summarizes the report's specific recommendations at the level of household and community interventions, service delivery, and policy.

Socioeconomic Context

As one of the poorest countries in the world, Malawi has some of the worst health indicators on record. Sixty-five percent of the population lives below the poverty line and the per capita income is a modest $210.[1] While government spending is admittedly low, neighboring countries such as Kenya and Tanzania spend even less on health but have much better health indicators. Moreover, the Government of Malawi (GOM) has made a conscious effort to reallocate resources to the lower levels of care, especially in rural areas, but the health outcomes have not improved. The main causes for poor health indicator performance includes such factors as inefficient management, inadequate incentives for health personnel, and low institutional capacity for planning and deployment.

Table 1. Malawi's Economic Indicators

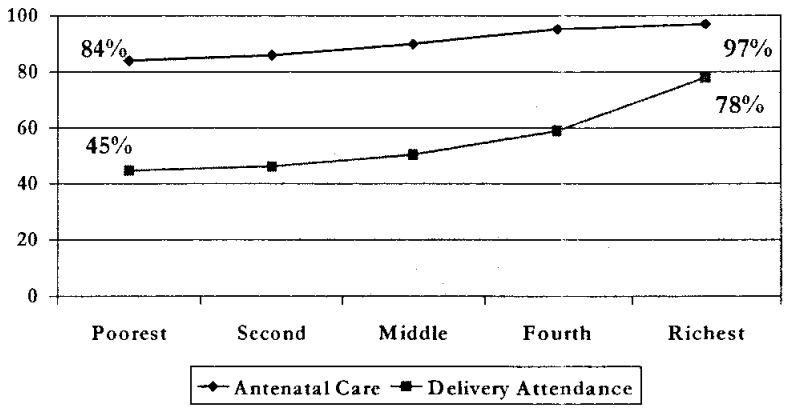
GNP per capita	US$210
Government + donors' health expenditures per capita (mid-90s)	US$7.82
Percentage of household expenditure per capita spent on health care (1993)	8%
Human Development Index Rank (out of 176 countries)[φ]	163

Source: World Bank Public Expenditure Review, 2000.

Source[φ]: UNDP: The World Development Report, 1999.

Regarding maternal health service, a woman's economic status is a key variable in whether or not she will receive care from a skilled attendant (doctor, nurse, nurse-midwife) upon delivery. While both rich and poor women seek and have access to antenatal care (see Figure 1 below), women in the richest sector of the population are 75 percent more likely to receive care from a skilled attendant at birth than women in the poorest sector. While assumptions could be made as to the barriers for access to skilled attendance (e.g., cultural beliefs lead poorer women to elect home deliveries, perceived quality of the service, cost, geographic access, transportation, etc.), further exploration is warranted in order to tailor and target interventions effectively.

Figure 1. Services According to SES Quintiles



Source: Gwatin, et al. "Socio-Economic Differences in Health, Nutrition, and Population, May 2000. Data from the 1992 DHS.

Key Issues Influencing Public Health in Malawi

Most of the problems with health service delivery and quality of care in Malawi stem from the lack of manpower in the health profession, inefficient management and use of scarce resources, and the indelible imprint of the HIV/AIDS epidemic. Newborn and maternal survival are further compromised by rampant malnutrition, poor water, and poor sanitation.

Malawi is overwhelmed by the HIV/AIDS epidemic, with a national seropositivity rate of 14 percent and reaching as high as 30 percent in urban areas.[2] The epidemic has reduced life expectancy to 39 years and is overburdening the health system in various ways.[3] The number of clients requiring in-patient care has increased dramatically, and HIV/AIDS has also taken a toll on health providers, who contract the disease and are unable to do their work. Meanwhile, the nursing and medical professions have become increasingly stigmatized as high-risk careers, dissuading young people from entering these professions. The net effect of the epidemic is increasingly overcrowded health facilities and a shrinking number of care providers.

In addition to the acute problems caused by the HIV/AIDS epidemic, Malawi experiences personnel deployment problems shared by other less developed countries. Professional nurses and doctors tend to gravitate toward hospitals in urban areas, leaving less experienced health workers to provide front-line health care in rural areas. When faced with obstetric and neonatal emergencies, these ancillary health providers are often left unsupported, without the training, supplies, equipment, and functioning referral system needed to prevent death from complications.

A recent study revealed that village women understand the need for adequate nutrition during pregnancy,[4] including the need for taking iron supplements and malaria prophylaxis during pregnancy. Nevertheless, many Malawian women enter pregnancy in a malnourished state; one study in Malawi found 42 percent of pregnant women to be anemic.[5,6] Children born to malnourished mothers are predisposed to low birth weight that in turn makes them more vulnerable to infections such as sepsis, pneumonia, and diarrhea.

Unhygienic conditions increase the chances of illness and death among newborns. Early and exclusive breastfeeding, hand washing, and proper cord care are the basic means for preventing

infections, but these practices are difficult without access to water and sanitation. Almost one out of five Malawians has no access to sanitation; some simply use the bush as a toilet (18.5%), while the vast majority of people use pit latrines (78.5%). The median time to walk to a water source is approximately 20 minutes. Only a fraction of the population (7.1%) has water piped into the home or yard.[7]

1 STATUS OF NEWBORN AND MATERNAL HEALTH

Newborn Health

The estimated neonatal mortality rate for the more developed regions of the world is 5/1,000 live births, compared to 34/1000 live births for less developed regions.[8] At almost 42 deaths/1,000 live births, Malawi's neonatal mortality is 23 percent higher than the average rate for less developed countries. Table 2 provides other related infant health indicators.

Table 2. Selected Infant Health Indicators

Neonatal mortality rate (per 1,000 live births)	41.8
Infant mortality rate (per 1,000 live births)	103.8
Under-five mortality rate (per 1,000 live births)	188.6
Percent of babies with low birth weight (1995-99)[9]	20%

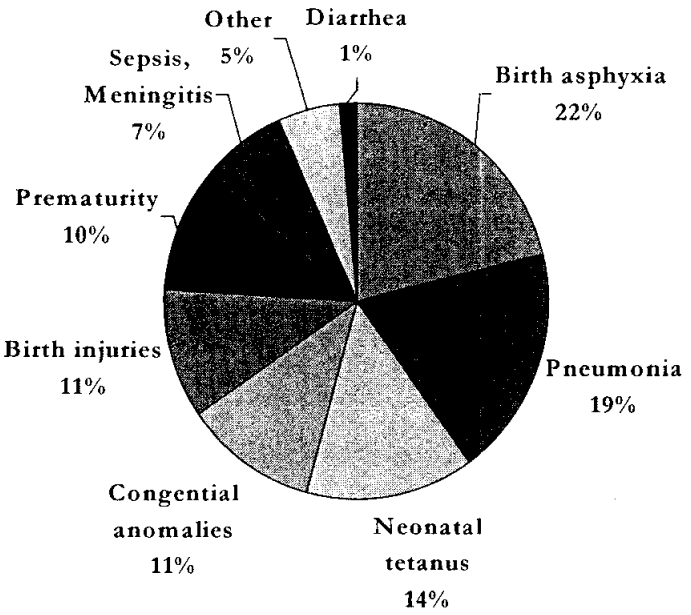
Source: Malawi Demographic and Health Survey 2000

Source[9]: State of the World's Newborns, Save the Children, 2001

While the causes of neonatal death in Malawi have not been closely studied, Figure 2 provides the etiology of neonatal deaths from a global perspective. According to some pediatricians, the most common neonatal problems in Malawi are sepsis (unrelated to umbilical cord infection), prematurity/low birth weight, asphyxia, and jaundice.[9]

More than 40 percent of all the infant mortality in Malawi occurs among newborns of 0-28 days. Various efforts have been made by a number of players to address the problems of the newborn, but more needs to be done. The Ministry of Health and Population (MOHP), for example, has written guidelines for a newborn assessment at one week and six weeks postpartum, and the National Safe Motherhood Program has developed numerous protocols for maternal health, but there is only one protocol related to newborns. The current Integrated Management of Childhood Illnesses (IMCI) modules for Malawi do not address newborn care during the first week of life but combine neonatal care with guidelines for managing children one week to less than two months of age. The National IMCI Task Force is working with UNICEF to develop a module for the newborn with community-based components. The MOHP identified the implementation of IMCI strategy in all districts by 2004 as one of the main goals to achieve newborn health.

Figure 2. Causes of Neonatal Deaths in Developing Countries



Although improved newborn health is recognized as an important goal for Malawi by the government and international donors alike, a clear strategy and policy guidelines have not been forthcoming.

Antenatal care

Antenatal coverage in Malawi is strikingly good, with almost 94 percent of all pregnant women having at least one visit, albeit relatively late in pregnancy; the mean initial visit is at 6 months and the median number of visits is 3.4. It is also very promising that 81.5 percent of pregnant women receive at least one tetanus toxoid vaccination, thus reducing the threat of one of the major killers of newborns in other parts of the world. [10] Less encouraging is the fact that many pregnant women are not receiving or taking the recommended two doses of sulfadoxine/pyrimethamine (SP) as prophylaxis treatment for malaria. Seventy-two percent of pregnant women receive at least one dose of SP, but there are no data on the number of women who have received two doses. Malaria is known to predispose women to premature delivery, a known risk factor for newborns.

While congenital syphilis is common due to the high seropositivity among pregnant women, syphilis testing is not routine. Other laboratory tests, for hemoglobin and urinalysis, for example, to screen for anemia and infection respectively, are rarely conducted, usually because of a lack of trained staff, supplies, or equipment.

Intrapartum care

The training of nurses and physicians is relatively good, as seems to be confirmed by the migration of health professionals to the United Kingdom and other countries. In-service training includes

intrapartum care components such as aseptic delivery and fetal monitoring. Sound intrapartum care is jeopardized, however, due to poor client management and a malfunctioning logistics system that fails to maintain adequate equipment and supplies in the facilities. Few midwives use the partograph properly and therefore fail to identify fetuses at risk. Referral within and between facilities can take several hours, placing women with obstructed labor in a highly compromised state and complicating caesarean sections when they are finally performed. Newborns caught in the birth canal for prolonged periods are at high risk for birth asphyxia.

These circumstances do not instill confidence in the health system, so it is no wonder that almost half of Malawi's women prefer to deliver in the comfort and perceived safety of their own homes where they will be treated with respect and allowed to practice their traditional beliefs.

Postpartum care

The lack of supplies and equipment noted above places newborns at undue risk in the immediate postpartum period. Suction equipment, for example, is rarely available or functioning, so that a newborn's airway is typically cleaned by external wiping even though this technique has little effect on an airway blocked with mucous. Facility staff next resort to holding newborns upside down or slapping their buttocks in an effort to resuscitate, but neither intervention is appropriate nor an adequate substitute for pulmonary resuscitation. Some TBAs resort to cleaning the newborn's face with a cloth and fanning it to stimulate respiration, and midwives have shown poor umbilical cord care to prevent infection and bleeding. Meanwhile, effective newborn care practices, such as keeping the baby warm and immediate breastfeeding, have proven difficult to carry out.

Physicians interviewed for the *State of the World's Newborns: Malawi* reported using antibiotics such as gentamycin and penicillin to treat neonatal sepsis and, in some cases, routinely using antibiotics and other medicines (such as aminophylline) to prevent infection or respiratory disorders. Given the propensity for inducing antimicrobial resistance in developing countries, the prophylactic use of antibiotics in newborns may not be warranted. Meanwhile, vitamin K is not routinely available, even though it is essential to prevent and treat hemorrhage in newborns, especially preterm neonates. Although the physician survey sample was quite small (less than 39) and not sufficient to identify trends in newborn care in Malawi, it is important to highlight these practices.

Maternal Health

Overview

The MOHP considers the major contributing factors in maternal mortality to be the excessively high fertility rate, the high percentage of 'high-risk' pregnancies, poor access to and utilization of essential obstetric services, and poor quality of care. The total fertility rate reported in the 2000 Demographic and Health Survey is 6.3 children per woman, a slight decrease from 6.7 children in 1992. Frequent pregnancies and closely spaced births are known to be risk factor for poor maternal and neonatal outcomes. The MOHP describes the most common causes of maternal deaths as puerperal sepsis, obstructed labor, and abortion, and estimates that almost one-third of all maternal deaths are among teenagers with incomplete abortions.[11]

While the recent Demographic and Health Survey (DHS, 2000) reveals some improvements in maternal health indicators, there has been little change since 1992 in skilled attendance at birth and an actual decrease in tetanus toxoid immunization among pregnant women. Table 3 displays some of the key maternal health indicators. (For a more comprehensive selection of maternal and infant health indicators and others, see Appendix B.)

Table 3. Selected Maternal Health Indicators

Total fertility rate women 15-49 years	6.3
Maternal mortality ratio per 100,000 live births	1127
Skilled attendance at delivery by physician, nurse, or nurse-midwife	55.6%
Women who delivered at home and received postpartum care services[12]	7%
Deliveries assisted by TBAs	22.7%

Source: Malawi Demographic and Health Survey 2000

Research, clinical observations, and anecdotal evidence within Malawi and elsewhere have clearly shown the importance of quality antenatal, intrapartum, and postpartum care of mothers to ensure good perinatal outcomes. Good newborn health goes hand in hand with good maternal health, the principle at the core of the World Health Organization's (WHO) Mother-Baby Care Package and the Safe Motherhood Program, whose slogan is, "Healthy Mother, Healthy Baby, Healthy Malawi!" Because of the relationship between maternal morbidity and mortality and poor perinatal outcome, the MOHP is putting in place a number of health care programs and services aimed at reducing the high maternal mortality (see Chapter 4).

Antenatal care

The GOM has made great strides in implementing some of the WHO recommendations for antenatal care. The recent Demographic and Health Survey revealed that 56 percent of women had four or more antenatal care visits, although only 6.5 percent of them had initiated these visits during the first trimester. But these national statistics mask the true story; many women do not have access to hospitals because of distance, lack of transport and communication, or socioeconomic barriers.

And there are other challenges to adequate antenatal care. There has been some success in providing prophylactic antimalarials such as sulfadoxin/pyrimethamine (SP), but many pregnant women take only one dose late in pregnancy. There are also persistent problems screening for syphilis, which is very prevalent and thought to be a major cause of poor perinatal outcomes. Unfortunately, most pregnant women do not enjoy good nutrition, making them susceptible to anemia and contributing to low birth weight among their babies. One study revealed that 56 percent of all pregnant women attending antenatal clinics are anemic. Among these women receiving antenatal care, over 30 percent are estimated to be HIV positive in urban areas and approximately 12-14 percent are HIV positive in rural areas.[13]

Intrapartum care

The provision of clean and safe delivery is one of the four pillars of safe motherhood. According to national data, 55.6 percent of expectant mothers deliver in health facilities (81.6% urban; 51.9% rural). This national rate does not disclose geographic pockets of low coverage. According to the DHS, the lowest incidence of skilled attendants at birth is the Kasungu District, with 44.6 percent coverage. Aggregated health information data from districts in the Southern Region that collaborate with the Malawi Safe Motherhood Project show that deliveries attended by skilled personnel increased from 34 percent in 1998 to 46 percent in 2001.[14] Interviews in the communities and with TBAs revealed that many women prefer to deliver at home assisted by a TBA because of the negative attitudes of midwives in health facility labor and postnatal wards. In addition, some women do not like what they perceive as a prolonged hospital stay, even though it may only last 12-48 hours.

When home deliveries go bad, prompt referral to a facility could make the difference between life and death. The GOM has put in place a system for referring women in labor to higher levels of care when the need arises, but this policy assumes the woman will not be delivering at home. Pregnant women are supposed to report to their nearest health center when labor begins, and if a woman has a risk factor or develops a problem in the course of labor, delivery, or after, she is to be referred to the next level of care nearest to the health center. The referring health center is responsible for providing transport (usually an ambulance) for the clients, for providing a skilled health worker or a midwife as an escort, and for alerting the receiving facility of the en route client, either by telephone, walkie-talkie, or radio. When the client arrives at the receiving facility, the escort hands the woman over to a fellow midwife or clinician on duty, who is then expected to immediately initiate appropriate care.

That is the theory. But this does not often happen in actual practice, according to interviews with health workers, policymakers, program workers, and other members of the community.[15] A number of problems were cited:

- delays in referral because of the lack of transport, in some cases because the vehicle was being used for errands that were not health-related;
- delays in instituting appropriate admission procedures and in providing emergency care at the receiving facility;
- absence of skilled health workers to escort clients;
- delays in diagnoses (and hence referrals) because health workers are overwhelmed by the volume of work;
- negative attitudes among midwives at the receiving facilities toward their fellow midwives or the clients.

As a result, some women referred to a hospital by a health center hide until dark or until they are in an advanced stage of labor, and then report back at the health center or even a different one because they know they will not be referred at this late stage. The end result in these cases is pregnancies with poor maternal and neonatal outcomes.

Although the majority of women do receive assistance during labor and delivery, many problems were cited with the way women are routinely managed at this stage in spite of the existence of various protocols. These include:

- poor or no monitoring of maternal and fetal well-being and progress of labor because of a shortage of staff;
- delays in detecting and appropriately managing problems when they occur because of severe shortage of staff as well as poor staff attitudes;
- poor or no appropriate infection control measures and practices, despite the availability of protocols on infection prevention and control.

These problems may lead to late recognition of obstructed labor as well as puerperal sepsis, both of which are major causes of maternal mortality and morbidity in Malawi. The ongoing Safe Motherhood Program's life-saving skills courses and the pre-service curricula of Kamuzu College of Nursing and College of Medicine and Malawi College of Health Sciences are addressing these issues.

Postpartum care

The MOPH provides service delivery guidelines for postpartum care for new mothers in order to reduce the risk of maternal morbidity and mortality. These include routine observations of blood pressure, vaginal bleeding, and the status of the uterus. Women are usually observed in the labor ward for one hour postpartum and are then transferred to the postnatal ward where they stay for a

period of 6-48 hours, depending on the capacity of the individual health unit. Upon discharge, women are advised to attend a postnatal clinic after one week.

Postnatal clinics provide women with a complete physical examination. They are asked about their health and that of their newborn and are given appropriate medications such as vitamin A. The last postnatal examination six weeks after delivery also provides women with counseling on family planning and contraception. During both of these postnatal visits, the attention is on the mother rather than the newborn.

Operations research has found that these guidelines are not routinely followed:

- A community survey revealed that 42 percent of mothers reported receiving a postpartum examination from a clinically skilled provider.[16] However, only 17 percent of the mothers reported receiving the first postpartum visit within one week of delivery.
- In another study, over 80 percent of respondents did not consider taking a sick newborn to a facility for any of the following conditions: convulsions, failure to thrive, bloody stools, or rapid breathing.[17]
- In another community survey, trend analysis showed that 81 percent of mothers breastfed exclusively during the initial month of life, a proportion that declined during the second (70%), third (44%), and by the end of the fifth month (15%).[18]
- Although vaginal washes with chlorhexidine have been found to reduce postpartum infections and are mandated in an MOHP directive (that the procedure be carried out routinely in labor), there was no evidence that this policy was being implemented.[19]

On the bright side, postpartum hemorrhage, the number one cause of maternal morbidity and mortality, was reported to be on the decline in health facilities among all women regardless of parity, thanks to active management of the third stage of labor (i.e., delivery of the placenta) by controlled cord traction after administering oxytocin.

Infectious Diseases Influencing Neonatal and Maternal Health

Any disease a woman faces while pregnant will be an assault on her and her unborn child's health. In Malawi, rampant sexually transmitted infections (STIs), the devastating AIDS epidemic, and endemic malaria are three diseases that regularly compromise newborn health.

Sexually transmitted infections

Among the various STIs that might befall a pregnant woman, syphilis is by far the most common. The syphilis prevalence rate among urban women attending antenatal clinics ranges from 2.3-2.9 percent; among semi-urban women the prevalence rate ranges from 2-7.3 percent; and among rural women from 0-10.4 percent.[20] The impact of syphilis on perinatal mortality is quite significant. According to a study of perinatal mortality in Malawi by McDermott et al., syphilis, nulliparity, and low socioeconomic status each contributed between 22-25 percent of perinatal deaths. Home delivery, a history of late fetal or neonatal death in the most recent previous birth, and a mother of short stature each contributed to another 10-16 percent of perinatal deaths. These findings suggest that screening and treating pregnant women with positive syphilis serology would reduce current perinatal mortality by at least 22 percent.[21]

HIV/AIDS

The major mode of transmission of HIV/AIDS in Malawi is through heterosexual contact, with mother-to-child transmission (MTCT) the second most common mode. The national HIV

prevalence rate among people of reproductive age (15-49 years) is approximately 14 percent. Young adult women (15-24 years) have approximately 4-6 times the prevalence as young men in that same age group, a finding with serious implications on mortality and morbidity since most women have their first child while still in their teens. Furthermore, there is wide variance between urban and rural prevalence rates among pregnant women, 30 percent and 10 percent respectively.[22] Other data taken from pregnant women presenting in antenatal clinics corroborate this pattern; HIV prevalence among urban pregnant women is 25.6 percent, among semi-urban pregnant women 27 percent, and among rural pregnant women 12.1 percent on average.[23] Mother-to-child transmission of the HIV virus is of growing concern in Malawi. The risk of such transmission occurs during pregnancy, delivery, and breastfeeding. Virtually none of the current research implicating the transmission of HIV through breastfeeding has differentiated between breastfeeding patterns (i.e., exclusive breastfeeding versus "mixed" feeding of breast milk and other feeds).[24] (See box, page 24, for a description of efforts to reduce mother-to-child transmission in Malawi.[25])

National and international programs are focusing on the HIV/AIDS problem as a whole in Malawi, and several of these programs, such as Community Health Partnerships (CHAPS) and USAID's Linkages project, are honing in on mother-to-child transmission.

Malaria

According to behavioral research conducted in all three regions of Malawi,[26] malaria is widely recognized as a threat to pregnancy. However, the association between bed nets and prevention was not readily made by respondents in the study. Bed nets have been shown to be a cost-effective intervention for diminishing malaria in the population, and while MOHP recognizes this fact, it has yet to act on it.

In a study in the Blantrye district of the availability and use of sulphadoxine-pyrimethamine (SP) for presumptive treatment of malaria during pregnancy, 92 percent of women receiving antenatal care took their first SP dose but only 40 percent took the second. [27] The mean timing of the first SP dose was approximately 23 weeks of gestation, while that of the second dose was 31 weeks. Inadequate knowledge of the health staff regarding the timing of SP was part of the problem, and another part was the fact that only half of the women surveyed knew the rationale for receiving SP.

Public knowledge of the treatment of malaria could be improved in order to increase compliance with the drug regime during pregnancy. Further investigation as to why bed nets have not been fully implemented may be necessary as well.

The above discussion briefly describes three primary diseases that directly affect newborn survival, all three of which can be screened for and treated during antenatal care, assuming the health system provides the necessary laboratories, staff, supplies, and medications. Health centers equipped to combat these diseases in pregnant women will also be able to help the general public, thus improving overall health and productivity in the country.

Efforts to Prevent Mother-to-Child-Transmission of HIV

On average 16 percent of pregnant women in Malawi who have been tested in the antenatal period are infected with HIV. Consequently, there is an urgent need to counsel women in relation to reproductive health and feeding practices. CHAPS (Community Health Partnerships) has designed a voluntary counseling and testing program that will be available through the Baby-Friendly Hospital Initiative. The government of Malawi has given the go-ahead to use the drug Nevirapine that prevents replication of the virus causing infection in the mother's blood and breast milk. At a cost of US$4 per woman and requiring just two doses (one for the mother when she goes into labor and one for the baby within 72 hours of birth), it has been shown to reduce the transmission rate by half. However, the cost-effective use of Nevirapine still depends on an effective counseling and testing program, since only mothers known to be HIV positive will be given the drug. Unfortunately, most poor African women are not within reach of facilities that can provide testing and treatment.

2 COMMUNITY AND FAMILY PRACTICES

The Cultural Context Behind Maternal and Newborn Care Practices

According to ethnographic research conducted in Malawi,[28] the newborn is considered a human being soon after birth and almost always after the umbilical cord falls off. Stillborns and early neonatal deaths are attributed to "God's will," but people remain hopeful because they make a distinction between the baby's death and the mother's ability to bear another child. In many situations, newborns who die early are buried by the women and not handled by the men for fear of contamination, since people believe the newborn is not yet a human being. (In Mulanje district, this is practiced for deaths of infants up to six months.) These beliefs and traditional practices have implications for the accurate surveillance of perinatal deaths.

Decision-making, health seeking behavior, and demand for service

Among the different districts in Malawi, there is some variation in decision-making and health seeking behavior that affects the demand for services. Men, for instance, are the key decision-makers regarding the delivery site in some of the districts of the Southern Region. In the other districts, women claimed to be the primary decision-makers. Uncles, mothers-in-law, and mothers also play a role in decision-making regarding the delivery site. In some communities, women are able to make their own decisions about seeking care for a newborn once an illness is recognized, while women in other communities described a complex process that involves the extended family on both sides.

First-time mothers are significantly influenced by their mothers and mothers-in-law for advice regarding newborn problems, whereas more experienced mothers are not. In some areas, a confinement practice of the newly delivered mother and baby is adhered to for a period of 10 days or until the umbilical stump falls off the neonate. In other cases, this confinement period may extend to a period of several months. Recent qualitative research reveals that women and families are more likely to turn to traditional healers for newborns, although they take older children with similar danger signs to the professional health system for treatment.[29]

In general, people prefer traditional practitioners because they perceive the quality of care to be better than in the formal health care system. Women perceive herbalists and healers to be available, accessible, attentive, warm, and culturally sensitive, while the health center may be far away and dirty and health personnel often treat clients with disrespect. Interestingly, trained TBAs are sometimes perceived to be more "government-like" in their approach, causing some people to prefer an untrained TBA.

Operations research conducted in Nsanje District demonstrated that neither bicycle ambulances nor community transport plans significantly changed home delivery rates or mean travel time.[30] Pregnant women were deterred from using bicycle ambulances because they feared evil spirits would cause them to have obstructed labor for publicizing their delivery.

Two recent assessments of cultural beliefs and behavior change needs[31,32] revealed the following beliefs and practices:

Antenatal period:

- Traditional beliefs prevent women from disclosing pregnancy and seeking antenatal care in the first trimester for fear of evil spirits or sorcery.
- In the Southern Region, primagravidas pass through an initiation ceremony with *nankungwi* (initiative advisors) who instruct them on what to expect and how to behave while with a TBA or health provider. They are advised to avoid shouting, crying, and discussion of danger signs.
- Forty-two percent of the health facilities surveyed in Blantyre had adequate stocks of iron supplement. Many women who had received antenatal care had not been given enough iron to last until their next visit. A vast majority of women were unclear on how to take the iron and often did not, due to nausea and various beliefs such as the perceived association between iron and obstructed labor.
- Sexual intercourse is prohibited from the fifth month of gestation because it may cause a depression on the fontanelle. The sperm is considered dirty and the cause of vernix, which is thought to be bad for the baby.

Intrapartum period:

- Community recognition of danger signs, including awareness of appropriate life-saving response, continues to be influenced by beliefs regarding witchcraft and infidelity associated with obstructed labor. In addition, some confusion continues to persist regarding malaria and sepsis.
- In Blantyre and Nsanje, the highest-ranking disincentives for delivering at a health facility were poor attitudes of health staff, unsanitary conditions, and distance. Good quality care, appropriate equipment and drugs, and distance were mentioned as motivators for delivering in a health facility.
- In Mangochi and Balaka districts, some people believe that the paternity of the child can only be determined if the baby is born at home or with a TBA.
- Throughout Malawi, difficult labor is commonly believed to result from the wife's infidelity or strained relationships between other spouses in the family. The modern equipment and technology associated with facility deliveries is thought to obscure the real truth. Breeched and prolonged deliveries can be attributed to sexual activity in the vicinity, and sometimes village chiefs ask the community to abstain from intercourse until the child is delivered.
- Sugarcane peel is commonly used to cut the cord. Substances that women may put on the umbilical stump include soil, ashes, pumpkin flower juice, root extracts, cow dung, crushed charcoal powder, tobacco leaves, and breast milk. Some women are motivated to put these substances on the cord stump in order to hasten healing, since they are confined to the house and cannot resume household duties until the cord stump falls off.

Postpartum period:

- Rural Malawian women often report not understanding the need for attending a postpartum visit because, "the baby is already born so what would be the point."[33] This underscores the importance of communicating with new mothers about the need to prevent potential problems with their babies. Government health providers voice similar fatalistic attitudes about newborn survival, stating that "if the baby dies, the woman will have another one next year anyway."[34]

- Handling of the placenta is an important consideration for families when deciding whether to birth at home or in a facility. Among those who favor delivery at home, traditional beliefs concerning expulsion and disposal of the placenta are important considerations. First,

women may need special assistance to expel the placenta; a feather might be needed to induce a gag reflex or the mother may need to blow into a bottle. In order to preserve a woman's fertility and prevent danger to the child, the placenta needs to be properly buried in a pit with the umbilical cord facing upward. Men who come in contact with the placenta or other by-products of delivery may contract a fatal illness.

Newborn care:

- In the Southern Region, the baby is only put to the mother's breast after she has bathed herself and changed her clothes. An evaluation of an exclusive breastfeeding intervention in Mulanje revealed that none of the women initiated breastfeeding within 30 minutes because of the belief that the mother and baby have to be cleaned after delivery. In addition, most women reported to have introduced the baby to gripe water and light porridge between one week and three months due to the strong belief that the baby cannot survive without water. Flour and water mixtures or water used to wash dishes are believed to impart intelligence. Grandmothers consider exclusive breastfeeding a negative practice due to its conflicts with traditional baby feeding practices. However, TBAs and traditional counselors did not play an active role in providing breastfeeding advice during the course of the intervention.

- Generally, the majority of community members are able to identify sick newborns through information, education, and communication messages promoted by missionaries. While utilization of the formal health sector for ill newborns is on the rise, families often delay seeking outside care until the condition deteriorates, and then it is often too late.

- As noted previously, common methods for resuscitating a newborn with asphyxia are fanning the baby with a cloth or pillow, blowing into the baby's mouth, vigorous rubbing of the baby's thighs, buttocks, or back, and holding the baby upside down and rubbing its feet.

- Other newborn care practices uncovered during the recent ethnographic field research include the expectation that women sleep on the floor with their newborns, placing the latter at risk for hypothermia. Also, some newborns are given orange Fanta soda because the mothers believe it contains vitamin A like other orange foods that they have seen advertised, a misinterpretation of messages promoting vitamin A-rich foods. As part of a broader review of behavioral attitudes and practices, it is important to rectify the miscommunication concerning vitamin A-rich foods and to clarify that orange Fanta should not be given to infants or children.

Improving Community and Family Responses to Health Care

Strategies and programs

Programs targeting grandmothers, men, women, spiritual leaders, and TBAs are needed to focus on the danger signs of pregnancy. Potential interventions might include: radio messages, village theater, grandmothers' clubs, take-home packages for illiterate families on danger signs and newborn care, expansion of trained community-based distribution agents for family planning, and expansion of the social marketing of bed nets.

Village health committees could be more actively involved in documenting perinatal deaths and participating in maternal and newborn survival interventions, such as TBA training, quality of care improvements, and enhancing community decision-making processes.

Community involvement in the transportation of mothers and newborns in need of care is largely nonexistent. There are few, if any, examples of community-generated funds for emergency

transport, and some questions must be answered before a program can be designed. Anecdotal evidence suggests that some women are embarrassed to be transported by bicycle ambulance because they do not want to publicly announce their condition. It is unclear whether these women are self-conscious simply because they are pregnant or because they are facing a problem during their pregnancy. Or, they might be ashamed that they cannot afford another means of transportation. Nonetheless, an emergency transport system must account for this important concern. Income-generating projects for emergency transport could be piloted and adapted to Malawi from other countries with similar conditions. Transport should be part of a broader referral strategy that includes improving the lines of communication between the home environment and the formal health structure.

Behavior change interventions

Clearly, there is much work to be done to improve the interpersonal skills of providers in the formal health system. The overall appearance of facilities and hygienic practices is important not only for provision of good health care but to attract clients who now perceive them as uninviting environments.

There need to be stronger links between TBAs and the formal health sector, especially in relation to postpartum care referrals.

- TBAs should be encouraged to motivate and accompany women and babies for early postpartum care.
- IEC materials should be provided to TBAs to use as learning and memory aids, to use in interpersonal counseling, and to disseminate to the community.
- TBA trainers who have not received a refresher course in over a decade should be retrained on a periodic basis.
- The logistics and supply system for TBA kit provision and replenishment also needs improvement.

These are some of the more specific interventions that can be targeted toward TBAs. Worldwide there is still some question concerning the effectiveness of TBA programs. None of the partner programs working with TBAs in Malawi have evaluated the impact of their programs, making it difficult to establish a relationship between training and impact on neonatal outcomes. Since training of TBAs is a given in Malawi, a broader literature search of program evaluations in other countries might be useful to help guide the types of interventions designed for TBA training

3 HEALTH SERVICE DELIVERY SYSTEM

Formal Health Care System

The formal health care system in Malawi includes facilities under the MOHP (60%), the Christian Health Association of Malawi (CHAM) (37%), and the Ministry of Local Government (MLG) (1%), as well as other public and private providers (2%). There are three central hospitals managed by the government; 82 district, rural, and other hospitals, half of which are government owned; and 417 rural and urban health centers, maternity units, and dispensaries, of which 201 are government owned.[35]

Role of government

Local government assemblies (LGA) were elected in November 2000 and are in the process of organizing. LGAs operate at the peripheral level and manage care for pregnant mothers and neonates in maternity units throughout the nation. The MOHP plans to devolve the management of district hospitals and peripheral health facilities to the LGAs in phases starting in FY02/03. The autonomy of central hospitals will be phased in, starting with Queen Elizabeth Central Hospital and Lilongwe Central Hospital, although they will remain under the supervision of boards of governors. As this transfer of responsibility occurs, the LGAs need to build their capacity in fiscal and human resource management.

In the new decentralized environment, village health committees (VHC) play a leading role in identifying health priorities within the communities, with assistance from the health surveillance assistants. The VHCs decide which health problems the community can undertake and which will need assistance from health providers.

Approximately 20 donors provide more than half of the health expenditures in Malawi, and their growing presence is putting a drain on the GOM's limited capacity for project preparation, negotiation, and monitoring. A joint Donor/MOHP Task Force was formed in 1999 to improve donor coordination and to promote a sector-wide approach to programming. Table 4 below lists the donors and the maternal and child health activities they support. Although some donors (i.e., USAID, DFID, UNFPA, UNICEF, and WHO) include some aspects of neonatal care as part of their maternal and child health initiatives, none include essential newborn care practices.

Table 4. Maternal and Child Health Activities among International Donors

USAID	CHAPS, HIV/AIDS, family planning, sexual reproductive health, child health, health information and support systems, human resource development (HRD)
DFID	Sexual and reproductive health, safe motherhood, HIV/AIDS, immunization, health systems development, reform of central medical stores, HRD, labs
GTZ	District health services, family planning, HIV/AIDS, essential drugs, HRD
EU	Health sector reform, safe blood program, Kangaroo Mother Care
World Bank	PHN Sector Project, Population and Family Planning Project
ADB	Rural Health Project, renovation of health facilities and construction of maintenance workshops, HRD, HIV/AIDS
UNFPA	Safe motherhood, support for TBAs, sexual reproductive health, HIV/AIDS, family planning, Banja la Mtsogolo
UNICEF	Safe motherhood, family planning, EPI, IMCI, IEC, HIV/AIDS, child survival growth and training
WHO	Safe motherhood, health systems development
JICA	Lab equipment, renovation of facilities, HIV/AIDS
Canada	HIV/AIDS
Italy	Safe motherhood

Source: Situational Analysis of Newborn Health in Malawi, 2001.

Role of the private sector

There are a growing number of NGOs and PVOs active in the health sector, including the Umoyo Network, a USAID-funded cooperative agreement headed by Save the Children/US and implemented by Plan International, the Adventist Development and Relief Agency (ADRA), and CARE, with a variety of subgrantees. The Umoyo Network includes three CHAM hospitals: Ekwendeni Hospital in the northern region, St. Anne's Hospital in the central region and Malamulo Hospital in the Southern Region. The NGO/PVO activities do not specifically include an essential newborn care package, but they do include some aspects. (Appendix C describes activities of the main NGOs and PVOs.)

USAID also supports several NGOs to implement maternal and child health programs in partnership with some district health offices. This initiative, Community Health and Partnerships (CHAPS), includes infection control, quality assurance, HIV/AIDS prevention, IMCI, water and sanitation, support for TBAs (including bicycle ambulances), and behavior change communication interventions such as drama and interactive plays. The partners include Save the Children/US and UK, Project HOPE, the International Eye Foundation, and Africare. This three-year initiative is assisting district

hospitals in delivering quality health services in partnership with the communities they serve. The role of Save the Children and Project HOPE is to improve the capacity of the district health teams to deliver basic primary health services, including maternal and child health. The CHAPS partnerships will be extended for another year. They will build upon the progress they have made in the past three years with increased attention to HIV/AIDS activities.

CHAM has a national network of mostly rural facilities that provide a large proportion of all formal health services in Malawi. CHAM hospitals implement GOM policies and activities and while they do not include central hospitals, some of their district hospitals have specialty services. The government gives a grant to CHAM to cover local salaries. CHAM charges user fees for treatment but they do not charge for growth monitoring, immunization, or community-based preventive services such as the treatment of STIs.

Household and community-based programs

In 1993, the MOHP in collaboration with the College of Medicine opened the Lungwena Health Center in Mangochi with technical assistance from the Mannerheim League for Child Welfare. The Lungwena Project serves as an experimental site for primary health care provision and as a training site for health professionals. An important aspect of this project is the linkage it provides between the formal health sector and the community. Once a week, this health center conducts a clinic where newborns are registered, assessed for growth and development, and referred to the outpatient department if problems are detected. The standard for newborn care during these visits consists of querying the mother about the general health of the baby and examining the umbilical cord stump for signs and symptoms of infection. The next scheduled visit is at six weeks postpartum when mothers present at the under-five clinic.

To improve the linkages between the informal and formal health sectors, TBAs were trained to educate the community on the need for pregnant women to have three ANC visits. The Lungwena Center staff aimed to bridge the gap between TBA activities and under-five clinic services. TBAs were encouraged to refer all newborns for postpartum check-ups. In fact, one of the aims of the project was to determine how to attract mothers and their newborns to personalized postpartum care, a goal that was successfully accomplished, with postpartum coverage reaching 90 percent within the intervention group. The health center developed a referral system that included radio contact with the district hospital and push ambulances for each village. Prior to this intervention, very few of the mothers came for follow-up, with only 50 of the estimated 280 babies born each week at the Queen Elizabeth Hospital being brought to the one-week postpartum clinic.

In summary, the main achievements of the Lungwena Project were to increase the community's knowledge about pregnancy risks, to mobilize support for trained TBAs, and to raise awareness of the relationship between a healthy pregnant women and the health of her newborn. The most important overall success was to form a bridge between the community and the MOHP health center.

Other hospital-based projects with a focus on building partnerships with the community are found in the Ekwendeni Hospital, which is part of the Umoyo Network. (See box, page 32, for a description.)

Since 1996, the University of Pennsylvania has addressed community and family needs to understand basic safe motherhood messages. Funding from the University of Pennsylvania and the Rockefeller Foundation support a village-based safe motherhood intervention in Chiwamba, Lilongwe District, a remote and underserved area. Village chiefs select women to be trained as community-based safe motherhood advisors (CBSMAs) who are held in high esteem in society. These village women receive a total of three weeks of training-of-trainer sessions over several months. The CBSMAs

bring safe childbearing messages to all community members while interfacing with government health providers. By the end of 1999, 75 percent of the women originally trained were still actively volunteering, reaching an estimated population of 20,000 inhabitants with at least one safe motherhood message.

EKWENDENI HOSPITAL IN THE UMOYO NETWORK

The Ekwendeni Hospital, a certified Baby-Friendly hospital, is one of three Synod of Livingstonia Hospitals. The safe motherhood component of their reproductive health project includes community outreach activities such as:

- Antenatal care (including 12 mobile clinics)
- TBA training (with kits)
- Emergency transport
- Safe Motherhood refresher training
- Perinatal Education Program training
- Maternity Waiting Home on site
- Health education and outreach through volunteers

Other activities related to maternal and newborn health are part of their partnership in the Synod of Livingstonia Child Survival Project and include:

- Breastfeeding
- Peer educator program to encourage delivery with a skilled attendant and educate on maternal risks during pregnancy
- Exploration of an emergency fund

Facility-level programs

There are 82 district hospitals in Malawi, resulting in a ratio that exceeds the "Better Health in Africa" (BHA) recommended ratio of one district hospital per 150,000 population. On the other hand, the nation falls short of the BHA recommendation for one health center per 10,000 people, with only 417 centers. Since the majority of the population is rural, the latter figure represents a significant shortcoming in Malawi's ability to provide access to health services.

Newborn survival is often dependent upon the ability of families to obtain rapid access to services for newborn resuscitation that is often only available through the formal health structure. In theory, the MOHP has basic and comprehensive Essential Obstetric Care (EOC) facilities. The basic units are the health centers where the main obstetric service providers are nurse-midwives (nurses and RNs). However, these units lack equipment such as vacuum extractors. Moreover the personnel in these facilities frequently lack training in appropriate resuscitation techniques, and might not be able to use the equipment even if it were available There are three types of comprehensive EOC facilities: rural hospitals (mostly managed by missions), district hospitals, and regional hospitals. In most of these facilities there is 24-hour coverage by clinical officers, general medical practitioners, and nurse anesthesiologists (although there may not be *any* physician trained anesthesiologists in-country). The OB/GYN specialists are found only in the regional hospitals.

The University of Pennsylvania has had an on-going long-term program to provide technical assistance and training to professional nurses. Between 1991 and 1996, the University of

Pennsylvania prepared 57 nurse-midwives to become safe motherhood trainers. Since then, these women have reached more than 5,000 health workers and community groups with in-service education on healthy pregnancy, safe delivery, and postpartum care. These trainers are supervised by the Malawian master teachers. The University of Pennsylvania has also had an on-going relationship with the Kamuzu College of Nursing (KCN) in an official university-to-university-link relationship. Four KCN faculty have received their master's degree and one has received her PhD degree from the University of Pennsylvania. Currently, the University of Pennsylvania professors are focusing on training nurse-midwives to treat neonatal asphyxia, one of the main causes of newborn mortality. One professor found that the Malawian nurse-midwives possess the knowledge at the hospital level but more attention needs to be focused on newborn education and service delivery.

The Baby-Friendly Hospital Initiative (BFHI) is an effort by UNICEF and WHO to ensure that all hospitals become centers of breastfeeding support and promotion. Hospitals must meet 10 global criteria for successful breastfeeding before they can be classified as Baby-Friendly. Thirteen hospitals in Malawi have been designated as Baby-Friendly, beginning with Monfort in Chikwawa in 1995 and, more recently, Ekwendeni and Embangweni in 2000. According to BFHI criteria, each facility is to be reassessed every two years after the initial accreditation. Malawi has not yet completed the reassessments in those hospitals designated in 1995 and 1999. The MOHP has requested financial assistance from UNICEF to conduct a monitoring and evaluation study of the Baby-Friendly hospitals.[36]

Other collateral reproductive health programs include Johns Hopkins University's efforts to promote reproductive health. Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO) is involved in the development of pre-service clinical curriculum for physicians and nurses, with special emphasis on family planning methods, post-abortion care and diagnosis, and care and treatment of sexually transmitted infections (STIs). JHPIEGO's pre-service technical assistance touches upon HIV/AIDS. Department for International Development (DFID) also provided technical assistance with curriculum revisions covering maternal and neonatal care. JHPIEGO is actively involved in the development of a post-abortion care strategy focused on service delivery and training. In November 2001, they began training health providers in four central hospitals. JHPIEGO is also collaborating with Engender Health, which is supporting training in 6-8 district hospitals.

Health Providers Supporting Newborn Care

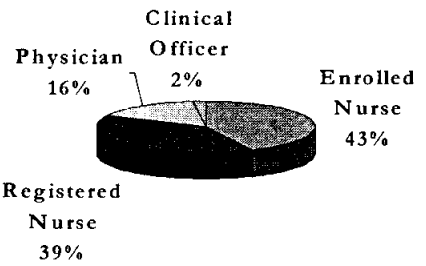
Malawi has many levels of health providers, ranging from physiotherapists to obstetricians, but each category suffers from severe shortages.. The vacancy rates for key maternal and neonatal care are as high as 56 percent for medical officers, 47 percent for registered nurses, 41 percent for public health nurses, 36 percent for medical assistants, and 18 percent for enrolled nurses. It is hoped that the GOM's plans to increase salaries in FY01/02 will help improve the situation.[37]

Undoubtedly, the lack of human resource capacity is one of the major problems facing the MOHP. The primary contributing factors are low enrollment and poor retention of nurses and doctors. Low enrollment is in part the result of not enough high school graduates eligible for college and in part because of the perception among the high school graduates that the health profession is dangerous due to the high risk of contracting HIV/AIDS. Retention is difficult because health professionals are well trained and therefore easily absorbed into the United Kingdom's health care system. The problem of retention is further compounded in rural facilities where nurses and doctors tend to gravitate toward urban hospitals, leaving the health surveillance assistants and some enrolled nurses to staff the majority of the country's health centers. Finally, countless nurses and doctors have fallen prey to the HIV/AIDS epidemic. When these factors are combined with low salaries and poorly equipped facilities, it's no wonder people stay away from the health professions. To address the

daunting problem of enrollment and retention of health professionals, the World Bank will be convening a Pan-African meeting (January 2002) to look at issues of human resource development. The Malawian MOHP will be participating and hopefully will be able to glean some useful strategies to address their problems with enrollment and retention of health professionals.

In addition to the shortage of professional nurses and doctors, these professionals are not deployed evenly throughout the health system, with most of them working in larger urban hospitals. Moreover, nurses provide the majority of newborn health care in the formal health sector, as denoted in Figure 3.[38]

Figure 3. Neonatal Health Workers by Cadre



Malawi has only one medical college, located in Blantyre. Founded in 1990, its curriculum is based on the British medical system and is designed to prepare students to sit for the medical exams at the Royal College of Medicine in the United Kingdom. The obstetrics and gynecology curriculum covers the treatment of obstetric emergencies, including caesarean sections. Each student has a six-month attachment to the obstetric and gynecology unit during his school training. After graduation, the student gets another six months of internship at a central hospital under the supervision of an obstetrician. Management of pregnant women with HIV/AIDS is included in this training. Malawi continues to suffer from a dearth of doctors, and with only 15 physicians on average graduating each year, the country will lag behind the health care needs of a population that places higher than average demands on the health care system.

Clinical officers, educated at the Malawi College of Health Sciences, are another cadre of health workers trained to manage obstetric emergencies, including performing caesarean sections. Their qualification is a step lower than the doctors trained by the College of Medicine.

The profile of a graduating professional nurse is changing in Malawi. Previously, registered nurses (RNs) graduated with four years of general nursing and a fifth year of midwifery training. Likewise, a certified enrolled nurse received two years of general training and a third year focused on midwifery. Given the severe shortage of skilled health providers, however, both curricula have been shortened. and the final year that had focused on midwifery skills has been subsumed into the new abridged curricula. The RN curricula still includes one year of midwifery but within a four-year program. According to local sources, the midwifery component in the revised curricula is adequate. The only difference is that not all enrolled nurses get the midwifery training, although enrolled nurses interested in midwifery can elect to take the additional one-year midwifery training. The Nursing College is in the process of introducing a two-year advanced midwifery training for RNs.

Health surveillance assistants (HSA) are community health workers with two months of training and who are paid and supplied through the District Health Office (DHO). HSAs operate from the health centers, but their main responsibilities are in the community. While the recommended catchment population for each HSA is 2,000, in practice most of them provide services for over 5,000 people. At the health center, HSAs provide vaccination services and health education, and they also assist the nurses with maternal and child health activities, either at the center or through

outreach. They also help with growth monitoring, immunizations of children under five, and supervising revolving drug funds. They do not have any midwifery training and do not assist deliveries. In the community, HSAs ensure that the environment is kept clean and that household members have good hygienic practices. They also educate people on proper food handling and general sanitation, supervise the construction of pit latrines, and assure protection of wells. In addition to these responsibilities, HSAs have been assigned other duties by the DHOs and NGOs to provide nonsurgical contraceptives (excluding injectables, although in some areas, the HSAs are administering Depo against government policy). Indeed, the HSAs are multi-purpose workers and a great asset to community health.

The Government of Malawi has a World Bank Learning and Innovation Loan focused on the development of community-based distribution (CBD) workers who dispense contraceptives in three districts. The CBD workers receive a two-week training course on family planning methods not including injectables.

TBAs form an integral part of the health system because they attend close to half of all deliveries. Most of them are women in their sixth decade of life who learned the trade from their mothers, and a few of them are passing down their skills to younger women. Some are also functioning as traditional healers or herbalists. There is wide variation in the currency of skills and client flow, with some TBAs assisting one or two deliveries a month and others attending more than 50 per month. The NGO community is actively involved with TBA training in collaboration with the DHOs. In general, trained TBAs cooperate with DHOs to provide antenatal counseling and support, make referrals, assist deliveries, and perform postpartum visits. They keep records and submit them monthly to their supervisors.

Quality of Care

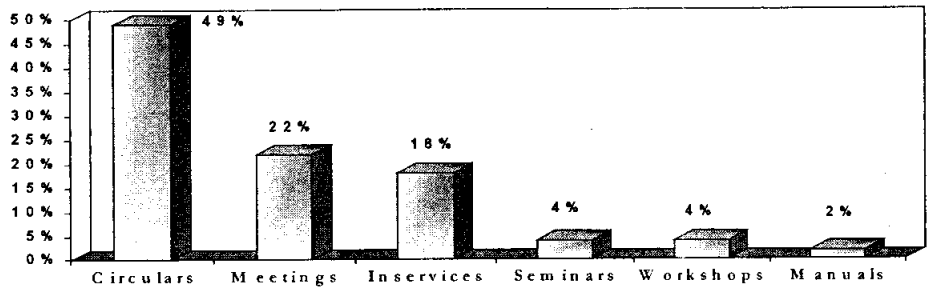
Some international donors believe the private sector and NGOs are more effective than the public sector in providing adequate care for their clients. While CHAM facilities charge for their services, clients are willing to pay because they perceive quality of care to be better than at the public health facilities.

University Research Corporation's Quality Assurance Project (QAP) is working with the MOHP to help attract young people to the health profession. They have established a National Quality Assurance Task Force whose mandate is to monitor and improve the overall quality of health care in all health facilities, especially government facilities. The task force was formed approximately two years ago and is not yet fully functional. About five years ago, the Medical Council of Malawi led the development of a quality assurance strategy for the country. Based on the Medical Council's document, some NGOs in partnership with QAP have established quality assurance teams in selected health centers (approximately 5-9 teams in 5 of the 27 districts). These quality assurance activities are in the early stage of implementation.

Despite the wide array of courses offered in pre- and in-service education for health providers, the emphasis is mainly on resuscitation and exclusive breastfeeding. Forty percent of the 39 health providers interviewed for the *State of the World's Newborns: Malawi* mentioned resuscitation as the principal focus of their in-service education, followed by exclusive breastfeeding noted by 17 percent of the respondents.[39] Other newborn care related topics were covered, but each was only noted by a small percentage of the providers interviewed.

The principal methods of information dissemination are laid out in Figure 4 below. These results on in-service education are based on a small sample of providers who were not selected at random and are not representative of the national situation in Malawi.

Figure 4. Method of Information Dissemination to Health Providers



Effectiveness of Service Delivery

The current National Health Plan summarizes three main health delivery system problems: 1) limited access to quality health care, 2) weak intra- and inter-sectoral linkages, and 3) weak policy and regulatory infrastructure. The National Health Plan has a strong emphasis on improving maternal health, but newborn health is discussed only peripherally within the maternal context. Some of the main activities described include: 1) strengthening advocacy and IEC, 2) providing equitable access to quality maternal and neonatal care, 3) strengthening capacity building for safe motherhood, and 4) undertaking research promotion in maternal and neonatal care.

Health facilities in urban areas are understaffed and overcrowded. The high client-to-provider ratio is complicated by a lack of supplies and equipment, thus making it almost impossible to deliver quality care. In the rural areas, the largest problem is the lack of infrastructure and insufficient provider skills. The lack of equipment and supplies is due in part to insufficient finances and in part to improper management of available resources. DFID is assisting with the provision of supplies and equipment for health facilities. Together with USAID, they also assist with logistics management training. Nonetheless, the pharmaceutical sector remains in a state of disarray vis-à-vis procurement, distribution, and utilization. Pediatric formulations of common medicaments are not routinely available, and drugs are leaked out of the system, perhaps into the private practices of physicians and nurses and possibly into the black market.

Given the lack of support for newborn care, it is not surprising that health care providers have a strong need to improve their ability to prevent, recognize, and manage newborn complications. A 1995 Safe Motherhood needs assessment revealed that less than half of the health personnel

interviewed dried the newborn or checked for crying and breathing. Only 56 percent interviewed had cleared airway passages, and 17 percent used eye medication as part of their newborn care. Even more alarming was the poor knowledge base for recognition of danger signs in the newborn; a mere 18 percent of health staff interviewed identified convulsions as a danger sign, 21 percent knew that a low Apgar score was reason for action, 27 percent recognized poor suckling, and less than half were aware of the significance of a baby not crying or grunting. Similarly, an evaluation of the health personnel trained in life-saving skills through the DFID Safe Motherhood Project noted that only 26 percent of those trained were able to prioritize correctly the interventions for newborn resuscitation.

Ethnographic research and anecdotal evidence indicate that health providers are infamous for their poor interpersonal skills with clients. The poor attitude of nurses has been attributed to their excessive workload, difficult working conditions, and customary beliefs regarding acceptable behavior of pregnant women during delivery (e.g., endurance of pain in silence).

Antenatal period

The MOHP recommends that pregnant women with a gestational age of less than 28 weeks attend follow-up antenatal visits monthly; those with a gestational age of 28-36 weeks should attend every two weeks; and those with more than 36 weeks should visit weekly.

Government policy recommends giving iron tablets combined with folate to clients according to the gestational age of their pregnancy. Women reporting to the health facility at less than 28 weeks gestation get a one-month supply (30 tablets); those visiting between 28-36 weeks gestation get a 14-day supply; and those visiting after 36 weeks get a seven-day supply. The quantity provided depends on the follow-up date given to the client.

The services provided during an antenatal visit are variable. The recent DHS survey interviewed pregnant women who received antenatal care and queried them as to the services rendered during the visits. Table 5 below provides an illustrative example of those services:

Table 5. Antenatal Services

Informed of signs of pregnancy complications	71.1%
Blood pressure taken	82.7%
Urine taken (presumably for protein and bacteria examination)	23.1%
Blood sample taken (presumably for hemoglobin; less likely for syphilis)	43.2%
Received iron tablets	69.7%
Received anti-malarial medication	71.9%

Source: Malawi Demographic and Health Survey 2000

Overall, the content of the services provided during antenatal care is quite good, with the noted exception of laboratory services. Considering that more than half of the women are receiving four or more visits, Malawi is doing very well with the content of their antenatal care, compared to other countries, with fewer resources.

Intrapartum period

The health center is the lowest level within the health system for facility-based obstetric care. Midwives refer cases they cannot manage at this level to a rural or district hospital, and district hospital staff refer cases they cannot manage to the regional hospitals. In some districts, there is two-way radio communication between the health centers and the district hospital, making it possible for the health center to request an ambulance from the hospital. Unfortunately, the hospital ambulance is not always available to respond to this need. Most districts have only one ambulance that performs multiple functions, and most clients depend on public transportation that is not easily available. Some communities have bicycle ambulances (i.e., a stretcher pulled by an ordinary bicycle) that transport women with pregnancy complications to the health facility. There is no standardized referral system from the community (i.e., TBAs or pregnant woman's house) to the health center.

Postpartum period

Fewer than one-third of the health personnel trained through the Safe Motherhood Project provided advice to mothers on general newborn care. On average, only 13 percent instructed mothers on aseptic techniques for cord care and even less gave information on signs and symptoms of neonatal infection or tetanus.

Kangaroo Mother Care (KMC) for preterm newborns has been established at the Zomba Central Hospital, which has successfully managed over 80 preterm neonates. Surveillance records indicate that none of these premies have died, a fact that has been attributed to the initiation of KMC. The European Union is supporting this activity.

Strategies to Enhance Service Delivery

Increase human resource capacity

The MOHP should continue to strive toward one of the key reforms delineated in the National Health Plan, namely, "quality of trained human resources increased, improved and equitably and efficiently distributed." Coupled with the GOM goal to increase overall resources in the health sector, this should be possible, but the problem of decreased enrollment still needs to be addressed. As noted, the profession of health care provider has become stigmatized because of the generally held belief that health care providers have increased susceptibility to infectious diseases, particularly HIV/AIDS, although there are no data on HIV prevalence among health personnel to substantiate these assumptions. In fact, anecdotal information suggests that health providers are dying at the same rate as the general populace. It would be important to clarify which perception coincides with empirical evidence. More importantly, there is a need for increased emphasis on infection control protocols that deal directly with the nosocomial transmission of infectious diseases in the health care setting.

A gap specifically related to the medical profession is the long-term need for the College of Medicine to offer medical residencies in obstetrics and gynecology, pediatrics, and anesthesiology. These specialists are greatly needed to build a cadre of skilled professionals who are in the best position to avert maternal and neonatal mortality and morbidity, and they are integral to the implementation of essential obstetric care (EOC) as recommended by the WHO. A feasibility study would be required before embarking upon any new programs.

To address the need for deployment of professional nurses and physicians to the rural areas, an incentive structure should be created. Incentives might include provision of housing, clean water and

electricity, good schools, and, most importantly, hardship differential pay.[40] There should be higher salaries for the RNs who have the additional two-year midwifery degree that is currently under discussion. Unquestionably, equipped facilities with adequate and regularly replenished stocked drugs and supplies are needed so professional personnel can supply appropriate treatment to their patients.

Improve quality of care

Poor quality of care dissuades people from using the formal health sector. Therefore, it is essential to address quality if demand is expected to rise. At the heart of improving quality are the interpersonal skills of the health providers. Almost any technical training, both pre- and in-service, should include information related to the proper treatment of clients.

Currently, there is rare and inconsistent testing, treatment, and follow-up for syphilis, HIV, anemia, and malaria. The reasons for this are multifaceted and include lack of awareness on the part of the providers, nonexistent or poorly functioning equipment, insufficient supplies, lack of trained laboratory personnel, and general provider morale due to poor working conditions. Essential resources should be defined, prioritized for procurement, and then distributed to health facilities nationwide, based on such considerations as magnitude and severity for the particular problem identified. This is not possible without functioning information and logistics systems.

It is unlikely that very many facilities in Malawi can provide either basic or comprehensive essential obstetric care given the limitation in supplies, equipment, blood supply, and 24-hour coverage by specialists in surgery and anesthesiology. An assessment should be made to identify the level of EOC that health facilities can provide and to plan the optimal placement of limited resources. The severity and magnitude of neonatal and maternal mortality should be key criteria for placement of EOC facilities.

The quality of services might improve if the method mix of disseminating information is reconsidered. Health care providers would certainly benefit from attending seminars and workshops, but this may be too costly. A cost-effective alternative would be to invest in manuals and self-training courses to supplement in-services. Not to diminish the importance of learning neonatal resuscitation, the range of topics covered could be broadened to include more input on general care for both well and sick newborns, infection prevention, hypothermia, postnatal care, etc. Of utmost importance is sustained attention to improve health providers' interpersonal skills, an emphasis that could easily be integrated into each of the technical areas.

Carry out behavior change interventions

The Lungwena Project is coming to an end, and it would be useful to evaluate the successes and lessons learned as they apply to neonatal health care. More might be done with the *Tukumbusyana* drama and band to disseminate IEC messages specific to newborn care. The band has a broader primary health care focus which includes weaning practices, but they could also transmit messages related to warming, exclusive breast feeding, hygienic practices, postpartum care, etc.

The successes from the Zomba Central Hospital with the Kangaroo Mother Care intervention are limited to that hospital. This is a missed opportunity, and efforts are needed to replicate this model of care to other facilities. A community-based IEC campaign might be very useful to advise mothers with premature infants born at home to seek assistance on the KMC method from local facilities.

Under the CHAPS Initiative, Project HOPE is developing 'Mother Reminder' handouts on danger signs for maternal health. This campaign could be expanded to include danger signs for newborns as well.

Increase research activities

According to some international nursing advisors who have worked with the Malawian nursing program for several years, the profession of nurse-midwifery has been diluted in an effort to produce as many general nurses as possible in a short time. As long as maternal and neonatal mortality remain high, the demand for midwifery skills remains a priority. This is especially true in a country that does not produce obstetricians. These advisors suggest an evaluation comparing the different nursing curricula is warranted.

There are scanty data on the quality of care provided in the private sector. It is not uncommon for public health nurses and doctors to provide clinical care out of their homes. Assumptions are made regarding the leakage of drugs and supplies into the hands of these clandestine providers, but this has not been verified. To maintain some oversight of government employees who operate private practices, the GOM has been experimenting with the incorporation of private services inside a public facility, a pilot project that has established private wards in the public central hospital. According to World Bank sources, these wards are usually full and the project appears to be successful, but. the project has not been evaluated as to its effectiveness, impact, sustainability, or its applicability to other settings. An assessment of the private sector's current contribution to newborn health would be warranted and should determine the ability and capacity of the private sector (including NGOs) to provide essential newborn care.

While there is evidence that TBAs are not effective in reducing maternal mortality, their role in averting neonatal deaths is less clear. An examination of TBAs' impact on newborn survival outcomes is justified. In addition, it is unclear whether TBAs are replacing themselves. If they are not passing on their skills, it will be important to forecast the future health-seeking patterns of their clientele, including the role that traditional healers play in the promotion of newborn health.

Sociological research with an emphasis on newborn health would best be directed at examining: 1) individual and household health-seeking behaviors; 2) community and individuals' perceptions of quality care and its influence on access to services; and 3) ways to improve attendance and quality of postpartum visits. It would be useful for this ethnographic research to point to interventions that take into consideration viable alternatives within the cultural context. For instance, if mothers prefer to keep their babies home until the umbilical cord stump falls off, perhaps that should be the milestone date for them to come to a facility for postpartum care, but this would need to be part of a strategy to encourage TBA home visits during the critical first week postpartum to provide preventive care, detect danger signs, and make urgent referrals.

4 POLICY ENVIRONMENT

Current Strategies, Policies, and Plans

Decentralization process

The 1998 Government Policy on National Decentralization delineates the devolution of administrative authority to the district level in one administrative unit. These units are District Assemblies (DA), and they encompass various special interest groups including health. DAs have two major funding sources: central government transfers and locally generated funds. While the DAs are to assume decision-making responsibility at the district level, the MOHP will continue to be responsible for policy formulation and enforcement, establishment of standards and regulation, training and curriculum development, and international representation. Functions relevant to maternal and child health that have been transferred to the DAs include personnel employment, management of all health facilities and community health services, provision and management of maternal and child welfare services, provision of ambulances and control of communicable diseases including HIV/AIDS. The decentralization of health services is to be introduced in two stages; however, the process is lagging behind in regard to local control of budgets. Given Malawi's long history of a one-party government, devolution of power is not an intuitive process. Lack of management skills at the local level and resistance of central level leaders to release their control over funds only compound the difficulties of the transfer process.

Financing services

Although the GOM made a deliberate effort over the past decade to increase the share of the total government budget set aside for health (from 7.3 % in FY91 to 9.1% in FY97 to 11.6% in FY98), these fiscal increases began eroding in 1995 with the onset of economic difficulties, notably devaluation and inflation, which lead to the stagnation of real per capita health expenditures. For most of the decade, the expansion of the health infrastructure could no longer be maintained with adequate recurrent spending and was no longer sufficient to meet the needs of a growing population.

An increasing share of the health budget has been going to district and lower level facilities at the expense of central headquarters administration, which declined from 22 percent to 10 percent of the budget between FY90/91 and FY97/98, and of central tertiary hospitals, which declined from 38 percent to 17 percent. While the number of central hospitals has increased by one, the number of secondary and primary facilities has increased from 202 in the late 1980s to 284 in the late 1990s. The increase in the overall allocation to district and lower-level facilities has therefore not necessarily translated into an increase in the amount allocated to each primary and secondary facility. Moreover, while peripheral facilities often find themselves unable to increase additional allocations during the year, central hospitals tend to overspend their budgets.[41]

The government's focus on funding the primary and secondary levels of care has hurt both the central level facilities and the front-line services. People continue to bypass the health center when they seek care in the formal health sector, thereby straining the tertiary hospitals with overcrowding. Tertiary facilities incur only 17 percent of the total recurrent expenditures, while the primary and

secondary levels have more than half of these expenditures (54%). Training institutions (19%) and administration (10%) comprise the remainder of recurrent costs.[42]

National Health Plan

The main health service delivery strategy emphasizes primary health care that is focused on three key areas: 1) maternal and child health, 2) water and sanitation, and 3) early treatment of common conditions. Irrespective of the stated goal to focus on maternal and child health, the essential health care package (EHP) only identifies maternal conditions and pregnancy outcomes; the essential newborn care (ENC) package has not been specifically included.

By the year 2004, the EHP has the overly ambitious target to reduce neonatal mortality by 27 percent. Similarly, the GOM aims to reduce maternal mortality by 50 percent and to have 90 percent of women deliver in health facilities. Currently, just over half of pregnant women use the formal health system.[43]

National Safe Motherhood Task Force

Malawi's National Safe Motherhood Task Force is responsible for the development of safe motherhood policies and procedures. They conduct maternal audits but do not conduct maternal/perinatal surveillance. One of their main achievements is the development of a national protocol flow chart for management of specific obstetric complications, which is now the standard tool for managing pregnant women in Malawi. The members convene quarterly and include representatives from the MOHP, College of Medicine, Medical Council, Kamuzu College of Nursing, Nurses and Midwives Council, CHAM, Queen Elizabeth Central Hospital, Lilongwe Central Hospital, UNICEF, and DFID. A recommendation was made during a recent stakeholder's meeting to invite the SNL program manager for Malawi and a pediatrician to join. The SNL program manager also has been invited to participate in the National Integrated Management of Childhood Illnesses Task Force.

Guidelines, standards, and protocols

The new national reproductive health guidelines are in the final revision before publication. In collaboration with JHPIEGO, the MOHP revised the previous guidelines that addressed family planning and broadened the scope to include integrated reproductive health practices. These guidelines have a minimal focus on maternal health, and neonatal health is only nominally covered.

There is an inconsistency vis-à-vis risk assessment in these new guidelines. While they correctly state that all pregnancies should be considered as potentially "high risk," they also suggest identifying high-risk factors during antenatal care and placing an intravenous infusion in those women during labor and delivery. This advice is potentially misleading. Moreover, the Safe Motherhood Program recommendation to refer "high risk" pregnancies to the formal health sector should be reconsidered in light of the lack of empirical evidence to support the assumption of superior quality of care. If this advice were widely followed, it would put an undue burden on overcrowded hospitals, but probably would not have a real impact on reducing neonatal and maternal mortality.

Policy Recommendations for Newborn Health

Strategies, policies, and plans

Despite periodic references to essential obstetric care (EOC), the MOHP does not provide guidance on the components nor the distribution of such services. While one component of EOC includes

immediate newborn care, there is clear guidance from the WHO on essential newborn practices (ENP). EOC and ENP need to be clearly defined in national policy and hard decisions should be made regarding the best placement of scarce resources. As an immediate objective, MOHP should begin to provide basic, and potentially comprehensive, essential care for the newborn and the mother based on internationally accepted recommendations. Given local conditions, it will not be possible to begin with four EOC facilities for every 500,000 inhabitants, but some effort should be made to reach that objective.

The draft reproductive health guidelines provide a very brief overview of maternal and neonatal health. While these related chapters were not intended to be exhaustive, there remains a need for specific guidance on maternal and neonatal care with an emphasis on the essential practices needed to avert mortality and morbidity. First and foremost, the guidelines should be comprehensive and inclusive. Below is a thumbnail sketch of some of the specific issues that deserve consideration in neonatal and maternal health guidelines:

- The topic of "risk assessment" during the antenatal period should be revisited by the MOHP, and policy recommendations should be revised based on the current literature. Differences between high-risk pregnancies and women with complications and danger signs should be made clearer. Advice on risk assessment should be consistent with the current literature. Terminology such as "danger signs" should be clearly defined.

- Content of a postpartum visit should be provided, and it should encompass newborn assessment, including guidance on family education during the postpartum period.

- ENP is covered only briefly in the current guidelines, offering little detail to help a provider not trained on this topic. More background and supplementary information should be included.

- Pocket references or job aids that accompany maternal and newborn guidelines might be useful. Meanwhile, existing tools such as the "Newborn History and Physical Examination Form" produced through support from the University of Pennsylvania should be assessed for use and effectiveness.

- Policies are needed that outline expectations for a more comprehensive referral system for emergencies. Such policies should clearly describe the roles and responsibilities of the various providers. The community component is essential for the guidance to be effective. Policies that focus on concrete procedures and logistics (such as transportation and communication) are more useful than an ideal care strategy.

- Promotion of birth and death registries is warranted to help identify interventions that could avert poor neonatal outcomes. Moreover, perinatal death audits would highlight the magnitude of the problem and might advance the need for newborn health interventions among policymakers.

- There are many conflicting messages surrounding MTCT guidance or lack thereof. Clear national policy and related guidelines are needed on breastfeeding recommendations for HIV-infected mothers, regarding access to infant formula as an alternative to breastfeeding. Policymakers must weigh the balance between the likelihood of HIV transmission through breastfeeding, versus the increased susceptibility to communicable diseases in newborns on infant formula. Clarifying this issue would assist health providers in caring for expectant mothers. In an effort to dissuade vertical programming of newborn health interventions, the EHP should include maternal and *newborn* conditions. The content of such services should

reflect the ENP to ensure optimum health of newborns. Inclusion of these practices in the package would also highlight the significance of newborn survival and the government's commitment to focus on maternal and *child* (especially newborn) health, which is one of its three key goal areas.

By definition, safe motherhood addresses maternal and newborn health. In practice, however, the newborn is not adequately covered by the National Safe Motherhood Task Force. The IMCI Task Force is working on developing a community-level strategy to address newborn needs. IMCI management of the newborn would function best if the interventions for the newborn are teased out of the interventions for children under five years of age.

Behavior change interventions

There is much discussion on the need to change behaviors of individuals and communities to optimize their health outcomes. However, less is said about the need for governments to examine their own resistance to behavior change. The onset of decentralization can be quite upsetting to central level officials who have understood their role in the past but are less clear on what their role is in a reformed environment. Fears of losing power and authority may lead some senior officials to hold on tightly to their existing areas of control. Likewise, local level managers may be intimidated by a sudden expectation to make difficult programmatic decisions without any prior experience or training in program management. Thus, definition and communication of new roles in a decentralized environment would be helpful at all levels of the government. This should be supplemented with training and appropriate supervision where needed. Such organizational change management is a slow and lengthy process but needs to be addressed in tandem with reforms as the government phases in decentralization.

5 FUTURE PROSPECTS AND CHALLENGES

Placing Newborn Care at the Top of the Health Agenda

One of the more commanding challenges confronting neonatal health advocates is to convince a wide range of policymakers—from the Minister of Health and Population to the Minister of Finance and Economic Planning—of the benefits of saving a newborn's life. There are different arguments for considering newborn health as a priority. From a humanitarian perspective, every life should be valued and cherished. What kind of precedent is set turning a blind eye to the needs of a newborn? Is it justifiable to avoid direct intervention because providing services inside the home is too difficult? There are no simple answers to such ethical arguments, but they deserve to be vetted just the same.

Another argument for promoting neonatal health is economies of scale, that some of the neonatal interventions would have an impact on improving the health of the general public. Programs that will improve antenatal care and related newborn outcomes also reach the broader public. Women who can be diagnosed and treated for malaria during pregnancy not only benefit from the treatment themselves but are less likely to have premature infants, with prematurity a known risk factor for perinatal mortality. Likewise, research has shown that perinates with syphilis are more than three times likely to die than those without. Improving laboratory diagnosis in rural health centers and district hospitals helps mothers and the general population suffering from STIs, malaria, and HIV/AIDS. Improved health among the general population in turn contributes to improved economic productivity.

This "free rider" effect benefits the general population in other ways also. Well-functioning logistics, communications, and referral systems make for the smooth transfer of a woman in obstructed labor from her home to the nearest hospital, thereby diminishing the potential for asphyxia in her unborn child. Such systems are critical for any client in need of urgent care. And the more efficient the formal health sector is, the more likely it will be primed to provide quality care. Increased utilization of facilities generally follows an improved reputation for quality because people tend to be very discriminating in their health-seeking behaviors.[44]

The Malawian MOHP has designated maternal and child health one of their three main health goals. The next step is to tease out the different age groups within the category of child health and target specific interventions where much of the mortality occurs. The death rate during the first year is almost nine percent higher than the death rate for children between one and four years. And in that first year, the most critical period is the first month of life. In fact, over 40 percent of infant mortality occurs in this neonatal period of 0-28 days, not surprising given that even healthy babies are born with a naturally underdeveloped immune system.

The risk for immuno-suppression and consequent morbidity and mortality becomes much greater for babies born to mothers suffering from HIV/AIDS, syphilis, malaria, or anemia. All of these diseases are quite prevalent in Malawi, but screening and treatment during pregnancy are inconsistent at best. Thus, programs designed to hone in on reducing child mortality are remiss if they do not recognize

the need for interventions specifically targeted for the first month of life. Solutions to neonatal problems do not lend themselves to under-one interventions, much less to under-five interventions found in the IMCI strategy.

Improving Newborn Practices at the Community and Household Level

A community-based newborn health strategy should carefully differentiate between healthy newborn care that can be accomplished in the home environment with assistance from TBAs and the care of ill newborns who should be seen in a health facility. The former can focus on promoting simple interventions such as provision of warmth and hygiene, while the latter should focus on recognizing danger signs during the first week of life and encouraging referral care.

Recent ethnographic research has provided insights into the practices of pregnant women and the care of the newborns. Analyses describe the cultural beliefs and practices surrounding decision-making and care-seeking behavior patterns. These findings could be incorporated into the MOHP's strategies and programs to stimulate changes in newborn care practices. But mothers and professional health providers should not be the only audiences; grandmothers, fathers, spiritual and community leaders, traditional healers, and TBAs all need to be included when planning for newborn health care.

The concept of birth preparedness plans is not yet fully developed in Malawi. TBAs with assistance from community leaders and health providers could help families plan for potential emergencies. However, the concept of planning for unlikely events might not make much sense to some people. Behavioral change takes a long time, and people need a clear rationale before changing traditional practices. Verbal autopsies of perinatal deaths are, of course, important for vital registration and advocacy but could also be used as case studies for the other people in the community. Perhaps the village health committees could take on the role of reviewing the circumstances and outcomes surrounding a newborn death and share their recommendations with the public. This might provide the rationale some people need for developing a birth preparedness plan, and it might also instill a spirit of a communal effort to develop an emergency transport fund for those in need to prevent future deaths.

Innovative projects linking the community with the formal health sector, such as the Lungwena and Ekwendeni projects, should be examined carefully for lessons that can be applied to other settings. Realistic recommendations concerning priority interventions for newborn survival should fit within traditional belief systems. Families need more knowledge so they can make connections between maternal health and newborn outcomes and so they can understand the need for prompt help from the formal health sector for sick newborns. Programs should make the most of the expertise and acceptance of TBAs, allowing them to act as the liaison between the home and the facility, to accompany referrals, and to stay with client in the facilities.

Possible Solutions for Improving Newborn Care

Some of the most important solutions for attracting people to use the health service delivery system are the simplest to implement. For example, installation of an inexpensive screen in the examination area will provide needed privacy. Putting chairs in the waiting rooms and triaging pregnant women upon arrival will increase comfort levels and diminish long waits. A courteous greeting and gentle approach by a nurse will reassure a woman and allow her to place trust in the system. Permitting a family member and/or TBA to attend the birth will do much to quell the uneasiness a new mother may feel in an otherwise stark and cold environment. It might be possible to explore ideas for traditional disposal of the placenta so long as universal blood precautions are maintained to prevent nosocomial transmission of HIV. These are all low cost, simple solutions that do not require much

manpower to institute and yet could greatly improve the image of government health care in the eyes of a rural family.

Other solutions will take more time and effort, especially those directed at the staffing of health facilities and quality of care. The shortage of nurses in hospitals impinges on their ability to conduct timely physical assessments of newborns. Given that respiratory arrest accounts for the majority of neonatal deaths and the window of opportunity for response is measured in minutes, the nursing shortage has a direct affect on newborn morbidity and mortality. However, the merely increasing the supply of nurses is not sufficient; research conducted in Malawi found that the ability of nurses to identify and respond to emergencies is critical for survival. Nurses need increased competence in performing neonatal resuscitation. But even a competent nurse is rendered helpless if she does not have the needed supplies and equipment to provide emergency care. By far, the biggest concern is the decline in enrollment and retention of health professionals, especially nurses and doctors. The MOHP has accelerated the time it takes to become a nurse and has plans to increase salaries as an incentive to retain them. This is a start, but this issue needs a multisectoral approach as it extends outside the reach of the MOHP.

Approximately half of all births are occurring in the home, and facility-based interventions will not impact them directly. At a minimum, families and TBAs need to recognize the danger signs during the intra- and postpartum periods in order to anticipate potential neonatal and maternal emergencies that might require assistance from the formal health sector. For example, primagravidas who begin premature labor or have a breech presentation should be a signal to the TBA to seek outside assistance. Those babies who are born prematurely need more attention to their basic needs than a full-term infant. The Kangaroo Mother Care method is practically a no-cost intervention that can be readily facilitated by a trained TBA.

With persistence and some ingenuity, immediate and long-term solutions to improving the quality of services could potentially yield high returns. The aim is to encourage families to have a skilled attendant at the time of delivery, or at the very least to recognize danger signs and to seek newborn care outside of the home without delay.

Newborn Issues in the Current Policy Environment

Decentralization in Malawi is beginning to unfold. When it is fully implemented, District Assemblies with advice from village health committees will have more decision-making power, more control over resources, and more accountability for government services. By enhancing local ownership of health services, decentralization will increase their quality and availability. However, there are some inherent risks, especially for reproductive health care and newborn care because some services may be relegated to a lower priority by the local government regardless of the national priorities. Therefore, the challenge for keeping newborn health as a priority agenda item will continue and may even be elevated after health sector reforms are in place.[45]

Reforms bring with them another risk: institutional capacity may be inadequate at the local level. District health officers may be aware of the appropriate interventions to reduce neonatal morbidity and mortality, for example, but they may lack the experience in program management. Local capacity for planning, budgeting, and implementing neonatal health services will most likely need strengthening, and the central government does not provide many examples to replicate. Fortunately, there is a precedent for maternal health programs that can be adapted to meet the specific needs of the newborn. Many community and facility-based projects have sufficient experience to jump-start new activities in newborn care. New members on the Safe Motherhood Task Force focused on reducing neonatal mortality will supply needed direction and guidance. Similarly, a revised IMCI strategy that targets newborns in the community will be an added resource to policymakers.

An important role for the central government is the development of national guidelines for neonatal and maternal care. The current reproductive health guidelines that are soon to be released do not adequately cover these topics. The guidelines will need to be backed by new policies and protocols that speak to essential newborn practices, maternal risk assessment, mother-to-child transmission of AIDS, a communication and referral system that includes a community component, postpartum care, and vital registration.

Making Newborn Lives a Priority

New mothers should be aware that all newborns have immediate needs for warmth, hygiene, and immediate and exclusive breastfeeding. Further, they and their families and healers should be able to recognize danger signs, such as rapid breathing or infection, and feel comfortable to seek outside assistance. Lack of money should not pose a barrier to seeking care.

Advocates of newborn health need to look outside the context of the health delivery system for answers as well. Malnutrition, poor water and sanitation, an encroaching AIDS epidemic, high female illiteracy, and low household incomes all contribute to a woman and child's physical vulnerability and constrain the family's ability to take the best decisions to preserve a newborn's life.

---

[1]Government of Malawi and United Nations Development Program, 1993.
[2] Mbvundula M, Kamwendo L, Lema V. Situation Analysis of Newborn Health in Malawi. September 1, 2001.
[3] UNDP, 2000.
[4] Gennaro S, Thyangathyanga D, Kershbaumer R, Thompson J. Health promotion and risk reduction in Malawi, Africa, village women. *Journal of Obstetric, Gynecologic and Neonatal Nursing, Clinical Issues* August 2000; 30(2):224-230.
[5] According to the World Bank's "Public Expenditure Review 2000", more than half of the people in the Central and Southern Regions of Malawi are malnourished.
[6] The study covered more than 95 percent (795) of all pregnant women in the Lungwena area.
[7] Malawi Demographic and Health Survey, 2000.
[8] Hill K, et al. World Health Organization 2001 estimates. Based on data collected around 1999.
[9] Mbvundula, p. 8.
[9] Malawi Demographic and Health Survey, 2000.
[11] Malawi Ministry of Health and Population. Fourth National Health Plan 1999-2004. Lilongwe, Malawi. May 1999, p. 5.
[12] Women who delivered outside health facilities were asked if "a health professional or traditional birth attendant checked on her (the respondent's) health after the birth". Does not include the health of the newborn.
[13] Ministry of Health and Population. Sentinel Surveillance Report 1999. National AIDS Control Programme, Malawi
[14] Malawi Safe Motherhood Project. Six Monthly Report for the Period January-June 2001. Project Management Unit: October 2001.
[15] Mbvundula, p. 21.
[16] Umoyo Network. Malawi. Baseline Survey Results for Six Partner Organizations (Adventist Health Services, Blantyre Christian Centre, Ekwendenic Hospital, MACRO, Malamulo Hospital and St. Anne's Hospital.) August 2001, p. 16.
[17] Government of Malawi. A Household Baseline Survey for Family and Community Child Key Care Practices in Selected Districts in Malawi. Lilongwe, Malawi: UNICEF, WHO, December 2000.
[18] Umoyo Network, Malawi, p. 16.
[19] Taha TE, Bigger RJ, Broadhead RL, Mtimavalye LAR, Justesen AB, Liomba GN, Chiphangwi JD, Miotti PG. Effects of cleansing the birth canal with antiseptic solution on maternal and newborn morbidity and mortality in Malawi: clinical trial. British Medical Journal July 1997; 315(7102):216(5).
[20] National AIDS Control Programme, Malawi.
[21] McDermott J, Steketee R, Wirima J. Perinatal Mortality in Rural Malawi. *Bulletin of the World Health Organization* 1996; 74(2):165-171.
[22] Ministry of Health and Population. Malawi National HIV/AIDS Strategic Framework 2000-2004. The Strategic Planning Unit, National AIDS Control Programme.
[23] Ministry of Health and Population. Sentinel Surveillance Report 1999. National AIDS Control Programme, Malawi.
[24] USAID/Malawi. Integrated MTCT Risk Reduction Strategy, February 2001, draft, p. 1.
[25] Saving Newborn Lives. State of the World's Newborns. Washington DC: Save the Children, September 2001.

[26] Waltensperger KZ. Cultural Beliefs, Societal Attitudes, and Household Practices Related to the Care of Newborns. Malawi: Saving Newborn Lives, Save the Children, May/June 2001, p. 11.
[27] Ashwood-Smith H, Coombes Y, Kaimila N, Bokosi M, Lungu K. Availability and use of Sulphadoxine-Pyrimethamine and Iron in Pregnancy in Blantyre District, Malawi. August 2001.
[28] Waltensperger, p. 9.
[29] Matinga P. Formative Research report for developing mother reminder materials for Project Hope, Malawi. Draft September 2001.
[30]Lungu K, Kamfose V, Chirwa B, Hussein J, Ashwood-Smith H. Are Bicycle Ambulances and Community Transport Planes Effective in Strengthening Obstetric Referral Systems in Southern Malawi? *Malawi Medical Journal* 2001; 14(2).
[31]Ibid.
[32] Kureshy N. Considerations for Behavior Change Strategy Development for the Saving Newborn Lives Program in Malawi. NGO Networks for Health, Save the Children, September 2001.
[33] Gennaro, p.227.
[34] Salin JL. Improving health in rural Malawi—targeting women and children—Lungwena experience. June 3, 2001, pp. 1-15. Unpublished paper.
[35] World Bank. Public Expenditure Review, 2000. Chapter 6, p. 3.
[36] Banda J, et al. Monitoring and Evaluation Report on Baby-Friendly Hospital Initiative. January 2001.
[37] Mbvundula, pp. 32-33.
[38] Mbvundula, p. 7.
[39] Mbvundula, p. 12.
[40] The government of Uganda experimented with "lunch hour loans" to increase the salary for their professional health providers. This incentive was a reimbursement method that increased salaries by some 20-25%.
[41] World Bank, p.5.
[42] Ibid.
[43] Ministry of Health & Population. Malawi Fourth National Health Plan 1999—2004. Lilongwe, Malawi. May 1999.
[44] Still, many people will stay away from the formal health sector until they can give birth in a place where they feel respected and they are able to practice their traditional beliefs. Further, there are people who simply prefer the comfort of their own homes to birth their children and that is where they will remain. Tending to the needs of their newborns takes a different approach using the TBA as the liaison. When something does go wrong in the home, women and their families should be able to recognize the danger and act accordingly by entering into a reliable referral system that will afford them prompt attention.
[45] Daly P, Fadia S. Reproductive Health in Indonesia: Lessons from the Past and Opportunities for the Future. Washington, DC: World Bank, 2000. Unpublished paper.

APPENDIX A: BIBLIOGRAPHY

Banda J, et al. Monitoring and Evaluation Report on Baby-Friendly Hospital Initiative. January 2001.

Daly P, Fadia S. Reproductive Health in Indonesia: Lessons from the Past and Opportunities for the Future. Washington, DC: World Bank, 2000. Unpublished paper.

Demographic and Health Survey 2000.

Gennaro S, Thyangathyanga D, Kershbaumer R, Thompson J. Health promotion and risk reduction in Malawi, Africa, village women. *Journal of Obstetric, Gynecologic and Neonatal Nursing (JOGNN), Clinical Issues* August 2000; 30(2):224-230.

Gwatkin D, et al. Socioeconomic Differences in Health, Nutrition, and Population in Malawi. HNP/Poverty Thematic Group of World Bank, May 2000.

Heymann M. Early Postnatal Assessment of the Newborn: Malawi. *The Association of Black Nursing Faculty* 1993; 4(4).

Kulmala T, et al. The relationship between antenatal risk characteristics, place of delivery and adverse delivery outcome in rural Malawi. *Aeta Obstetricia et Gynecologica Scandinavica* 2000; 79.

Kureshy, N. Considerations for Behavior Change Strategy Development for the Saving Newborn Lives Program in Malawi. NGO Networks for Health, Save the Children, September 2001.

Ministry of Health & Population. Malawi Fourth National Health Plan 1999—2004. Lilongwe, Malawi, May 1999.

Ministry of Health and Population. Malawi National HIV/AIDS Strategic Framework 2000-2004. The Strategic Planning Unit, National AIDS Control Programme.

Mbvundula M, Kamwendo L, Lema V. Situation Analysis of Newborn Health in Malawi. September 1, 2001.

Mbweza E. Risk Factors for Perinatal Asphyxia at Queen Elizabeth Central Hospital, Malawi. *Clinical Excellence for Nurse Practioners* 2000; 4(3).

McDermott J, Steketee R, Wirima J. Perinatal Mortality in Rural Malawi. *Bulletin of the World Health Organization* 1996; 74(2):165-171.

Rogerson SJ, et al. Malaria in Pregnancy in Blantyre. Paper presented at the 2nd European congress on Tropical Medicine, Liverpool, United Kingdom, 1998.

Sabin JL. Improving health in rural Malawi—targeting women and children—Lungwena experience. June 3, 2001, pp. 1-15. Unpublished paper.

Saving Newborn Lives. Strategic Plan for Malawi. August 2001. Draft.

United Nations Population Fund. Proposed Projects and Programmes: Recommendation by the Executive Director Assistance to the Government of Malawi. November 6, 1996: DP/FPA/CP/162.

USAID/Malawi. Integrated MTCT Risk Reduction Strategy. February 2001. Draft.

Waltensperger KZ. Cultural Beliefs, Societal Attitudes, and Household Practices Related to the Care of Newborns. Saving Newborn Lives, Save the Children, May/June 2001.

APPENDIX B: SELECTED DEMOGRAPHIC AND MATERNAL AND CHILD HEALTH INDICATORS

Demographic & Health Indicators

Total Population[δ]	9,933,868
Percent Rural Population[δ]	85.6%
Population Growth Rate[δ]	2.0%
Life Expectancy at birth[ε]	44 years
Population per physician	45,737
Syphilis seroprevalence among pregnant women attending antenatal clinics[α]	3.5%
Percentage of all inpatient admissions due to HIV/AIDS[α]	>40%
Condom use during last sexual intercourse w/ any partner (men/women)	14%, 4.7%
Percentage of outpatient visits attributable to malaria cases[α]	33%
Percentage of households with at least one bed net	13.1%

Source: Malawi Demographic & Health Survey 2000

Source[δ]: Malawi Population and Housing Census: Report of the Final Census Results, 1998.

Source[ε]: Malawi Ministry of Health & Population

Source[α]: Malawi National AIDS Control Programme: Sentinel surveillance Report 1999.

Maternal Health Indicators

Total Fertility Rate (women 15-49 years)	6.3
Modern Contraceptive Prevalence Rate among all women 15-49 years	21.5%
Maternal Mortality Ratio (per 100,000 live births) (not confirmed)	1127
Pregnant women receiving at least one tetanus toxoid immunization	81.5%
Pregnant women receiving at least one antenatal visit	93.5%
Skilled attendance at delivery (by physician, nurse, or nurse-midwife)	55.6%
Deliveries assisted by TBAs	22.7%

Source: Malawi Demographic and Health Survey 2000

Early Childhood Health Indicators

Perinatal Mortality Rate (per 1,000 pregnancies 7 months gestation up to 7 days after birth)	45.9
Neonatal Mortality Rate (per 1,000 live births)	41.8
Post-neonatal Mortality Rate (per 1,000 live births)	62.0
Infant Mortality Rate (per 1,000 live births)	103.8
Child Mortality Rate (age 1-4 yrs.) (per 1,000 live births)	94.6
Under-five Mortality Rate (age 0-5 yrs.) (per 1,000 live births)	188.6
Percentage of all infants 12-23 months of age with BCG immunization by 12 months of age	89.7%
Male/female knowledge of GOM birth registration program	32%, 19%
Percent of babies breastfed in the first hour of life	72%
Percent of children aged 4-5 months exclusively breastfed (24 hour recall)	12.2%
Percent of babies with low birth weight[ε]	20%

Source: Malawi Demographic and Health Survey 2000, Malawi Demographic and Health Survey 1992 Report

Source[ε]: State of the World's Newborns, Save the Children, 2001 (1995-99 estimates).

APPENDIX C: SUMMARY OF NGOS AND PVOS IN MALAWI

Organization	Activities	Catchment Area
Save the Children/US	▪ Community health and partnerships (CHAPS) ▪ Disease control & IMCI ▪ Family planning HIV/AIDS ▪ Youth and adolescent health ▪ TBA training	Mangochi and Balaka
Save the Children/UK	▪ CHAPS, TBA, HIV/AIDS water and sanitation	Salima, Dowa, Mchinji and Lilongwe
Project Hope	▪ Operates mainly in agricultural estates in IEC family planning HIV/AIDS ▪ Disease control, IMCI	Mulanje, Phalombe, Nkhata Bay, Kasungu and Mzimba
Banja La Mtsogolo	▪ Leading NGO implementer of family planing services. Experienced in BCC	Nationwide
Welcome Trust Research Laboratories	▪ Malaria research	Blantyre
Johns Hopkins Project	▪ HIV/AIDS studies	Blantyre
International Eye Foundation	▪ CHAPS	Nsanje and Chikwawa districts
Africaire	▪ HIV/AIDS Malaria control ▪ IMCI youth and adolescent health and CHAPS ▪ Health formation management system.	Ntcheu and Mzimba
Linkages Project	▪ Breastfeeding practices woman adolescent & child nutrition HIV/AIDS especially MTCT	Blantyre
JHPIEGO	▪ RH/FP/STI Infection control	Lilongwe
University of North Carolina	▪ HIV/AIDS	Lilongwe
Medical Association of Malawi (MAM)	▪ Organizes periodic seminars for members on topical health issues	Nationwide
College of Medicine, University of Malawi	▪ Research ▪ Teaching ▪ Supervision of district health services	Blantyre and Mangochi

Kamuzu College of Nursing University of Malawi	▪ Research ▪ Teaching	Lilongwe and Blantyre
Malawi College of Health Sciences	▪ Teaching	Lilongwe, Blantyre and Zomba
Association of Malawian Midwives (AMAMI)	▪ Conducts infection control activities in various hospital maternity units. ▪ Organizes conferences and other activities on annual Midwives day (May 5) ▪ Plays advocacy role. ▪ Participated in field testing of essential midwifery competencies	Southern and Central Regions
Family Planning Association	▪ Newly launched. Targets youth.	Lilongwe
Blantyre Malaria Initiative (BIMI)	▪ Malaria control studies in partnership with the Centers for Disease Control USA ▪ Sensitivity studies in health centers ▪ IMCI training ▪ Health systems studies	Blantyre District
Women religious groups	▪ Groups meet regularly. Could play advocacy role for SNL	Nationwide
Chatinkha Care support group (CHAMACA)	▪ Support to QECH maternity (advocacy and provision of equipment and supplies)	QECH, Blantyre
Malaria Training Center	▪ Malaria training	To be established in Blantyre soon under College of Medicine
Children's Fund of Malawi	▪ Support for pediatric clients ▪ Funded construction of a newly opened pediatric short stay ward at QECH	Queen Elizabeth Central Hospital.
National Association of Business Women	▪ Support women to obtain loans for business. ▪ Useful vehicle for BCC	Nationwide
Freedom Foundation Trust	▪ Support for orphans and others in need. ▪ Vehicle for BCC	Nationwide
University of Malawi Center for Social Research	▪ Community-based research for various social issues	University of Malawi -Zomba

APPENDIX D: SUMMARY OF NEONATAL RESEARCH IN MALAWI

Published Research

In addition to the research citations throughout this paper, the following are highlights of Malawian research on neonatal health:

- *Health promotion and risk reduction in Malawi, Africa, village women.* A recent trainer-of-trainer approach was tested in the Traditional Authority Chimutu. Village women were selected from a rural area to train other villagers on risk reduction and healthy behaviors during pregnancy. While no tests for statistical significance were calculated, the post-intervention results demonstrated an increase frequency in the number of ante- and postpartum visits and increased utilization of health facilities for labor and delivery. The intervention was not able to change cultural beliefs about witchcraft and its influence over maternal and newborn mortality. There was a high demand among village women to know more about the danger signs during labor since about half of the women knew three or more women who died during childbirth.[1]

- *Causal association between antenatal risk assessment and adverse delivery outcomes.* The lack of a causal association between antenatal risk assessment and adverse delivery outcomes affecting the mother and newborn has been well documented. A recent study conducted in rural Malawi corroborated this finding and found positive predictive values as low as 7 percent for perinatal mortality. Most "risk" characteristics could be found among the majority of pregnant women and could not be associated with adverse delivery outcomes even though they were adjusted for the location of the delivery. Seventeen percent of the newborn deaths were found among the low percentage of women identified as "no risk" (26%). However, there were some characteristics and danger signs that demonstrated a higher relative risk (RR) for perinatal mortality such as previous caesarean section (RR = 4.4) or stillbirth (RR = 2.7), and anemia[2] (4.7).

- *Risk Factors for Perinatal Asphyxia at Queen Elizabeth Central Hospital, Malawi.* A 1998 study examined the outcomes of 100 newborns with Apgar scores less than 6 at five minutes of birth in the Queen Elizabeth Central Hospital. The purpose of the study was to identify maternal risk factors for perinatal asphyxia. The majority of the mothers were primagravidas (79%). Sixty-five percent of all the mothers developed obstetric and medical problems that contributed to perinatal asphyxia and close to one-fifth of them had more than one problem. The major problems identified were premature labor and delivery (21%), breech presentation (12%), prolonged second stage (11%), and pre-eclampsia (10%). Eighty-one percent of the newborns were admitted to the neonatal nursery and among them, 67 percent developed complications leading to early neonatal death in one-third of these babies. The most common complication was hypoxic ischemic encephalopathy (68%). This study highlights the importance of the supply of the necessary equipment and the improved competency of hospital personnel to perform newborn resuscitation.[3] Further research should control for early identification of neonatal distress (i.e., by using the Apgar tool) and prompt action to improve client outcome.

- *Perinatal Mortality in Rural Malawi.* McDermott et al.[4] examined the prevalence and risk factors for perinatal deaths in Mangochi District, Malawi during 1987-90. Independent risk factors for death revealed through a multivariate analysis delineated syphilis (OR3.39), a history of late fetal or neonatal death in the most recent previous birth among multiparous women

(OR = 1.47), nulliparity (OR =2.38), short maternal stature (< 150 cm) (OR = 1.74), home delivery (OR = 1.47), and low SES (OR = 1.41). The authors suggest screening and treating women for syphilis in addition to management by skilled providers in health facilities of women with short stature or who have a previous history of perinatal death. The second recommendation should be taken in light of the research on risk assessment.

- *Perinatal intervention trial in Africa: effect of a birth canal cleansing intervention to prevent HIV transmission.* This study[5] examined the effectiveness of vaginal cleansing with chlorhexidine to reduce perinatal transmission of HIV type 1. This case-control study revealed no significant decrease in the rate of HIV transmission to the newborn among the women who received the birth canal washes versus those women who were not washed (27% and 28% respectively). The one exception was in the sub-population of infected women who had delivered more than four hours after their membranes had ruptured where only 25 percent of the newborns born to intervention group were HIV infected compared to 39 percent newborns in the control group. Policy on the use of a chlorhexidine wash after the membranes rupture might be a consideration.[6]

Unpublished Operations Research

- *Lungwena Child Survival Study.* The Lungwena Child Survival Study (LCSS) is a community-based cohort investigation of pregnant women and their babies up to one month old between 1995-96.[7] The study revealed the following findings: 1) almost 22 percent of deliveries occurred before 38 weeks of gestation which were positively associated with primiparity and malaria; 2) the mean weight of term newborns was 3.2 kilograms; weight was independently associated with pregnancy duration, parity, initial maternal weight, gestational weight gain, and gender; 3) the perinatal and neonatal mortality rates were 65/1,000lb and 37/1,000lb, respectively; preterm birth was the strongest predictor for mortality, and 4) anecdotal evidence suggested that one or two doses of SP might not reduce the frequency of preterm births. This heightens the importance for identification of preterm newborns and specifying the special care and attention they require.

- *Community-based Safe Motherhood Trainers Project.* The University of Pennsylvania instituted the use of community-based safe motherhood advisors in the Traditional Authority Chimutu (Chiwamba), Lilongwe District. A 1998 post-intervention study was conducted and data were compared to the baseline results. The following successes were highlighted:

Table 6. Results from Community-based Safe Motherhood Trainers Project, Chiwamba Lilongwe District

	Baseline Results	1998 Study
Percentage of women receiving prenatal care	88%	96%
Percentage of women having more than 4 antenatal visits	42%	63%
Percentage of home deliveries	32%	21%
Percentage of women delivering in health facilities	36%	59%
Percentage of women receiving post-natal care	26%	72%
Increase in importance of eating fruit during pregnancy	58%	71%

Source: Sabin JL. Improving health in rural Malawi—targeting women and children—Lungwena experience.

[1] Gennaro S, Thyangathyanga D, Kershbaumer R, Thompson J. Health promotion and risk reduction in Malawi, Africa, village women. *Journal of Obstetric, Gynecologic and Neonatal Nursing, Clinical Issues* August 2000; 30(2):224-230.

[2] Anemia classified as moderate to severe corresponded to a packed cell volume < 20%.

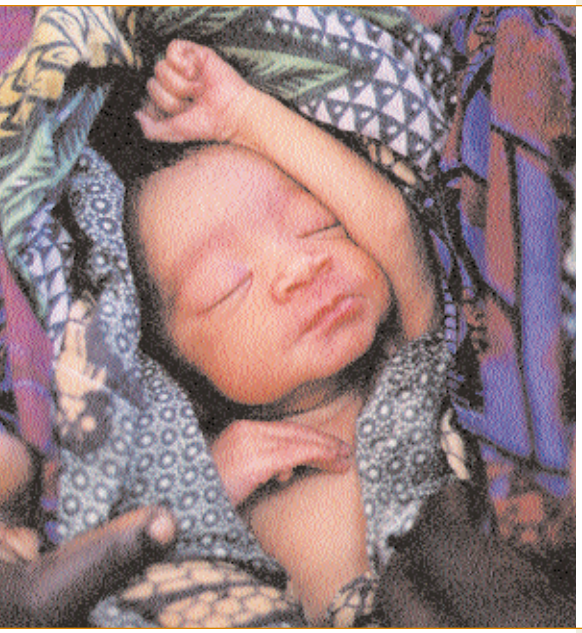
[3] Mbweza E. Risk Factors for Perinatal Asphyxia at Queen Elizabeth Central Hospital, Malawi. *Clinical Excellence for Nurse Practioners* 2000; 4(3):158-162.

[4] McDermott J, Steketee R, Wirima J. Perinatal Mortality in Rural Malawi. *Bulletin of the World Health Organization* 1996; 74(2):165-171.

[5] Bigger RJ, et al. Perinatal intervention trial in Africa: effect of a birth canal cleansing intervention to prevent HIV transmission. *Lancet* 1996; 347:1647-1650.

[6] The revised Reproductive Health Guidelines do not discuss the timing of delivery after the membranes rupture (e.g., whether to induce within 24 hours).

[7] Sabin JL. Improving health in rural Malawi—targeting women and children—Lungwena experience. p. 5.



Saving Newborn Lives
Save the Children US
PO Box 30374
Lilongwe 3, Malawi
011-265-753-888

www.savethechildren.org

Save the Children®