AN ANALYSIS OF MATERNAL HEALTH IN BURKINA FASO

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ABSTRACT
AN ANALYSIS OF MATERNAL HEALTH IN BURKINA FASO

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Since the year 2000, countries around the world have focused on achievement of the Millennium Development Goals, the fifth of which is to “improve maternal health”. Burkina Faso has made good strides towards improving maternal health and has achieved a 57% reduction in the maternal mortality ratio between 1990 and 2010. While the lifetime risk of maternal death remains elevated at 1 in 55, in recent years the government has instituted several programs aimed at improving women’s health with varied results. This paper aims to survey the state of maternal health in Burkina Faso and evaluate the impact that government policies such as subsidies have had on the overall picture of maternal morbidity and mortality.

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INTRODUCTION

I have nurtured an interest in global health since my childhood growing up abroad and have long wanted to spend some time furthering this interest during my training. When the opportunity arose to participate in the International Medical Exchange Program (IMEP) I leapt at the chance. As part of the IMEP, I chose to do a rotation in obstetrics and gynecology in Ouagadougou, Burkina Faso; as I wanted to experience medical work in a resource-poor setting, and I have a strong interest in obstetrics and maternity care, it seemed like a logical choice.

I was fortunate enough to be hosted as a visiting student by the Maternity Center at Yalgado Ouedraogo University Hospital in Ouagadougou, the highest level referral center in the country. In the Burkinabe medical system, 7th year (senior) medical students have largely the same roles and responsibilities as Interns in the United States would have: they make treatment and management decisions themselves with oversight by specialists-in-training who are equivalent to upper-level residents in the US. As an American senior medical student I was expected to act as a full 7th year Burkinabe student with a similar degree of autonomy and oversight. Since Yalgado was a referral center, we received transfers from all other smaller medical centers in the region for obstetrical emergencies, including eclampsia, hemorrhage, and obstruction of labor, and saw local patients with uncomplicated pregnancies.

While Yalgado offered the top level of care, the hospital conditions were difficult at best, with a severe lack of beds in all wards, including delivery tables, supply shortages, and poor oversight. Specialists were often only available for caesarians and emergencies if the 5 or so students in the delivery room were unable to handle it by themselves. Patients and their families would line up along the corridors and in entryways, waiting for a bed – or even floor space to lay

their own mat on – to open up in a ward. In terms of sanitation, at 5 am every day the housekeeping staff would come through all the wards, causing patients, including those immediately post-partum or in labor, to stand up and relocate temporarily while they threw bleach water over everything. At other times of the day, it was hard to find housekeeping staff or bleach water to wipe down surfaces in the delivery room between patients. Essential supplies such as magnesium sulfate were not readily available, and if an eclamptic patient arrived convulsing, a student would have to track down one of the specialists with the key to one of the cabinets where they had hidden extra vials to prevent theft. There were no gloves or syringes in stock at any time and patients had to be given a prescription for these and other necessary items before they could be seen.

Patients who arrived by ambulance as transfers were frequently in severe shock from loss of blood, or in prolonged labor and severe pain due to obstruction, with severe fetal distress or demise. There was also a stark acceptance of the limitations of medicine in Burkina Faso, with mothers of premature babies delivered alive and breathing told there was no point in resuscitation as they would die soon anyway. Working conditions such as these, as well as frequent hassling by patients' families, would also wear on the tempers of all the caregivers, and occasionally some would yell at their patients, increasing tensions all around. Despite all of these limitations, all the midwives, physicians, and medical students I met at Yalgado were determined to do their best for the patients under their care.

During my time at the University hospital, I learned that Burkina Faso has instituted a subsidy policy for maternity care. Those I worked with stated that they have noticed a definite increase in hospital visits and, though somewhat discouraged as to the overall conditions of the medical system, they thought it was a positive step towards decreasing maternal mortality. I

became curious as to what the overall effect of the subsidy policy has been, and what the general picture of maternal health in Burkina Faso is today.

OVERVIEW OF MATERNAL HEALTH IN AFRICA

Since the year 2000, the Global Health community has been focused on achieving the Millennium Development Goals (MDGs), the 5th of which is "improving maternal health". This particular goal is subdivided into (1) reducing the maternal mortality ratio (MMR) by 75% between 1990 and 2015 and (2) achieving universal access to reproductive health by 2015. Overall, progress has been slow but significant, with the MMR decreasing in Sub-Saharan Africa for the first time in 2008[1] followed by a global decrease of 47% in 2010,[2,3] from 400 maternal deaths per 100,000 live births to 210. Other associated positive developments globally have been 10% increases in both births attended by skilled health personnel and in women using birth control.[2]

Notably, over 90% of maternal deaths in sub-Saharan Africa are attributed to HIV, the largest proportion of any region worldwide. Furthermore, of all maternal deaths due to HIV/AIDS in the world, 91% occur in this region.[2] The main causes of maternal mortality are excessive bleeding at 35% and hypertension at 18%.[2] Importantly, high maternal mortality co-occurs with relatively high child mortality: 40% of all childhood deaths occur in the first 28 days of life due primarily to preterm birth, severe infection, asphyxia and trauma.[2]

While only 19 countries have either already achieved MDG 5 or are on track to do so, 50 others, including Burkina Faso, are classified as "making progress" towards the goal. Worldwide, several different approaches towards improving maternal health have been started.[2] These can broadly be divided into those with a structural/political policy emphasis and those which endorse direct technical interventions on the ground.

In the first category, that of policy recommendations, we see the United Nation's (UN) *Global strategy for women's and children's health* being developed in 2010 as a direct attempt to improve progress towards achieving MDGs 4 and 5. This particular strategy emphasized the need to implement country-led health plans with a comprehensive package of essential health services/interventions, integrated care, and overall strengthening of the health system, workforce capacity and research.[2] Another example of this approach is the World Health Organization's (WHO) report *Addressing the Challenge of Women's Health in Africa*[4], which makes recommendations founded on the principle that women's health and economic development are entwined. While they emphasize the need to develop structures for delivery of health care, they also acknowledge that education and empowerment of women and young girls is a basic step towards improving their overall health. While important for creating awareness of the issues and generally outlining steps that should be taken, this approach can tend to devolve into "all talk, no substance," as little effect is felt on the ground.

In the second, more practical, category of approaches, one example is the WHO-led *Essential Interventions* study conducted in 2011.[5,6] This looked at interventions targeting maternal/child health currently in place around the world and used them to develop a consensus of 56 key interventions with proven efficacy in the field. These are suitable for delivery in low- and middle-income countries, and are stratified by level of health sector delivery center from the community level up to primary and referral centers. The interventions are intended to serve as a guide to countries when putting together their own maternal/child health programs and include such basic components as iron and folic acid supplementation for pregnant women, availability of family planning services, exclusive breastfeeding, and caesarian sections to save the life of the mother or fetus. Another program, run by the UN Population Fund (UNFPA), is the Maternal

Health Thematic Fund,[7] which focusses on 5 areas: advocacy and creating demand for maternal/child health, emergency obstetric and newborn care (EmONC), a midwifery program, the campaign to end fistula, and maternal death surveillance/reporting and response. Among their successes across Africa, their work in Burkina Faso has included direct support for the National Health Sciences Institute and development of an institutionalized process for maternal death review and notification. The *Essential Interventions* study is of particular note, as it constitutes one of the first efforts to use an Evidence-Based approach to maternal health interventions. This is key, as prior campaigns, such as the Safe Motherhood initiatives begun in 1987/89, lacked large-scale impact in part due to the fact that interventions were chosen to implement based on theoretical efficacy or common-sense/expert opinion rather than evidence.[8-10] Despite not reaching targets, the Safe Motherhood initiative, which called for a 50% reduction in maternal morbidity by the year 2000 and proposed action on family planning and education campaigns, was an important first milestone in increasing global awareness of challenges in this arena, and can be seen as the precursor for incorporation of maternal mortality reduction into the MDGs.

When it comes to providing emergency obstetric care, the UNFPA, WHO and UN Children's Fund (UNICEF) have established joint guidelines defining 6 essential components of *basic* EmONC designed to be implemented in facilities without an operating room. These basic interventions are: the ability to provide IV or IM antibiotics, IV or IM oxytocins, IV or IM anticonvulsants, manual removal of the placenta and uterine revision, assisted vaginal delivery (including vacuum assisted), and removal of retained products of conception after an abortion or miscarriage, as well as basic newborn care.[11,12] The same guidelines note that referral sites – those with an operating theater – are supposed to be able to provide capacity for *comprehensive* EmONC in addition to the six basic functions. These more advanced capabilities are: the ability

to perform caesarean sections and provide safe blood transfusions. In terms of neonatal care, they are also supposed to provide appropriate care to sick and low birthweight infants, including resuscitation.

There are also specific criteria for who, exactly, qualifies as a skilled birth attendant (SBA). According to the WHO:

> *A skilled attendant is an accredited health professional — such as a midwife, doctor or nurse — who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns.*[13]

Attendance at the birth by an SBA is a key indicator of progress towards MDG 5. Unfortunately, different countries use different training guidelines for various cadres of health professionals, and it becomes difficult to evaluate whether all providers possess the necessary skills to be considered SBAs.[14,15]

While these basic guidelines seem straightforward, they are not always easy or practical to implement, leading to continued high maternal morbidity and mortality. The challenges of implementing them in Burkina Faso will be discussed in the following sections.

BURKINA FASO: CONTEXT

Health care in Burkina Faso must account for the fact that 46.4% of the population lives below the poverty line,[16,17] with 31% of those individuals classified as "poor" stating they cannot go to a health center either due to the cost (this includes cost of transportation, time to get there, and wages lost).[18] The majority of the population (approximately 75%) lives in rural areas,[19] a fact that means that even if there is a health care facility nearby, it is unlikely to have the full range of services available and may be limited in staffing and supplies. Of note, as of 2010 there were only 7.9 health care providers per 10,000 people[20] with these concentrated at the highest referral levels in the system.

The Burkinabe government has implemented a tiered health care system similar to that in use across the region, with widely varying levels of service depending on the type of facility.[21] At the base level are the Centres de Santé et de Promotion Sociale (CSPS), which function as community dispensaries and clinics, and are usually staffed only by non-physician personnel. This can include midwives, pharmacists, and 6th year medical students, along with certified "birth assistants" trained to handle uncomplicated deliveries. This cadre of "birth assistants" has developed as part of an effort to have SBAs present at deliveries, yet it is questionable whether they completely meet the official criteria to be called SBAs. In 2008 there were 1,352 CSPSs in total,[22] 16 of which provided only limited maternity care services such as prenatal visits and delivery of non-complicated pregnancies. Only 76.8% of these clinics were staffed according to minimum guidelines.[23] All CSPSs are supposed to offer the full complement of basic EmONC services. In practice, however, few do due to a combination of lack of equipment, personnel or cost.

The next level of care is the primary referral center, the Centre Medicaux avec Antenne Chirugicale (CMA), which is the smallest full medical center, providing limited emergency surgical facilities. These centers are, in theory, able to handle emergency caesarian sections, however they are often out of supplies and may or may not have a surgeon or anesthetist available. According to EmONC guidelines, they should also be able to provide capacity for transfusions. In 2009, 12 of 54 CMAs were non-functional in one way or another, including due to dilapidation.[24]

Continuing up the chain, at the 9 secondary referral centers, the district-level Centre Hospitalier Regionaux (CHRs), one finds a relatively full physician staff with training for most emergencies and complications. Finally, at the highest referral level one reaches the Centre Hospitalier Universitaires (CHUs), which are the University hospitals housing the best-trained staff and the best public facilities in the country. There are 3 CHUs, 2 in Ouagadougou and 1 in Bobo-Dioulasso. Both types of hospitals function as the "last stop" for emergencies, and are generally reached through the referral system from lower level facilities. This means that a patient will present at their closest CSPS and be referred up to the CMA with the hope that they can receive an intervention there, and then often be bounced on yet again to either the CHR or CHU. The delays involved in this referral system result both in loss of time critical to the patient and in transfer costs which can be devastating to their families.

Of the medical centers, the CHRs and CHUs are the locations with most consistent access to blood products in the event of transfusions being needed. Despite this, both CHRs and CHUs (especially the former) are often subject to blood shortages due to difficulty in transportation and storage. There are 4 regional transfusion centers in the country; while these provide the safest

sources of blood products, production is often insufficient and products cannot be stored at many hospitals and CMAs due to electricity shortages.[25,26]

Overall, Burkina Faso has made reasonably good strides towards improving women's health. In terms of maternal mortality, they fall into the "making progress" category for MDG 5, with a decrease in the MMR of 4.1% per year. This works out to a 57% total reduction in MMR between 1990 and 2010, or a decrease from 700 to 300 deaths per 100,000 live births.[2] Although this falls short of the goal (ideally 175 or fewer deaths per 100,000 to reach a 75% decrease), it is significantly better than the situation in the rest of the African region as a whole. It is also important to note that it is the second highest performing country in West Africa after Ghana.[27] Overall, the lifetime risk of maternal death is 1 in 55.[20,28] Neonatal and infant mortality remains high, with 65 infants per 1,000 live births dying before their first birthday and 28 per 1,000 of them dying before their first month. Country-wide, the risk of dying before reaching age 5 is 129 per 1,000 live births, about one in eight.[17,29] Most infant deaths are attributable to malnutrition or infectious diseases such as malaria, measles, diarrheal diseases, acute respiratory infections, and AIDS.

In terms of the proximal causes of maternal mortality, 80% of maternal deaths are due to 5 main direct causes: severe bleeding, unsafe abortions (abortion is technically legal in Burkina Faso but only under certain conditions[30,31]), eclampsia, infections, and obstruction of labour/dystocias.[27] Placental retention and uterine rupture also occur with high frequency.[21] About 20% of maternal deaths can be attributed to so-called "indirect" causes, which include malaria, anemia, HIV/AIDS, heart disease, and hemoglobinopathies.

While the proportion of women benefiting from the complete prenatal care package—4 prenatal visits, 2 doses of tetanus vaccine, iron and folic acid supplementation, intermittent

preventive treatment of malaria, and HIV screening—is extremely low at 10.5%,[28] the number of women who have been seen at least once for a prenatal visit has increased from 59% in 1993 to 73% in 2003 and to 95% in 2010.[17,32] In 2004, there was one midwife per 33,000 people, accompanied by a total of 42 obstetricians/gynecologists and 58 general surgeons[21] (also able to perform emergency caesarians). While this ratio has remained low, it is somewhat improved, with the number of midwives in 2009 put at 13,138.[25] This has contributed significantly to an increase in the number of patients with a skilled birth attendant present at delivery. While the quality of SBA in attendance remains in question, the number of patients benefiting from assistance at birth has gone from 38% in 2003 to 66% in 2010, and 72% of new mothers receive some degree of post-natal care within the first 48 hours after birth.[17,32]

Other aspects of maternal health which are encouraging are that the percentage of mothers who breastfeed exclusively has also increased (from 16% to 25% in recent years) and 46% of HIV+ mothers received antiretroviral therapy in 2011.[20] While the latter needs further improvement, it is already better than the 29% of HIV+ mothers on antiretrovirals noted in 2009.[20] Two other areas which have been improving slowly are those of under-5 mortality and the number of mothers receiving intermittent preventive treatment for malaria. The former has decreased 30% from 1990, (goal is an eventual two-thirds decrease) while the latter remains at 11% in 2010.[20]

Another issue which should be briefly touched on is that of HIV and its effect on women's health. While Burkina Faso, and West Africa in general, tends to have better control of the HIV epidemic than countries in South and East Africa, the 2010 prevalence of 1.6% still means that 210,000 people are documented to be living with the disease.[33] While this is minimally improved over the 1.8% documented in 2003,[34] half of those affected are women. In

general, high-risk sexual behavior tends to be common in cities among men in particular (1 in 10 males admit to high-risk sexual encounters as compared to 1 in 100 women), who go on to infect their wives and girlfriends. This, combined with low testing behavior (30% of men and 11% of women would voluntarily get tested),[28] often due to cultural stigma against those who test positive, means low numbers of people taking anti-retroviral therapy and more chance of transmission. For women, testing for HIV is supposed to be a component of regular prenatal visits, and there have been maternal-to-child transmission prevention programs in place since 2002[35] with these services becoming free in 2010.[36,37] Unfortunately even among those who have been screened, only around 20% have received ARVs to prevent maternal-child transmission[33] and there is a generally low utilization of resources.

When one looks beyond the obvious causes of morbidity and mortality, one can see an underlying non-medical cause, that of delays in care.[12] These delays happen at three particular points:

1. Delay in the decision to seek initial treatment when a problem arises during pregnancy. This is a community-level process and can be attributed to cultural norms, lack of education and knowledge about the risks of pregnancy, lack of planning, or economics.

2. Delay in reaching an appropriate health care facility. This second one is primarily an issue of accessibility and transportation. In Burkina Faso, the mean distance to a health care facility is 7km with a range of 1-40km[38] (improved from 9.1 km in 2001[25]) in a country where bicycles and mopeds are the primary methods of transportation. Due to the layered structure of the health care system, if there is a true

emergency that cannot be handled at a CSPS, the patient, and her family, must be referred to the next level.

3. Delay in receiving appropriate treatment at the final health care facility. This last is most clearly a quality of care issue, and can be due to either a lack or inefficient distribution of personnel or supplies. In many instances, sadly, CMAs are not fully operational and some district CHRs lack the full scope of specialized personnel.

Studies based on verbal autopsy of maternal deaths in Burkina Faso have indicated that delays in at least one of these three levels were present in 74% of deaths, with the majority being clustered in the first two and associated with transportation and financial trouble.[39,40]

Ultimately, the cultural framework of a country and its norms and traditions is at least as important as government policies and health care infrastructure in affecting maternal and women's health. Traditionally, women in Burkinabe society bear responsibility for the entirety of childrearing as well as playing a significant economic role: they work in the fields and markets, and are in charge of household tasks and cooking. Children are viewed as a sign of wealth, with women encouraged to become pregnant early and often.[26] Despite the vital role that women play, it is a strongly male dominated society, with men being the primary decision makers and controllers of household finances.[41] Historically, men wanting a wife would kidnap their bride and later arrange a dowry with her family.[42] The woman herself was viewed as property of the husband's family and would be kept in the family if the husband died by being forced to marry one of his male relatives (usually a brother).[43] Due largely to this history, it is the husband who determines when a woman will seek health care and there can be severe social, financial, and even physical consequences for the woman who defies him. While laws protecting women do exist, they are often outweighed by cultural factors in day to day practice.

Another important factor tying in to the decision to seek care is that of catastrophic spending and obstetric "near misses" on a household's finances and family life. There is an acute awareness of the risk that when a pregnant woman goes to the hospital there is a chance that an intervention such as a caesarian section or a transfusion may be needed. Despite being subsidized, these may not be affordable for many of the families affected. Households often find themselves in the position of needing to borrow money from friends or family, or even needing to sell their belongings to afford care that may or may not turn out to be lifesaving. In many cases, the family never recovers financially, as the animal they sold to afford the hospital bills may have been necessary for the harvest the following season.[44-46] This type of catastrophic spending leads to a loss of not only financial, but also social capital, as wives deemed "too expensive" or "bad luck" after complications may be divorced or put aside for a younger wife deemed "more fertile" or stronger[45,47,48] and entire families become indebted to others in the village. Due to all the social and emotional baggage associated with pregnancy and childbirth, women commonly think of themselves as having "one foot in the grave" until 40 days after giving birth, when they feel they are beyond the reach of complications.[49]

Low levels of education and literacy continue to be a problem, despite official encouragement of female education and mandatory universal primary education from ages 6 to 16.[50] While the current generation of girls is beginning to catch up to boys in terms of schooling at the primary level, with 71.2% of girls and 78.3% of boys enrolled,[51] these gains tend to fall off when they reach secondary school with only 16.6% of girls enrolled compared to 23.6% of boys.[52] Literacy is a problem across the board, with 2007 data indicating that only 28.3% of the population was able to read. These data are, however, encouraging, as literacy rates for the

youngest demographic range, 15-19 years, are notably higher, showing a 47.7% rate among boys with girls still lagging at 35.5%.[53]

In a government survey[54] completed prior to the launch of a country-wide maternal health and communication effort, focus groups were asked about their perceptions of and attitudes towards management of pregnancy and childbirth, in an effort to describe community approaches to obstetric care and health-care seeking behavior. When broken down by focus group, the following themes and key elements emerged:

1. Young girls' perception of pregnancy and motherhood revolved around themes of risk and suffering with a clear sense of the possibility of dying during childbirth.

2. Young men tended to perceive motherhood as a natural event with potential problems being easily curable by visits to health centers. Their primary focus was on expanding the family and creating a line of descent.

3. Older women had a blended perspective, with their own painful experiences balancing against happiness with motherhood.

4. Health agencies and groups focused on the risks to women of heavy labor during pregnancy and the expenses faced by the population during pregnancy and childbirth.

All groups shared beliefs in the importance of roles of traditional practices, including community support during childbirth, prayer, and possibly most important, following the advice of older women during the process. Mothers and mothers-in-law were the traditional sources of information on proper care during pregnancy and childbirth due to their own experiences and strongly influenced decisions on when or if it was necessary to go to a health care provider. If an

expecting mother did go to a clinic, her elders, particularly her husband's relatives, still had a say in determining whether or not to follow the health professional's advice. This outsized role of the mother-in-law in particular in determining a woman's health care-seeking behavior is borne out by a number of different studies of cultural attitudes towards clinic use.[40,55]

Another cultural tradition which has been made illegal in the country is the practice of female genital mutilation or circumcision. Traditionally, it was believed that female circumcision was necessary in order to enhance fertility, promote purity and fidelity and make the woman a more desirable wife. Despite official proscriptions, 62% of women aged 15-49 are circumcised.[28] Encouragingly, while still high, this has decreased from 76.6% in 2003.[21] There is a strong ethnic and social component to the practice, with increasing maternal age and religion (Muslim > Christian) being the major determinants in the decision of whether or not to circumcise the daughter.[55,56] These factors are, interestingly, separate from whether or not the mothers *approve* of the practice. There are multiple degrees of female genital mutilation (FGM), ranging from clitoridectomy, to excision (of the labia), to infibulation, in which case the vaginal opening is narrowed. Complications can range from sepsis, shock, hemorrhage, and urine retention in the short term to long term sequelae such as scarring, difficulty in childbirth, infertility, and recurrent urinary tract infections.[57]

The use of family planning methods is generally regarded as critical in the pursuit of women's health, as it allows women (and their partners) to take an active role in deciding timing and number of children, increasing birth spacing, and generally improving maternal health by decreasing unwanted and unexpected pregnancies which can put a woman at risk. In 2010, the national fertility rate was 6.0;[17] while this is gradually decreasing, it remains an indicator that family planning has yet to be fully taken advantage of in the country. This is

despite the fact that use of family planning and modern contraceptive methods is strongly supported by the Burkinabe government. Use remains limited due to both lack of availability in all regions and socio-cultural behavioural constraints.[26]

Data from 2010-2011 indicated a 16.2% prevalence of all methods of contraception (traditional included), with the vast majority of these choosing modern contraceptive methods. While this percentage is low overall, it is one of the highest in West Africa.[58] There was also a 7% increase in the use of modern contraceptive methods between 2010 and 2012, indicating that adoption continues, though slowly, with a marked association between adoption and ethnic group, age, education level, and social class.[28] There is a definite gender gap in approval of contraceptive use: while just over 80% of women approve of family planning and would like to increase or control spacing of pregnancies, a similar proportion of men do not. Unfortunately this results in approximately 9 out of 10 women who cannot seek contraception without their partner's approval.[28] In part this is due to the fact that the primary traditional female role is to bear and raise children and if a woman chooses to change how she does so she is seen as not living up to her societal expectations. Female fertility can also be perceived as a way of monitoring a woman's fidelity as there is the unfortunate perception that she must have something to hide if she chooses to seek contraception. Overall, it is estimated that unmet need for family planning extends to 24.5% of the population.[58]

GOVERNMENT APPROACHES TO MATERNAL HEALTH

The government of Burkina Faso has considered health care and, more generally, the right to health, as key to national development since the 1960s.[59] Maternal health in particular has been considered a priority since the Safe Motherhood conference in Nairobi in 1987.[60]

The government's stated commitment to maternal health in the country can be seen winding through the Ministry of Health's major documents and development plans. In its National Plan for Health Development (2001-2010), women's health is specifically accounted for through plans for consolidating isolated maternity centers with pharmacies and creating fully-functioning CSPSs. There was also increased attention paid to HIV/AIDS and its high incidence among pregnant women, along with a need for prevention of transmission, and high maternal mortality with the need to develop resources for Emergency Obstetric care.[61] By far, the main focus of this first development plan was on bolstering health infrastructure and on the dual need to have both health care facilities and trained workers to staff them.[61] In the current version of the National Development Plan (2011-2020), the authors single out women and children as the most vulnerable groups, emphasizing the high mortality ratios and calling out existing EmONC services as needing improvement and being "incomplete" structures with "non-permanent" availability of services.[59] They also note inconsistent availability of services and medication for prevention of maternal-to-child transmission of HIV/AIDS and general HIV testing (although this latter is partly due to a dependence on financial support from partner organizations). While they noted a slight improvement in human resources, this is still inadequate for the country's needs. National data from 2008 put the number of midwives in the country at 697 total (1 per 13,138 as noted previously), with 473 doctors and 2,101 "birth assistants".[62]

The Ministry of Health has also expanded the role of the Office of Family Health (Direction de la Santé de la Famille – formerly the Office of Women's and Children's Health) and given it the mission of developing, planning, coordinating, and evaluating health programs related to everything from women's health to adolescent and youth health. This department spearheaded 3 safe motherhood programs between 1994 and 2008.

Other government initiatives have been attempted with varying degrees of success. These include the prime minister's announcement in 1997 of the intent to treatment all emergencies arriving at public hospitals without pre-payment and to make caesarians free for the worst-off. Unfortunately these were not implemented at the time.[16] There was also a UNICEF-supported, Ministry of Health-promoted initiative for cost-sharing among the state, communities, regional CSPSs, and individuals for OB emergencies.[46]

The Ministry's most significant recent efforts to date include its 2004-2008 *Integrated Communication Plan for a Less Risky Motherhood and Fistula Reduction*,[63] in which they attempted to buffer existing goals by surveying patients, family and community members, and health care workers and used the results to more appropriately target groups when disseminating information. The existing areas of weakness which they were attempting to evaluate included: relative difficulty of access to health facilities and services, both due to insufficient facility coverage, elevated cost relative to poverty of patients, and cultural habits delaying and limiting use of health facilities; weakness in the quality of health services linked to understaffed and under-equipped facilities; persistence and recurrence of traditional practices injurious to maternal health such as early marriages and pregnancies, resistance to female education, female genital mutilation, and sexual violence; lack of coordination among the interventions already in place and between the different agencies and partners; and lack of personal engagement by people at

all levels, from politicians, to health professionals, to the citizens using health services. While there was not a significant effect on existing programs and goals, the survey approach taken did provide valuable information on patients' and communities' attitudes to pregnancy and cultural approaches.

The primary programs currently in place for maternal health are the 2006 *"Road Map" for Reducing Maternal and Neonatal Mortality in Burkina Faso,*[21] and government subsidies for deliveries and emergency obstetric and neonatal care. Both of these initiatives can be seen as extensions of the Safe Motherhood programs already attempted in the country, with the first developing directly out of an African Union plan to guide participating governments towards achievement of the MDGs, and the second considered as a priority in the *Poverty Reduction Strategy Paper* started in 2002.[64] The proposed timeframes for both projects was for implementation beginning in 2006 and running through 2015 – ideally to make achievement of MDGs 4 and 5 possible.

Both the *Road Map* and the subsidy program attempted to tackle the problems of access, structural capabilities and morbidity, each with a slightly different focus. The essential elements of the former were to make high-quality maternal and neonatal care accessible to all, and to reinforce existing community capabilities. In terms of specific objectives, they planned to increase the percentage of provider-assisted deliveries from 50% to a target of 80%, increase contraceptive prevalence from 20% to a target of 30%, and work towards increasing the participation of individuals, families, and communities in maternal and neonatal health programs. In order to be able to provide appropriate EmONC, they noted the need to have the 6 basic components available at the CSPS level and surgical teams, kits for caesarian sections, and blood banking facilities available at referral centers at all times. The approach to do this was through

fundraising and cost-sharing programs, building improvement, development and refining of the referral system, and teaching/information sharing.

The subsidy program, on the other hand, was designed purely to address the economic causes of maternal mortality. Its stated goal was to "contribute to the reduction of maternal and neonatal mortality through improving accessibility of health care services to the beneficiaries"[64] as a strategy to achieve a ¾ reduction in maternal mortality. Three types of subsidies were initially debated: 100% coverage, 80% coverage or 60% coverage. The final decision was a bit of a blend, as it was decided that overall 80% of the total cost of treatment plus evacuation/transfer between medical centers should be covered. In actuality it works out to 80% of non-complicated deliveries at the CSPS or CMA level, 60% of non-complicated deliveries at the CHR or CHU level, and 80% of emergency services. The cost difference is partly to encourage patients to present to the lowest appropriate level facility in order to conserve resources. In addition to this, it was determined that the poorest 20% of the population would receive 100% coverage of their care. This was to be implemented not only in all public health facilities, but in private not-for-profit health centers as well. The total cost estimate was put at 1.006 billion CFA (West African francs) for the period of 2006-2010 (equivalent to $2,085,000).

It is worth briefly mentioning how other countries in the region have attempted to tackle maternal morbidity and mortality. In 2002, neighboring Mali implemented a national referral system with free caesarian sections aimed at improving access to and quality of the emergency obstetric care received.[65] While an immediate positive effect was seen in the number of women reaching district hospitals and receiving advanced care, patients are often still reluctant to seek care due to the effect of catastrophic spending on their household – even with abolition of fees for caesarians. As in Burkina Faso, transportation costs in particular are a major barrier to

access.[65,66] Sierra Leone, known for one of the 8 highest maternal mortality ratios in the world (890 per 100,000 live births[2]) launched an ambitious free health-care initiative in 2010 targeting maternal-child health. Public hospitals now offer free consultations, treatment, beds, obstetric care, and drugs. While this has had a rapid impact on usage of services, the government has run into problems with funding and must rely heavily on foreign and Non-Governmental agency donors.[67] Other initiatives include free deliveries, treatment of complications and caesarians in Ghana since 2005, free caesarians in Niger since 2006, and free deliveries and caesarians in public facilities in Senegal since 2006.[16]

PROGRAM SUCCESSES AND DISAPPOINTMENTS

As of 2011, analyses of program successes are somewhat mixed. While utilization of health care facilities has increased from 0.21 new visits per person per year in 2001 to 0.56 in 2009 and there has been notable success with childhood vaccine coverage, most areas remain sadly lacking. The government notes that there is insufficient functioning of the hospitals, with weak operational capacity and lack of coordination between the different health sector levels, as well as trouble with quality assurance of medications, reagents, and blood products. They attribute part of this to corruption throughout the system, with financial mobilization and information distribution being key challenges to overcome in the upcoming years.[25]

The overarching questions are to what degree have these government programs had an effect on maternal health and what is the experience of Burkinabe women today? It is hard to fully analyze the extent to which the above programs have been successful. What becomes rapidly apparent in studying the ministry's initiatives is that they are consistently battling the same issues of insufficient infrastructure and barriers to access year after year, program after program. It is certainly difficult for a country ranked 183 out of 187 countries on UN Development Programme's Human Development Index[68] to adequately fund and sustain its initiatives on good will alone. Despite this, overall indicators do seem to show that their efforts are slowly but surely paying off.

In terms of objective evaluations, the subsidy program was supposed to be scheduled for bi-yearly reviews of costs in order to determine re-allocation of resources every 6 months. It is unclear whether or not this occurred; external analyses of the program seem to indicate not. Providers were to be supervised initially to ensure they were implementing the subsidies

appropriately, and there were supposed to be regular structured surveys of beneficiaries/patients about the quality of care received. Measures of success were to be determined by: number of health-professional-assisted deliveries performed, caesarian section rate, rate of post-operative and post-partum infections, lethality of obstetric complications, number of newborn deaths in health care facilities, number of still-births and deaths within the first 7 hours, as well as from patient "satisfaction" scores for services provided. These measures were to be related/compared to impact indicators, which were the rate of maternal and newborn mortality in the general population as determined every 5 years.[64]

There are some data extant that suggests that the use of skilled birth attendants at delivery has been increasing since 2004, with a particular increase noted in 2007.[16] This calls into question the degree to which an improvement in this area can be attributed wholly to the subsidy program. In a 2011 study looking at the implementation and effectiveness of the policy, the author notes that during interviews with policy makers, they were informed that the Ministries of Health and Finance were told that they needed to meet obstetric health indicators or else become ineligible for World Bank funding. Following this disclosure, the Ministry of Health was given limited time and technical support to develop a cohesive program, with 3 weeks stated as the initial timeline.[16] One effect of this abridged time frame was that there was no time to implement pilot projects to assess functionality and build capacity. Instead, there was rapid expansion of caesarian sections during phase 1 in 2006 and vaginal deliveries in 2007, despite lack of a full safety net and framework of health care providers and without proper evaluation of success between the two expansion phases to look at efficacy.[36] The rapid roll-out also resulted in many shortages of basic supplies such as magnesium sulfate for treatment of eclampsia, as no extra

equipment or supplies were purchased for facilities (these were considered to be technically already functional through implementation of the *Road Map* begun just prior).[16,36]

Perhaps attributable in part to the rapid start of the subsidy program, due to begin in 2006, communication to all involved, both beneficiaries and health care workers, was not well organized. Importantly, there was very late involvement of the media, including radio, TV and print. Radio is the most used media source in the country; and announcements were due to be made in the three most common languages (Moré, Dioula and Fulfuldé/Peuhl) as well as in French. Despite this, when information was finally disseminated in late 2008 there was a relatively high reliance on print (both posters in health care facilities and brochures which were supposed to be available in all health care facilities).[16,36,64]

Given both the largely rural and illiterate nature of the population, and the difficulty of coordinating with workers in rural locations, officials developed the concept of holding "information days" at each health care facility to be run in two groups, one for the health care workers and one for the general population. Unfortunately, not all of these were accomplished and there was poor dissemination of the official guidelines to workers at all locations. This, along with the lack of a pilot period and lack of official workshops and education efforts, resulted in minimal to no standardization of implementation strategies across the country. As few people in the field agreed on what the standard costs covered by the subsidies were, there was a fair degree of misappropriation of funds and variation in how the subsidies were applied. Notably, there was no clear definition for how to identify the poorest 20% of the population who was to benefit from free care. Due to this, workers were left to make the best judgment they could at the time, often leaving the most vulnerable patients still unable to afford care.[36]

Some efforts were made independently of the Ministry of Health to assess various methods of determining indigent status of patients for full benefit from the subsidies. These have included independent selection of individuals by a village selection committee and researcher-driven criteria given to staff at various CSPSs. While these methods, particularly that of using village selection committees, worked fairly well, there remained the question of how to generalize these isolated experiences to the country as a whole.[69,70]

Besides the problems with disseminating information and education, other, more general, areas of concern appeared. Chief among these was the issue of transportation. Although it was clearly stated that transfer costs from the referring facility to a higher level of care were to be covered, what was not specified was who would receive the subsidy fee: whether it was the referring or receiving facility. Ambulance drivers would, of their own initiative, commonly refuse to transport a patient without initial payment,[26] despite the fact that this was one of the reasons the subsidy was developed in the first place. Beyond transportation costs, there was also the issue of what occurred within the walls of hospitals and clinics. The subsidy program instituted the use of a special prescription pad for qualifying patients to be used when ordering tests or writing prescriptions. Unfortunately, due to the lack of consistent training, usage of this pad was not standardized, leading to some qualifying patients not receiving the full benefits of the subsidy, while some who did not qualify received a financial benefit. This continues to be an issue today, as I witnessed at the CHU-Yalgado Ouedraogo in 2013. There was also the problem of the general lack of supplies and space—including beds—at hospitals, resulting in patients being asked to purchase gloves, speculums, thermometers and other basics with their own money, another situation which remains very common in practice. Finally, there was the issue of health professionals' behavior towards patients. While not a problem restricted strictly to

implementation of the subsidies, patients complained often of being treated disrespectfully by health care workers and noted this as a reason for not wanting to go to the hospital/clinic unless it was absolutely necessary.[26]

CONCLUSION

Overall, the picture of maternal health in Burkina Faso is mixed but hopeful. While the raw numbers for maternal morbidity and mortality remain far higher than optimal, and achievement of the MDGs within the allotted time frame is unlikely to happen, the country has a clear commitment toward improving maternal health and is supportive of interventions to help. Unfortunately, good intentions can only go so far, and they are underfunded and under-staffed, with drastic improvements in logistics, evaluation processes, and infrastructure all needed. It also seems likely that, given its limited resources, Burkina Faso will continue to be dependent on foreign aid to fund their health projects, with all the uncertainties and restrictions that come with it.

The effect of the subsidy program, while definitely positive to date, was blunted by poor management and coordination, with a significant portion of the population not benefiting completely, in particular indigent patients not receiving the full 100% coverage of costs. Further educational campaigns are needed on the part of the Ministry of Health to spread knowledge about this and other programs, with dissemination of a uniform message to both health care workers and beneficiaries. The overall focus should be on quality of care and logistics, with review of programs strictly followed through on, penalties for workers found to be misusing funds, and better attention to the supply chain and delivery of materials to outlying locations. The dire transportation situation also needs improvement, with an official policy concerning ambulance costs and payments implemented country-wide with penalties for drivers found to be requesting additional payments.

Given the above, the Burkinabe government, and Ministry of Health in particular, will need to focus their efforts on tightening their own infrastructure as they attempt to work towards a safer environment for women and mothers in the country. A continued effort to improve education of the general population will also be fundamental to any future improvement as it will help women learn to direct their own lives and take a stronger role in their own health care.

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