

Implementing a Medical Program for Children's Relief International

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Introduction

Children's Relief International (CRI) is an organization devoted to sharing the gospel with the poorest individuals around the world. CRI was founded by, Alan Pieratt, and his wife, Melody, who served with WorldVenture, partaking in ministry work for several years in Brazil in the 1990s. After returning to the States in 1999, they felt the need to start a program that would focus on God's poorest children and empower national leaders with a vision to impact their communities. The first official CRI meeting was March of 2000. Today, there are 28 staff members residing in the United States and 26 leaders located in partnering countries. CRI addresses needs such as nutrition, orphan care, education, housing, sports ministry, widow care, hunger, medical care, and clean water. CRI's website states that people come to know God and are helped, healed, and saved in the same way through their programs and ministries (childrensrelief.org). Billions of people currently live in deep poverty around the world and CRI's goal is to act quickly and efficiently to be the hands and feet for God and help those in dire need.

Currently, CRI supports ministry work in several different locations, with local leaders defining needed projects and developing those projects in partnership with CRI. In each partnering location in North America, Southeast Asia, and Africa, different programs are designed that best fit the community needs and with CRI's support, funding is made available to support the initiatives of the local leaders and their communities. Emphasis is put on local leaders devising a plan to give aid where they see it needed most.

CRI partnering locations are poverty stricken and several studies show poverty's link to ill-health. Currently, CRI does not have a specific medical program. In India, one local leader has a medical and counseling degree and therefore has provided HIV/AIDS support in

surrounding villages via an independent mobile medical clinic. This, along with other medical care being provided by CRI, enhances the feasibility for CRI to implement more mobile medical clinics because medical aid is a need in all CRI partnering locations. Designing a mobile medical clinic for each location will be the goal in investigating the health issues created due to poverty in CRI's partnering locations. Implementing a medical program will benefit impoverished residents in CRI partner locations, providing several health care services to improve health and decrease morbidity and mortality rates simultaneously.

Poverty and Health

Serving the poor is a top priority of CRI because the poor are at a disadvantage to the wealthier in more developed countries due to their lack of access to medical care and environmental and behavioral factors. Linking poverty and health is complicated and controversial, but there is a clear connection between the two. Health is one of the main aspects compromised with impoverishment. According to Wagstaff, inequalities in health outcomes between rich and poor are unfair, not because the poor are more deserving than the better-off, but because these inequalities correspond to widely differing constraints and opportunities facing the poor and better-off (Wagstaff, 2002). The cycle of poverty is largely at play, also known as the health-poverty trap (Chokshi & Khullar, 2018), and often this cycle will not subside without intervention.

Various mechanisms allow income to influence health including environmental and behavioral factors, and access to medical care. These mechanisms can ultimately have adverse effects on mortality and morbidity across the income distribution. The association between income and life expectancy was well established in a study that found a gap in life expectancy of about 15 years for men and 10 years for women when comparing the most affluent 1% of

individuals with the poorest 1% (Chokshi & Khullar, 2018). Low-income individuals also have higher rates of behavioral risk factors, like drinking and using tobacco, which is often influenced by the environments they live. According to Chokshi and Khullar, low-income individuals encounter numerous daily environmental exposures that create greater allostatic load – the wear and tear on the body that accumulates with repeated or chronic stressors (2018).

Impoverished families tend to have lower access to education as well, which is adversely related to health. People living in poverty may stop going to school so they can work, which leaves them without literacy and numeracy skills they need to further their careers (childfund.org). Time passes, but the situation tends to stay the same due to the health-poverty trap. The children grow up with little income and decide to leave school to go to work. And according to Chokshi and Khullar, “The health impacts of low incomes may be greatest for those with lower educational attainment” (2018).

Individuals with low-income, in comparison to higher income individuals, experience decreased access to medical care. Access to healthcare is not sufficient in most developing countries which creates a continued cycle of poverty leading to ill-health and ill-health maintaining poverty (Peters et al. 2008). Impoverished families are less likely to be exposed to new drugs and technology and are less likely to have health insurance or any means of paying for health care (Chokshi & Khullar, 2018). Low-income families typically eat less nutrient dense foods and less food in general, have a lower activity level, and experience a more demanding line of work, creating physical stress on the body which can lead to an increased rate of chronic illness and lower life expectancy.

Peters et al. investigates poverty and access to health care in developing countries in their paper. The paper documents disparities in access to health services in low- and middle-income

countries (LMICs). Governments in LMICs typically overlook the poor, rarely focusing on their health needs, putting them at an automatic disadvantage. Access to health care and poverty can negatively affect each other as well. As Peters et al. discuss in their paper, “When health care is needed but is delayed or not obtained, people's health worsens, which in turn leads to lost income and higher health care costs, both of which contribute to poverty” (2008). The poverty-health cycle will continue to have detrimental effects until intervention occurs. Peters et al. also talks about the worldwide effects of poverty on health. Low- and middle- income countries account for 90% of the global burden of disease but for only 12% of global spending on health. High-income countries spend about 100 times more on health per capita than low-income countries (Peters et al. 2008). It is also stated that out-of-pocket health expenditures are higher in poorer countries: On average, more than 60% of the spending in low-income countries is from out-of-pocket payments, compared with about 20% in high-income countries (Peters et al. 2008). Out-of-pocket expenses are often not feasible and not realistic for poorer individuals to deal with, compromising their health tremendously.

Geographic accessibility plays a major role in access to medical care for low- middle-income people according to Peters et al. (2008). Individuals in developing countries often experience difficulties reaching hospitals and clinics. Roads are often impassable and walking as a main form of transportation can be lengthy and difficult, creating a huge barrier to quality health care. Substandard weather can cause road conditions to worsen and communication lines to be shut down, which are already mediocre. Worsened road conditions can increase costs of travel-related expenditures, all of which act as obstacles to obtaining care, especially for the poor (Peters et al. 2008).

Financial accessibility also plays a role in access to health care and according to Peters et al., affordability is now considered one of the most important determinants and is most directly associated with dimensions of poverty (2008). Not only are the direct costs of paying for healthcare daunting, but the indirect costs also deter impoverished individuals from seeking healthcare. Indirect costs can include travel expenses, food and housing away from home, and the cost of time spent away from work. There may also be a family member or close friend accompanying this person on their journey which takes their time and money as well (Peters et al. 2008). Access to health care is a clear problem in CRI partnering countries, supporting the need for medical aid in those areas.

Issues, like those listed above, leading to ill-health, are often seen in developing countries. Behavioral and environmental factors, as well as access to medical care, all contribute to the ongoing link between poverty and health. Among countries considered to be developing are Malawi, Mozambique, Nigeria, Uganda, and India, of which all have leaders residing in them that partner with CRI. These sub-Saharan country's health sectors face enormous challenges in addressing unmet health service needs, and still cope with the problems left by years of serious financial constraint, according to Bloom and Lucas (2000). On behalf of India, the health care situation is similar. India experiences the same issues with poverty and health. Some of these challenges include an imbalance in resource allocation, inadequate physical access to high-quality health services, high out-of-pocket health expenditures, inflation in health spending, and behavioral factors that affect the demand for appropriate health care (Balarajan et al. 2011). A deeper look into demographics, income, and health care needs in Malawi, Mozambique, Nigeria, Uganda, and India, will give context for the need of a medical program with CRI.

Demographic Investigation of Children’s Relief International Locations

Malawi, Mozambique, Nigeria, Uganda, and India demographics, including income, and current health related statistics will be investigated to show the need for medical aid in these areas. Poverty and health are very clearly linked in these locations as they are classified as low-middle-income countries (LMICs). All information in the following tables was obtained from cia.gov.

Malawi

Malawi is located in southern Africa, bordered on three sides by Mozambique, on the southeast side by Tanzania and on the southwest side by Zambia. Its current population is estimated to be 19,842,560 people, ranking it 60th in the world. Malawi is one of the least developed countries in the world. Most of its population is rural and Malawi has a low life expectancy and high infant mortality rate and prevalence of HIV/AIDS (approximately 9.6% of the population) (cia.gov). The population growth rate is 3.31%, ranking Malawi 3rd.

(Malawi) Category	Rate	Rank
Physician density	0.02 physicians/1,000 population (2009)	
Hospital bed density	1.3 beds/1,000 population (2011)	
Maternal mortality	634 deaths/100,000 population (2015)	15 th
Infant mortality	42.1 deaths/1,000 live births (2018)	42 nd
Life expectancy at birth	62.2 years (2018)	200 th
Contraceptive prevalence	59.2% (2015/16)	
Total fertility	5.43 children born/woman (2018)	9 th
Health expenditures	11.4% of GDP (2014)	9 th
HIV/AIDS adult prevalence	9.6% (2017)	9 th
People living with HIV/AIDS	1 million (2017)	10 th

HIV/AIDS deaths	17,000 (2017)	13 th
Children under the age of 5 years underweight	11.7% (2015)	56 th

Approximately 80% of the population in Malawi lives in rural areas and about 76.9% of the labor workforce is in agriculture. Agricultural work can be demanding and add a physical and time burden to members of the family working in agriculture. Looking at the physician density and hospital bed density, there is a clear shortage of doctors in-country to perform medical tasks as well. From Abihiro's et al. paper, it is clear that gaps in financial protection in Malawi are mainly triggered by supply-side access-related barriers in the public health sector such as: shortages of medicines, emergency services, shortage of health personnel and facilities, poor health workers' attitudes, distance and transportation difficulties, and perceived poor quality of health services (2014).

Currently in Malawi, over 60% of all health services are provided in public hospitals and health centers, 37% by the private not-for-profit Christian Health Association of Malawi, and the rest by individual private-for-profit health practitioners (Abihiro et al. 2014). The government is currently striving for Universal Health Coverage and since 2004, full-cost coverage of an Essential Health Package (EHP); however, several studies have found some serious gaps in this system, possibly due to underfunding.

Even with the current health coverage goal in Malawi, there are huge gaps in equity to receive health care at a reasonable cost. According to Abihiro et al., after analyzing the data from the focus group discussions, residents from rural communities are geographically excluded from effective Essential Health Protection coverage (2014). Financial unaffordability was frequently reported by rural Malawians, and community respondents reported delays in seeking care, refusing hospital admissions, demanding early discharge, or being detained in the hospitals for

non-payment of bills due to financial difficulties. Travel expenditure was also reported as an additional barrier to seeking health care. From the data above and reports from residents of rural Malawian communities, need for medical aid becomes quite clear, especially in rural areas.

CRI's recent partnership with Malawi has the potential to grow immensely. Right now, in Malawi, there is a Care Center for educating kids each day, which is also where women's bible study takes place daily. A mobile medical clinic in this area would have the ability to reach people who are quite far from the nearest hospital (approximately 50 km).

Mozambique

Mozambique is situated in southeast Africa along the coast of the Indian Ocean. Its population is 27,233,789 people (2017) ranking it 50th in the world for population. Mozambique is a poor, sparsely populated country with high fertility and mortality rates and a rapidly growing youthful population – 45% of the population is younger than 15 (cia.gov). The high poverty rate is sustained by several factors including disease, natural disaster, and unequal distribution of wealth. High rates of HIV/AIDS and overall mortality rate keep the population somewhat restrained. The population growth rate is still ranked 25th, at 2.46%.

(Mozambique) Category	Rate	Rank
Physician density	0.06 physicians/1,000 population (2013)	
Hospital bed density	0.7 beds/1,000 population (2011)	
Maternal mortality	489 deaths/100,000 live births (2015)	21 st
Infant mortality	64 deaths/1,000 live births (2018)	11 th
Life expectancy at birth	54.1 years (2018)	218 th
Contraceptive prevalence	27.1% (2015)	
Total fertility	5.02 children born/woman (2018)	12 th
Health expenditures	7% of GDP (2014)	9 th

HIV/AIDS adult prevalence	12.5% (2017)	6 th
People living with HIV/AIDS	2.1 million (2017)	4 th
HIV/AIDS deaths	70,000 (2017)	3 rd
Children under the age of 5 years underweight	15.6% (2011)	39 th

Mozambique, along with most other African countries, has a shortage of medical staff to provide for the needs of African citizens, especially those in rural areas. Pereira et al., investigates the history of medical doctors and assistant medical officers trained for surgery by reviewing all hospitals with functioning surgical theatres (2007). There were 23 rural/district hospitals, 8 general and provincial hospitals, and 3 central hospitals. According to Pereira et al., in the 34 health units, the theatre registers for 1 year (2002) were examined in detail to identify three major obstetric/gynecologic interventions: caesarean sections, obstetric hysterectomies and laparotomies for ectopic pregnancy (2007). Number of operations were found, and proportions carried out by either medical school graduates, also called medical officers (MOs), or TCs were determined. TCs became a new category of midlevel providers with surgical skills in the 1980s.

Most MOs are assigned to rural hospitals with little experience, while TCs have three years of surgical training and experience. TCs perform 92% of all major obstetric surgical interventions in rural hospitals. However, according to Pereira et al., in Mozambique and other African countries, the internal drain of medical personnel from rural to urban areas and from public to private hospitals is a problem (2007). Pereira et al. says that sending recent medical graduates to rural areas is not a sufficient solution to staff shortages (2007). They do not have the experience needed to perform vital procedures and they do not stay. Pereira then states, “In Mozambique, none of the graduates from three medical school classes sent to a rural hospital was still there after 7 years” (Pereira et al. 2007). Pereira’s et al. paper and the above demographics, emphasize the need for medical aid in Mozambique.

Nigeria

Nigeria's population is 203,452,505 people ranking it 7th in the world. Nigeria's population is projected to grow from more than 186 million people in 2016 to 392 million in 2050, becoming the world's fourth most populous country (cia.gov). Its population growth rate is 2.54%, ranking it 21st in the world. Nigeria has enormous rates of HIV/AIDS and a huge percentage of underweight kids under the age of 5, yet their health expenditures are drastically low at 3.7% of GDP.

(Nigeria) Category	Rate	Rank
Physician density	0.38 physicians/1,000 population (2009)	
Hospital bed density		
Maternal mortality	814 deaths/100,000 population (2015)	4 th
Infant mortality	63.3 deaths/1,000 live births (2018)	13 th
Life expectancy at birth	59.3 years (2018)	211 th
Contraceptive prevalence	13.4% (2015/16)	
Total fertility	4.85 children born/woman (2018)	16 th
Health expenditures	3.7% of GDP (2014)	167 th
HIV/AIDS adult prevalence	2.8% (2017)	20 th
People living with HIV/AIDS	3.1 million (2017)	2 nd
HIV/AIDS deaths	150,000 (2017)	1 st
Children under the age of 5 years underweight	31.5% (2016)	8 th

According to Awofeso, within-country analyses indicate that maternal mortality is significantly higher in the largely rural regions of Nigeria (Awofeso, 2010). Nigeria, along with many other sub-Saharan African countries, is facing a health workforce crisis. Mortality and morbidity data from Nigeria indicate greater unmet health needs in rural and remote regions than in urban areas (Awofeso, 2010). Comparing Nigeria's data with Malawi, Uganda, Mozambique,

and India, it is the worst in terms of health care, HIV/AIDS prevalence, healthcare expenditure, and mortality rates.

Uganda

Uganda's population is 40,853,749 people (2018). Its ranked 35th in the world in population and is located in east, central Africa, west of Kenya and east of the Democratic Republic of the Congo. The population growth rate was at 3.18% in 2018 ranking Uganda 6th.

(Uganda) Category	Rate	Rank
Physician density	0.09 physicians/1,000 population (2015)	
Hospital bed density	0.5 beds/1,000 population (2010)	
Maternal mortality	343 deaths/1,000 population (2015)	36 th
Infant mortality	54.6 deaths/1,000 live births (2018)	22 nd
Life expectancy at birth	56.3 years (2018)	217 th
Contraceptive prevalence	38.4% (2017)	
Total fertility	5.62 children born/woman (2018)	7 th
Health expenditures	7.2% of GDP (2014)	78 th
HIV/AIDS adult prevalence	5.9% (2017)	11 th
People living with HIV/AIDS	1.3 million (2017)	7 th
HIV/AIDS deaths	26,000 (2017)	8 th
Children under the age of 5 years underweight	11.7% (2015)	56 th

Due to resource limitations and other constraints, implementing certain interventions to increase access to healthcare in Uganda have not been a success; however, the Uganda National Minimum Health Care Package was implemented in the year of 2000 to try to fight the challenges of poor access to health care. According to Kiwanuka at al., inequity in access to services is said to have increased, and important health indicators such as infant mortality rate and maternal mortality rate have stagnated or even worsened for the poor in Uganda (2008).

Throughout Kiwanuka's et al. paper, health disparities in Uganda are explored and significant data is found on the colossal link between poverty and ill-health.

The poor and vulnerable bear a disproportionately heavier burden of disease and are more likely to suffer ill-health than the less poor (Kiwanuka et al. 2008). The most common illnesses in Uganda were listed as fever and malaria followed by respiratory tract infections. Also, according to Kiwanuka et al., the most affected with HIV/AIDS were the poorest and children from impoverished families were more likely to suffer from malnutrition, not acquire adequate immunizations, and have fewer health check-ups (2008). This ultimately puts them at higher risk for mortality and morbidity.

Geographical inaccessibility was also listed as a major issue in rural areas in Uganda according to Kiwanuka et al. Though geographical access to health services improved from 49% to 72% of the population living within 5km of a health facility between 1990 and 2005, "The distance from the health facility was one of the most important factors leading to low turnout of mothers for facility deliveries and is closely linked to rural residence and poverty" (Kiwanuka et al. 2008). This holds the implication that the poor living in rural areas are not accessing health facilities regularly or at all sometimes. The need for medical aid in these types of locations is substantial. Uganda has many rural areas with residents who are unable to access medical care on a regular basis. A mobile medical clinic could provide health care for the rural areas around the partnering location combating these geographical barriers.

India

India is located in Southern Asia, bordering the Arabian Sea and the Bay of Bengal, between Burma and Pakistan. As of July 2018, its population is 1,296,834,042 people, ranking

India 2nd in the world for population. The population growth rate is 1.4% ranking it 94th in comparison with the world.

(India) Category	Rate	Rank
Physician density	0.76 physicians/1,000 population (2016)	
Hospital bed density	0.7 beds/1,000 population (2011)	
Maternal mortality	174 deaths/100,000 population (2015)	56 th
Infant mortality	37.8 deaths/1,000 live births (2018)	46 th
Life expectancy at birth	69.1 years (2018)	163 rd
Contraceptive prevalence	53.5% (2015/16)	
Total fertility	2.4 children born/woman (2018)	81 st
Health expenditures	4.7% of GDP (2014)	149 th
HIV/AIDS adult prevalence	0.2% (2017)	94 th
People living with HIV/AIDS	2.1 million (2017)	3 rd
HIV/AIDS deaths	69,000 (2017)	4 th
Children under the age of 5 years underweight	35.7% (2015)	3 rd

Those with the greatest need for healthcare in India have the hardest time gaining access to it and are very unlikely to have their health care needs met (Balarajan et al. 2011). Looking at the statistics from cia.gov, HIV/AIDS prevalence is high and children who are under the age of 5 and underweight in India ranks 3rd in the world. Health also varies considerably within India and Balarajan et al. says health outcomes are determined by factors such as gender, wealth, caste, education, and geography (2011). Also, according to Balarajan et al., 39 million additional people fall into poverty every year as a result of health care expenditures (2011).

Inflation, drug costs, differing financial burden between rural and urban households, and out-of-pocket expenditures prove to be a medical constraint in India (Balarajan et al. 2011). Achieving equity is a current goal in India and has been since 1946. A major goal is to improve the access and availability of medical care especially to the rural areas of India. Emphasis is put

on the women, children, and people who are poor to provide adequate health infrastructure (Balajaran et al. 2011). For the time being, medical aid is a necessity throughout India, especially the rural areas. CRI has acknowledged that and currently has a local leader providing some medical care; however, much more can be done for the poor throughout India who have little access to proper health care.

Comparison

Several issues are observed when looking at the demographics listed for Malawi, Mozambique, Nigeria, Uganda, and India. All five of these countries have high HIV/AIDS rates, high mortality rates, and low birth expectancies in comparison with the rest of the world, yet they all have considerably lower health expenditures. To show the stark difference between these five countries and developed countries, a table is shown below with the same information about the United States. Its population is 329,256,465 people as of 2018, ranking it 3rd in the world after India. The population growth rate is only 0.8%, ranking it 130th compared to the rest of the world.

(U.S) Category	Rate	Rank
Physician density	2.57 physicians/1,000 population (2014)	
Hospital bed density	2.9 beds/1,000 population (2013)	
Maternal mortality	14 deaths/100,000 population (2015)	139 th
Infant mortality	5.7 deaths/1,000 live births (2018)	170 th
Life expectancy at birth	80.1 years (2018)	45 th
Contraceptive prevalence	72.7% (2013/15)	
Total fertility	1.87 children born/woman (2017)	142 nd
Health expenditures	17.1% of GDP (2014)	2 nd
HIV/AIDS adult prevalence	N/A	
People living with HIV/AIDS	N/A	

HIV/AIDS deaths	N/A	
Children under the age of 5 years underweight	0.5% (2012)	126 th

Comparing the data between the U.S. and the developing world is shocking. The United States has a higher physician density and hospital bed density than Malawi, Mozambique, Nigeria, Uganda, and India. The U.S. has higher health expenditures than all five countries and a higher life expectancy at birth than all five countries. The U.S. also has a considerably lower maternal and infant mortality rate as well as a lower percent of children under the age of 5 years old who are underweight. No data is listed for HIV/AIDS in the United States; however, Malawi, Mozambique, Nigeria, Uganda, and India are all in the top 10 countries listed for people living with HIV/AIDS. Clearly, there are issues to be dealt with in the developing world. Sub-Saharan Africa and India are in dire need of medical aid from wherever they can obtain it, and CRI has the ability to provide medical care in the rural areas in these locations.

Sub-Saharan Africa is defined as anything south of the Sahara, which places Nigeria, Uganda, Malawi, and Mozambique in that range. In a paper by Gerald Bloom and Henry Lucas, the burden of disease in sub-Saharan Africa is discussed. Sub-Saharan Africa, compared to other regions, is in a markedly worse position. The concept of disability adjusted life years (DALYs) is explored, which are commonly used to measure the extent of sickness and premature death (Bloom & Lucas, 2000). DALY rate estimates the excess years of active life lost per 1,000 of the population due to disability and death. Bloom and Lucas found that not only does sub-Saharan Africa, with less than 10% of the world population, account for 22% of total world DALYs and 25% of those lost to premature death, this latter rate is almost twice that of the second worst region, India, and seven times that of the established market economies (2000). Levels of infectious and parasitic disease are almost twice those in other developing country regions.

It is necessary to take into consideration that data may be somewhat skewed when looking at different regions of sub-Saharan Africa. Poorer individuals may have higher incidence of disease but may report less for two different reasons. According to Bloom and Lucas, poorer individuals underreport either because they are more tolerant, or they do not see the point of reporting if they do not have the time and/or resources to obtain treatment (2000). It is also important to note that even though poorer countries have higher rates of sickness, they have less resources available to monitor health status (Bloom & Lucas, 2000). Therefore, rates of ill-health may actually be substantially higher if reporting were consistent across income distributions.

Analysis of the five sub-Saharan African countries and India compared to the United States shows the vast difference in health and the extreme need for medical aid in the developing world. Currently, CRI is providing some medical care in its partnering locations, however, a minimal amount. The need for medical aid in these areas is much larger than what is being furnished at present. In the following sections, current medical care being provided at CRI locations will be discussed as well as a plan for implementing a medical program for CRI in the form of mobile medical clinics.

Current Medical Care

Controversy is met when dealing with non-profit organizations entering a third world country to try to make changes that they see necessary. Macfarlane et al. discusses good public-health practice and says that it encourages people and communities to take part in decisions about their own health; countries need to recast their health systems to support people's initiatives; and new international relations are required to support countries to resolve their own public-health issues (2000). CRI promotes independency by seeking local leaders to devise a plan that best fits the needs of the community rather than bringing in foreign leaders to

implement plans they think would work. Not trusting local leaders is likely to cause issues and has for many organizations in the past. CRI is currently taking the correct precautions, like relying on local leaders advice, to avoid these types of issues and plans to do so in future endeavors, including when implementing a medical program.

CRI provides medical care, to some extent, at a few of its partnering locations including Mozambique, Nigeria, and throughout South Asia. There are two programs offering medical care: Tessa Grace Nutrition and Project Life. Both will be explained in the following sections.

Current Medical Care – Mozambique

Both Tessa Grace and Project Life take place in Mozambique as a way of providing medical care to those in need. In Project Life, CRI cares for widows, orphans, HIV patients etc. that have no one else to care for them. In country staff does daily home visits, checking that the patients are taking their medications. Staff also spends time simply talking to patients, providing emotional care. It is a holistic approach and CRI has seen wonderful results. A full-time staff in Mozambique helps run Project Life and a health clinic, and they see a few thousand patients a month. Current projects make the implementation of a mobile medical clinic in these areas much more feasible due to having certain connections with current medical care providers.

Another project associated with CRI, called the Tessa Grace Program, offers child and maternal health in Africa and South Asia. According to the Tessa Grace Program Packet from CRI, “Tessa Grace programs address quality of life, not just quantity of life. And plenty of socioeconomic research shows how empowering women as decision makers, caretakers, income earners, and otherwise active members of society positively impacts the social livelihood and economic stability of entire communities.” Tessa Grace offers medical care, nutrition, spiritual

care, and education. Medical care includes health check-ups for mothers and babies who also receive free regular checkups by a skilled health care provider. The clinic staff weigh the babies weekly, carefully tracking the progress of a child who starts using formula or Miracle Mix. On page 5 in the Tessa Grace Packet, Miracle Mix is described:

“Miracle Mix” is a homemade powder mix of locally sourced ingredients. It is called Miracle Mix not only because of the nutritional quality of its constituents, but also because of the astounding recoveries and decreases in mortality and morbidity of infants and children in communities which have adopted its use. Undernourished toddlers and mothers receive needed calories and protein from rice, corn and peanuts. But the “miracle” in the mix is powdered moringa leaves. These leaves contain 7x the vitamin C of oranges, 4x the vitamin A of carrots, 4x the calcium of milk, 3x the potassium of bananas, and 2x the protein of yogurt, among various other vital micronutrients. Moringa trees grow easily in semi-tropical climates like South Asia and Mozambique—making them an accessible source for adding to cooked meals or Miracle Mix.”

Miracle Mix has contributed to the current health status of the babies involved with the Tessa Grace Program. It has truly saved lives in both Africa and South Asia. According to CRI, in the early stages of Tessa Grace, it wasn't uncommon for eight to ten babies to die every month of malnutrition. After several years of ministry, the health of moms and their infants has improved; last year, no babies in the program were lost. Cooking classes are also offered as part of the nutrition aspect of Tessa Grace as well as dispersing vitamins and supplements for pregnant mothers. Beyond mothers and babies, there is a need for medical aid in other areas. Maternal and child health is not the only aspect affected by poverty in these areas, though it is one of the most significant areas of needed medical care.

Current Medical Care – Nigeria

The two local leaders in Nigeria started the Grace & Knowledge Academy and high school in 2016. About 12-15 mothers and their babies are enrolled in this Tessa Grace Program and they meet weekly for check-ups. Tessa Grace does a nutrition/hygiene lesson where women

are taught basic nutritional, hygiene, and parenting knowledge, and they also do the weekly milk distribution. The Nigeria Sponsorship Program provides the mothers with a week's worth of feeding formula. Only a small number of mothers and their children can be reached in Nigeria. Therefore, a mobile medical clinic in Nigeria would be extremely beneficial.

Current Medical Care – India

CRI is currently providing a minimal amount of medical aid at the partnering location in India. While speaking with the Vice President of Operations for CRI, Jason Pieratt, ongoing health care being provided by CRI was discussed:

“The R. medical camps in India are hosted by Rani Yangad. She is a doctor and was able to offer medical camps in rural areas where doctors rarely visit. In recent months the Indian government has shut down her ability to offer this care - due to politics and their Christian bent in the work. I suspect the door will open again someday; but for the meantime they have spent their energy caring for HIV orphans who live in a home run by a Buddhist. They bring the 30+ orphans milk with the Tessa Grace Miracle Milk in it every day along with fruit and other healthy foods.”

Hitherto, CRI has seen great progress with the medical care that is being provided in India. Pieratt says, “Since starting the program, the children’s health has improved in leaps and bounds with very few deaths. It used to be that there were numerous deaths a year. It is my understanding that there haven't been any since miracle milk started. So, medical care for children via miracle milk, nutrition, and education is full steam ahead.” It is promising to see such immense progress in the medical care provided. This gives good hope for a future mobile medical clinic in India. Though resistance was met when offering medical camps to rural areas there, the care being provided now is substantial and having a huge impact on the community and families.

Meeting reluctance in any of the five countries CRI partners with is not unimaginable. Organizations like CRI must be flexible and willing to make needed changes in order to proceed with work in third world countries. Like the example given above in India, Dr. R had to simply back out of her work in providing medical clinics to rural areas. These clinics will likely carry on someday. It is important to have a mobile medical clinic in design and ready to be implemented when the door opens for CRI to host mobile medical clinics in India once again.

Current conditions support the implementation of mobile medical clinics in CRI partnering locations throughout Africa as well as India. First, medical care is needed in these areas beyond the medical aid being provided by CRI at this time. Mobile medical clinics can provide in-depth medical examinations and an array of different services much needed in the rural communities of Malawi, Mozambique, Nigeria, Uganda, and India. Second, the current medical care being provided in partnering countries by CRI will allow for a smooth transition into the implementation of a mobile medical clinic in these areas. Current medical care would not subside at the execution of the mobile medical clinics. Keeping both, and running them simultaneously, would allow for more people who are in need to be reached and cared for at the necessary level.

Implementing a Medical Program

Given the present conditions in CRI partner countries, there is a clear need for medical aid. The link between income inequality and health disparity is cause for concern which is why a medical program for CRI is particularly reasonable in the developing world. CRI has the ability to decrease the burden of poverty by implementing a medical program.

According to the World Health Organization (WHO), mobile clinics and teams may be some people's only source of health care and the demand for mobile medical clinics is on the rise. The WHO regularly deploys mobile medical clinics to reach people cut-off from access to health care. The WHO's website talks about mobile medical clinics providing care in Ukraine since 2015:

Halyna, 70, cries. She has heart disease, but it is almost impossible for her to visit a doctor. "The clinic is 30 km away, the bus runs only once a day, but even in town there is no cardiologist to consult with," Halyna said. "I cannot afford medicines. We have not received proper health care for more than two years since the conflict started. Without the support provided by the mobile team, I cannot imagine how I would survive."

The World Health Organization continues to work on its outreach of mobile medical clinics. They have affected communities all over the world with their ability to travel to remote locations to provide medical care to those in need.

Mobile medical clinics associated with CRI would be more consistent in the partnering locations and they would develop relationships with local leaders instead of simply bringing in health care providers from the United States periodically. Connections have already been formed in these partnering countries; therefore, implementation of the mobile medical clinics will likely be an easy transition. Regular care will be provided in chosen locations where communities can count on CRI to provide services at allotted times. There will also be emotional and spiritual care associated with CRI, which can be a monumental advantage to an individual in need of care. According to an organization called Marie Curie, "Spiritual needs are connected to physical, emotional and social needs too. Some studies have suggested that spiritual wellbeing may affect suffering" (mariecurie.org.uk, 2019). Spirituality can affect people at any point in their lives. The kind and supportive staff at CRI and in the partnering locations are invested in the people they care for.

A mobile medical clinic is the most basic, yet helpful and underutilized tool that can be offered to people in rural communities in Africa and India. Mobile medical clinics are at the front-line of health care and can intercept many issues that can spiral out of control if not caught early enough. According to Srinivasan, care provided by mobile medical clinics can be considered preventative care, saving money in the long-run by avoiding chronic issues (2015). People in low- middle-income countries, as discussed earlier, do not have the funds for quality medical coverage and lack the access to medical care that they need. Mobile medical clinics bring the doctor to those in need rather than forcing people to the clinics which is often costly and time consuming. A very large number of patients can be seen each day at a mobile medical clinic as well. The goal is to spread personalized medicine to the most underserved communities. This will also be CRI's goal when implanting mobile medical clinics in Africa and India.

A study in India was done by Kojima et al. showing the feasibility of patient-centered mobile medical clinics describing them as, "Successful and acceptable models that can be used to provide quality healthcare to pregnant women in rural and hard-to-reach settings" (2015). When Kojima et al. hosted mobile medical clinics, the clinic consisted of two vehicles that carried staff and equipment necessary to conduct health clinics and education programs (2015). The clinics provided education about general reproductive health, prenatal health screenings, nutritional counseling, HIV testing, treatment for reproductive tract infections, and antiretroviral drugs for pregnant women infected with HIV. These are some of the tests and procedures that will be made available for the medical program that will be implemented with CRI.

An array of medical aid can be offered by a mobile medical clinic. Some of the suggested treatments are talked about by Venkat Srinivasan in *Docs on Wheels* (2015) and will be implemented in CRI's medical program. The mobile medical clinic for CRI should include

taking screenings, primary care, and triage. Immunizations, emergency contraception, blood pressure and blood sugar screenings, tuberculosis tests, and general advice on health care should all be provided at the clinics as well. Patients should be screened for hypertension, depression, and vision problems. They could also give blood samples to get their cholesterol and blood sugar numbers. Advice on diet and contraception would be administered, as well as treatment for minor injuries. It will be primary and preventive care on wheels. Mobile clinics also often offer flu and vaccine shots for adults and children, especially with the recent rise in measles and whooping cough cases (Srinivasan, 2015).

To devise a plan for a medical program in CRI's partnering locations, other organizations will be investigated to use as a model. One such organization that will be used as an example is called Foundation for African Medicine and Education (FAME). FAME was started in 2002 by Dr. Frank Artress and his wife, Susan Gustafson, from the United States. They are based in Tanzania with the goal in mind to advance patient-centered care in rural Tanzania. FAME began in 2005 with a mobile medical clinic, then transitioned into a very developed stationary clinic. Today, FAME provides comprehensive primary care in the outpatient clinic and inpatient hospital, services in surgery, maternal and child health, diagnostics, community outreach, and education and capacity building. CRI's medical program would begin with a mobile medical clinic and potentially advance to a stationary clinic as development progresses, similar to FAME.

During a FaceTime interview with Caroline Epe, one of FAME's in-country coordinators, FAME's mobile medical clinic was discussed. She said start-up funds came from fundraising as well as Frank and Susan's personal funds. Today, FAME is funded through donors and grants primarily. Epe went with the mobile clinics every month for three years. The clinic was based about four hours from the mobile medical clinic location and took a team out

the last week of every month for three years. To choose this location, the co-directors, Dr. Frank Artress and Susan Gustafson, spoke to the District Medical Officer of Tanzania who appointed them to host a medical clinic where it was needed most. FAME had two vehicles at the time, one bus with solar panels for electricity and a smaller car. They would load both vehicles up and travel to the clinic location on a Monday, host the clinic Tuesday through Thursday, and return to base Friday. Prior to the whole team leaving on Monday, an advanced team of two or three people would leave the Friday before to ensure citizens knew the mobile clinic was arriving soon.

At this point, FAME's outpatient clinic had already been established. Therefore, staff could be rotated and there was a base with extra supplies the mobile clinic could return to. They would typically take two nurses, a laboratory technologist, two Tanzanian doctors, one full-time staff as the receptionist, 2-3 translators, and a cook. The mobile medical clinic would use a small building in a remote area during their stay. For the three days FAME provided care, they saw about 100 people each day.

The bus had power which was used for lab equipment, phones, and computers. Any service under the umbrella of primary care was provided, and when a patient could not be treated, they were referred to a clinic that could provide the services needed. Epe said, "There was a high prevalence of STDs, infections, intestinal parasites, and diarrhea, and we basically deformed everyone who came to the clinic." According to Caroline Epe, they would bring rapid tests, including rapid malaria and pregnancy tests. They always had equipment for the occasional emergency wound-care they needed to provide. They also had a microscope which meant they could collect urine and stool samples to observe under the microscope. The mobile medical clinic also had a variety of medications supplied by a local pharmacy. Most, if not all medical

supplies, were bought in country rather than bringing them from the United States. Epe emphasized the importance of having local connections to know what to do when you had to refer patients elsewhere. Epe also talked about the difference in medical care provided compared to the United States:

“People were always treated who were far sicker than you could imagine. You know, patients would be coming in with full-blown pneumonia. One time a patient had an HB of 2.5. Frank said in the U.S., this person is in the ICU getting a blood transfusion.”

Epe said that there was a consultation charge for individuals 18-55 years old. The charge was typically equivalent to \$1 and would cover all medical treatment. Children and those above 55 years old were treated for free. The clinic ran from about 9 am to 4 or 5 pm and if all the patients did not receive care, they were triaged and asked to come back the following day. The mobile clinic was very consistent in its visits and Caroline said, “Still, at the end of our three years doing mobile medical clinics, we learned something new every month about how to provide better care.”

CRI’s mobile medical clinics will consist of these amenities and potentially more. The clinics will need to be flexible in services offered in order to accommodate the needs of citizens in rural communities. If more services are needed, CRI’s clinics will be equipped with the supplies necessary to deal with issues that come up without notice. If less services are needed, downsizing may certainly occur.

Implementing mobile medical clinics will look slightly different for each country. Mozambique would be the most feasible place to start a medical program due to its current clinics that are providing some medical aid through Tessa Grace. CRI will ultimately send a staff member to meet with the local leaders in each potential partnering country. Medical needs will be discussed, and different options will be investigated. A local health care provider will need to

be identified and able to participate in the mobile medical clinics when the short-term teams visit from the United States. Implementation will occur with the local leader's approval. The staff member will return to the United States to develop the team that will provide medical aid abroad. Short-term medical mission teams will be designed and the size of these will depend on the location being visited and needs being addressed.

Currently, CRI is funded primarily by donor support. The medical program will utilize similar methods. The majority of funding for the mobile medical clinics will be from donations. There are also grants available that support medical mission work around the world. Local clinics and hospitals in the United States often donate medical supplies and equipment to medical missions as well, which will tremendously contribute to supplies. CRI will also ask international governments in partnering locations to subsidize certain medical costs such as HIV/AIDS treatment. Because of the dependency on local leaders for implementation, meetings and discussions will need to occur prior to the planning of time frames for setting up the first medical clinic. Frequency of short-term teams will need to be discussed and decided on. Time frames will depend on the country being visited.

The Future of CRI's Medical Program

After a substantial amount of time providing medical care through the mobile medical clinics to establish personnel, future goals for CRI include a stationary clinic in each partnering location. If the need is still there to provide mobile medical clinics to reach the most remote areas, this service will be continued along with the building of a primary stationary clinic. The clinics should be located in rural communities in order to ensure access to care for those most in need. FAME will once again be used as the model for CRI's future. Each stationary clinic will be able to provide much more in-depth medicine, including an outpatient clinic and inpatient

hospital, surgery, maternal and child health, diagnostic services, community outreach, and education and capacity building.

The first innovation following the mobile medical clinics will be a stationary outpatient clinic. At FAME's outpatient clinic, doctors treat acute respiratory infections, pneumonia, hypertension, gastrointestinal disease, skin infections, urinary tract infections, diabetes, ear infections, and sexually transmitted diseases in children and adults (fameafrica.org). They also treat burns, wounds, and minor injuries. CRI's medical clinics will strive to meet the needs of rural communities and provide needed health care to the poorest. Expansion of the clinics and hospitals will take time and funding. The next step is an inpatient hospital. This infrastructure will be built near each other, expanding but keeping services in close proximity.

FAME's inpatient hospital consists of a 14-bed inpatient ward, a 9-bed maternity ward, two delivery rooms, an emergency room, night clinic, two operating rooms, and a recovery room. The inpatient hospital will be dynamic and responsive to patient needs. Number of rooms (surgical, maternal, delivery, emergency, recovery) in each hospital will depend on the country of operation. Needed surgeries will be accommodated for and maternal and child health needs will be assessed. A laboratory and diagnostic services will be provided eventually. Drawing blood and having the means to digitally capture images of patient blood smears, can be a huge asset. Community outreach is important to inform locals what there is to offer at the hospital and clinic. This will expand the number of lives touched by medical care in rural areas.

Education and capacity building are two of the most critical aspects that will be implemented with clinics and hospitals built for CRI's medical program in the future.

“Continued medical education allows practitioners to learn and discover viable ways to improve on the patient care they deliver and effectively manage a career in the ever-changing landscape

of the medical industry” (Swanson, 2014). Capacity building will be important in providing the necessary care to the array of patients who come to the hospital for treatment. FAME takes a four-pronged approach to continuing education, including a rigorous on-campus training program, an overseas medical volunteer program, an online specialty consulting program, and a selective scholarship program for FAME employees (fameafrica.org). A similar approach will be taken by CRI when implementing education and capacity building for a future stationary medical clinic, a vital aspect to making progress.

Building and providing these services will be amazing for CRI’s partnering locations. FAME is also a non-profit organization like CRI and the costs for reduced rate or free treatment are subsidized by a combination of donations, grants, and higher fees for patients from certain categories (e.g., insured Tanzanians, expatriates living in Tanzania, and tourists) (fameafrica.org). CRI’s medical program will be ran via similar financial methods for future medical clinics as well as the mobile medical clinics. Financial records will be kept and filed so assessments can be done, and improvements can be made.

Conclusion

CRI’s current partnering locations throughout Africa and South Asia are impoverished. Data from these countries shows the considerable lack of health education and health care throughout. The link between poverty and health is a contributing factor to these health deficits and medical care is a huge need throughout these communities, especially the rural parts of Africa and South Asia. CRI currently has no medical program associated with it but has the means to implement mobile medical clinics to provide critical health services and combat poverty in the several areas throughout the world. Mobile medical clinics take the doctor(s) to

individuals who have little to no access to medical care and provide first-line health to those in need.

Designing and implementing the mobile clinics will depend considerably on local leaders in partnering countries to ensure needs that are specific to certain areas are met. Other non-profit medical organizations, such as FAME, will be used as a model for creating CRI mobile medical clinics in each partnering location. Providing health care to remote areas in Africa and South Asia would be a tremendous benefit to these places, where physician density is lacking and maternal and infant mortality rates, HIV/AIDS prevalence, and percent of children under the age of five who are underweight is extremely high. CRI strives to take the Light of Christ to the poor, therefore, designing mobile medical clinics will fit with CRI's agenda, lessening the burden of poverty and taking physical and emotional treatment to those in far reach and in dire need.

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