Implications for Incentivizing Health Outcomes in South Sudan: An Assessment of a Results-Based Financing Project in the Jonglei and Upper Nile States

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Abstract

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With few national resources, poor health outcomes, and a dire need for increased financial commitments to the Ministry of Health, South Sudan has turned to international donors to support and grow their health system since independence in 2011. While sustainability and country ownership are ultimate goals, a weak economy, tenuous political leadership, insufficient infrastructure, and a feeble health services workforce have created a multitude of opportunities for the international community to offer assistance. The introduction of innovative financing mechanisms since the inception of the Millennium Development Goals in 2000 has attempted to improve both health outcomes and health systems simultaneously.

IMA World Health first implemented the Rapid Results Health Project (RRHP) in South Sudan in 2013 in an effort to improve health outcomes among the 3.3 million people throughout the Jonglei and Upper Nile states. RRHP introduced results-based financing (RBF): a mechanism used to provide the healthcare workforce with financial incentives to increase and improve their health service provision by achieving key performance targets.

Keeping in line with the limited and inconsistent literature on RBF, an assessment of RRHP data showed inconsistent results across multiple indicators used to measure project management and health outcomes. Despite the inability to draw any statistically significant conclusions from the available data, the Rapid Results Health Project presents many learning opportunities for current and future results-based financing initiatives. Because effective, innovative health financing is a critical aspect of health systems strengthening, continued and improved monitoring and evaluation of results-based financing initiatives can have a strong impact on the future of public health.

Cover Page

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CHAPTER 1: INTRODUCTION

South Sudan

After more than 40 years of civil war, South Sudan declared its independence from Sudan in 2011. Years of ethnic tensions, competition over oil, – the country's most valuable natural resource – and the formation of a rebel army – the Sudan People's Liberation Army (SPLA) – led to a transformation in Sudanese leadership and the establishment of a comprehensive peace agreement in 2005. The SPLA led its own autonomous government until a transitional constitution for South Sudan was ratified in 2011. SPLA leader Salva Kiir Mayardit served as the new nation's President, while Riek Machar was appointed Vice President. The newly established and internationally recognized Government of South Sudan, with the guidance and assistance of much of the international community, had to develop a way forward for its people and their fragile state.

Over the decades of civil war, the country and its people were ravaged: millions of people were displaced, poor infrastructure was weakened even further, and governance was lacking. Resilient and intentional leadership was needed to guide the country to a state of development and security; however, the initial appointed leadership did not address the historical effects of ethnic tensions. In two short years, President Salva Kiir – an ethnic Dinka, the country's largest ethnic group – removed Vice President Machar – of the Nuer community, the second largest ethnic group – out of fear of an attempted overthrow. Tensions within the new country escalated, political allegiance was lost, and thousands were killed in the resulting conflict.

The civil war had devastating effects on the country, especially as many of the international aid workers fled their posts for safety, but the progress made throughout the South Sudanese health system before 2013 should still be acknowledged. In less than five years, the South Sudan Ministry

of Health made significant achievements. A Health Sector Development Plan for 2011 – 2015 was created with a goal "to improve access, quality and utilization of Health Services and to strengthen Health Sector Systems, including organizational, management, and wider Institutional issues" (Ministry of Health, 2011; WHO). A Human Resources for Health (HRH) strategic plan was established for 2007 – 2017, which led to the draft of a national HRH policy for 2011-2015 (WHO). Despite the development of an HRH plan, however, the WHO reports that only 55% of 57 countries that are facing a health workforce crisis report implementation of their national plan (WHO).

At the time of national Independence, due to the inevitable political turmoil within a post-conflict nation, non-governmental organizations (NGOs) - both faith-based and international - comprised the majority of health care employers in South Sudan (WHO). There was little coordination between NGOs and the government, especially because of the serious absence of government resources for health (IMA). In response, in 2012, the Ministry of Health (MoH) launched a primary health care (PHC) program to streamline donor support and service provision (IMA). The MoH instituted a "one donor per state" approach wherein each major donor was required to support all health facilities within a geographic region, including public facilities (IMA). Therefore, the World Bank, USAID, and Health Pooled Fund (HPF) worked with the South Sudan MoH to provide health system strengthening support through service provision, health worker capacity-building, technical assistance, and donor/data reporting.

Despite improved coordination between donors, NGOs, and the Ministry of Health, South Sudan still suffers from a weak health system. Moreover, the already-poor health outcomes of South Sudan's 12 million citizens were exacerbated after decades of war. The majority of the South Sudanese population lack access to quality care. The physician density is unsustainably low at just

one physician per 65,574 population (WHO). There are just 47.6 nurses and midwives per 39,088 population, which may help to explain why South Sudan has the worst maternal mortality ratio in the world at 789 deaths per 100,000 live births (CIA; WHO). The infant mortality rate is also dismal at 66.39 deaths per 1,000 live births, ranking 16th in the world (CIA). An infant mortality rate that is slightly better than the maternal mortality rate can be indicative of a potential for improvement in maternal health, but it may also be indicative of a cultural preference for infant health over reproductive health. Regardless, there is much room for improvement among both vulnerable populations.

As a possible response to years of civil conflict and especially high mortality rates among the population, South Sudan's fertility rate is 4.9 (WHO). A high fertility rate coupled with impressive and ongoing migration into the country leaves South Sudan with the highest population growth rate in the world at 4.02% (CIA). Furthermore, the contraceptive prevalence rate – defined as the percentage of women ages 15-49 who are practicing, or whose sexual partners are practicing, any form of contraception - in the country is just 4% (World Bank, 2010). High fertility rates and a low contraceptive prevalence rate may help to explain why nearly half (42%) of the population is under the age of 15 (WHO). A younger population, despite its implications for a stronger future, presents a host of complications to the caretakers in the country, both older generations and those in the health workforce. The health of children under five is of particular importance given the uniqueness of the first few years of human development.

Approximately 95% of the country is malaria endemic (Malaria Consortium). 20-40% of all health facility visits in the country can be attributed to malaria, in addition to 30% of all hospital admissions (Malaria Consortium). Malaria is a leading cause of death overall and the leading cause of death in children under five years of age (Malaria Consortium). Additionally, 27.6% of children

under-five experience malnutrition, further exacerbating the deadly effects of malaria in the country (CIA).

As can be expected from years of civil conflict and a devastated social structure, the quality and availability of education has been inconsistent. In 2009, only 27% of the population over the age of 15 could read and write (CIA). Moreover, just 16% of women were literate (CIA). Low literacy rates have serious implications for the future of the country. The health workforce has a strong need for educated, literate individuals to supply critical health information to its patients; however, low literacy rates make it difficult to recruit and train qualified individuals. In 2013, health expenditures in the country were only equal to 2.2% of GDP, which is estimated to be just two thousand USD per capita (WHO). Constant disruption and turmoil in the country, in addition to ongoing tensions with Sudan, have prevented steady access to the country's oil reserves, which are the principle source of revenue for South Sudan. The oil reserves are partially located in what is now the Upper Nile state. Limited natural resources, weak infrastructure, and a mostly illiterate and unskilled workforce prevent the country from improving their economy. Moreover, with more than 50% of the population living below the poverty line, the financial effects of a health shock - or even just the cost of basic primary care services - can be financially devastating, further preventing Sudanese from accessing care.

With such few national resources and a dire need for increased financial commitments to the Ministry of Health, South Sudan has turned to international donors to support and grow their health system. While sustainability and country ownership are ultimate goals, a weak economy, tenuous political leadership, insufficient infrastructure, and a feeble health services workforce have created a multitude of opportunities for the international community to offer assistance. Assistance is appreciated in such a tumultuous time but it also creates tension between the newly established

government that is working to assert its authority and the experienced donor community. One report about the state of aid in the country stated, "Donors complain that the [Government of the Republic of South Sudan] and the [Ministry of Health] demand ownership of the health system without accepting the responsibility that comes with it" (Downie, 2012). Improved coordination among stakeholders is critical for the development of South Sudan.

Results-based Financing

Results-based financing (RBF), also referred to as performance-based financing (PBF) or pay for performance (P4P), has been defined as "any program that transfers money or goods to either patients when they take health-related actions or to healthcare providers, when they achieve performance targets" (Morgan). For the sake of consistency and to assert a focus on the sustainability of health systems, this paper will focus on the incentives directed toward healthcare providers and organizations, rather than patients.

The expectation of RBF is that financial incentives will allow market mechanisms to alleviate poverty, increase access to health services, and improve the quality of care thereby improving health outcomes and creating sustainable, responsive health systems (Grittner, 2013). To address the difficulties of implementation, RBF schemes often involve regular and timely monitoring and reporting, technical assistance, and suggested corrective and/or punitive actions if targets are not met. The introduction of the Millennium Development Goals set forth clear targets for the global health community, but after ten years of implementation and unmet goals, it was evident that more specific goals would need to be introduced: to continue to improve upon MDG progress, but to strive toward more concrete targets. Thus, the Sustainable Development Goals (SDGs) were introduced in 2015.

While the SDGs present more specific targets, they have also been criticized for being more diffuse than their MDG predecessor; only time and increased monitoring will determine whether the SDGs serve to benefit global health outcomes. Global goals for improved health and well-being not only serve to prioritize health care delivery services, but they also help to the international aid community to prioritize funding for certain goal-oriented health outcomes. The justification for financing health systems has relied primarily on funding inputs rather than funding to improve outcomes. With the introduction of results-based financing, donors are pushing for increased efficiency, enhanced transparency, and improved outcomes. Furthermore, the introduction of the word "Sustainable" in the new set of Development Goals implies that there is a push toward country-leadership in health, justice, and education systems, as well as energy and economic policies. Results-based financing has the potential to improve health systems, healthcare efficiency, and coordination between donor agencies, non-governmental organizations, and the aid recipient's government, thereby stressing the role of country-led initiatives.

Despite widespread implementation of RBF across many low- and middle- income countries, there is limited data to suggest its widespread effects. Initial RBF experimental pilot successes in Rwanda and Haiti encouraged donors to pursue an incentive-based scheme, providing more measurable programming and encouraging innovative health systems reform. The Deputy Director for Global Health Delivery at the Bill & Melinda Gates Foundation, Dan Kress, claimed, "We are cautiously optimistic that these innovations can improve utilization, and improve working conditions of health care providers, all of which can improve health care outcomes for the poor" (Morgan). Kress' caution may prove valuable as evaluations of various RBF programs continue to show mixed results.

IMA World Health

IMA World Health (IMA) is a faith-based NGO headquartered in Washington, DC seeking "to build healthier communities by collaborating with key partners to serve vulnerable people". They were founded in 1960 as the Interchurch Medical Assistance, Inc. at the behest of six Protestant mission boards. The non-profit organization currently has projects in over twenty countries throughout the world, each with a unique project goal, but all with a shared vision of "Health, Healing and Well-Being for All".

IMA has been working in the region currently known as South Sudan since 2008, before independence, to help strengthen the country's health system, provide primary health services, and support emergency relief efforts. The Republic of South Sudan is divided into ten states, each with its own division of counties. There are 95 counties throughout the country. IMA World Health works specifically in Jonglei and Upper Nile states which comprise approximately 25% of the country's population. Jonglei and Upper Nile, located in the Northeast of the country, are large states with severe geographical and weather-related hardships [*Figure 1*].

The financial support for the majority of IMA's work in South Sudan comes from the World Bank, the primary Donor for the health systems in the Upper Nile and Jonglei states. This funding is channeled through the Ministry of Health through a contractual agreement, offering a practical solution to the previous challenge of convincing NGOs to communicate directly with the MoH, who had been removed from the Donor-NGO relationship despite its critical role in the health system. Other states' health systems are funded directly by USAID and DFID through the Health Pooled Fund [*Figure 2*]. Each Donor is responsible for coordinating with and disbursing payment to a "Fund Manager" which oversees the work of county-level NGOs. As the Fund Manager for Upper Nile and Jonglei, IMA oversees over twelve NGOs throughout the 24 counties

in their two states [*Figure 3*]. The "foundational tasks" of the Fund Manager – as implemented through the NGOs – are three-fold: health systems strengthening, health service delivery, and health promotion.

One of IMA's first efforts to establish a stronger health system was the introduction of salary harmonization between government- and NGO-led health facilities. MoH-paid government staff salaries were decreased while most NGO-paid health care workers' salaries were increased, in order to reduce pay disparities and improve pay equity across the country's health facilities. Despite initial resistance, both parties allegedly welcomed the salary harmonization. The government-paid workers, who would be receiving less income, accepted the lower wage in exchange for the promise of being paid in a timely manner, rather than continuing to wait for months at a time for inconsistent payment from the government.

Rapid Results Health Project

The Rapid Results Health Project in South Sudan has been implemented throughout 18 of the 24 counties to help the 3.3 million people living in the Jonglei and Upper Nile states by providing the healthcare workforce with financial incentives to increase and improve their health service provision. Funded by the World Bank, IMA World Health serves as the Fund Manager for each of their two designated states, coordinating with various NGOs who serve as county-level health system liaisons. Each NGO works with approximately 7 - 25 health facilities per county [*Table 1*].

RRHP was introduced in January of 2013. The World Bank introduced top-level program indicators in order to set their own project objectives. These indicators trickled down to the Fund Manager, NGOs, and Health Facilities, creating a four-tier project with five shared indicators at each level. Performance-based contracting was utilized to ensure timely and accurate data

measurement and coordination between each level of the project. Furthermore, meeting the targets set forth for each indicator was essential for the disbursement of incentives within the Health Facilities.

The Rapid Results Health project has multiple project activities, including health service delivery throughout 284 facilities, health systems strengthening through County Health Departments across 24 counties, and health promotion by prioritizing life-saving preventive health measures such as vaccination, antenatal care, provision of vitamin A, HIV/AIDS screening, and the distribution of long-lasting insecticide-treated bed nets. Despite their comprehensive set of activities, this thesis will focus specifically on the results-based financing and performance-based contracting facets.

Problem statement

As a new, post-conflict nation, South Sudan faces immense obstacles in establishing a stable, country-led, effective health system. With limited resources and weak political leadership, multiple international non-governmental organizations have established themselves as a consortium of humanitarian aid in the country. Innovative financing mechanisms are encouraged to promote country-ownership and improve health outcomes. The introduction of an incentive-based financing system throughout the health facilities of the Upper Nile and Jonglei states presents unique opportunities and possible challenges for health care workers, who confront the incredible health burdens of the South Sudanese, especially among women and children.

Purpose Statement

An evaluation of results-based financing efforts in the Jonglei and Upper Nile states of South Sudan will help to provide critical information to those invested in the South Sudan health system, by assessing the program's impact and analyzing its implications.

Research Questions

1.) Does results-based financing, as implemented by multiple NGOs and managed by IMA World Health, have an effect on health outcomes throughout the Upper Nile and Jonglei states of South Sudan?

2.) What trends can be identified across the counties of the Upper Nile and Jonglei states in South Sudan, based on data collected from the results-based financing efforts implemented by various NGOs?

Significance Statement

Since the inception of the Millennium Development Goals, results-based financing (RBF) for health has been introduced as an innovative mechanism for funding developing health systems. Offering critical funds for targeted health outcomes rather than resources or outputs presents unique implications for health systems strengthening. Evidence in support of results-based financing schemes could seek to improve health care efficiency, equality, and sustainability; however, the public health community currently lacks the necessary evidence to make strong policy or program development recommendations to potential financing institutions and Ministries of Health. A review of the available evidence and analysis of a current RBF program can help to make the case in favor or opposition of continued incentive schemes.

Definition of Terms

- **ANC 1:** an indicator used to measure the number of women accessing at least one antenatal care visit during pregnancy
- **Cur U 5:** an indicator used to measure the number of children under the age of five who are accessing curative care
- **DPT3**: an indicator used to measure the number of children receiving the Diphtheria-tetanus-pertussis immunization
- **MoH:** Ministry of Health, a health department that is part of the government and seeks to maintain or improve the health of the country's citizens
- **MDG:** Millennium Development Goals; a set of eight anti-poverty targets that the world committed to achieving by 2015
- **NGO:** Non-governmental organization, any formal institution that is not managed by a government official, but has a shared mission
- **P4P:** Pay-for-Performance, an alternative term for "Results-based financing"
- **PBC:** Performance-based Contracting; a method of contracting method that ties a contractor's payment or contract renewal on the results, outputs, quality, or outcomes associated with their performance standards
- **PBF:** Performance-based Financing, an alternative term for "Results-based financing"
- **QSC:** Quality Supervisory Check; an indicator used to measure whether or not a given health facility fulfilled and met the requirements for a quarterly quality supervisory visit
- **RBF:** Results-based Financing; "any program that transfers money or goods to either patients when they take health-related actions or to healthcare providers, when they achieve performance targets" (Morgan)
- **SDG:** Sustainable Development Goal; a set of 17 goals to end poverty, fight inequality and injustice, and tackle climate change by 2030
- **UHC:** Universal Health Care; a formal system which provides health care and health-related financial protection to all citizens of a given country

CHAPTER 2: LITERATURE REVIEW

Background

Unmet global public health goals of universal health care, sustainable country-led health systems, and reductions in poverty have led to a surge in innovative health financing mechanisms over the past few decades. The Declaration of Alma Ata in 1978 created great momentum around achieving universal primary health care for developed and developing countries alike. However, dialogue shortly after Alma Ata reconsidered the feasibility of financing universal primary health care. An alternative push for selective primary health care led to a prioritization of specific health indicators and outcomes targeting the largest health disparities globally. The selective primary health care focus became the dominant approach over the next twenty or more years. The financing of selective health care is focused on achieving specific and measureable targets related to the improvement of quantifiable health outcomes. In response, governments, civil society organizations, and international financing institutions such as the World Bank have funded projects linked to specific health outcomes. Despite major successes in some areas – like HIV/AIDS prevention and access to clean water – there has been a clear lack of investment in comprehensive health systems.

Innovative financing mechanisms have recently begun attempts to address both health outcomes and health systems simultaneously. A focus on improving access to services, the quality of care, and the allocation of resources concurrently may address some of the shortcomings experienced throughout recent RBF projects, preparing Ministries of Health to maintain control of their country's health system while consistently improving health outcomes.

Effects on Maternal and Child Health

Because of the clearly defined targets and measurable outcomes associated with maternal and child health, in addition to the strong emphasis and momentum provided by the Sustainable Development Goals and Millennium Development Goals, many of the results-based financing efforts in the last five to ten years have been focused on maternal and child health, specifically related to vaccination rates, antenatal care visits, the presence of skilled attendants at childbirth, and adequate treatment of children born to HIV+ mothers. Despite inconsistent results, results-based financing has proven to be somewhat effective in improving indicators related to maternal child health and offers motivation for continued evaluation.

A controlled before and after study conducted in Tanzania from 2012 – 2013 noted a significant positive effect on two of eight targeted indicators: institutional deliveries among women in the intervention area, and the provision of anti-malarial drugs during pregnancy (Borghi et al., 2013). Similarly, a pilot study conducted in Yobe Sate, northern Nigeria found that performance-based financing led to increased utilization of antenatal care and skilled delivery, but did not have a significant effect on MMR vaccination rates (Ashir, Doctor, & Afenyadu, 2013). Another mixed methods evaluation of a midwifery incentive scheme in Cambodia found that facility deliveries increased from 19% of estimated births to 57% from 2006 to 2011. This increase was more substantial at health centers than hospitals. Linear regressions also showed that the presence of skilled birth attendants at deliveries increased by 10% (Giller et al., 2015). An analysis of the effects of PBF on maternal and child health services in Cambodia between 2000 and 2005 found that the volume of maternal, neonatal, and child health services was significantly boosted. Strengthened financial and operational management, due in part to effective technical assistance, was also observed (Matsuoka, Obara, Nagai, Murakami, & Chan Lon, 2014).

An equity analysis of performance-based financing in Rwanda found that the probability of a facility delivery in a district that had adopted PBF increased by 10% when compared to the control districts. In contrast with the aforementioned studies, no significant effects were noted for antenatal care visits or modern contraceptive use. The researchers also claimed that extreme gaps in equity – in access to care based on geographic location and the disparity of resources between facilities – also limit the effects of equity targets (Priedeman Skiles, Curtis, Basinga, & Angeles, 2013).

Despite its limited successes in addressing issues that directly concern maternal and child health, a question that remains is whether RBF initiatives can be replicated successfully in any context. There is limited research on the influence of government policies, civil conflict, and cultural barriers on the effects of RBF in various low and middle-income countries.

Does Context Matter?

Much of the initial RBF success was noted in Rwanda, a country that had significant political, structural, and cultural obstacles to overcome after the genocide in 1994. While the country was primed for change and investment, it is important to understand its healthcare successes within its unique political and cultural context. In the many evaluations of Rwanda's RBF programming, few acknowledge the political climate. The country faced immense external pressure to reinstate a stable, trustworthy government. In an effort to improve the social welfare in the country, the Rwandan Ministry of Health helped to set the indicators used to measure pay-for-performance (P4P) progress. These indicators were set with national priorities and budgets in mind. Increased accountability at all levels of the health system, fiscal decentralization and a subsequent shift toward health facility autonomy, and decreased financial risk for Rwandans through subsidized insurance schemes helped to create an atmosphere ripe for health system

strengthening (Sekabaraga, Diop, & Soucat, 2011). Strong leadership and rigorous transparency measures were critical to gain the trust and improve the wellbeing of the Rwandan people. Results-based financing has been described as "more of an agreement between countries and donors than a prescription on what countries should do," allowing governments like Rwanda's to set goals and manage expectations within their health system while also facing the external pressures to improve their governance and transparency (Morgan).

In the Democratic Republic of the Congo, one study acknowledged the important role of donor institutions in the fragile state, but it highlights the detrimental effects of a fragmented international aid community on the future of the country's own health system. The article suggests that post-conflict states present a unique opportunity for donor innovation and a much-needed platform for investment; however, the study found no evidence of benefits of paying for performance as it relates to service inputs, processes or measured outputs (Fox, Witter, Wylde, Mafuta, & Lievens, 2014). An earlier performance based financing experiment in the Democratic Republic of Congo found improvements in three of the study's seven indicators - "the proportion of people with a disease episode who used a modern health facility," "households having at least one bed net," and the "vaccination composite score for children under age one" - but these findings were not statistically significant (Soeters, Peerenboom, Mushagalusa, & Kimanuka, 2011). The two significant study results included an improvement in childbirths in a health facility for the control group and an improvement in knowledge about HIV/AIDS in the study group (Soeters et al., 2011).

An additional observation among the earlier DRC study was enhanced transparency and reduced corruption in the study areas introduced to a performance-based financing initiative,

suggesting that RBF efforts may be effective beyond improving health outcomes in post-conflict nations that are still reeling from a national tragedy (Soeters et al., 2011).

A 2011 review of PBF approaches suggests that researchers should focus on how and why interventions work in various settings. Furthermore, the authors state their concern about the limited number of studies that have looked at the possible side effects of PBF (Ireland, Paul, & Dujardin, 2011). Because PBF is a new tool for achieving and measuring health outcomes, longitudinal studies do not exist. Further and continued research is needed for ongoing assessment of its short term and, more importantly for the sake of a sustainable health system, long term implications.

How is Effectiveness Measured?

Of the few studies that have analyzed the effects of RBF on maternal child health indicators, a variety of analysis methods are used. As RBF is not a uniform intervention, different analysis methods are required from the varying types of data collected within each program. Limited, inconsistent data and a multitude of analysis methods make comparison difficult, if not impossible. A 2013 Cochrane review's assessment of the current evidence on the effects of paying for performance found that drawing general conclusions about the overall effectiveness of RBF is not possible (Witter, Fretheim, Kessy, & Lindahl, 2012). There is a clear need for more consistent and rigorous research.

Effects on Quality

Critics of RBF discredit the provision of incentives for healthcare workers, as their intrinsic motivation to provide quality services to patients may diminish (Morgan). Furthermore, critics worry that a focus on specific health-related targets rather than holistic healthcare might lead to a neglect of non-incentivized important health services (Morgan). Quantity of health services does

not imply quality of care, especially when the quantification can lead to misreporting and corruption.

Few research efforts have addressed the issue of quality, but one case-control study in Egypt did claim significant improvements in the quality of family planning, antenatal care, and childcare services. Findings were collected from women seen in clinics where the incentive payment scheme had been implemented. The study suggests there may have been external influences, other than financial incentives, on the providers, but the research does not analyze that claim in depth (Huntington, Zaky, Shawky, Fattah, & El-Hadary, 2010). For future RBF projects to improve the quality of care provided, further research should be done to measure the changes in quality over the course of implementation. Both qualitative and quantitative data will be important for those looking to capitalize off of current and past projects.

Sustainability

Results-based financing has been lauded as an effective tool for achieving universal health care: by increasing the efficiency of healthcare workers, allocating more resources for healthcare facilities, and increasing the financial flow within the health system while reducing the financial burden on patients (Meessen, Soucat, & Sekabaraga, 2011). Since 2007, the World Bank – one of many funders supporting RBF efforts – has disbursed more than 396 million USD into programming and evaluation (World Bank). While some success has been achieved with this investment, the financial sustainability of the programs is questionable. Have healthcare organizations earned enough revenue or cash flow via incentives to improve the quality of their services, strengthen their health system, and achieve gains in health status to continue *without* the continued financial support of aid agencies?

One qualitative study on the effects of paying for performance in Tanzania concluded that despite improved outcomes, P4P payments were not actually based on performance. The researchers concluded that the inequity of the payment system was due to a lack of resources within the District Administration: one study participant claimed that improved motivation to increase health facility deliveries did not equate to more or better equipment to provide those services (Chimhutu, Lindkvist, & Lange, 2014). While results-based financing may have an effect on service provision, the need for improved resource allocation should not be ignored, especially in more rural and poor areas.

A review of Rwanda's health financing policies, including RBF, between 2000 and 2007 found that utilization of health services increased while out-of-pocket spending, especially catastrophic expenditures, decreased. The authors recommended further impact evaluations to assess the effects of financing policies on the poor (Sekabaraga et al., 2011). Additionally, data from 217 health facilities in Haiti in 2010 was collected to assess the impact of performance-based incentives on indicators relating to maternal and child health, HIV/AIDS, TB, and service quality. The results indicated that PBF was associated with a 39% increase in primary health care services, particularly for pregnant women and children under one year of age, over three years. Moreover, the study also assessed the impact of PBF along with technical assistance support. The results indicated that PBF and TA support contributed to an increase in PHC services of 87% (Zeng, Cros, Wright, & Shepard, 2013). It is clear that technical assistance is beneficial, if not necessary, for sustainable PBF programming, but at what additional cost?

Based on the existing literature, one might conclude that there is a dearth of evidence on the monetary benefit of the financial investment over time. Improved health outcomes are currently being attributed to the improved effort of health workers, which is ultimately – arguably –

strengthened via financial incentive. If the financial incentive were removed after the project sustains improved health outcomes, it remains to be seen whether health worker performance would remain the same.

Equity Weights in the Nigeria State Health Investment Project

The Nigeria State Health Investment Project (NSHIP) was implemented in three Nigerian states – Adamawa, Nasarawa and Ondo – in 2012, thanks to the financial investment of over 150 million USD from the World Bank (World Bank, 2012). NSHIP is unique in that the design of the program's incentive structure includes weights used to measure progress, as determined by the relative importance of national health priorities and the burdens of disproportionate access to healthcare across various regions and health facilities. These equity weights are an important factor of this program; however, there is very little published research on their effects.

Though RBF offers innovative and unique means to increase access to quality health services, it also presents numerous opportunities for compromised service delivery and/or fraud. To address these possible limitations, NSHIP has also implemented data verification and counter-verification procedures, in addition to penalties for clinics or technical support staff who report discrepant data (Nigeria Federal Ministry of Health). In addition to the equity weights, the verification procedures of NSHIP make the program especially unique and comprehensive.

There does not appear to be a published review or evaluation of the NSHIP RBF project to date; however, the World Bank has reported that after the first two attempts to scale up the pilot project, uptake of services – especially core maternal and child services – has increased. The change in immunization coverage from pre-pilot rates to after the first phase of scale up shows an increase from 5 percent to 44 percent. Despite alleged success, the questions that remain – for NSHIP as well as other RBF initiatives, however, are 1) whether RBF is worth the financial

investment, 2) if quality of services has improved, and 3) how well the projects will transition to country-ownership. Further research should be done to assess the cost-benefit, quality improvement, and sustainability of RBF projects against their health outcomes measurements.

CHAPTER 3: METHODOLOGY

From January 2013, data were collected at four different levels throughout the Rapid Results Health Project. Data were collected at individual health facilities to track client visits, immunization coverage, patient satisfaction, equipment and medication availability, and other health outcome-related metrics. Data from each health facility within a given county were collected by the respective county's NGO liaison. In Upper Nile and Jonglei, there are anywhere between 12 – 15 different NGOs managing county health systems during any given quarter [*Table 5*]. Quarters are equal to three months and begin in January of 2013 [*Table 2*]. Each NGO aggregates the data from the health facilities within their county and reports the county-level, aggregated data to IMA World Health.

Because IMA serves as the Fund Manager for the World Bank in the Jonglei and Upper Nile states, IMA sets thresholds for each NGO as an additional motivator to meet certain indicator targets tracked by the World Bank. Together with the Ministry of Health, baseline measurements and target goals were set for five indicators: 1) the number of children receiving DPT3 (DPT 3); 2) the number of women accessing at least one antenatal care visit (ANC 1); 3) the number of health facilities who report within the required time frame; 4) the number of children under the age of five who are accessing curative care (Cur U 5); and 5) whether or not a given health facility fulfilled and met the requirements for a quarterly quality supervisory visit. Each health facility in the county was to be assisted with the same level of technical assistance, health services were to be co-managed with the County Health Department, and the project indicators were to be identical across each state (IMA).

Each indicator is weighted equally at 20%. Each indicator has a specified target (a percent of the total relevant client population) that must be met or exceeded each quarter. If all five targets

are reached across a given county for a specified quarter, the lead NGO for each county receives the full 5% of the quarter's budget that was withheld by IMA at the start of the quarter. If any fraction of the five targets is met, a proportional amount of the 5% is paid to the county. For example, if three of the five target indicators are met in a given quarter, 60% of the 5% - or 3% - of the withheld reimbursement amount will be disbursed to the county. The disbursement amount – if the targets are met – is used to improve health outcomes, but also to increase available health services resources. If the targets are not met, the 5% hold back amount is not given to the NGO. This punitive motivation is implemented through a performance-based contracting (PBC) process between IMA and their implementing NGOs.

It should be noted that despite the overall performance in the county, each health facility should receive an incentive based on its above-target performance. The incentives offered or received at a health facility do not necessarily correlate with the 5% reimbursement offered at the NGO level. For example, if a given county does not meet its target for overall performance in a given quarter, the county will not receive the 5% that was withheld from that quarter's budget; however, within the same county, if an individual health facility *does* reach its goal, they will still receive the incentives they earned based on their facility's performance. This distinction is important to acknowledge, as NGO-level performance may obscure facility-level successes and/or failures in their implementation of RBF.

To assess whether an indicator has reached the Pass or Fail threshold for the quarterly disbursement calculation, the % Achieved (the number of clients served over the total number of available clients) in a given quarter is measured against the % Target. If a county has met or exceeded its % Target, it receives a passing mark of "1". If a county does not meet its % Target, it receives a failing mark of "0".

To track overall trends by county for Quarters 1 – 6, a chart was compiled with each county listed in rows and each indicator listed in columns [*Table 3*]. Each indicator was listed twice: once to indicate if the county had met the "Pass" threshold at least three times and the second time to indicate if the county had met the "Fail" threshold at least three times. Cells were marked to correspond with each county's progress. For indicators with an equal number of Pass and Fail thresholds – or, if there were missing data for two or more quarters, the cell was colored gray. Trends across counties and indicators were identified using this table.

Without baseline values to track progress from before the project's inception, each indicator's given "success rate" (measured by the number of times the threshold was met for the % Target over the first six quarters) was used as a proxy measurement for progress. Because quarterly success is contingent on a variety of external factors, including weather, road conditions, availability of staff, availability of resources, political events, the prevalence of infectious disease, and the availability of nutritious food, three or more 'Passing' quarters - despite the effects of external factors – was interpreted as a positive outcome.

Quarterly performance was measured for each county in order to determine the percentage of the 5% budget holdback the NGO was to receive at the end of each quarter. To track overall performance by quarter, the average performance across all eighteen counties was determined. [*Table 4*] below demonstrates the average performance across all five indicators by county for each Quarter. For Quarters 6 through 11, data is limited.

TABLE 4. Average Performance Across All Project Indicators by County and Quarter

County	State	Q1	Q2	Q3	Q4	Q5	Q6	Q7*	Q8*	Q9*	Q10*	Q11*
Akobo	Jonglei	60%	80%	60%	80%	20%	50%	67%	75%	75%	75%	25%
Ayod	Jonglei	40%	80%	0%	40%	0%	0%	0%	0%	25%	25%	25%
Bor	Jonglei	80%	80%	40%	0%	0%	100%	75%	100%	75%	100%	100%
Duk	Jonglei	80%	60%	60%	40%	0%	33%	67%	0%	100%	100%	75%
Fangak	Jonglei	0%	40%	40%	40%	0%	50%	100%	25%	25%	50%	75%
Nyirol	Jonglei	20%	0%	60%	80%	0%	33%	0%	50%	50%	50%	50%
Pigi	Jonglei	60%	60%	60%	60%	0%	0%	0%				
Pochalla	Jonglei	60%	80%	60%	40%	20%	67%	25%	50%	75%	75%	100%
Twic East	Jonglei	60%	100%	80%	60%	20%	100%	33%	100%	75%	75%	
Uror	Jonglei	40%	80%	40%	0%	0%	50%	33%	50%	100%	50%	
Baliet	Upper Nile	100%	100%	100%	100%	0%	0%	0%	50%	75%	50%	25%
Fashoda	Upper Nile	40%	80%	80%	80%	40%	100%	75%	100%	100%	100%	25%
Longechuk	Upper Nile	40%	0%	60%	60%	0%	0%	100%	50%			
Maban	Upper Nile	80%	100%	100%	100%	80%	100%	75%	75%	100%	100%	100%
Maiwut	Upper Nile	40%	60%	60%	60%	0%	100%					
Nasir	Upper Nile	60%	0%	0%	0%	0%	0%					
Panykiang	Upper Nile	100%	100%	80%	80%	0%	0%	0%	0%	50%	75%	50%
Ulang	Upper Nile	80%	100%	80%	80%	20%	0%		50%	75%	50%	100%

* Limited data available

+ Blank cells indicate there was no data available for the specified quarter

Ethical considerations

This analysis was determined to be IRB-exempt because it is an analysis of secondary data. All data were de-identified by IMA World Health prior to analysis. Additionally, at the behest of IMA World Health, the researcher signed a data use agreement so as not to share the data tables or analysis with any third party or for reasons beyond the MPH thesis requirements for the Rollins School of Public Health.

Limitations

The primary limitation of the data used for the purposes of this thesis is the inconsistency of the data available for analysis. The Rapid Results Health Project is a comprehensive, multi-faceted program involving multiple levels of data over a two-year time period. The multitude of data managers at each level of the project makes data aggregation difficult. Moreover, there does not seem to be one RRHP database. The Monitoring and Evaluation team at IMA World Health at the DC Headquarters shared data and answered questions as requested, but did not share a robust data file with all relevant project data. The researcher compiled a spreadsheet with the shared data; thus, analysis and summaries were drawn from the researcher's compilation of data rather than a shared document from IMA World Health. Misinterpretations and contextual nuances may not have been noted, as the researcher is a second party to the data owners.

Second, the researcher has not verified the accuracy of reported data. All data are assumed to be reported accurately by the Health Facilities and NGOs in question. However, it is important to note that each county did not maintain the same NGO manager over the course of the Rapid Results Health Project. Five of the eighteen counties in question experienced a change in NGO management, which may affect the accuracy of the data for those counties' health facilities, especially in counties where an NGO was dismissed by IMA due to poor performance.

Third, it should be noted that the researcher did not have access to the entirety of the Health Facility-level data. Most analyses of results-based financing programs start at the health facility level, rather than a county-level aggregate. While a county-level aggregate demonstrates progress toward state-level health services coverage more than data from a health facility would, county-level data indicate a loss of contextual information. Individual health facilities will vary in their location, employment status, availability of resources, catchment area population, facility outputs, health outcomes, and skill level of their medical providers.

Fourth, the availability of data changes over the course of the project. For Quarters 1 – 6 (January 2013 – June 2014), full data sets were shared with the researcher. For each of the five NGO-level indicators, % Achieved, % Target, Difference in Achieved % and Target %, and whether or not a county passed the Pass/Fail threshold for each indicator were recorded. This data was used to assess overall trends from January 2013 – June 2014. The only comparable data available for Quarters 7 – 11 was overall average performance by county as indicated in [*Table 4*]. For Quarters 8 – 12, the only indicator-level data available was based on clients served. For each county and health facility, the number of clients served was tracked, but the researcher was not privy to the targets set for each indicator. Comparing the total number of clients served for each indicator can assess overall progress, but not against project targets. As this data set was incomplete for the purposes of comparison to Quarters 1 – 6, this data was not factored into the assessment of the project.

Fifth, for the sake of this analysis, there is no county or state to which one can compare the results from the Rapid Results Health Project. No other state, or county, has implemented an RBF approach. The first quarter's data are the only data that can be used as baseline, despite it being collected after the first three months of project implementation. For an effective evaluation, a

county with demographics and population size similar to one of the eighteen counties tracked for this project should have been considered as a control group. While the introduction of RRHP may have coincided with improved health outcomes, it is not clear whether the change in health outcomes can be attributed to the incentives offered through the Project.

Last, numerous assumptions were made in drawing conclusions from the chart [*Table 3*]. First, the researcher assumed that the % Target set forth for each quarter and each indicator was appropriate given the county's health status. Second, the researcher assumed *ceteris paribus* among health facilities in a given county: all facilities had similar health burdens, equal resources and shared availability of skilled service providers.

CHAPTER 4: RESULTS

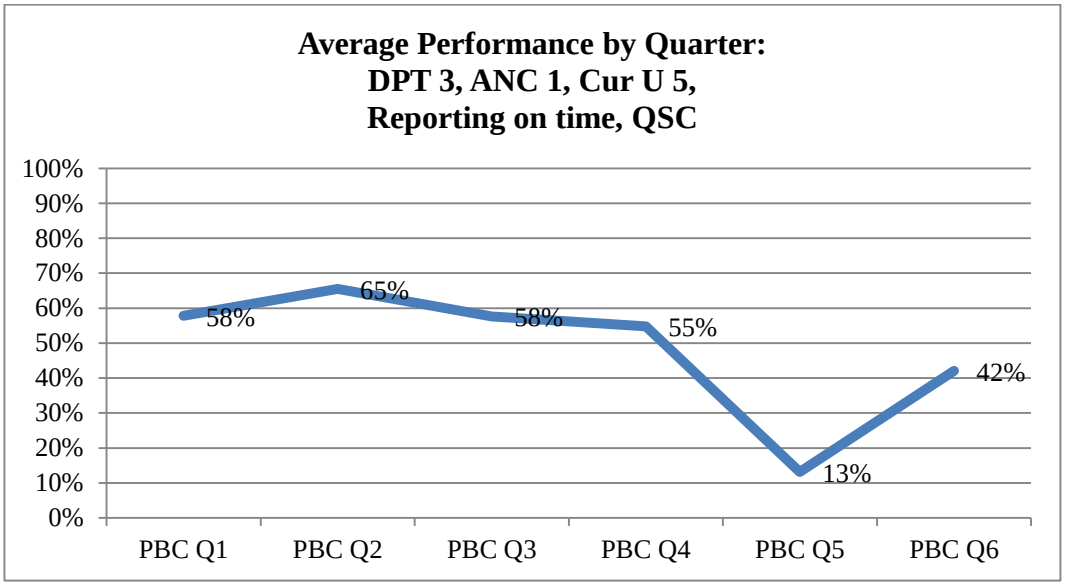
Preliminary IMA World Health Analysis

Initial analysis of the impact of RRHP on health care worker performance showed that incentives paid for antenatal care provision correlated with a higher uptake in services; however, the same was not true for DPT3 vaccinations [*Figure 4*]. IMA states that most DPT numbers were generated from mass immunization campaigns that did not have an incentive component (IMA).

Effects of Civil War

After reviewing the county-level data for trends, the clearest result was the stark decline in progress during Quarter 5. Of all eighteen counties, only two counties had at least one 'Passing' indicator from January – March 2014. As evidenced in [*Figure 5*] below, the average performance across all five indicators throughout all eighteen counties plummeted during Quarter 5. The most likely cause for this disruption to the RRHP is the Civil War that occurred throughout South Sudan in the same time period. According to IMA, most of the international NGO staff were forced to evacuate their posts, leaving most health facilities understaffed and inadequately managed. This finding is consistent with the literature. Multiple studies have concluded that results-based financing in post-conflict settings is difficult to implement because stable governance is critical for the development and maintenance of an effective health system.

FIGURE 5. Average RRHP Performance by Quarter across all counties and indicators



Inconsistent Outcomes

Another finding that is consistent with the literature is that progress in each county was inconsistent over the course of the project. There does not appear to be a trend of improved health outcomes from Quarter 1 to Quarter 6, but the devastation stemming from the Civil War in Quarter 5 likely hindered any potential progress over the course of the project. Moreover, seasonality will affect outcomes as well: changing weather affects road access, disease burden fluctuates across seasons, and variable agriculture affects nutrition levels and food access. Like most experimental financing projects, more time is needed to assess overall effectiveness.

Leadership and Project Management

Of eighteen counties, only four saw consistently 'Passing' results for all five indicators over the first six quarters. Baliet, Maban, Panykiang, and Ulang counties are all located in the Upper Nile state; furthermore, each of these counties had consistent NGO management from Q1 – 11. Baliet and Ulang counties were managed by the same NGO, GOAL. The NGO that managed RRHP in Maban, Refugees International (RI), was only responsible for that one county. The NGO

that managed the program in Panykiang, CORDAID, was also responsible for another Upper Nile county, Fashoda, which experienced consistently 'Passing' results for Reporting on Time, QSC, and Curative care, and DPT 3, but experienced three 'Failing' quarters for ANC 1. One could argue that success across four indicators still demonstrates effective RRHP management.

In contrast with the four counties that saw consistently 'Passing' results, of the eighteen total counties, one experienced consistently 'Failing' results for all five indicators over the first six quarters. Nasir County in the Upper Nile state is the largest county throughout Upper Nile and Jonglei in terms of population, which may present obstacles associated with inequities of access and the availability of resources. Furthermore, Nasir County experienced a change in NGO management, from IMA World Health to ADRA, between the 4^{th} and 5^{th} quarters, which would present further obstacles associated with inefficient and unstable management and leadership. Because they have experienced the most success throughout the Rapid Results Health Project, GOAL, RI, and CORDAID should be strategically evaluated to determine their best practices and the conducive elements of the environments in which they are working.

DPT 3 Coverage

Twelve of eighteen counties experienced consistently 'Failing' results for DPT3 coverage from Q1 – 6. This finding is consistent with the preliminary RRHP analysis performed by IMA World Health, indicating that immunization coverage is not significantly affected by the introduction of incentives because the majority of immunizations were administered during a mass immunization campaign. Another interesting finding is that of the six counties that did experience consistently 'Passing' results for DPT 3 coverage from Quarter 1 through 6, all six also reported consistently 'Passing' results for Cur U 5 visits in the same time period. Five of the six counties

overlap with those counties who experienced consistent NGO leadership and success across all five indicators.

Curative Care Visits

Success with curative care visits for children under five was much more common, with fourteen of eighteen counties experiencing consistently ‘Passing’ results for Cur U 5 visits from Q1 – 6.

Antenatal Care

Antenatal care visits had the least consistent results over the first six quarters of the RRHP. Eleven counties experienced consistently ‘Failing’ results while seven counties experienced consistently ‘Passing’ results. Nine of the eleven counties with ‘Failing’ results also experienced ‘Failing’ results for DPT 3, but eight of the eleven counties also experienced ‘Passing’ results for the Cur U 5 indicator. It is difficult to draw any conclusions on the effect of results-based financing on antenatal care because a strong correlation between incentives and performance is not apparent.

Reporting on Time

Three counties had consistently ‘Failing’ results of Reporting on Time. Each of these counties also had consistently ‘Failing’ results for at least three other indicators. Of those three counties, two experienced a change in NGO management, indicating poor and inconsistent management. Because the Reporting on Time indicator is more closely associated with project management than direct health outcomes, it is important to see that more counties than not have been successful at following the project implementation guidelines for improved monitoring and evaluation.

Comparing Performance by County

To visualize the disparity in outcomes between counties, simple line graphs were developed for each county's progress across individual indicators for Quarters 1 – 6. To demonstrate the vast disparity, Figures 6 – 10 show the differences in the percent achieved for each indicator for two counties: Maban (Upper Nile) and Nyirol (Jonglei). These counties were selected for visual comparison because they had the most available data and because their progress, as indicated in [*Table 3*], showed the greatest difference in 'Passing' indicators versus 'Failing' indicators. Maban County had more than three 'Passing' quarters across all five indicators, while Nyirol County had more than three 'Failing' quarters across four indicators and one indicator without sufficient data to determine its success. Nasir County had five indicators with at least three 'Failing' quarters, but there was less data on percent achieved available for the sake of graph development.

FIGURE 6. Nyirol v. Maban: DPT 3

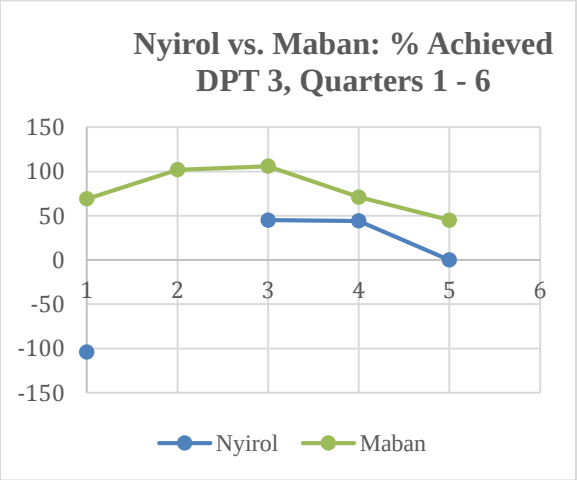


FIGURE 7. Nyirol v. Maban: Cur U 5
**Please note difference in vertical axis*

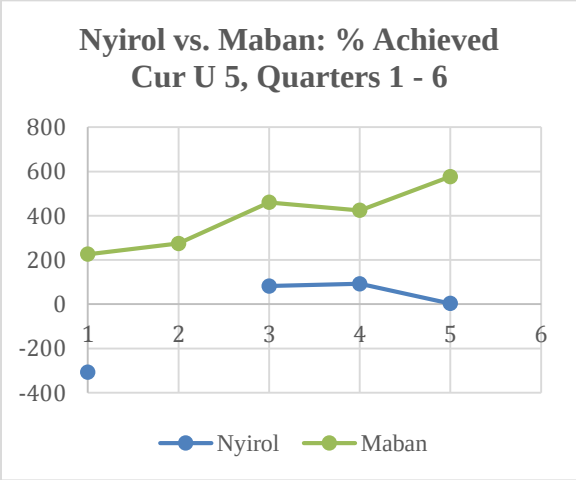


FIGURE 8. Nyirol v. Maban: ANC 1

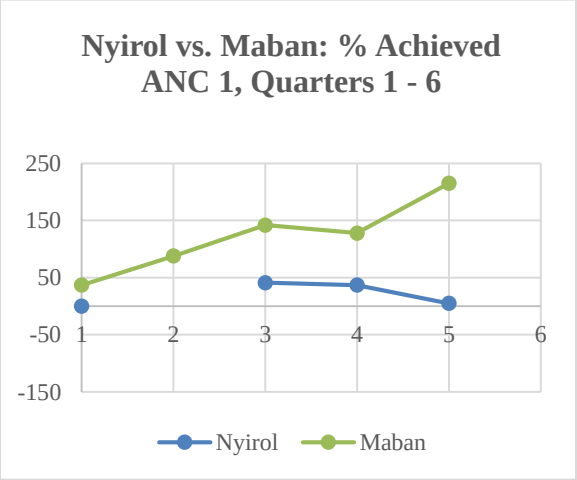


FIGURE 9. Nyirol v. Maban: Report on Time

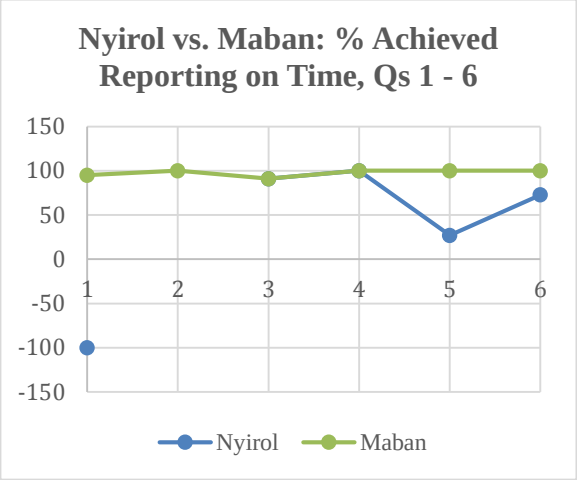
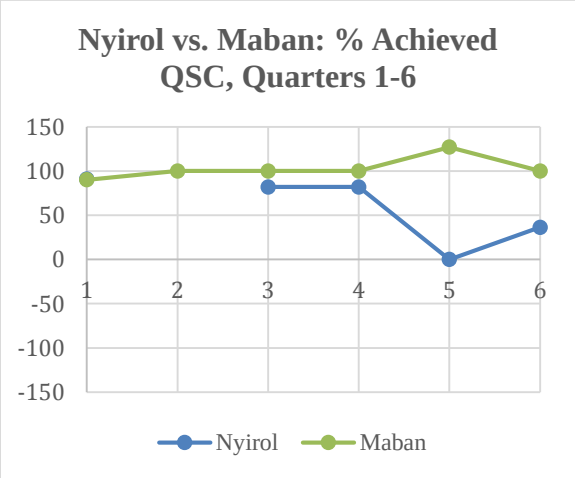


FIGURE 10. Nyirol v. Maban: QSC



Figures 6 – 10 are representational of the aforementioned findings throughout all eighteen counties measured in the Rapid Results Health Project. It is clear that Nyirol County had much more relative success than Maban; however, it is still worthwhile to note the downward linear trend for progress associated with DPT3. Poor achievement rates in Quarter 5 for both counties are apparent. Cur U 5 rates are consistently higher than other indicators, while ANC 1 and DPT 3 rates remain inconsistent throughout and between each county. A noteworthy discrepancy is the

high rates of Achievement for Maban County's Cur U 5 indicator. Achievement rates far above 100% may demonstrate misreported data, an overwhelming demand for services, and/or targets that were set too low. Discrepancies exist throughout the available data, beyond Nyirol and Mabana Counties, were analyzed as accurate. Lastly, while these graphs do not take into account the difference in initial targets between the counties, they do serve to show how each county's progress measures up to its set expectations.

CHAPTER 5: DISCUSSION & CONCLUSION

Despite the inability to draw any statistically significant conclusions from the available data, the Rapid Results Health Project presents many learning opportunities for current and future results-based financing initiatives. Because effective, innovative health financing is a critical aspect of health systems strengthening, evaluating and modifying results-based financing initiatives to improve health outcomes and strengthen health systems can have a strong impact on the future of public health.

Antenatal Care & Maternal Health

Higher success with antenatal service provision is consistent with findings from multiple studies. A review of the evidence published in 2013 showed the strongest results for incentivized service delivery among labor and delivery, specifically for skilled birth attendance and facility-based deliveries (Morgan et al., 2013). Incentives that enhance demand and increase supply have shown to have positive effects on maternal health in regions where results-based financing programs have been introduced (Morgan et al., 2013). Because it is difficult to separate the effect of incentives from other confounding factors in each study, it is worthwhile to note that the strong global push – in policy, funding, and leadership – for maternal and child health services in the recent decades may have an overwhelming effect on maternal health services, regardless of the incentive provision.

Curative Care

Understanding why the indicator associated with curative care for children under five showed the greatest amount of success across all counties, allows us to consider certain benefits and potential risk factors associated with incentivized care. Services associated with the Cur U 5 indicator most likely include Vitamin A supplementation, management of diarrheal disease,

deworming medication, and treatment for malaria, among others (Bassani et al., 2013). Because the definition is much more robust than the other two health-related indicators, it is more likely that service providers will meet their quarterly target due to the wider-ranging client population than those associated with DPT 3 or ANC 1. Potential risks of such a comprehensive indicator include an increased likelihood for providers to over report their service provision or compromise the quality of their visits to increase the quantity.

Project Implementation and Measurement

First, the importance of monitoring and reporting data consistently should not be undervalued. Accurate, thorough, consistent data across each project level over the entirety of the project's time span is critical in order to assess progress. In the same vain, consistent definitions and methods of measurement are needed from the health facility level up to the World Bank's donor report. Clear definitions for each measured indicator will help to reduce confusion and inconsistencies between health facilities and counties. Moreover, consistent definitions leave less room for error in evaluation and more room for project replication as needed.

As noted in one Tanzanian Pay-for-Performance study, the implementation of the project varied drastically from its intended design. With a shortage of P4P specialists to implement the project as intended, local authorities altered the measurement of indicators and the subsequent payment of incentives to match their perceived "fairness ideals". Furthermore, the payments disbursed as incentives in this project were not based on performance (Chimhutu et al., 2014). Without following the project's intended strategy, there is no way to assess the project's effect on health outcomes. Adherence to the intended strategy is important for the sake of evaluation; thus, project specialists should be used to ensure adherence and quality.

Due to the number of NGOs managing RRHP throughout Jonglei and Upper Nile, in addition to the second and third levels of management between the World Bank and the health facilities, one may argue that the RRHP handbook coupled with quality supervisory visits is not enough to ensure consistent project implementation. The limited data available for multiple quarters across multiple counties further illustrates that the project is not being measured – and therefore implemented – as intended. Without accurate measurement, it is difficult to assess whether incentives are being disbursed based on improved or sufficient performance.

Additionally, the establishment of healthcare standards across the country should be introduced to reduce variation in service delivery. South Sudanese states besides Jonglei and Upper Nile have been managed by Fund Managers other than IMA World Health and have not been exposed to results-based financing schemes; however, the Fund Managers and various implementing NGOs throughout the other state's counties are not held to the same standard as IMA is to World Bank. Coordination and data sharing between Fund Managers and Donors could be integral for assessing progress toward universal primary health care in South Sudan.

Impact on Overall Health and Equity

Progress over five indicators does not measure overall health. Moreover, an increase in the number of services provided through RRHP does not translate to improved quality of care. In fact, some critics of results-based financing worry that the pressure of incentives associated with the quantity of services provided cause providers to ignore certain tasks that are not rewarded with incentives. In addition to ignoring important health services that are not incentivized, providers may also choose to provide services only to the easiest-to-reach patients. The Cur U 5 indicator shows potential for this possible adverse effect, as the definition is broad enough that the client population is plentiful and can be reached within a manageable distance from any health facility.

While the same risk is possible for DPT 3 and ANC 1, the inconsistent success – or lack thereof – associated with both indicators throughout Quarters 1 through 6 demonstrates that there is still room for improvement in service provision among the target client population.

Multiple studies have been conducted on whether results-based financing contributes to or detracts from inequity in service provision; one specific study conducted in rural Rwanda determined that performance-based financing improved efficiency but not equity by improving access to services for those who were closer in distance to the facility, but not those who experienced the greatest health burdens (Lannes, Meessen, Soucat, & Basinga, 2015). One researcher stated, "the stronger the incentive simply to serve greater numbers, the less likely the poor are to benefit" (Gwatkin, 2010). Thus, measures should be implemented to ensure a focus on quantity, quality, and equity.

One possible consideration for an effective, equity-driven RBF scheme comes from the Nigeria State Health Investment Project (NSHIP). NSHIP weights its RBF indicators based on the indicators' importance to a given population's health. To address the inequities between patients in each of the three NSHIP states, 'equity weightings' can be allocated for "relative destituteness" of a facility, based on its accessibility and supply availability (Nigeria Federal Ministry of Health). With higher incentives for clinics and hospitals that face "rural hardships", those facilities are offered an economic opportunity to attract and retain qualified staff while also being compensated for the higher costs of delivering quality health services (Nigeria Federal Ministry of Health). Moreover, for the most destitute patients with no means to afford healthcare, RBF offers an opportunity for a facility to lower their user costs in order to earn more through subsidies (Nigeria Federal Ministry of Health).

While data about the populations served by RRHP within each county was not available, some assumptions can be made about the current state of equity within the project. As demonstrated in the disparate measurements between counties throughout Upper Nile and Jonglei, as well as in the steep decline of progress during Quarter 5, the health facilities do not appear to be providing equal services across both states, especially during times of increased need like the civil war. IMA should not accept liability for influences outside of their project's control; however, introducing a component of RRHP that would further incentivize providers in counties with fewer resources, more destitute and/or rural locations, or during emergency scenarios might help to eliminate some barriers to healthcare for more vulnerable populations.

Leadership and Project Management

Among counties where NGOs changed, average performance was worse overall, compared to the counties that had consistent NGO management. Though this relationship is not causal, it does indicate that consistent leadership and implementation is important for the success of the project. IMA World Health should focus on communication between the various NGOs, so those who are struggling to meet their quarterly goals are able to learn from the NGOs who have experienced success. Based on their success, the NGOs responsible for the performance in Baliet, Maban, Panykiang, Ulang, and Fashoda counties could be used as mentors and examples for other counties with less consistently positive results. Additionally, qualitative and contextual program data could be used to understand why Upper Nile states have more positive results than their neighboring Jonglei states.

Qualitative Data

While clear targets and easy-to-measure indicators are important for tracking progress in RBF initiatives, routinely collecting qualitative data should also be integrated into the monitoring

of various incentive schemes. Qualitative data can and should provide crucial information from clients, service providers, health facility staff, and donor agencies. Because incentive schemes introduce potential for corruption and fraud, but also because increased quantity of services does not imply improved quality, qualitative data is necessary to monitor client and staff satisfaction. Qualitative data can also help researchers to understand the time frame for which improved behavior relies on financial incentive. Is there a time after which incentives will no longer prove to be effective in improving health outcomes or health care worker performance? What are the barriers to service provision that are overcome by the promise of financial incentives? By collecting data from clients and health service providers in the Rapid Results Health Project, IMA World Health may be able to better understand barriers faced by individual health facilities, at the county level, and within the Ministry of Health administration. In one mixed methods evaluation of a Performance Based Incentive program in Malawi, the qualitative data – collected through one-on-one interviews with providers and patients – was used to explore the experimental, social and cultural setting of service delivery, elucidating the elements responsible for provider motivation and patient satisfaction (Brenner et al., 2014). Because provider motivation is a critical aspect of an effective results-based financing scheme, qualitative data should be collected and analyzed regularly. Findings should be incorporated in ongoing iterations of the RBF scheme to improve processes and outcomes.

Government Coordination

Coordination between donor agencies and the Ministry of Health, in addition to ongoing financial support, are important for continued progress. As South Sudan strives toward a sustainable, country-owned health system, the Ministry of Health should play a growing role in the facilitation of health services. County Health Departments, in conjunction with their NGO

liaisons, should continue to monitor the progress of each facility. As demonstrated in the literature, in Rwanda, the role of the Ministry of Health was critical in leading the strategy that has improved maternal health significantly over the last few decades. If South Sudan improves its governance, they may begin to see more promising and consistent results from their health systems strengthening efforts.

Cost Effectiveness

Critical to understanding the impact of results-based financing schemes is assessing a project's cost-effectiveness: understanding the net benefit against the total investment amount. While some progress has been determined throughout the course of the RRHP, it is unclear whether this progress was worth the total investment of 27 million USD from the World Bank. A full cost-benefit analysis should be conducted to determine impact, but also to offer policy recommendations for future investments in results-based financing initiatives. Moreover, with more comprehensive data on the RRHP indicators, the cost-benefit of the project will become easier to understand and/or justify to other stakeholders in the health system of South Sudan.

Adverse Side Effects

Many critics of results-based financing have commented on the dearth of literature examining adverse side effects of the incentive schemes. Megan Ireland posits that an absence of published evaluations focused on the possible negative consequences of results-based financing results in a favorable bias for performance based financing in the literature (Ireland et al., 2011). Future research should focus specifically on adverse side effects of RBF including, but not limited to, the motivation of unintended behaviors, providers inadequately providing necessary services that are not incentivized, falsification of reports or measurements, and the possibility of a growing dependency on financial incentives (Oxman & Fretheim, 2009). By continuing to improve data

collection, while making sure to include qualitative, context data, results-based financing can be studied more rigorously.

CONCLUSION

As demonstrated throughout the available literature and the Rapid Results Health Project data provided by IMA World Health, there is not sufficient evidence to assert that results-based financing is an effective financing tool for improving health outcomes. Understanding the context in which one is implementing results-based financing is a crucial element for success; the current political climate, availability of resources – both human and capital, and the burden of morbidity and mortality in a region are all critical sources of information required for effective RBF project development and implementation. To adequately address the climate in which one hopes to improve health outcomes, strong leadership and governance, a focus on equity, and ensuring adherence to the intended RBF strategy are vital. The international support of many donor agencies that are focused on attaining the SDGs will help to mobilize the metric-driven aspect of results-based financing.

While there is limited data to suggest that incentivizing health providers may have an impact on certain health outcomes, there is a clear need for more and rigorous evaluation of past and existing RBF programs. For appropriate and comprehensive evaluation, however, consistent and thorough monitoring is necessary throughout all phases and levels of the program. Well-defined indicators, strict guidelines on reporting mechanisms, and robust and accessible technical assistance will help to improve monitoring and thereby data collection.

The public health implications of thoroughly monitored and rigorously evaluated RBF projects are vast. Over time, results-based financing may prove to be one solution to health systems

strengthening; with more comprehensive data, it will be easier for project developers, Ministries of Health, and donor agencies to replicate successes and ensure sustainability. On the other hand, more and better data may prove that RBF, due to its inconsistent or poor outcomes, is either detrimental to health or not a cost-effective strategy and thus the funds allocated for such programs should be redirected. Innovative financing mechanisms, including RBF, show great potential in the era of the Sustainable Development Goals, but the projects should be developed, implemented, and monitored with heed, as the consequences for success or failure concern the health and well-being of millions of individuals directly impacted by weak and fragile health systems around the world.

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TABLES AND FIGURES

FIGURE 1. Map of Jonglei and Upper Nile States: Counties
(United Nations Office for the Coordination of Humanitarian Affairs, 2012)

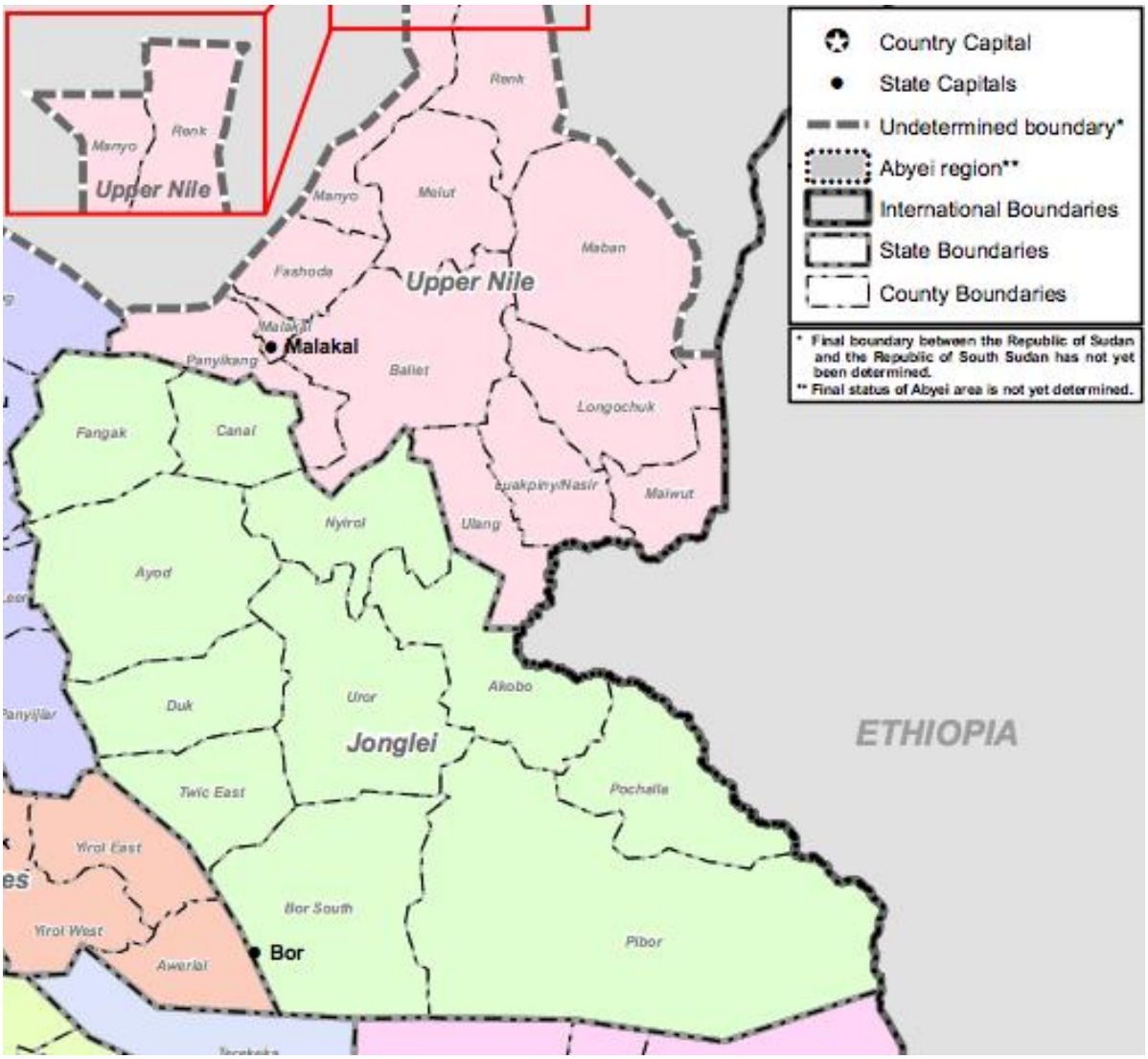

FIGURE 2. States of South Sudan and corresponding Fund Managers

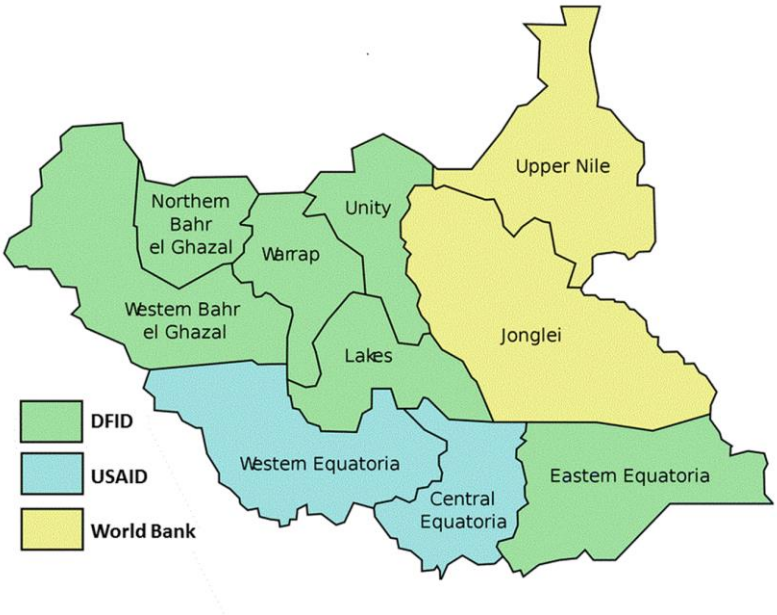

FIGURE 3. Rapid Results Health Project and Fund Management Diagram

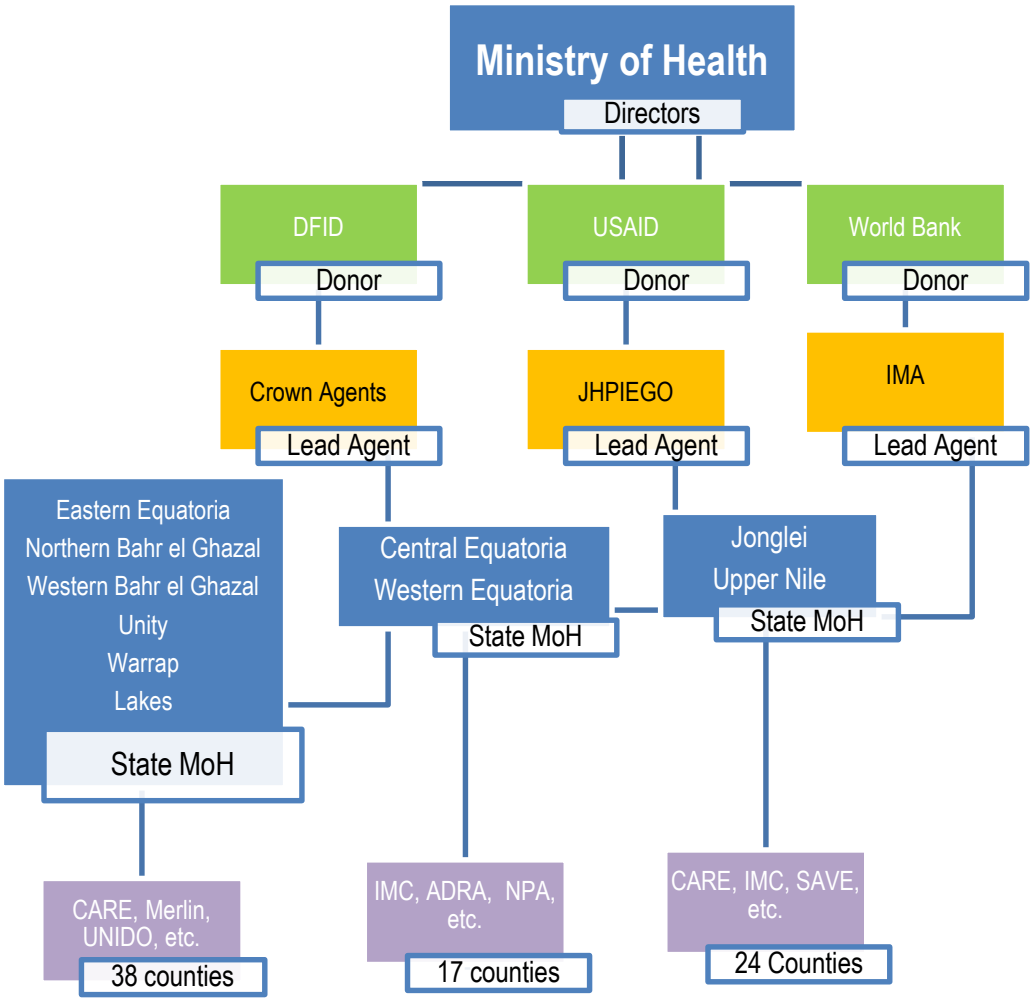

FIGURE 4. IMA World Health Preliminary Analysis Graphs: ANC 1, DPT 3

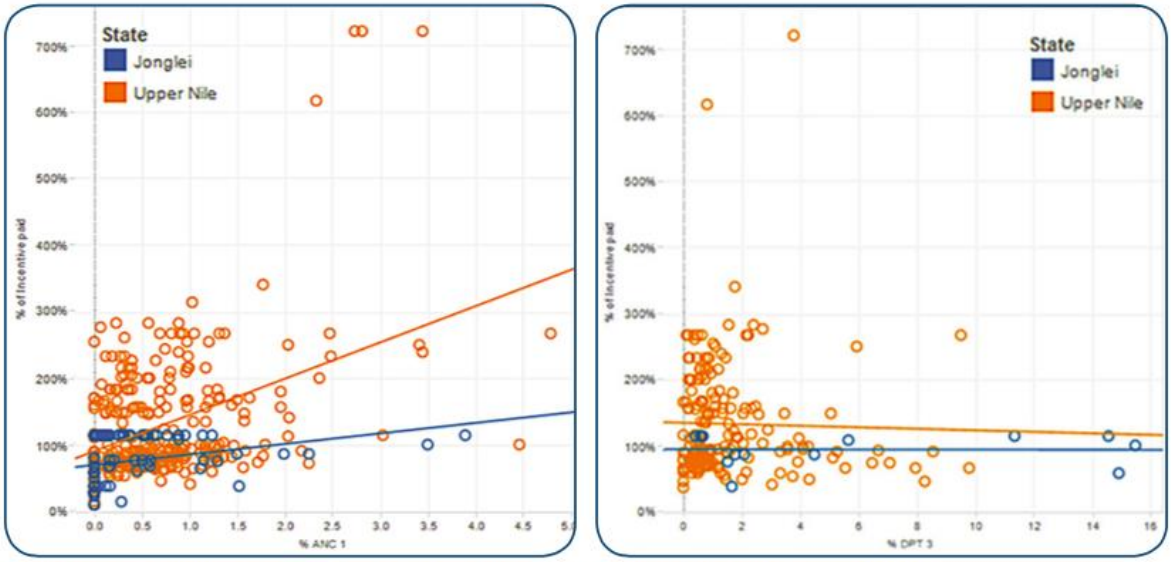

Figure 5: *Incentive payment linked to ANC1 services (left) vs. non-incentive linked DPT3 services (right).*

TABLE 1. Upper Nile and Jonglei States: County Names & Number of Health Facilities

County	State	# of Health Facilities
Akobo	Jonglei	13
Ayod	Jonglei	13
Bor	Jonglei	25
Duk	Jonglei	12
Fangak	Jonglei	20
Nyirol	Jonglei	11
Pigi (Canal)	Jonglei	10
Pochalla	Jonglei	8
Twic East	Jonglei	16
Uror	Jonglei	12
Baliet	Jonglei	7
Fashoda	Upper Nile	9
Longechuk	Upper Nile	13
Maban	Upper Nile	13
Maiwut	Upper Nile	10
Nasir	Upper Nile	19
Panykiang	Upper Nile	12
Ulang	Upper Nile	8

TABLE 2. Rapid Results Health Project Data Collection Quarters

QUARTER	DATES
Q1	January – March 2013
Q2	April – June 2013
Q3	July – September 2013
Q4	October – December 2013
Q5	January – March 2014
Q6	April – June 2014
Q7*	July – September 2014
Q8	October – December 2014
Q9	January – March 2015
Q10	April – June 2015
Q11	July – September 2015
Q12*	October – December 2015

*Limited data available

TABLE 3. Pass / Fail Table by County and Indicator

	DPT 3 Pass 3+	DPT Fail 3+	ANC Pass 3+	ANC Fail 3+	CurU5 Pass 3+	CurU5 Fail 3+	QSC Pass 3+	QSC Fail 3+	On time Pass 3+	On time Fail 3+	
Akobo											3
Ayod											4
Bor											
Duk											
Fangak											3
Nyirol											4
Pigi											3
Pochalla											3
Twic East											4
Uror											3
Baliet											5
Fashoda											3
Longechuk											4
Maban											5
Maiwut											3
Nasir											5
Panykiang											4
Ulang											5

TABLE 5. NGOs by County

County	State	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Akobo	Jonglei	Nile Hope	Nile Hope	Nile Hope	Nile Hope	Nile Hope	Nile Hope	Nile Hope	Nile Hope	Nile Hope	Nile Hope	Nile Hope
Ayod	Jonglei	COSV	COSV	COSV	COSV	COSV	COSV	COSV	COSV	COSV	COSV	COSV
Bor	Jonglei	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC
Duk	Jonglei	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC
Fangak	Jonglei	CMA	CMA	CMA	CMA	CMA	CMA	CMA	CMA	CMA	CMA	CMA
Nyirol	Jonglei	CMA	CMA	CMA	CMA	CMA	CMA	CMA	CMA	CMA	CMA	CMA
Pigi	Jonglei	IMA	IMA	IMA	IMA	CMA	CMA	Nile Hope	Nile Hope	CMA	NHDF	
Pochalla	Jonglei	IMC	IMC	IMC	IMC	IMC	IMC	IMC	IMC	IMC	IMC	IMC
Twic East	Jonglei	CARE	CARE	CARE	CARE	CARE	CARE	CARE	CARE	CARE	CARE	CARE
Uror	Jonglei	CARE	CARE	CARE	CARE	CARE	CARE	CARE	CARE	NHDF		
Baliet	Upper Nile	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL
Fashoda	Upper Nile	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID
Longechuk	Upper Nile	CMA	CMA	CMA	CMA	CMA	CMA	CMA	RI	CMA		
Maban	Upper Nile	RI	RI	RI	RI	RI	RI	RI	RI	RI	RI	RI
Maiwut	Upper Nile	SAVE	SAVE	SAVE	SAVE	SAVE	SAVE	GOAL / SAVE	SAVE	GOAL		
Nasir	Upper Nile	IMA	IMA	IMA	IMA	ADRA	ADRA	ADRA	ADRA	NHDF		
Panykiang	Upper Nile	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID	CORDAID
Ulang	Upper Nile	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL	GOAL