

# The Impact of Access to Quality Healthcare in Africa

Research findings on Health Insurance Fund  
supported programs





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Amsterdam Institute for Global Health and Development



Amsterdam Institute for International Development



University of Ilorin Teaching Hospital



Lagos University Teaching Hospital

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# Acknowledgements

*Joep Lange as founder of PharmAccess is widely acknowledged for pioneering HIV/AIDS treatment in Africa during the late 90's. At that time, public funding was not yet available for HIV/AIDS treatment. Matters got worse when public funding began, as private payers and private providers could not access any donor money for HIV/AIDS treatment. Witnessing this crowding out effect, Onno Schellekens and Joep Lange started to work on a public funding concept for HIV/AIDS treatment that would also include private players. That initiative led to the founding of PharmAccess in 2000.*

*In 2006 Onno Schellekens and Sweder van Wijnbergen wrote an article that summarized their philosophy titled 'On aid and AIDS in Africa'<sup>1</sup>. Topical concepts such as risk equalization, health insurance, matching demand and supply, investments, quality, the role of trusted medical administrators were addressed. The Dutch Government was attracted by the new concept and decided to support PharmAccess through the Health Insurance Fund with a start-off grant of 100 million Euro. With this support, PharmAccess was able to initiate, implement and operate functioning health insurance and delivery "labs" in Africa to test its interventions and business model. In the years since then, the systems have been strengthened and the results are becoming more evident. In 2007, AIGHD and AIID were assigned to conduct a rigorous research effort to measure the impact of the interventions starting with the demand side.*

*This report is a compendium of the research conducted. It highlights what impact the analytical activities have had, and still have, on the culture of PharmAccess, the Health Insurance Fund enterprise and their public and private partners in Africa. This culture is a continuous interaction between project implementation, evidence based analyses, and subsequent project improvements. Such a recurrent learning process ensures that we keep the ultimate goal clearly in sight, which is to provide affordable access to high quality healthcare for low-income households living in our target areas.*

*We would like to thank the Ministry of Foreign Affairs, the boards, management and staff of Health Insurance Fund, PharmAccess, AIGHD, AIID and their local partners in Africa for their ongoing support. It has been ground-breaking and hopefully will be continued for many years to come.*

*Several people have provided input for this report. They are listed here in alphabetical order: Tanimola Akande, Daniella Brals, Sicco van Gelder, Wendy Janssens, Emily Gustafsson-Wright, Marleen Hendriks, Berber Kramer, Marijn van der List, Heleen Nelissen, Alice Ogink, Akin Osibogun, Gosia Poplawska, Nicole Rosendaal, Constance Schultsz, Carlijn Speelman, Zlata Tanovic, Edit Velenyi, and Ferdinand Wit.<sup>2</sup> Special thanks goes to Alexander Boers who produced sections 2, 4, 8.3, and the Annexes. He also edited the entire manuscript. Finally, we dedicate this report to Joep Lange and his partner Jacqueline van Tongeren whose tireless efforts to improve the health of the poor will continue to be an inspiration to us always.*

*Jacques van der Gaag*

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- <sup>1</sup> Schellekens, O. and Van Wijnbergen, S., (2006). On aid and AIDS in Africa: Alleviating poverty through increasing access to healthcare and HIV/AIDS treatment in Sub-Saharan Africa.
  - <sup>2</sup> The report is based on 59 articles and reports that are often quoted verbatim. All of these reports and articles are listed in Annexes 11.4 and 11.5. Not all of them are explicitly referred to in the text.



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# 1 Introduction

In October 2006, the Health Insurance Fund was founded with a generous grant from the Dutch Ministry of Foreign Affairs. The fund was meant to support an innovative new approach to try to make access to quality healthcare available to low income people in low and middle income countries in sub-Saharan Africa. This new approach was being implemented by PharmAccess, a Dutch NGO, which was founded in 2000. The origin of PharmAccess lies in the areas of HIV/AIDS and the mother to child transmission studies which were conducted in the mid-1990s. Since those studies, PharmAccess has been active in health care in sub-Saharan Africa by pioneering large scale HIV/AIDS treatment programs that provided anti-retroviral drugs to people with HIV/AIDS. The late Prof. Joep Lange, the founder of PharmAccess, famously remarked “why is it that we are always talking about the problem of drug distribution, when there is virtually no place in Africa where one cannot get a cold beer or a cold Coca-Cola?” Through activism, scientific research on triple combination therapy and collaboration with the private sector, PharmAccess demonstrated, through these initiatives, how more resources, efficiency and effectiveness could be introduced in the healthcare system of sub-Saharan Africa<sup>3</sup>. In the early 2000s, PharmAccess set up a Risk Equalization Fund for HIV to encourage health insurance companies to offer health insurance to people with HIV in Namibia<sup>4, 5</sup>.

PharmAccess has evolved into an organization that focuses on improving general access to quality healthcare. With the resources of the Health Insurance Fund (supported by the Dutch Ministry of Foreign Affairs), PharmAccess has been increasingly successful in forming solid local public private partnerships to address the health needs of the low-income people in sub-Saharan Africa. The objectives of the Health Insurance Fund are the following:

- To increase access to quality basic health care for currently uninsured groups, mainly through private health facilities.
- To evaluate different private healthcare delivery models based on a demand-driven and results-oriented approach.
- To directly support Millennium Development Goals (MDG) 1 and 6, by reducing poverty and halting the spread of HIV /AIDS, tuberculosis, malaria, and other major diseases.
- To lower the threshold for investment in private healthcare infrastructure mainly through the Investment Fund for Health in Africa.
- To build sustainable medical, financial and administrative capacity in the health sector.

The PharmAccess approach encompasses demand as well as supply. On the demand side, PharmAccess develops, with local counterparts, community health insurance products that, through significant subsidies, become affordable for the local population. Those subsidies can come from the Health Insurance Fund, from local

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3 Schellekens, O. et al. (2007) ‘A New Paradigm for Increased Access to Health Care in Africa’

4 Schellekens, O. and Van Wijnbergen, S., (2006). On aid and AIDS in Africa: Alleviating poverty through increasing access to healthcare and HIV/AIDS treatment in Sub-Saharan Africa.

5 Onno Schellekens, Ingrid de Beer, Marianne E. Linder, Michelle van Vugt, Peter Schellekens and Tobias Rinke de Wit (2009). The Innovation in Namibia: preserving the private health insurance and HIV/AIDS treatment. Market Watch 28 (6) pages 1799-1806.



or national governments, or from other sources (such as bilateral and multilateral donors). On the supply side, PharmAccess has developed a number of activities that are geared towards expanding the available health sector infrastructure and improving its quality. Working with national and local government counterparts, as well as with private partners, the PharmAccess model tries to harness and increase all available resources (public and private clinics, public and private financing, and public and private human resources) to make quality healthcare available and affordable to all<sup>6</sup>.

Because of the innovative character of the PharmAccess approach, the Health Insurance Fund decided early on that all projects funded by the Health Insurance Fund and implemented by PharmAccess should be rigorously evaluated in terms of their impact on the target population.<sup>7</sup> This report focuses on the impact evaluation studies on the demand side of the PharmAccess program. For instance, Nigeria has 2 percent of the world population, but 14 percent of global maternal deaths. The impact evaluation and the other studies summarized in this report address issues of trust and demand in relation to affordable and quality healthcare. Trust among the communities in the healthcare system enhances participation, ensures pre-payments, and encourages providers to make the required investments. The evaluation looks at the impact of the program on financial protection (out-of-pocket expenditures), utilization of care, and health outcomes. The studies do not look at household productivity but it can be inferred that with increased financial protection – reducing out-of-pocket expenditures thanks to affordable care – households can spend their additional income on other activities such as food consumption, savings or investment in productive assets. Further, the studies do not look at business performance, investment risk, or access to capital. Program data are, however, collected regarding financial leverage in the healthcare system.

Through its approach PharmAccess tries to increase investments in the healthcare sector by individuals and organizations that usually shun the sector. Thus one important question is, to what extent has PharmAccess been successful in leveraging the Health Insurance Fund resources to increase sector investments from private investors, local banks, local governments, the larger donor community, etc.? Another important question is whether PharmAccess has been successful in convincing local and central government agencies to create a more conducive environment for increasing private sector involvement in health, through improved regulations and institutions. These and related questions will be touched upon in a companion briefing paper, provisionally titled “The Health Insurance Fund: Building a Business Case to Provide Affordable, Quality Care for Low-income Populations in Sub-Saharan Africa,” written by Maaïke Veen and Julien Schrijver.

This report summarizes findings from studies conducted by the Amsterdam Institute for Global Health and Development (AIGHD) and the Amsterdam Institute for International Development (AIID). AIGHD is closely linked with the

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6 Schellekens, O. et al. (2013) ‘New Development Paradigm’, in A. Preker et al. *Scaling Up Affordable Health Insurance, Staying the Course*, pp539-555.

7 It is envisioned that in a later stage the impact evaluation will also focus on more general welfare indicators, such as income, savings, investments in human capital, etc.

Academic Medical Center (AMC) of the University of Amsterdam (UvA). AIGHD is an international research institute which was established in 2006 and acts as the implementing body for programs targeted towards better delivery of scalable quality health services in resource-poor settings. Its mission is “to link disciplines, resources and innovative programs from academic institutions and implementing partners in both the developed and developing world, with the ultimate aim to lead the way to access to high quality healthcare for all inhabitants of this world.” AIGHD has an outstanding track record of research, education, and training in African and Asian countries.

AIID is a multidisciplinary research organization founded by the University of Amsterdam and the VU University in Amsterdam, the Netherlands. The main focus of AIID is the effectiveness of development aid. Rigorous impact evaluations form a large part of AIID’s research portfolio. During the course of the impact evaluations in Nigeria, Kenya, and Tanzania, staff from both Amsterdam institutes worked closely with local counterparts in a multi-disciplinary effort to quantify the impact of the PharmAccess projects funded by the Health Insurance Fund as precisely as possible. This report is a summary of that work.

In the next section the programs that are implemented by the PharmAccess Group and funded by the Health Insurance Fund, in Nigeria, Kenya, and Tanzania are described. Only those that have been the subject of research by AIID and/or AIGHD are described. Section 3 presents a short explanation of the concept of “impact evaluation.” The key distinction of this type of research is that the measurement of causal effects, i.e., attribution, is at the core of the exercise. Section 4 briefly describes the quality improvements in healthcare infrastructure that are an integrated part of the PharmAccess interventions.

Sections 5, 6, and 7 present the main results of the impact evaluation conducted in Kwara Central, Nigeria. Two evaluations were carried out, two and four years after the roll-out of the program, focusing mainly on the program’s impact on (modern and traditional) healthcare utilization, out-of-pocket expenses, self-reported health status and health outcomes for Cardiovascular Diseases (CVD), and Maternal and Child Health (MCH). In section 8, results from numerous studies that are all related to both the projects and the ongoing impact evaluations (most of these studies make use of the baseline data conducted for the impact evaluations) are briefly summarized. Some of these studies augmented the data with more detailed data (including qualitative information) focusing on the central theme of the study. Sub-section 8.8 shows how the research activities have contributed to the research capacity of the AIGHD/AIID counterparts in Kwara State. After presenting some general conclusions in section 9, section 10 concludes with recommendations for future project design and, in parallel, further research.<sup>8</sup>

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<sup>8</sup> All the reports and publications on which this report is based are listed in the Annexes 11.4 and 11.5.

## 2 Community Health projects funded by the Health Insurance Fund<sup>9</sup>

This section presents brief descriptions of contents and context of the projects funded by the Health Insurance Fund and were implemented by PharmAccess in Lagos and Kwara State, Nigeria, and in Kenya, and Tanzania and which were subsequently studied by AIID and/or AIGHD. All projects involved the roll-out of a subsidized health insurance package for the target population and quality upgrades of the participating hospitals and clinics. The insurance packages are different for the various target groups but most packages include basic outpatient services, limited inpatient services & maternal care. For more information on the quality upgrades, see section 4.

### **Nigeria**

Since 2007, PharmAccess has assisted Hygeia Community Healthcare (HCHC), a subsidiary of Hygeia Nigeria Limited with the implementation of health programs in Nigeria.

#### *Lagos Market Women*

The Community Health Insurance Scheme in Lagos was launched in January 2007 and initially planned to run to 31 December 2012, with an option to extend it. The scheme was designed for a target group of 10,000 market women with their dependents, i.e., a total of 40,000 people, in 43 selected markets in Lagos.

As part of the operational research for the Health Insurance Fund, an impact evaluation was envisaged for this scheme, which was renamed the Lagos Market Women program. This was to be accomplished through a baseline survey (which was conducted in July/August 2008 in 1,979 households from 8 program markets and 8 “control” markets) and a follow up survey scheduled for 2012.

After successful implementation of the program, monitoring and evaluation was done by the PharmAccess Foundation and an eligibility study was carried out for the Health Insurance Fund and PharmAccess by AIID and Lagos University Teaching Hospital in December 2009. These studies made new information about the size of the target group available and furthermore revealed that the program faced administrative problems. In addition, in 2010 PharmAccess carried out a marketing study to determine the most suitable markets to be included in the scheme.

Based on these studies, over the course of 2010, the Lagos Market Women program was redesigned. As a result, the number of markets was reduced from 43 to 8, to allow for more focused marketing efforts and greater control over adherence to eligibility rules during enrollment. A registration system and tight eligibility rules were introduced with the aim to eliminate non-eligible access to the scheme and reduce excess medical pay-outs. In addition, PharmAccess and HCHC redesigned the Lagos scheme for a target group of about 80,000 people

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<sup>9</sup> This section was produced by Alexander Boers with input from Carlijn Speelman. It draws heavily on Activity Plans and Progress Reports produced by the Health Insurance Fund and submitted to the Dutch Ministry of Foreign Affairs between 2007 and 2013. These reports are not referenced but available on request.

After the redesign, only two markets from the original 16 markets included in the baseline household survey remained in the program. Based on a tracking study conducted in 2011, AIID/AIGHD found that within these two treatment group markets only 157 households remained active in the Lagos Market Women program of the 1,231 households originally interviewed in the eight treatment group markets for the household survey conducted in 2008. Of these 157 households that remained in the treatment group, AIID/AIGHD expected only around half of them to still be insured. With such a low sample size a traditional impact evaluation would not be feasible. Although this is unfortunate and regrettable, a number of research papers had already been produced with the baseline data collected in 2008.<sup>10</sup>

In 2013 several events led to the decision to review and restructure the Lagos programs (Lagos Market Women and CAPDAN<sup>11</sup> programs). On 14 February 2013, a meeting was organized with a representative of the Dutch Ministry of Foreign Affairs, the Chairman of the Health Insurance Fund, representatives of Hygeia Community Healthcare (HCHC) and PharmAccess, and all of the Chief Medical Directors of the Lagos Service Provider Network. Two of the main issues raised by the Chief Medical Directors were overutilization of services by enrollees and the increasing participation by high-income individuals.

The consensus reached during the meeting was that a possible solution to the overutilization issue, and other operational issues, would be a restructured program that would implement appropriate policy interventions in the interim. Specifically: (i) introducing co-payments for enrollees at hospital level to reduce overutilization; (ii) introducing medical payout limits for the treatment of chronic care and maternal care, the main drivers of the excess costs; (iii) to cope with the issue of adverse selection a family package will be introduced; (iv) exploring mobile solutions to reduce overhead costs; and (v) substitution of premium subsidization by the Dutch Government to local sources or introducing a non-subsidized product. A biometric solution was already being introduced on a pilot basis at the provider facilities to address fraudulent practices by enrollees.

Consequently a new product called Hygeia Better Life (HBL), intended to be self-sustaining and an alternative for the target population when the premium subsidy funding of the current scheme ceased, was launched in November 2013.

Later, it was decided that the Hygeia Better Life program will be phased out by the end of 2014. More information behind this decision will be available in the forthcoming Health Insurance Fund Progress Report 2014.

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<sup>10</sup> Reports and academic articles in annex 11.4 and 11.5 with reference to Lagos made use of this data.

<sup>11</sup> The CAPDAN project (started in 2009) is a health insurance scheme for the members (& their families) of 22,500 small businesses in the Computer and Allied Products Association in Nigeria (CAPDAN). CAPDAN is located in the Ikeja IT village in Lagos, an umbrella organization for small- and medium sized enterprises (SMEs). The IT village is the central place for ICT-related business activities in Lagos. All ICT related businesses active in the IT village can become a CAPDAN member.

### *Kwara North*

The objective of the schemes in Kwara State is to introduce health insurance programs in all three Senatorial Districts of Kwara State and therefore to lay the basis for a state-wide health insurance scheme. The first program was introduced in Kwara North in February 2007 with the understanding that it would be supported until December 2012, with an option to extend it into 2013. The beneficiaries of the scheme were two farming communities in the Edu Local Government Area (Shonga and Tsaragi) with a target population of 70,000. In 2009 the scheme was expanded to include the Lafagi LGA. Based on the information gained from a house numbering study, the target group size was revised to 80,000.<sup>12</sup>

As part of the operational research for the Health Insurance Fund, an impact evaluation was envisaged for this scheme. A baseline survey was conducted in the region in August 2008 in more than 900 households. It was expected that AIID and AIGHD would conduct a follow up survey in Kwara North in 2010 so that an impact evaluation could be carried out on the program implemented in the area.

However, due to the program's very successful uptake, 70.8% of the households in the treatment group were already insured by the time the baseline survey was conducted. With such a large group of individuals insured for up to one and a half years before the baseline survey was conducted, the baseline figures most likely do not truly reflect the treatment group before the insurance project was launched. This could result in an underestimation of the true effect of the program in any impact conclusions drawn on the basis of a follow up survey. It would be very difficult to draw policy conclusions from an analysis with this amount of uncertainty.<sup>13</sup>

### *Kwara Central*

The second Senatorial District of Kwara State to receive the Kwara Health Insurance program, after consultation between the Kwara State Government and the Health Insurance Fund, was the Afon and Aboto Oja Community in the Kwara Central region. The overall objective of the scheme was to provide health insurance to 71,000 low-income farmers living in the Afon, Aboto Oja and surrounding communities for the period from 1 July 2009 to 31 December 2012, with an option to extend the scheme into 2013.

The Kwara State Government contractually agreed to gradually take over the premium subsidy and introduce legislation to guarantee the continuity of the program beyond the term of a governor. The Governor of Kwara State transferred the first premium subsidy amount to the Health Insurance Fund program for the period from 1 July 2010 – 31 June in 2011. Beyond this period the commitment is planned to gradually increase to 100% of the premium subsidy amount by the Kwara State government by 2013.

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<sup>12</sup> This household numbering study was conducted by PharmAccess but has been shown to be unreliable during sampling for the Financial Diaries study carried out by AIID.

<sup>13</sup> The survey data were subsequently used to complement the Client Satisfaction study which was conducted in 2009; see section 8.4.

In April to May of 2009 a baseline survey was conducted among 1,476 households in the Kwara Central region by AIID and AIGHD in collaboration with the University of Ilorin Teaching Hospital (UIITH). Following the baseline survey the Health Insurance Fund program was introduced in this area.

In order to measure the impact of the insurance program, a follow-up survey was conducted in May to June of 2011. This survey was successfully conducted two full years after the initial baseline study in the area. Of the original 1,476 households (5,991 individuals) interviewed, 84% of these households (1,241 households) were successfully tracked and interviewed in the follow-up survey. By matching the 2011 data with the baseline data from 2009, a short term impact evaluation could be conducted. The resulting report estimates the causal effects of the HCHC program on both biomedical and socio-economic outcomes.<sup>14</sup>

In 2013 the program contributed to a policy dialogue at state and nation levels on how the community health insurance scheme can be scaled up in Kwara and other states in Nigeria. The passing of the Kwara State Community Health Insurance Bill into Law in October 2012 by the Kwara State governor underscored the importance of increasing access to quality healthcare as one of the highest priorities on the development agenda of the governor. In line with the State Strategic Health Development Plan 2010-2015 and the administration's health policy reform, significant resources have been committed towards improving healthcare service delivery points across the state. The state government has spent approximately 4 billion Naira (\$24m) to renovate and equip five General Hospitals across the state to acceptable standards, with further plans to renovate fifty primary health centers across the sixteen local government areas (LGAs) by 2014.

The achievements of the three programs in Kwara (the Kwara South program began in 2012) spurred the Kwara State Government to enact the Kwara State Community Health Insurance Scheme Law in 2012 to scale up the programs to achieve statewide access for the rural low-income population. Furthermore, a memorandum of understanding was signed in February 2013 between Kwara State Government, Hygeia Community Healthcare and the Health Insurance Fund to support the expansion of this community health program with a target to cover a minimum of 60% of the one million low-income earners (600,000 people) in the rural areas of Kwara State by the end of 2017. A five-year health-financing plan was developed by an independent health financing consultant in August 2013. Following the completion of the five-year financing plan (2014-2018), a strategic meeting was held with the officials of the Kwara State Government in September 2013 to discuss the draft plan for the expansion of the Kwara program. One of the major outcomes of the meeting is that the state would fund 7 billion Naira (\$43m) of the total required budget of 14 billion Naira (\$86m) for the scale up to 600,000 rural beneficiaries. The scheme beneficiaries themselves are expected to pay a total amount of 1 billion Naira (\$6m) in co-payments up to 2018. The outstanding balance of 5.8 billion Naira (\$35.7m) would

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<sup>14</sup> For more details on the short term impact evaluation, see Gaag, J.v.d., et al. (2013). A Short-Term Impact Evaluation of the Health Insurance Fund Program in Central Kwara State, Nigeria.

be funded by the Health Insurance Fund and other interested donors as part of the premium subsidy contribution, costs associated with technical assistance, and other project costs.

From May to June 2013, the second follow-up household survey in Kwara Central took place so that the long term impact of the program on the community can be determined. Of the 5,991 individuals originally interviewed in 2009, 3,551 individuals were successfully interviewed in this later survey. The data collected was matched to that of the two previous household surveys, which allowed for analyses to be conducted to determine the long term impact of the program on not only the insured group but the whole community.<sup>15</sup>

Early in 2014, a Framework Agreement was signed between the Kwara State Government, Hygeia Community Healthcare, the Health Insurance Fund and the PharmAccess Foundation to scale up the community based program to a statewide health insurance program, targeting up to 600,000 people across the rural communities of Kwara State by 2018. In 2014 already, the Kwara State Insurance Program was expanded from four to ten Local Government Areas (LGAs). The program in Kwara is faced with the huge challenge of achieving affordable access to quality healthcare as it scales up to more LGAs.

Therefore, the principal focus from 2015 onwards will be to expand the Kwara program to more rural communities across the 16 LGAs of the state. The aim is to transfer ownership and management of the program to the Kwara State Government by 2017, strengthen collaboration with donor-funded vertical programs and develop a replicable and sustainable model as a blueprint for other states seeking to implement health insurance programs in Nigeria. More specifically in 2015, HCHC will deepen its coverage within the existing LGAs, while exploring the opportunity of expanding the program to more LGAs as from 2016. As the program is expanding an independent research plan is being developed to assess the impact of the scaled up program regarding a variety of outcome measures.

## **Kenya**

The development of the The Community Healthcare Plan (TCHP, formerly called Tanykina Community Healthcare Plan) started in 2010. The development continued until the launch of the scheme on 1 April 2011. The Tanykina program started with a pilot group of 160 enrollees in February 2011. The scheme opened to all Tanykina members in April 2011. Tanykina Ltd is a dairy company formed by dairy producers (often local small scale farmers) in Nandi County (formally part of the Rift Valley province), Kenya.

In late 2012, PharmAccess and AAR engaged with Tanykina to discuss the possibilities for Tanykina Dairy Plant Ltd. to co-finance the premium of the insurance, with a view on the sustainability of the insurance program. Although initially deemed

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<sup>15</sup> For details on the long term impact of the program, see Gaag, J.v.d., et al. (2014). A Medium-Term Impact Evaluation of a Health Insurance Fund Program in Central Kwara State, Nigeria.

a possibility by Tanykina, this was abandoned by the management in November due to insufficient financial resources (partly due to loss of their membership base, see below).

In February and March 2011 a baseline household survey was conducted amongst the dairy farmers and their families included in the Kenya program. The impact evaluation for the dairy farmers makes use of a difference-in-difference design. The intervention sample consists of households eligible for Health Insurance Fund insurance, as part of Tanykina Dairies Ltd. The control sample consists of households with at least one member in Leleben Dairies Ltd. (not eligible for enrollment into the program). In total, 818 households in the treatment group and 424 households in the control group were successfully interviewed, encompassing 4,868 household members. The follow-up survey was scheduled to be held in early 2013.

Enrollment in the TCHC program, however, remained behind target. One of the main reasons was that some members did not have sufficient milk income on their account to pay for the premiums. Another important reason was that the fluctuations in milk production and reduction of the milk price made premium payment more difficult. Management issues within Tanykina and higher prices offered by competitors also led to a decrease in number of suppliers to Tanykina (up to 40%). As a result, they could not access the insurance program. Various marketing strategies have been used over the years on the Tanykina members to get the best results.

In order to increase enrollment in the program, the TCHP program was extended, in 2013, to the general population beyond the Tanykina Dairy membership and expanded into neighboring areas. The program has demonstrated there is a willingness and ability for the target population to participate in health insurance and subsequently there is potential for growth. This was made evident when the product was made available to another group (Kabiyet Dairy) and the uptake of the product doubled within three months due to sales in the new group. Nonetheless, the program has also shown that it will be necessary to increase enrollment numbers considerably to ensure the health insurance product can continue in a sustainable manner.

Furthermore, as agreed at the onset of the program, a review was held of the package and price of the insurance program. The package review started in July 2012. Agreement was reached in December to introduce a second package (“Basic-outpatient and maternity only”), alongside the existing package (“Comprehensive-inpatient and outpatient”). The new package is a single package for the whole family, with some financial limits. It was introduced in May of 2013.<sup>16</sup>

Although a follow-up survey was planned in early 2013 to enable an impact evaluation of the TCHC insurance intervention, this was not conducted due to the low uptake of insurance product by members of the Tanykina dairy plant (as described

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<sup>16</sup> Information on how the re-design of the TCHP program affected enrollment can be found in an internal brief produced by Jaap den Teuling and Alice Ogink from PharmAccess' Health Intelligence unit entitled TCHP re-design: did enrollment increase?.



above). Since then, the redesign of the insurance program has led to a significant increase in uptake in the treatment area. In addition, several other healthcare interventions have been launched in the Nandi North district. The AIGHD and AIID proposed to perform a limited impact study focusing on the combined impact of all these healthcare interventions on the treatment community, mainly focusing on maternal and child healthcare utilization.

The study, which is coupled to a qualitative component, seeks to encompass three topics:

- An inventory of the healthcare system and healthcare utilization in Nandi County, taking into account other initiatives such as the National Health Insurance Fund (NHIF) and free Maternal and Primary healthcare.
- The impact of TCHP and other available initiatives on the use made of maternal and child health services.
- An evaluation of TCHP, including insights into factors leading to enrollment and dropping out of the insurance program.

Furthermore, this study will take into account the knowledge gained through a number of studies already conducted in the area by PharmAccess on similar topics. Fieldwork was carried out in late 2014 and the three reports are expected within the first quarter of 2015.

In 2015, TCHP will continue with further expansion in order to reach enrollment numbers that allow the program to become financially sustainable. This will include incorporating the control group into the insurance scheme. TCHP will expand to agricultural (target) groups, specifically in Nandi County and multiple Counties in Central Province where such groups are well represented. Adjustments to the insurance packages will be necessary. All the costing components, such as medical payout, administration, marketing & sales, and risk, should be included in the premium pricing. The aim is to limit the existing marketing and sales costs by concentrating on target group organizations to act as distribution channels for TCHP. Furthermore, local financial institutions, such as SACCOs and local MFIs will be approached to market and sell TCHP. There will be a continuation of the incorporation of SafeCare<sup>17</sup> Quality Improvement programs and certification for all healthcare centers that provide services for TCHP.

Finally, as this report is written, plans are being developed to transition the health programs in Kenya to the Health PIN platform. Details of this new platform will become available if the plan is approved by the board of the Health Insurance Fund.

## **Tanzania**

The implementation of the program in Tanzania was started in April 2009 after receiving the official approval of the Tanzanian Ministry of Finance and Economic Affairs and the Dutch government. All schemes were planned to be implemented by Strategis Insurance Tanzania Limited, the largest insurance company in the country.

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<sup>17</sup> For more information on SafeCare, see [www.safe-care.org](http://www.safe-care.org).

Strategis was selected through a tender process in 2007. One of the three low-income groups targeted by the program in 2010 was part of Promotion of Rural Initiative and Development Enterprises Limited (PRIDE) in Dar es Salaam.

PRIDE is a microfinance organization that consisted of around 30,000 clients and 25 branches when the insurance scheme was launched in April 2010 by Her Royal Highness Queen Maxima. Four branches of PRIDE were selected as the first group to be part of the program. The number of individuals (clients and their family members) able to access the insurance scheme within the original four branches is estimated at 40,000.

Preceding the launch of the program, a baseline survey was conducted between March and May of 2010. The survey was conducted on the Temeke and Buguruni branches of the PRIDE microcredit group, in which 674 households with 2,241 household members were interviewed. With a follow-up survey to follow at a later date, the impact of the program would be measured.

However, during 2010 PharmAccess facilitated the process of revising responsibilities between PRIDE and Strategis. This was necessary due to the slowdown of the scheme and disagreement between these partners during implementation of the scheme. It was eventually agreed that Strategis would be responsible for administration and PRIDE for enrollment and marketing, which Strategis had previously been responsible for. Unfortunately, however, largely due to capacity constraints it was agreed with PRIDE and Strategis leadership to terminate the scheme in June 2011.

A different part of the program in Tanzania was the development and implementation of the KNCU health program with the involvement of PharmAccess, in collaboration with the Kilimanjaro Native Coffee Union (KNCU) and MicroEnsure. This insurance program was piloted in 2011 and then redesigned and rolled out in August 2012. This health program has been exclusively available to KNCU members in four districts (Siha, Moshi Rural, Hai and Rombo) in the Kilimanjaro region.

Towards the end of 2012 a census was conducted by MicroEnsure in order to provide a pool from which to randomly sample for the baseline household survey in the area surrounding Moshi, Tanzania. The treatment and control groups for the KNCU Health Plan Impact Evaluation were selected such to have similar observed characteristics. The treatment and control groups consist of five and four KNCU Primary Societies, respectively, located in the Kilimanjaro region districts Hai, Moshi Rural, and Rombo. A representative sample of 1,500 KNCU farmer households was randomly selected for the baseline survey, half of which are in the treatment group. The baseline survey was conducted from January to March in 2013.

After consultations with the Permanent Secretary of the Prime Minister's Office, the PharmAccess Group received the request from the Prime Minister's Office to partner with NHIF (Tanzania's National Health Insurance Fund) to make the district-run public Community Health Fund (CHF) work in three regions of Northern Tanzania: Kilimanjaro, Arusha and Manyara. PharmAccess has three years of experience

working in the Northern Zone and understands the local conditions and hence is in a good position to realize an improved CHF (iCHF). An opportunity was therefore identified to collaborate with the CHF in the districts where the KNCU program is implemented, expand coverage to the general population in those districts, and expand even beyond Kilimanjaro region. Completing the integration of the KNCU health plan into the iCHF in three districts of Kilimanjaro will be a priority for the program for 2015. This integration is supported by memoranda of understanding between the PharmAccess Group and the District Councils responsible for the CHF. The aim of the collaboration is to establish iCHF in the districts into which the KNCU health plan will be merged. It is expected that the premium subsidy co-financing by the CHF will improve sustainability of the program. Both public and private providers will be included in the service delivery infrastructure, which is currently not the case in the Community Health Fund.

In addition, following a recommendation from the Tanzanian Ministry of Regional Administration and Local Government, the PharmAccess Group is collaborating on a higher level with the NHIF in the Northern Zone. In the regions Kilimanjaro, Arusha and Manyara of the Northern Zone, PharmAccess will work within the regional and district structures to support the development of the iCHF through technical assistance, capacity building and knowledge transfer of lessons learned in the KNCU program and other Health Plans programs in Kenya and Nigeria.

In November 2014, iCHF was launched in Siha district and in December 2014 the same was done in Moshi Rural district. In 2015, the integration of the KNCU health plan will be completed with the start of iCHF in Hai district. By the end of 2015, the enrollees of the KNCU health plan will have been transferred into iCHF in Siha, Moshi Rural, and Hai. If the initial launch of the iCHF in the three districts of Kilimanjaro is successful, iCHF will also be introduced in three districts in the Manyara and Arusha regions as agreed in the memorandum of understanding signed with NHIF.

The contract with MicroEnsure (the former administrator of the KNCU Health Plan) ended in September 2014. NHIF will be the administrator for iCHF in Siha, Moshi Rural, and Hai. This will significantly reduce the administrative costs of the health plan by leveraging the existing NHIF infrastructure, further contributing to long term financial sustainability. In order to increase efficiency the NHIF team shall be supported by experienced staff seconded to them by PharmAccess. These experienced staff members are recruited from and in agreement with former administrator MicroEnsure.

The premium subsidy for the KNCU health plan, which is now provided by the Health Insurance Fund, will be taken over by NHIF. According to the CHF act, NHIF provides a 50 percent matching grant to household contribution of CHF.

After the successful completion of the baselines survey in early 2013, a follow up survey on the same population is planned to take place in early 2015. The combination of baseline and follow up data will allow for a full impact evaluation of the program.

Impact evaluations have been carried out in the various countries (although still ongoing in Kenya and Tanzania) and there are also many results to present from a variety of additional studies that were based on large volumes of data collected during baseline, follow-up, and other in-depth surveys. Before presenting the various impact evaluation results, the special aspect of “rigorous impact evaluation,” as opposed to the more common “monitoring and evaluation” (M&E) exercises, will be discussed.

# 3 What is impact evaluation?

At the very start, the decision was made by the Health Insurance Fund to evaluate the impact of the new programs on key outcome variables. Given the innovative character of the health programs being implemented by the PharmAccess Group, this was a logical decision and in line with the growing understanding in the development field that impact evaluation should be a natural component of innovative development programs and projects. How to approach the impact evaluation in this particular case needed more discussion.

It was decided that the projects should be leading and the research, or impact evaluation, should follow. This decision was made to underscore that the entire set of activities was always first and foremost focused on getting affordable health services to the poor. While this, at first sight, seems obvious, the literature on the effectiveness of similar “community based health insurance” projects is riddled with pilot studies in which sophisticated impact evaluation techniques (notably Randomized Controlled Trial, or RCTs) are used to evaluate the impact of badly designed, short term (sometimes only one year) projects. The “bad” design can mean, for example, that projects completely ignore the supply side (e.g., is quality healthcare available?), while trying to get people to buy health insurance. Moreover, the limited time period of the project makes the concept of “insurance” unattractive. Not surprisingly, many of the “high quality” evaluations of “low quality” interventions find no or only minimal impact.

These evaluations of short term interventions lead to quick publications in peer reviewed journals, because these journals put a heavy emphasis on methodology and are less interested in the actual contents of the intervention. The evaluation of the PharmAccess projects placed the contents of the intervention first. Once implemented, suitable evaluation methods needed to be identified in order to evaluate the impact.

As it turned out, placing priority on project implementation had important consequences for the research component. First of all, it takes a lot of time to implement a project with multiple components in a difficult and constantly changing environment. Even if a treatment area has been identified (by the implementers) and a suitable control group has been found (by the researchers), it may still take one year, or multiple years even, before the program is sufficiently developed so there is actually *something that can be evaluated*. The best example is participation in health insurance. Even with heavy investments in marketing, including meetings at the village level and door-to-door information efforts, most people take a wait-and-see attitude before they consider enrolling in what, in many cases, is a completely new and little understood program for them. Indeed, while plans were initially made to conduct follow-up surveys one year after the start of the program, in all cases the follow-up survey was done two years or longer after the start of the program, to give the population in the target group time to become familiar with the program, and enroll in sufficient numbers.

Thus, out of necessity, the program comes first and needs to reach a sufficient scale before a rigorous evaluation is possible. The next question is: What methods are available to make that evaluation as rigorous as possible? There is a clear distinction

between standard monitoring and evaluation (M&E) activities and rigorous impact evaluation research. M&E describes the process of implementation and results, but cannot determine that those results (outcomes) are causally linked to the various components of the project, and not to other developments or interventions, for example. When carrying out an impact evaluation, one tries to answer the question of how the outcome variables would have been different in the absence of the intervention. This is called the counterfactual. It is this focus on attribution that distinguishes rigorous impact evaluation from M&E, although good M&E can contribute significantly to understanding the results of impact evaluation. In other words, M&E and impact evaluation are both necessary, they are complements, not substitutes.

The following techniques are standard for rigorous impact evaluation: Randomized Controlled Trials (RCTs), Different-in-Differences techniques (DD), Propensity Score Matching (PSM), and Instrumental Variable estimation (IV).<sup>18</sup> In RCTs, the intervention is randomly distributed to the households or individuals in the population. In principle, this would be possible for the insurance part of the PharmAccess intervention, though this raises serious ethical issues. How do you explain to a person that she cannot enroll in the subsidized health insurance program, but her neighbor can? In practice, it is impossible to do randomization for the upgrades of the clinics (unless one wants to forbid people to use the upgraded health facilities because they were not “chosen” by the randomized assignment to the project). In consideration of the practical and ethical issues raised by the use of RCTs, this technique was not considered suitable for the purposes of these impact evaluations. RCTs create an automatic “counterfactual”, i.e., those individuals not chosen in the randomized assignment process. For the other techniques, an artificial counterfactual needs to be created.

When using DD techniques, a treatment area, where the program is implemented, and a control area are defined. This control area is the artificial counterfactual. It is chosen so as to be highly comparable to the treatment area in all relevant aspects, ranging from the socio-economic make-up of the population, similarity in (mini-) climate, major economic activities (e.g., agricultural versus industrial), infrastructure (including medical infrastructure), etc. Measures have to be taken to prevent the control area from being “contaminated” by the intervention. For instance, the control area needs to be sufficiently far away from the treatment area, to make sure that patients do not travel from the control to the treatment area to benefit from the higher quality clinics. Baseline surveys are conducted in both areas prior to the roll-out of the program. Then after one or two years, follow-up surveys are done to measure how the outcome variables (e.g., medical consumption) have changed *differently* over time in the two areas. The difference between those two differences (DD) can then, under some plausible assumptions,<sup>19</sup> be attributed to the intervention. The most important assumption is known as the “parallel development.” This

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<sup>18</sup> There are more, see for instance Khandker, S. R., Koolwal, G. B., & Samad, H. A. (2010). Handbook on impact evaluation: quantitative methods and practices.

<sup>19</sup> See section 5.

means that it is assumed that, in the absence of any intervention, both areas would show identical development patterns for the variables of interest (such as medical consumption).

Using PSM, an artificial counterfactual is constructed by statistically “matching” an insured individual in the treatment area with a very similar individual (an “identical twin”) in the control area (who, in the absence of the program, cannot be insured). The assumption is that there is a high probability (“propensity”) that these two individuals would behave in very similar ways if they had lived under similar conditions (i.e., the “matched” person in the control area would have chosen to enroll, if the insurance program would have been available). But only the person in the treatment area can benefit from the program. Any difference between these two persons in one or more of the relevant outcome variables (e.g., out-of-pocket expenses for healthcare) can thus, under some plausible assumptions, be attributed to the intervention.

Note that the DD and PSM techniques measure two different types of impact. DD compares the entire population in the treatment area with the entire population in the control area. Thus the impact measured by DD will also include the impact on individuals in the treatment area who decide not to buy insurance, but who still can benefit from the higher quality healthcare in the clinics, albeit for a fee. The PSM technique compares *insured* individuals in the treatment area with a matched *uninsured* person in the control area. Thus PSM measures the combined effect of the intervention, both the insurance coverage and the access to higher quality care. But it does not capture the spill-over effect on the non-insured, which is included in the DD analysis. It is thus, *ex ante*, impossible to predict which effect will be larger. In practice the impact effects are very similar and this report presents only some of the DD results.

Finally, under some conditions, IV estimation would be appropriate. IV estimation is an econometric technique that tries to deal with the problem that some relevant variables in the analysis are endogenous, i.e., they are the result of a person’s behavior which, in turn, can be influenced by the program or other variables. An obvious example is “being insured.” Insurance is voluntary, and thus not randomly distributed in the population. This can influence the estimation of the impact of the program. In section 7.3 IV techniques are used to correct for this bias, and make an estimation of the pure impact of the program on health outcomes.

In all cases reported in this paper, the impact results can be causally attributed to the intervention, and not to any other known or unknown events or developments.

## 4 Improvements in health sector infrastructure<sup>20</sup>

The Health Insurance Fund program has five objectives, the first of which is: to increase access to quality basic health care for currently uninsured groups, mainly through private health facilities. To achieve this, the program takes on challenges on both the demand and supply side of the healthcare system. An important component that has to be dealt with on the supply side is the upgrade of the medical and administrative capacity of the healthcare providers contracted under the program. Payment of these providers is performance-based. The idea is that once quality is in place, people will be more willing to (pre)pay for healthcare through the health insurance program.

Once a public or private clinic starts participating in a health insurance program supported by the Health Insurance Fund, the healthcare provider is enrolled in the quality improvement program called SafeCare. SafeCare (ISQua approved) is a joint initiative of PharmAccess, the US-based Joint Commission International, and the Council for Health Service Accreditation of Southern Africa (COHSASA) for the improvement of quality standards of primary health and clinics in resource-restricted settings. SafeCare offers clinics positive incentives to move steadily upwards in quality while at the same time allowing clinics the possibility to make insights into quality levels available to patients.<sup>21</sup>

When a healthcare provider is contracted by the Health Management Organization (HMO), a third-party administrator (TPA) or by the insurer that manages the relevant health insurance program, a baseline assessment is conducted in the clinic by SafeCare and a quality improvement plan is formulated. The quality improvement plans consist of specific targets in thirteen different domains including: Management and leadership; human resource management; patients' rights and access to care; management of information; risk management; primary healthcare services; inpatient care; operating theatre; laboratory; diagnostic imaging; medication management; facility management; and, support services. The improvement plans, which guide healthcare providers towards internationally recognized quality levels in a stepwise quality improvement program, are implemented by the healthcare providers themselves with support from the HMO/insurer. SafeCare monitors the progress on quality improvement through annual follow-up assessments applying the SafeCare Quality Standards. Examples of quality improvement interventions include implementation of treatment guidelines (for example for hypertension); training of staff in guideline-based care; upgrading of laboratory equipment; training of laboratory staff to enable basic laboratory testing; assurance of continuous essential drug supplies; adequate medical file keeping; waste management protocols; and, hospital infection control protocols. The clinics' achievements are acknowledged through certification.

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<sup>20</sup> This section was produced by Alexander Boers, with Alice Ogink providing the data presented.

<sup>21</sup> For more information on SafeCare, please see [www.safe-care.org](http://www.safe-care.org).



Table 1 shows the number of healthcare providers (primary and referral) that have been included in quality improvement plans per program. The total number of healthcare providers that have participated in a quality improvement plan is higher, but the table shown here is limited to the programs that have been evaluated by AIID and AIGHD.

*Table 1: Healthcare providers included in quality improvement plans, per program*

Program	Ever joined	Public	Private	Still active
<b>Nigeria</b>				
Lagos Market Women	24	4	20	18
Kwara North	11	4	7	11
Kwara Central	6	4	2	6
<b>Kenya</b>				
TCHP	11	6	5	8
<b>Tanzania</b>				
PRIDE	6	0	6	0
KNCU	24	3	21	24

Note: "private" healthcare providers include faith based and NGO healthcare providers

Local offices, supported by the quality team in Amsterdam, keep track of the percentage of quality improvement plans that have been successfully implemented per healthcare provider, compared to their original Quality Improvement Plan. Table 2 provides an overview of the total number of clinical trainings provided through the SafeCare program. Trainings include participation by various clinics across all programs in a country.

*Table 2: Total number of clinical trainings by SafeCare*

Clinical trainings	#
Clinical care	34
Laboratory	8
Pharmacy	6
Quality management	24
Administration	17

In 2014, 951 staff members were trained in 30 clinic training sessions. Table 3 shows the number of individuals trained in selected programs during the course of 2014.

Table 3: Number of individuals trained over the past year

Type of training	# of staff trained
<b>KNCU</b>	
Management of medical records	27
Infection prevention & control	26
HIV testing / counseling	20
Basic life support & emergency care	19
Management of chronic diseases	19
Antenatal Care / Pregnancies	18
Other	25
<b>Kwara</b>	
Customer Service	71
Quality management	74
Paediatrics	37
Infection prevention and control	59
HIV counseling and testing	91
<b>TCHP</b>	
Leadership and Customer care	30
Commodity Management	17

Running parallel to these improvement plans, clinics within the program have access to capital through the Medical Credit Fund, allowing them to obtain loans to invest even more in capacity and quality improvement. The Medical Credit Fund's primary objective is to increase the delivery of affordable quality healthcare services by reducing the investment risk. To achieve this objective, the Medical Credit Fund provides performance-based financing in combination with technical support to eligible private primary healthcare providers. The two programs are interlinked: the Technical Assistance (TA) program and the Finance program. The TA program offers quality improvement and business planning while the Finance program provides access to loans. Additionally, the selected health facilities participate in a medical and business quality improvement program that will strengthen their business case and debt servicing capacity, and reduce credit and medical risk. To date (end of 2014), the Medical Credit Fund has provided 301 Quality Trainings and 327 Business Trainings under its TA program.<sup>22</sup>

<sup>22</sup> For more information on the Medical Credit Fund, see [www.medicalcreditfund.org](http://www.medicalcreditfund.org).

# 5 The impact on healthcare utilization<sup>23</sup>

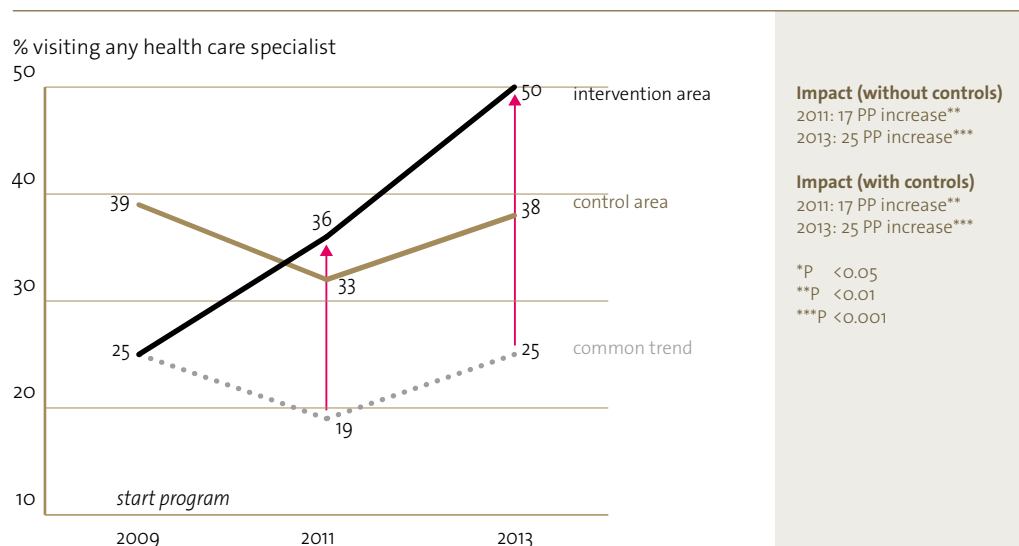
The Hygeia Community Health Plan in Central Kwara state started in July 2009. A baseline survey was conducted in the treatment area and in a control area, prior to the start of the program. Follow-up surveys were conducted in 2011 and 2013. In this section the main results are presented of this program's impact evaluation that is based on these three surveys.

The main objective of the health insurance intervention with concurrent upgrades of the participating clinics is to provide affordable quality healthcare to the entire population in the program area. Using the techniques described in section 3, a number of outcome variables in the program area will be compared with the outcomes in the control area.

The first outcome variable compared here is healthcare utilization, which is defined as the use of any type of healthcare provider in the previous year. In Figure 1, it is clear that at baseline, i.e., before the start of the program, healthcare utilization in the control area was significantly higher than in the program area.<sup>24</sup>

The solid gold line in the figure shows the development of healthcare utilization in the control group from 2009 to 2011 to 2013. Using the lower starting point, the dotted line shows what would have happened in the treatment area, in the absence of the program<sup>25</sup> (the counterfactual). The black line shows what actually happened in the treatment area.<sup>26</sup>

Figure 1: Percentage visiting any healthcare provider



<sup>23</sup> Section 5, 6 and 7 are largely based on Gaag, J.v.d., et al. (2014). A Medium-Term Impact Evaluation of a Health Insurance Fund Program in Central Kwara State, Nigeria.

<sup>24</sup> This shows how difficult it is to find a "similar" control area for the treatment group prior to doing any significant survey work. One has to rely completely on local knowledge and expertise. Fortunately, in the analysis one can easily control for such discrepancies.

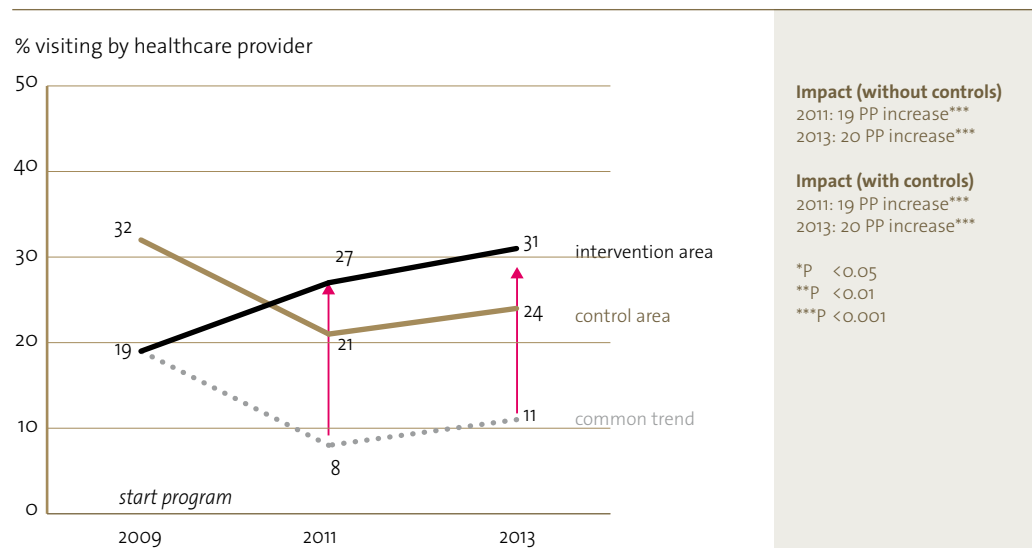
<sup>25</sup> Based on the "parallel development assumption."

<sup>26</sup> In the top right hand side of the figure is shown the percentage point (PP) difference in the outcome variable that is due to the program from regression estimates both with and without control variables.

In the control area, healthcare utilization went from 39% of the population in 2009, to 32% in 2011 and back up to 38% in 2013. Based on the “parallel development” assumption, in the program area one would expect a decline from 25% in 2009, to 19% in 2011, and back up to 24% in 2013. Instead there is a steady increase from 25% to 37% to 48%. This almost doubling of access and use of healthcare over four years can be completely attributed to the program intervention. Note that this result is the sum of the effect on those enrolled in the insurance program (and, of course – being in the program area – enjoying the quality upgrades of the participating clinics) and the spillover effects on those not enrolled (but still being able to enjoy the quality upgrades, albeit for a fee).

If analysis is limited to the use of modern/formal healthcare<sup>27</sup> only, a similar pattern emerges (Figure 2).

Figure 2: Percentage visiting to modern/formal healthcare provider

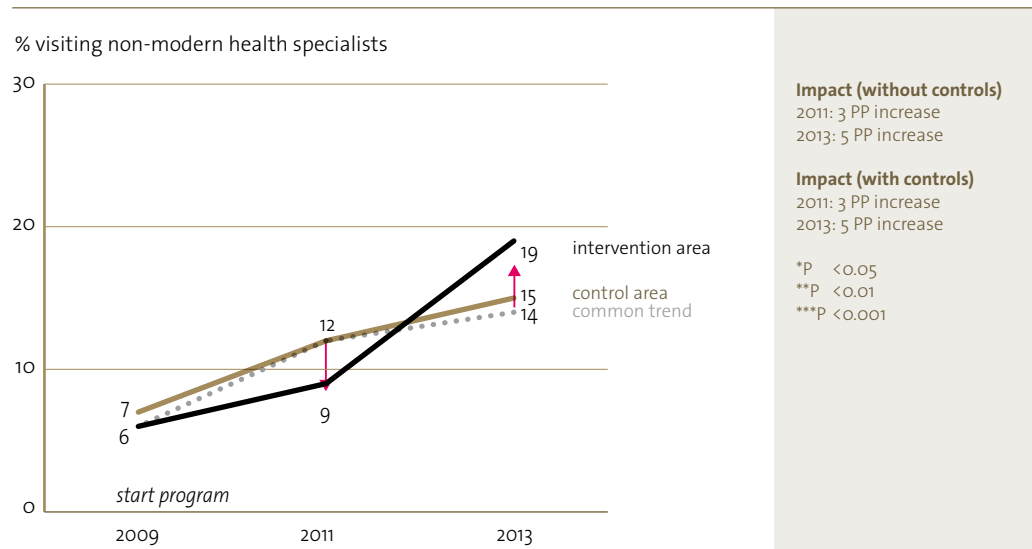


The use of modern healthcare in the program area increased from 19% to 28% to 30%, while in the control area the numbers are 32%, 20%, and 23%.

<sup>27</sup> Formal/Modern healthcare providers are categorized as any of the following: hospital/clinic, health center, private doctor, private nurse, private midwife, private paramedic, pharmacist, while Non-formal/Non-modern healthcare providers are categorized as any of the following: patent medicine vendor (main category), traditional healer, alternative medicine provider, religious person.

Figure 3 completes the picture. It shows the development of non-modern/non-formal healthcare over time.<sup>28</sup>

Figure 3: Percentage visiting non-modern / non-formal health provider



At baseline, 6% of the population reported to have used non-modern healthcare at least once during the previous year, in both the program area and the control area. Given identical starting points, one would expect the developments in both areas to be the same, with the percentage increasing from 6 to 12 to 14. Instead, after two years an increase in the program area was found, from 6% to 9% (i.e., smaller than the increase in the control area), but in the following two years a larger increase occurred, from 9% to 18% of the population.

Further analysis of this somewhat surprising result reveals that most of this increase consists of a visit (or visits) to local (non-formal) pharmacies. Apparently, by having more access to quality healthcare, people are more aware of their medical status (see section 7.1), and consume more medicines, some of which are acquired at the local pharmacy. Whether this is cause for concern can only be determined by a more detailed analysis of exactly which medicines are being used (see section 8.6).

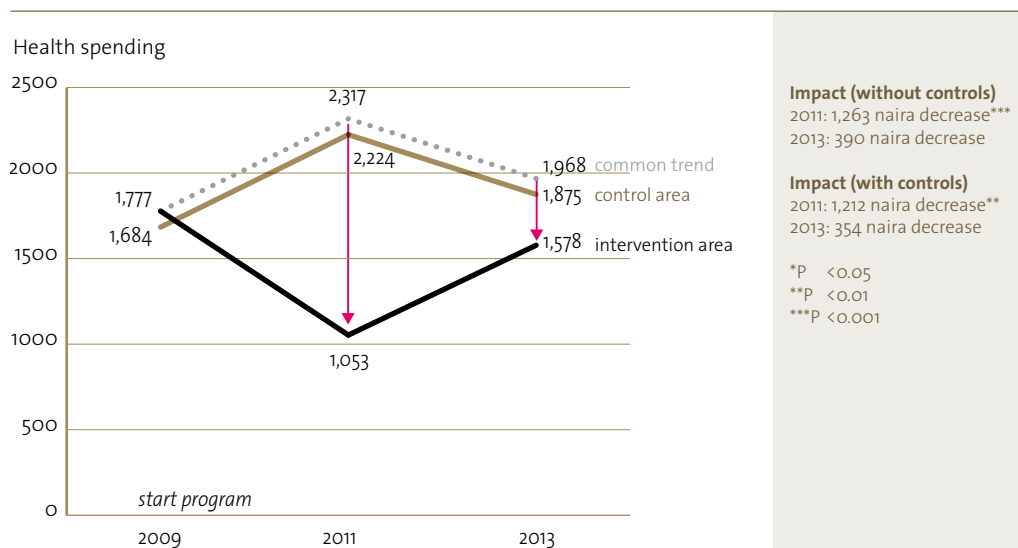
The impact of the program has also been analyzed by sub-groups of the population, such as children versus adults, the lower half of the income distribution versus the upper half, males versus females and by level of education. A formal test did not find any statistical differences in the impact of the program on these sub-groups of the population. This result is quite remarkable, and in sharp contrast with what is consistently found in the literature about the use of conventional government-run healthcare facilities. The benefits of government-provided “free” access to such facilities are almost always captured by higher income and more highly educated segments of the population.

<sup>28</sup> Note that Figure 1 is the sum of Figures 2 and 3.

# 6 The impact on out-of-pocket expenses

Figure 4 shows the development of another important outcome variable: Out-of-pocket expenses.<sup>29</sup> At baseline, out-of-pocket expenditures on healthcare are slightly higher in the program than in the control area: 1,785 Naira versus 1,656 Naira.

Figure 4: Health spending



In the control group, out-of-pocket expenditures increased to 2,229 Naira after two years and declined to 1,908 Naira over the next two years. The development in the program area is very different. After two years there is a sharp decline to 1,036 Naira, and then a re-bounce to 1,582 Naira by the end of the four year period. That is still lower than at baseline, and significantly lower than where it would have been in the absence of the program (2,037 Naira), but the surprising pattern requires an explanation.

First of all, one should keep in mind that the increase in out-of-pocket expenses from 2011 to 2013 parallels the increase in healthcare utilization during the same period from 37% to 48%. A more detailed analysis of the expenditures shows that most of the increase is for medication. This, and the earlier result that the increase in the use of non-formal providers was mostly due to visits to the local (informal) pharmacy, provides a consistent picture: Increased access to and use of quality medical care results in increased awareness of one's medical condition, which in turn may have increased the use of drugs, acquired, in this case, at local (informal) pharmacies. Again, this calls for a more in-depth analysis of exactly what type of drugs are bought.<sup>30</sup>

Again, the distribution on the impact over sub-groups was remarkably equitable, with no statistically significant differences being detected among the various sub-groups of the population.

<sup>29</sup> Out-of-pocket health expenditure is defined as the share of the expenses that the individual must pay directly. It is calculated per person per year, excludes the health insurance premium but includes travel costs to health facility.

<sup>30</sup> This analysis is currently going on using, among other things, data from the so-called "medical cabinet" surveys.

# 7 The impact on health outcomes

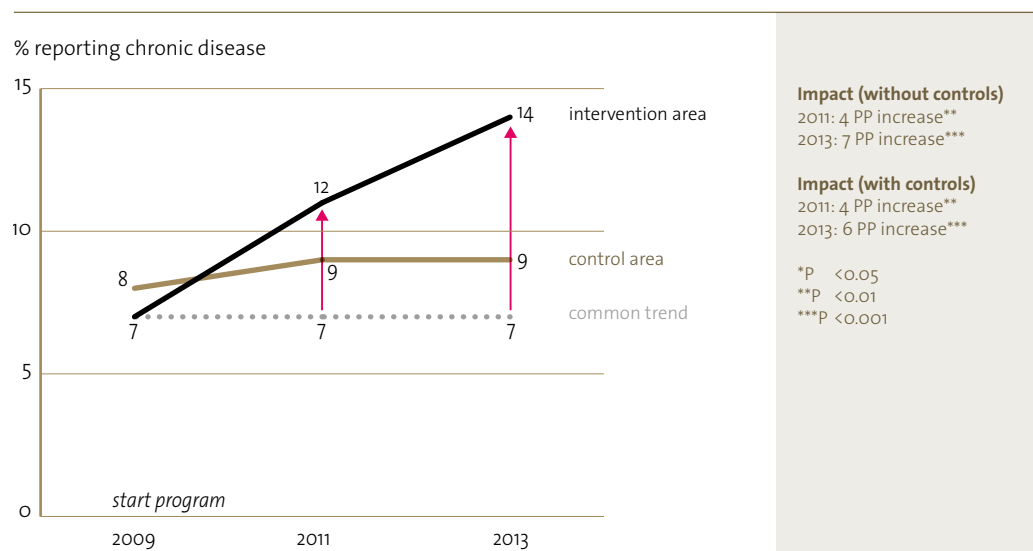
## 7.1 Results in self-reported health

The surveys included the following questions regarding self-reported health status:

- Does the respondent have difficulty carrying out certain daily activities as a result of health problems?
- Is respondent's health better or worse than last year?
- Does the respondent have one or more chronic diseases?
- Has the respondent experienced one or more acute diseases in the last 12 months?

The impact on the program was very similar for each of those questions. Figure 5 shows the results for chronic diseases. At baseline, awareness about having a chronic disease is rather low: 8% in the control group and 7% in the program area. It remains low in the control group, but after four years has increased to 14% in the program area. Clearly, in an environment with limited access to quality healthcare a major part of the burden of disease goes unnoticed, and thus untreated. In the program area, this situation has significantly improved, thanks to the intervention.

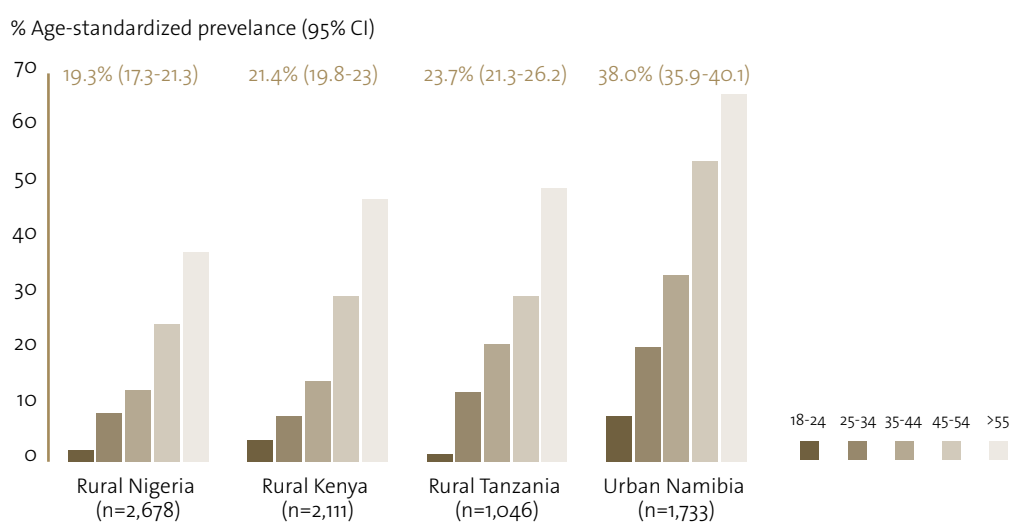
Figure 5: Respondents reporting a chronic disease



## 7.2 Results in hypertension<sup>31</sup>

Cardiovascular disease (CVD) is the leading cause of adult mortality in low-income countries, but data on the prevalence of cardiovascular risk factors such as hypertension are scarce. In a study using data from Namibia, Nigeria, Kenya and Tanzania, Hendriks et al. show that age adjusted prevalence of hypertension ranges from 19.3% in rural Nigeria to 38.0% in urban Namibia (see Figure 6).

Figure 6: Hypertension prevalence & distribution of blood pressure: age-standardized & -stratified hypertension prevalence



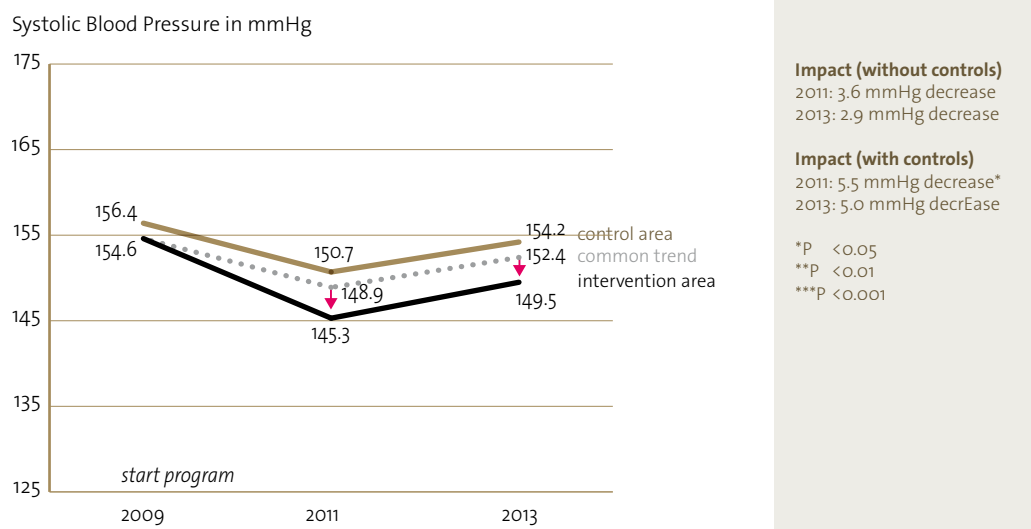
Despite these high levels of prevalence, there is very low awareness of the disease and very few people do get the necessary treatment. In a follow up study, Hendriks et al. tests whether the implementation of the dual intervention in Kwara State (health insurance plus facility upgrades) is successful in providing care and controlling hypertension for those living in the treatment area.

Figure 7 shows that systolic blood pressure (SBP) decreased in both the treatment and the control area from 2009 to 2011 and then increased again in 2013. Overall the decrease in blood pressure was greater in the program area compared to the control area. It was possible to attribute 5.5 mmHg of the decrease in SBP from 2009 to 2011 and 5.0 mmHg of the decrease in SBP from 2009 to 2013 to the HCHC program.

<sup>31</sup> This section draws heavily on Hendriks, M. E., et al. (2012). Hypertension in sub-Saharan Africa: cross-sectional surveys in four rural and urban communities.



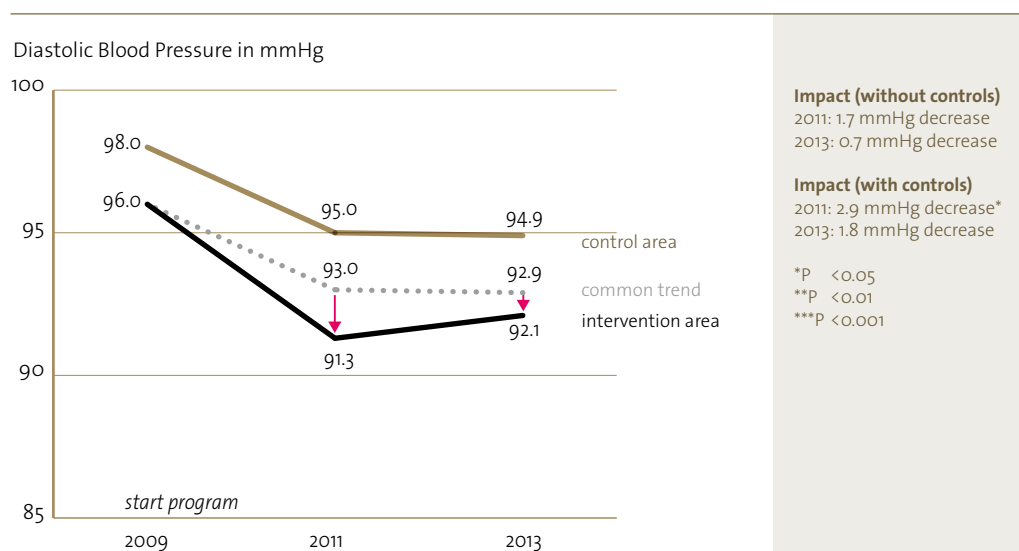
Figure 7: Systolic Blood Pressure in Hypertensive Respondents



In respondents with severe hypertension at baseline, systolic blood pressure decreased in both areas from 2009 to 2011, but more so in the program area. In 2013, the decrease in blood pressure was sustained in the program area, but blood pressure rose substantially in the control area. This resulted in a program impact of -9.4 mmHg SBP (non-significant) in 2011 and -16.4 mmHg SBP (significant) in 2013. In other words, the impact of the program on systolic blood pressure in respondents with severe hypertension increased over time. The same trend of an increasing impact can be seen in respondents with moderate hypertension at baseline. At the same time, the program impact on respondents with mild hypertension at baseline decreased over time. As part of the HCHC program, staff in the program area were trained in guideline-based care. Due to raised awareness, healthcare professionals may have been more likely to also treat people with mild hypertension, resulting in the initial improvement among respondents of this subgroup. The effect of the awareness raising may have faded over time, both in patients as well as in healthcare providers. Treatment fatigue is a known phenomenon and this may apply especially to people with mild hypertension. This could explain the diminished effect on respondents with mild hypertension in the longer term, and also explains that the impact on all hypertensive respondents is slightly lower in 2013 compared to 2011, as respondents with mild hypertension at baseline make up more than half of the total hypertensive cohort.

Diastolic blood pressure (DSP) decreased in both areas from 2009 to 2011 as well as from 2009 to 2013. The decrease in blood pressure was greater in the program area compared to the control area. It was possible to attribute 2.9 mmHg of the decrease in DBP from 2009 to 2011 and 1.8 mmHg of the decrease in DBP from 2009 to 2013 to the HCHC program (see Figure 8).

Figure 8: Diastolic Blood Pressure in Hypertensive Respondents



In respondents with severe hypertension at baseline, diastolic blood pressure decreased in both the control and program area from 2009 to 2011, but decreased slightly more in the program area. In 2013, the decrease in blood pressure was sustained in the program area, but blood pressure increased slightly in the control area. This resulted in a program impact of -2.7 mmHg DBP in 2011 (non-significant) and -5.7 mmHg DBP in 2013 (borderline significant). As was the case for systolic blood pressure, the impact of the program on diastolic blood pressure increased over time for respondents with moderate or severe hypertension at baseline and decreased over time for respondents with mild hypertension at baseline.

Thus increased access and improved quality of care resulted in a decrease in the prevalence of one of the most important risk factors for CVD, namely hypertension. It is also noteworthy that the enrollment percentage in insurance is relatively high among those with hypertension (42 percent<sup>32</sup>). Clearly, when people become more aware of their need for medical care, health insurance becomes more attractive. The authors conclude that community based health programs such as in Kwara can successfully contribute to counter the trend towards higher levels of hypertension in low-income countries.

<sup>32</sup> For more detail on enrollment within the Kwara program, see section 8.2.

### 7.3 Results in Mother and Child Health<sup>33</sup>

Maternal, newborn and child mortality rates remain unacceptably high in sub-Saharan Africa. In 2010 Nigeria alone accounted for 14 percent of global maternal deaths, although the country contains about 2 percent of the world population. The Nigerian maternal mortality rate is 630 per 100,000 live births, while it is 500 in sub-Saharan Africa and 20 in developed countries. The under-five mortality rate is very high, 132 per 1,000 live births. Increasing access to delivery and emergency obstetric care assisted by skilled birth attendants is the best way to bring down these high maternal and child mortality rates.

Brals et al. studied whether the Kwara State Health Insurance program is an effective way to increase hospital deliveries. All women in the treatment area could make use of quality care in the upgraded program hospitals, with or without insurance. For the insured women, hospital delivery was included in the insurance package.

The percentage of institutional deliveries among insured and uninsured women living in the intervention area and (uninsured) women living in the control area, in respectively the first, second, third, and fourth years after the start of the program, is shown in Figure 9. Before the start of the program, the percentage of hospital deliveries was about the same in the treatment and control area, 50% and 47%, respectively. In the treatment area there is a steady increase, to 72% in 2013. In the control area, the percentage of hospital deliveries remains around 50%, except for a steep drop in 2012, which was due to a strike by health sector workers in the public sector.

Figure 9: Institutional deliveries as percentage of all deliveries

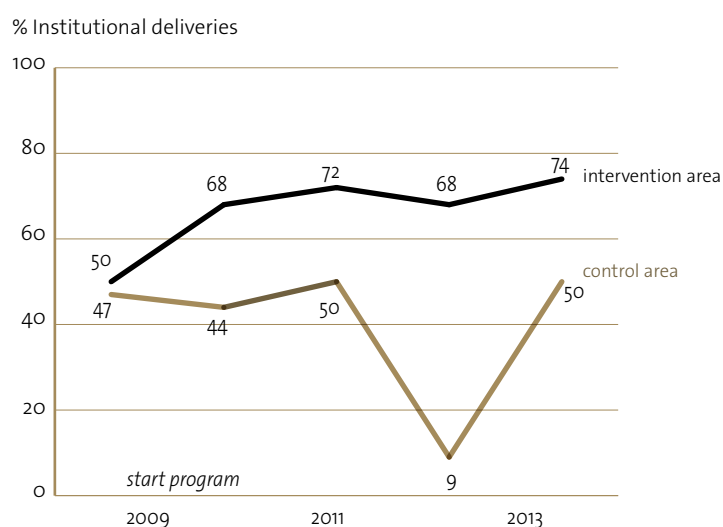


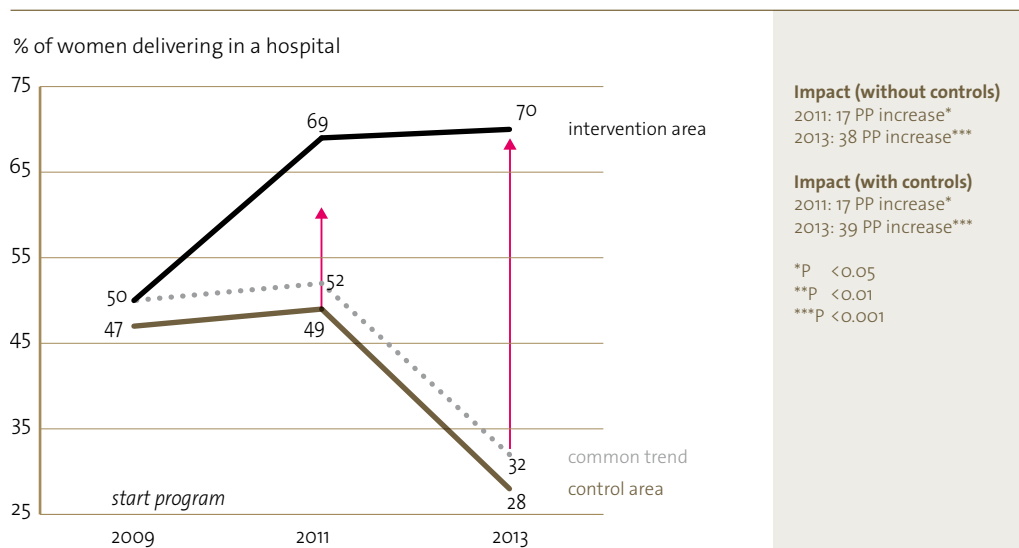
Figure 10 shows the increase in hospital deliveries that can be attributed to the program. In 2011, hospital deliveries in the treatment area were 17 percentage points higher than they would have been in the absence of the program. In 2013 the impact

<sup>33</sup> This section draws heavily on Brals, D., et al. (2014). The Effect of Health Insurance and Medical Facility-Upgrades on Antenatal Care Utilization among Women in Rural Nigeria: a Population-Based Study.

is 38 percentage points, a more than doubling. This remarkably strong impact clearly shows that increased access to and affordability of quality healthcare is a key factor in combatting the unacceptably high maternal and child mortality rates in sub-Saharan Africa in general, and in Nigeria in particular.

It is also noteworthy that before the start of the program none of the women were enrolled in an insurance program. After the implementation of the program, enrollment increased to 37% in the first year, to 64% in the second year and to 72% and 70% in the third and fourth years, respectively. As was the case for hypertension, when people become more aware of their health needs, and increase their trust in the (quality of) the healthcare system, the willingness to pre-pay for health insurance increases sharply.

Figure 10: Hospital delivery care utilization amongst pregnant women



As described at the start of this chapter, maternal, newborn and child mortality rates are unacceptably high in sub-Saharan Africa. An in-depth study, the Maternal and Child Health Study (MACHS), was designed in 2009. This study ran alongside the household surveys in Kwara on which the above results are based. For more information on the MACHS study, see section 8.7 below.

# 8 Special studies

## 8.1 The willingness to pay for health insurance<sup>34</sup>

A study by Velenyi, E. V. was carried out with the objective to estimate the demand for community-based health insurance in order to inform the scheme design and implementation decisions of the operating HMO before the introduction and scale-up of the scheme in selected market locations in the Lagos metropolitan area. The impetus for the study grew from a lack of local knowledge on demand for community-based health insurance among low- and middle-income market women, specifically the economic value of health insurance and the determinants of demand.

There had been little or no understanding at the time of (i) how large the market was for community-based basic health plans; (ii) what factors make insurance desirable among the target group; and (iii) whether there are particular driving forces – economic or behavioral – behind community-based schemes. Without these basic inputs on the feasibility of demand, any operator risks failure because of an inability to customize the products and services to their target group.

A dedicated survey of 1,979 households was implemented to reduce information asymmetry and uncertainty and to help scheme design, operations, and policy development. This survey:

- 1 Was designed to collect control variables that go beyond the evaluation of standard insurance schemes. Three hypotheses form the basis for this extension. First, because CBHI is embedded in the community, it is expected that market-level factors, specifically community social capital and network effects, are important determinants. Since trust is a central behavioral force, it can be expected that attitude toward the government may alter demand. Second, the desirability of the enrollment depends heavily on supply-side attributes, including proximity of the delivery network and benefit design.
- 2 Enabled ex-ante evaluation of demand for the community plan. The decision consists of two stochastic processes: The enrollment choice (willingness to join, WTJ) and the determinant of the reservation price (willingness to pay, WTP).

The data are used to quantify the demand for a hypothetical health insurance package that, of course, resembles the package that the HMO wants to make available to the target population. Using the so-called contingent valuation (CV) method, respondents are first asked whether they would be willing to participate in such a program if it existed, and if the answer is yes, a “shadow price” is solicited from them through a simple bidding process. An early paper on this topic is “Willingness to pay for health insurance: An analysis of the potential market for new low cost health insurance products in Namibia” by Asfaw, A., Gustafsson-Wright, E. and van der Gaag, J. (2009), which also provides a summary of the literature up to 2007.<sup>35</sup> In this paper,

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<sup>34</sup> This section draws heavily from Velenyi, E. V. (2011). Modeling demand for community-based health insurance: an analytical framework and evidence from India and Nigeria, especially Chapter 4: Modeling demand for CBHI – Evidence from Nigeria Using Double Bounded Dichotomous Choice Contingent Valuation.

<sup>35</sup> Velenyi, E. V. (2011). Modeling demand for community-based health insurance: an analytical framework and evidence from India and Nigeria, provides an updated discussion of the literature; see Chapter 2: Literature Review of Demand for CBHI and Presentation of the Extended Analytical framework.

using data from Windhoek, the capital of Namibia, the authors find that 87 percent of the uninsured respondents are willing to join the proposed health insurance scheme and more than half of them are willing to pay either the first (61 Namibian Dollars per person per month) or the second (59 Namibian Dollars per person per month) proposed bids.<sup>36</sup>

More highly educated and younger respondents show more interest in joining the scheme than the other groups. Education also affects the price people are willing to pay. A one-grade increase in the highest level of education achieved increases the probability of accepting the first (i.e., highest) bid by 10.5 percent and the second bid by 5.6 percent. Most of the health status indicator variables such as health expenditure, general health status, weight loss, etc., do not affect the decision of respondents to pay. Similar results are found for the study done for Lagos. But significant differences are also apparent, showing that the results of this type of CV studies are highly context specific.

### **Willingness To Join in Lagos**

It was found that 54 percent of the respondents stated their willingness to join the hypothetical program. This is the size of the ex-ante market for the insurer.

WTJ in households with higher shares of under-five children and senior family members place a greater value on insurance. WTJ is also higher for individuals with a higher education. There is evidence of interest in insurance even among the poorest. Respondents in lower consumption quintiles value coverage because they expect it to improve their utility through two channels: Better access to care (improved health) and reduced direct and opportunity costs. While previous hospitalization or chronic conditions in the household do not increase WTJ, the number of illnesses reported in the past year is positively related to enrollment, as are pre- and stage 2 hypertension. Higher relative health risk taking is associated with reduced likelihood of joining the scheme.

The economic effects of the additional vectors, including supply-side, community effects, and individual and community-level social capital are substantial. The supply side enters into the WTJ decision through marketing efforts, which have a highly positive effect, second only to the market effects. Social capital, trust in government or insurer, and some supply-side effects enter during the enrollment choice. For example, the marginal effect of the marketing variable has a positive effect of 89 percent, second in magnitude only to the market effects. Socially active members are also more likely to enroll.

### **Willingness To Pay in Lagos**

Estimates from various model specifications show low demand for coverage.

The mean stated preference value for a basic benefit package (WTP) is 312 Naira per person per month.

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<sup>36</sup> See also, Schellekens, O. et al. (2009) 'Innovation in Namibia: Preserving Private Health Insurance and HIV / AIDS Treatment', *Health Affairs* 28 (6): 1799-1806.

While there is evidence that respondents are willing to pay some non-zero price, the descriptive analysis and the analytical models consistently show that *ability* to pay is a concern. The results show higher relative willingness to pay as a share of total consumption at low income levels. However, based on past consumption patterns, the absolute level they can afford for co-payment is low. On average, the stated WTP for households in the lowest consumption quintile is 4.31 percent of total annual consumption.

The results also show that acceptance of the offer price reflects a wealth and intra-household “power” gradient, as males, financial decision makers, respondents from the top consumption quintiles, and the more highly educated exhibit higher WTP. In addition, more of the health risk profile measures became significant, including previous episodes of hospitalization, which increases WTP for coverage. Active knowledge of health insurance and trust are important factors behind the payment decision, suggesting that for any start-up scheme, trust building and marketing are essential to maximize the success of the scheme and its sustainability.

In general, the results are robust and consistent with economic theory. The size of the market (i.e., the percentage of people in the target groups who are willing to participate in the program) is rather large, especially given the lack of experience and prior knowledge about insurance in those groups. The Willingness To Pay appears to be rather low, and is well below the full cost of the offered packages, implying that subsidies for the enrollment fees are needed, especially for the poorer household. Of course, subsidies (direct and indirect) for healthcare are the rule, in rich and poor countries alike, so this is hardly an argument against the implementation of community based schemes.

## 8.2 Enrollment<sup>37</sup>

When the Kwara State Health Insurance program was introduced in Central Kwara State, only a handful of individuals had health insurance. Most people had never heard of health insurance. Two years later, in 2011, 32 percent of individuals in the program area were enrolled in the Hygeia Community Healthcare program. In 2013, the fraction of individuals enrolled remained about the same. However, half of the population that had been enrolled by 2011 had been replaced by new enrollees by 2013.

Enrollment in 2011 was higher in the sub-program area of Aboto (39%) relative to the area of Afon (26%), among adults (35%) compared to children (28 %) and among females (34%) relative to males (30%). Moreover, enrollment was higher among the richer half of the population (35%), among households located close to program clinics (36%) and among households whose head had some education in the baseline survey (38%). Enrollment was particularly low among the poorer half of the population (29%), and among households located more than 5 kilometers away from a program clinic (10%).

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<sup>37</sup> This section draws heavily on Gaag, J.v.d., et al. (2014). A Medium-Term Impact Evaluation of a Health Insurance Fund Program in Central Kwara State, Nigeria., section 4.3, and Kramer, B. Intra-household allocations of micro health insurance: No adverse selection after all?.

The enrollment rate amongst hypertensive respondents, at 42%, was higher compared to the enrollment rate amongst non-hypertensive respondents. Enrollment was also higher among pregnant women relative to the rest of population, and increased over the two periods. In 2009, none of the women living in the control area were enrolled in any health insurance scheme, while 51% of women living in the program area were insured during pregnancy between 2009 and 2011, and this increased further to 71% between 2011 and 2013.

Enrollment in 2013 was still higher in Aboto than in Afon, among adults compared to children, females relative to males, for the richer half of the population and among households whose head had some education at baseline. Compared to 2011, a significant increase can be observed in enrollment in Aboto (to 44 %) and a decrease in Afon (to 22%). Moreover, more insured individuals in households are located more than 5 kilometers from a program clinic (23%).

The most likely to re-enroll were individuals living in Aboto: 62% of those enrolled in 2011 were still enrolled in 2013, adults (58%) and females (56%). Re-enrollment was particularly low in Afon (43%) and among children (45%).

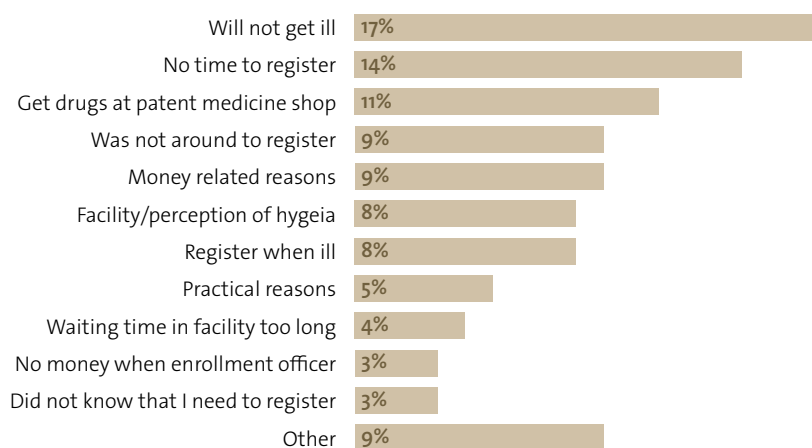
Those who did not re-enroll used less healthcare in 2011 than those who did re-enroll. Individuals insured in 2011 who did not re-enroll spent more out of pocket in 2011. Finally, those who did not re-enroll reported better health than those who re-enrolled: They were more likely to report no problems with daily activities, and less likely to report a chronic disease or an acute illness or.

These results are in line with the reasons stated for failing to re-enroll (see Figure 11). The most common reason reported was the expectation that they would not get ill (17%). Moreover, the individuals who did not re-enroll mentioned lack of time to register (14%) and the possibility to get medication at the patent medicine vendor instead of going to a clinic (11%).



Figure 11: Reasons for not re-enrolling

Kwara Central – ever insured but currently uninsured



The reasons for these results on enrollment and re-enrollment are poorly understood. The literature shows that the demand for micro health insurance is highly price-sensitive, but the current insurance package is highly subsidized. Convenient registration processes have also been shown to boost enrollment. But there are still large gaps in the literature. Kramer B., in her paper *Intra-household allocations of micro health insurance: No adverse selection after all?* addresses two of these gaps using data collected in collaboration with the Health Insurance Fund and the PharmAccess Foundation.

The first gap in the literature is whether there is really adverse selection from a household perspective, in other words, whether expected health expenditures are a dominant decision factor for enrolling households. The existing literature on adverse selection is inconclusive. It relies mostly on correlational designs, does not distinguish between more and less predictable health expenditures, and often does not control for observable demographic characteristics that insurance providers can take into account in the pricing of their insurance policies (e.g., age, gender and location). Moreover, it can be concluded that households enroll into insurance on the basis of health risk but conditional on other household characteristics such as wealth, education, and risk aversion. These characteristics are also correlated with health expenditures. The conclusion that health risk is of influence on enrollment decisions can only be reached if all of those conditions have been met.

A first case study on enrollment bridges this gap in the literature by testing for adverse selection in the HCHC in Kwara Central, using the 2009-2011 panel data sets collected for the impact evaluation. The program offered an excellent opportunity to address some of the limitations of the earlier literature as it included a control group without access to health insurance. It also covered treatment of both acute and chronic illnesses, which differ in terms of the accuracy and ease by which households can predict future healthcare needs. What's more, serendipitously, the program allowed households to enroll their members on an individual basis, leading to intra-

household variation in enrollment. Because of this program feature, it is possible to hold all household characteristics equal, and study who gets enrolled *within households*. No other study has ever been able to analyze insurance decisions made by the household decision-maker in such depth.

The study identifies the magnitude of adverse selection in two stages. A first stage estimates to what extent differences in self-reported and medical measurements at baseline between household members correlate with differences in follow-up health expenditures between households in the control group, where health insurance was not available. The second stage estimates within households whether the cross-sample prediction of health expenditures is significantly higher for insured than uninsured household members in the treatment district, which indicates adverse selection. The study focuses on health expenditures for acute and chronic illnesses and does not include visits related to preventive healthcare or pregnancies.

For the health expenditures considered, the study finds no substantial adverse selection within households. Thus, despite the opportunity to enroll individual members within the household, the decision-maker did not appear to take household members' health risk into consideration when enrolling members. This finding is robust across several subsamples and holds independent of whether the first stage uses self-reported subjective health or objectively measured health indicators as instruments. Differences in expected health expenditures cannot explain why households do not enroll all members. In other words, health risk does not appear to drive the insurance decision in this context.

An explanation for this perhaps surprising result is that many of the factors predicting future healthcare utilization, e.g. age and gender, can be observed and taken into account in pricing the insurance program. If the factors are unobservable, they are related to household-level or household decision-maker characteristics, e.g. household wealth or risk aversion of the decision-maker. This study goes one step further and analyzes whether within the household, conditional on age and gender, the household head decides to enroll high-risk members, for instance the weakest child but not the stronger child, or the father with arthritis but not the healthy mother. The study shows that this type of selection did not occur, at least not in the first two years of the program.

Nevertheless, keep in mind that the vast majority of the people in Kwara Central had never had health insurance prior to the launch of the HCHC. Unaware of how insurance exactly works, they may have listened to their community leaders in terms of whom to enroll and they may not have realized that the most economic choice would be to enroll only the most vulnerable members within the household. Over time, as households learn about insurance, expected health expenditures and beliefs may start shaping insurance decisions more. The next stage of this research project will therefore explore whether adverse selection within households is more evident for re-enrollment between 2011 and 2013.

A second case study on enrollment was a laboratory experiment framed as micro health insurance games in Tanzania. This study tests whether enrollment remains low because prospective insurance clients often participate in informal or semi-formal risk-sharing networks. In microcredit groups, for instance, clients are jointly liable for loan repayment, so that clients have an incentive to contribute for their fellow group members when health shocks occur. As a result of this institutionalized risk-sharing mechanism, clients may free-ride on social assistance from their credit group members even when they are offered group welfare-enhancing insurance.

This study tests this hypothesis and shows that indeed, less risk-averse clients forgo insurance because their group members contribute to their loan repayment when they are ill and cannot repay their loan themselves. The study also offers a solution for low enrollment rates. Group insurance, in which either all or no group members enroll, eliminates such free-riding. As a result, when it is optimal for the group to take insurance, it will bind clients to the group optimum, and increases demand substantially. Groups with only more risk-averse clients do not face a social dilemma. They are able to commit to full group enrollment when offered either type of insurance.

### 8.3 In-clinic studies<sup>38</sup>

The main objective of the in-clinic studies, carried out between 2007 and 2011, was to provide the Health Insurance Fund with independent feedback and recommendations on how to improve the Health Insurance Fund project with respect to both medical and organizational aspects.

This was done by collecting and analyzing detailed clinical data for the indicator diseases regarding disease incidence & prevalence, diagnostic & therapeutic practices of the participating healthcare providers, treatment outcome, disease progression and complications. Two data sets were used: 1) PharmAccess, in collaboration with the Nigerian health management organization (HMO) Hygeia, collected data on recruitment of individuals into the health insurance scheme, and information on the frequency and reasons for visits to the local healthcare providers; and 2) Hygeia collected further data on all healthcare utilization of the enrollees. For each enrollee every encounter with a participating healthcare provider is recorded. Each record contains information on the date of the encounter, which healthcare provider was consulted, performed investigations, diagnosis made, prescribed medications, procedures performed, and whether the subject was admitted to the clinic or seen at the outpatient clinic. Additionally, all enrollees' data is collected on date of enrollment and subsequent re-enrollments, and upon termination of the insurance.

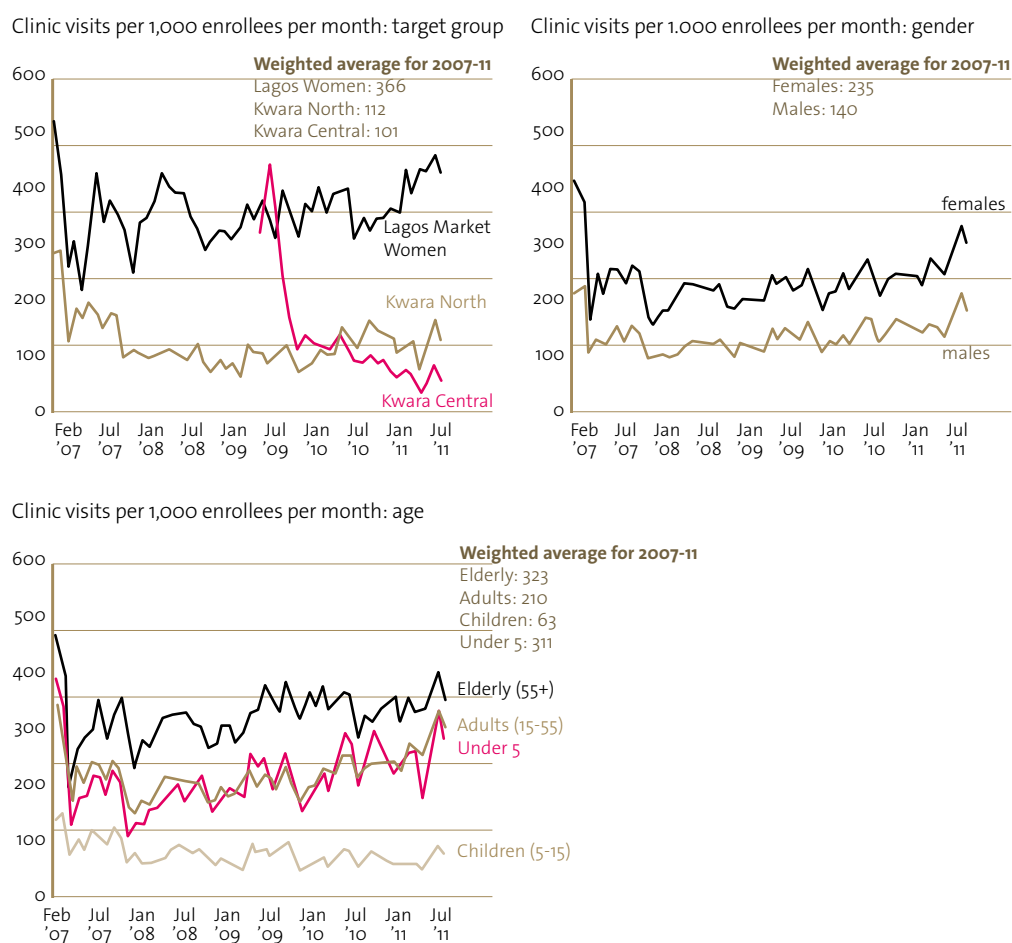
Merging the data from these two sources allowed for descriptive statistics to be calculated and tabulated for enrollment numbers, family composition, demographic characteristics of the enrollees, overall rates of healthcare consumption, and specific

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<sup>38</sup> This section draws heavily on Wit, F., and Schultz, C. (2011) Report on the In-Clinic Research within Clinics participating in the Health Insurance Fund Project Nigeria 2007-2010; Hendriks, M, et al. (2014). Strengthening Healthcare Systems for the Prevention of Chronic Diseases in Rural Nigeria: Cardiovascular disease prevention in the Kwara State Health Insurance program; and Odusola, O.A., et al. (2014). Perceptions of inhibitors and facilitators for adhering to hypertension treatment among insured patients in rural Nigeria: a qualitative study.

reasons for contacts with healthcare providers (diagnoses). Predictors for high (as well as low) rates of healthcare consumption were also investigated. Diagnostic and therapeutic practices were described and compared for selected diseases. All analyses were done separately for each of the three separate geographic locations: Kwara North, Kwara Central and Lagos. Trends over time were visualized by plotting summary statistics per unit of time (either monthly or quarterly). See Figure 12 for an example of one type of summary statistics plotted.

Figure 12: Evolution of the number of clinic visits over time



The AIGHD also used this data as a starting point for further in-depth research. AIGHD identified the disease areas that were of greatest local medical and public health importance. As part of this investigation, AIGHD identified cardiovascular diseases (CVD) as a particularly pertinent disease to examine, as it is the leading cause of death and disability worldwide.<sup>39</sup><sup>40</sup> CVD is a group of disorders of the heart and blood vessels such as heart disease, stroke, vascular diseases of the kidney, and peripheral arterial disease. Globally, 15.6 million people died from CVD in 2010, a 31 percent increase compared to 1990 when 11.9 million people died from CVD.<sup>41</sup> A common misconception is that CVD are “diseases of the wealthy” because the main risk factors for CVD, such as high blood pressure (hypertension), diabetes, obesity, smoking, high cholesterol and physical inactivity, are associated with a “Western” lifestyle. Over 80 percent of CVD-related mortality occurs in low- and middle-income countries<sup>42</sup> and the poorest people in low- and middle-income countries are affected most.<sup>43</sup> The additional in-depth studies on CVD were conducted at selected clinics in Kwara North.

### **Quality of care in insurance program comparable to high income countries**

The QQuality Improvement Cardiovascular care Kwara (QUICK) study followed a cohort of 349 patients who were treated for cardiovascular disease (CVD) risk factors in one of the Kwara State Community Health Insurance clinics during one year. All patients were insured. As part of the quality improvement program, guidelines for CVD prevention based on World Health Organization<sup>44</sup><sup>45</sup> and other international CVD prevention guidelines<sup>46</sup><sup>47</sup><sup>48</sup>, were implemented in the clinic. This included training of healthcare professionals, implementation of treatment protocols, upgrading of facilities for diagnostic testing and management and administrative support to provide chronic care.

Quality of care was measured 18 months after guideline implementation using quality indicators. One example of a quality indicator is the number of patients who are treated for hypertension who have their blood pressure on target (Figure 13). Scores on quality indicators were high, and were on a par with scores reported in primary

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<sup>39</sup> Lozano R, et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010.

<sup>40</sup> Murray CJL, et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010.

<sup>41</sup> See footnote 39

<sup>42</sup> World Health Organization. Global Status Report on Noncommunicable Diseases 2010.

<sup>43</sup> World Health Organization. Cardiovascular diseases (CVDs) Factsheet No 317. 2013.

<sup>44</sup> World Health Organization. Prevention of Cardiovascular Diseases: Pocket Guidelines for Assessment and Management of Cardiovascular Risk; 2007.

<sup>45</sup> World Health Organization. Prevention of Cardiovascular Disease. Guidelines for Assessment and Management of Cardiovascular Risk; 2007.

<sup>46</sup> Mancia G, et al. 2007 Guidelines for the Management of Arterial Hypertension: The Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC).

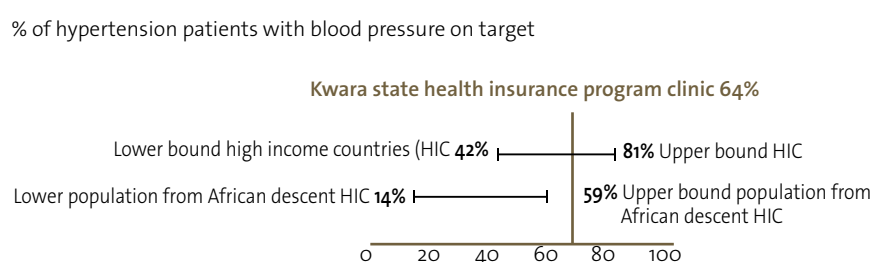
<sup>47</sup> Chobanian AV, Bakris GL, Black HR, et al. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report.

<sup>48</sup> American Diabetes Association. Standards of Medical Care in Diabetes--2009.

care settings in high income countries (Figure 13). Over 90 percent of the patients were still in care after one year. This percentage is very high in comparison to other CVD prevention program in sub-Saharan African countries.

Quality of care was measured 1.5 years after guideline implementation using quality indicators. An example of a quality indicator is the number of patients who are treated for hypertension who have their blood pressure on target (Figure 13). Scores on quality indicators were high, comparable to scores reported from primary care settings in high income countries (Figure 13). Over 90% of the patients were still in care after one year. This percentage is very high in comparison other CVD prevention program in Sub-Saharan African countries.

Figure 13: Quality of care for hypertension in one of the Kwara State Community Health Insurance clinics in Kwara State, Nigeria, and in high income countries



The results of the QUICK study are encouraging as they demonstrate that quality care can be delivered in sub-Saharan Africa under certain conditions. The context of the insurance program has most likely contributed to the success of the program. First, insured hypertension patients reported that the Kwara State Community Health Insurance program facilitated treatment compliance because they did not incur out-of-pocket expenditures for treatment. A pilot study in a health facility near the QUICK study clinic with a similar patient population but without access to insurance showed that many patients did not return after the initial diagnosis. Cost of care is also frequently reported as a reason to drop out of care by patients in other studies.<sup>49,50</sup> Second, the insurance program provided resources for quality improvement in participating clinics, such as upgrading of facilities and training of staff. For example, implementation of protocols for drug treatment, combined with training and feedback sessions, likely contributed to the high quality of care.

The results of the QUICK study show that insurance programs can be used to deliver high quality CVD prevention care in sub-Saharan Africa. Scale-up of insurance programs therefore offers a unique opportunity to expand urgently needed treatment of CVD risk factors in sub-Saharan Africa.

49 Mendis S, Abegunde D, Oladapo O, Celletti F, Nordet P. Barriers to management of cardiovascular risk in a low-resource setting using hypertension as an entry point.

50 Van de Vijver S, Oti S, Addo J, de Graft-Aikins A, Agyemang C. Review of community-based interventions for prevention of cardiovascular diseases in low- and middle-income countries.

## **Implementation of cardiovascular prevention care improved the general clinic management**

Quality improvement programs need to address typical operational issues in order to be successful. The QQuality Improvement Cardiovascular care Kwara (QUICK) study has shown that implementation of cardiovascular disease (CVD) prevention guidelines improved the general clinic management and service administration. For example, in order to better follow patient treatments, single patient files were introduced with standardized forms instead of family folders in which disease courses were difficult to track. In addition, forms were developed for the pharmacy to track drug dispensary and stock outs. Organizational support was provided to reduce the waiting time in the clinic and laboratory staff was trained in standard operational procedures, quality control and administration procedures. Equipment such as laboratory machines for biochemical testing was purchased. These investments will also benefit non-CVD patients and therefore strengthen the local health system.

The QQuality Improvement Cardiovascular care Kwara (QUICK) study has also demonstrated that it was not feasible to implement specific recommendations of international guidelines, despite the availability of the insurance program.

Guidelines recommend target organ damage screening in all patients at risk for cardiovascular disease (CVD). For example, a patient with hypertension should have screening for kidney disease with laboratory tests every year as well as an annual electrocardiogram to screen for heart disease. The results of these tests are used to make decisions on treatment intensity. However, target organ damage screening was perceived as too time consuming, too complicated and too expensive by the healthcare provider. If target organ damage screening remains unavailable, around a quarter of the population with hypertension will be undertreated because organ damage will not be diagnosed. Alternative, simplified tools are needed to select patients who need more intensive treatment.

Combination pills and high dose formulas were not available for patients in the Kwara State Community Health Insurance program, and as a consequence a large numbers of pills per day were prescribed in the cases of high dose multidrug regimes. For example, a patient that needed 60 mg three times for one drug and 50 mg two times a day for another had to take 13 pills a day, as only 20 mg and 25 mg pills were available. Patients perceive this as a barrier to treatment adherence. In addition, the lack of combination pills led to high costs of drugs for the healthcare provider as combination pills or higher dose pills are usually cheaper than the sum of separate low dose pills. Therefore, cheap combination pills are a necessary component of CVD prevention programs in sub-Saharan Africa.

The World Health Organization and other international guidelines recommend frequent follow-up visits when drug treatment is started (every two to four weeks). However, if a patient's condition is stable visit frequency can be reduced to every

two to six months.<sup>51</sup><sup>52</sup><sup>53</sup> Nevertheless, doctors in the QUICK study clinic perceived monthly doctor appointments as necessary for all patients. Providing a drug supply for longer periods to patients posed logistical barriers due to the high number of pills per day for multidrug regimes and because doctors feared that large amounts of drugs would get lost. In addition, they emphasized that regular appointments were needed to keep patients in care. However, for patients the frequent visits posed a barrier to treatment adherence due to inflexible clinic hours, the long waiting times in the clinic, resulting loss of income and associated travel costs.

These barriers make it apparent that there is a need for simplification of CVD prevention guidelines. The next chapter provides recommendations for innovative delivery models of CVD prevention care to enable rapid scale-up of services in sub-Saharan Africa.

The costs to deliver cardiovascular disease (CVD) prevention care in the QQuality Improvement Cardiovascular care (QUICK) study were \$144 (range \$130-158) per patient per year. The analysis used a healthcare provider perspective, which means that the costs for the hospital were \$144 per patient. Profits were not included. The healthcare provider perspective includes all direct and indirect costs for the hospital, such as costs for drugs, consumables, staff and overheads. Additional costs for patients or for society, such as travel costs or productivity losses due to illness, were excluded. The two main cost drivers were drugs (\$39) and diagnostic tests (\$36). Without health insurance, costs of care of \$144 per year would be unaffordable for many patients. Our survey in Kwara Central showed that CVD prevention care would represent 23 percent of their yearly expenditures if individuals were to pay for care. Health insurance programs such as the Kwara State Community Health Insurance program offer opportunities to improve access to CVD prevention care for patients in sub-Saharan Africa.

A rough estimate of the costs of scale-up of CVD prevention care in rural Kwara showed that the costs of CVD prevention were estimated at \$8 (\$7-9) per head of the population in rural Kwara. Total healthcare expenditure per capita in Nigeria was \$94 in 2012 of which only \$29 (31%) was funded by public means.<sup>54</sup> Within this healthcare budget, CVD prevention care is most likely not affordable. However, healthcare budgets in most countries in sub-Saharan Africa are disproportionately low compared to the Gross Domestic Product. Total healthcare expenditure in Nigeria was only 6.1 percent of Gross Domestic Product in 2012 and 66 percent of total healthcare expenditures came from out-of-pocket payments by patients.<sup>55</sup> In addition, economies in sub-Saharan Africa countries, including Nigeria, are among the fastest growing economies in the world. Finally, treatment of CVD risk factors will prevent

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<sup>51</sup> See footnote 46

<sup>52</sup> See footnote 47

<sup>53</sup> World Health Organization. WHO CVD-Risk Management Package for Low- and Medium-Resource Settings.

<sup>54</sup> The World Bank. World Development Indicators. 2012.

<sup>55</sup> See footnote 54



CVD in the long term and is thus expected to reduce direct healthcare costs of CVD and indirect economic costs to society such as loss of human capital and productivity loss due to CVD.<sup>56</sup>

With hypertension being the leading risk factor for death in sub-Saharan Africa<sup>57</sup>, CVD prevention should be a top priority for local and global policymakers. In addition, global funding for health should shift from a focus on infectious diseases alone to a broader agenda that also covers non-infectious diseases such as CVD.<sup>58</sup> If the political will exists to allocate sufficient resources to CVD prevention and healthcare in general, it should be possible to implement large scale CVD prevention programs in sub-Saharan Africa.

The findings of QUICK present a promising strategy for improving hypertension treatment and control rates in sub-Saharan Africa. Yet, even when quality care is accessible poor adherence can compromise treatment outcomes. To provide information for adherence support interventions, further QUICK studies were carried out. These explored what low income patients who received hypertension care in the context of a community based health insurance program in Nigeria perceive as inhibitors and facilitators for adhering to pharmacotherapy and healthy behaviors.

The study concluded that important patient-identified facilitators of medication adherence included: Affordability of care (through health insurance); trust in orthodox “western” medicines; trust in Doctor; dreaded dangers of hypertension; and use of prayer to support efficacy of pills. Inhibitors of medication adherence included: Inconvenient clinic operating hours; long waiting times; under-dispensing of prescriptions; side-effects of pills; faith motivated changes of medication regimen; herbal supplementation/substitution of pills; and not knowing that regular use is needed. Local practices and norms were identified as important inhibitors to the uptake of healthier behaviors (for example, use of salt for food preservation, negative cultural images associated with decreased body size and physical activity). Important factors facilitating healthier behaviors were raising awareness that salt substitutes and products for composing healthier meals were cheaply available at local markets and that exercise could be integrated in people’s daily activities (e.g., farming, yam pounding, and household chores).

With a better understanding of patient perceived inhibitors and facilitators of adherence to hypertension treatment, it is to be expected that better patient education and health system level interventions can be designed to improve compliance. Three more academic publications are anticipated on this “patient perspective” view within the QUICK research program. It is hoped that these studies will further complement the already convincing story developing from the QUICK clinic based studies.

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<sup>56</sup> World Health Organization. Preventing Chronic Diseases: A Vital Investment.

<sup>57</sup> Institute for Health Metrics and Evaluation. Global Burden of Disease. 2010.

<sup>58</sup> Maher D, Ford N, Unwin N. Priorities for developing countries in the global response to non-communicable diseases.

An important aspect for Health Insurance Fund supported programs, or any program for that matter, is whether it is cost effective to implement compared to the existing situation. Therefore, two cost-effectiveness studies were designed and are currently being concluded. The studies make use of empirically collected information from impact and costing studies undertaken during implementation of the program as well as insurance and hospital monitoring databases. The aim of these studies is to assess whether the implementation of the Kwara State Health Insurance program is likely to have been cost-effective with regards to cardiovascular disease prevention and maternal care interventions in rural Nigeria.

#### **8.4 Clients' satisfaction survey (Kwara North)<sup>59</sup>**

The interaction between implementation and impact evaluation is clearest at the start of a program. Once a suitable target group has been identified (by the implementers), a control group needs to be found (by the evaluators), and the baseline surveys need to be completed. During this two to three month period, the implementers cannot start the roll-out of the program. Not surprisingly, this did not always work out exactly as planned. Indeed for the very first program in Kwara State, Nigeria, the roll-out was embarked on so quickly, and the uptake of the program was initially so large, that a baseline survey could not be conducted, and so, strictly speaking, a rigorous impact evaluation was not possible. Given that this was the first program in Kwara, it was decided to still do a survey in order to better understand the characteristics of the target population. This survey was done about one year after the start of the program, so, in addition to the standard socio-economic and bio-medical modules of the survey, a client satisfaction module was added, to get the first systematic feedback on what, from the viewpoint of the clients, worked well and not so well during the first year of implementation. The survey was conducted among households in the target area, and among households in a comparable control area, to at least get some descriptive statistics about the differences in health seeking and other relevant behavior that could be linked to the implementation of the program.

This section will first provide a brief description of socio-economic household characteristics and bio-medical results of the households in both areas. This will give a good impression of the breadth and richness of the data routinely collected in these surveys. Then the results of the client satisfaction modules will be presented. Finally, the findings will be discussed that result from a complementary exercise that has also been carried out: Focus group discussions. This qualitative research technique was used to better understand why people do or do not enroll in the program and what, in general, they consider to be the most relevant characteristics of a healthcare system.

On the whole the results show that the treatment group and the control group are very similar. They are both homogenous and relatively poor, with only small consumption differences between quintiles. The only notable exception is seen when looking at employment. In the treatment group 16% of the population is employed

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<sup>59</sup> This section draws heavily on, and quotes often verbatim from Gaag, J.v.d., et al. (2009). Impact Evaluation of HIF-supported Health Insurance projects in Nigeria: Kwara I (North) Baseline Report and Lammers, J., et al. (2009). Focus Group Discussions on the Community Health Plan in Nigeria: Lagos and Kwara I (North).

in trade and commerce, while this number jumps to 30% for the control group. Both groups report agriculture to be the largest industry, employing 75% in the treatment group and 55% in the control group.

Mean annual consumption in the treatment group is slightly higher than in the control group, both measured on the household and individual level. In both groups, there is not a large difference between the lowest and highest consumption quintiles. Consumption per capita in the lowest consumption quintile is 33,085 Naira in the treatment group, compared to 253,857 Naira in the highest consumption quintile.

Using food consumption as a measure of well-being, it can be stated that for 42.4% of individuals more than 80% of consumption expenditures consists of food items. For an additional 46.0% of the population, 60% to 80% of consumption consists of food items.

Measured along the official World Bank poverty line, 6.84% of individuals are living in extreme poverty, and an additional 9.29% are living in moderate poverty.

On average, individuals in the sample are 21.5 years of age. This low average is partly explained by a large family size, as the average household includes 6.3 members. Of children between the ages of 5 and 9 in the treatment group, 31.94% were employed in the past 12 months, and this percentage is even higher in the control group. Of children between the ages of 10 and 17 in the treatment group, 35.62% were employed in the past 12 months, and in the control group 61.13% of children in this age category were employed. For adults, the employment percentage is 80.53% in the treatment group, and 72.08% work as farmers. The employment percentage for adults in the control group is 80.18%, and 55.44% work in agriculture, while 29.44% work in the tourism sector, a much higher percentage than in the treatment group (0.21%). As a consequence of the largely agricultural character of the region, most individuals are self-employed.

Most households own their dwelling, 93.52% in the treatment group and 92.84% in the control group. Most households do not have a mortgage on their house. In the treatment group 38.63% of households get their drinking water from a river, stream, dam or lake. This percentage is substantially lower in the control group, where more households get their water from a protected well. Most households in both the treatment (76.35%) and control group (68.38%) do not have access to toilet facilities. In the treatment group the main sources for lighting are public electricity (38.92%) and kerosene, paraffin, gas or oil (50.42%). Slightly more households in the control group have access to public electricity (45.97%). Firewood is the main source of energy for cooking.

Most adults in the treatment group have either a primary (47.10%) or secondary education (26.10%). 11.78% have no formal education, 12.47% have a diploma or vocational training. Only 2.54% have an undergraduate or graduate degree. Individuals in the control group have on average slightly higher education levels, and 12.92% have an undergraduate or graduate diploma. In the treatment group, 33.87% of

individuals older than 10 are literate compared to 40.67% in the control group. Young individuals are literate more often, as 50.7% of children between the ages of 8 and 15 are literate, and 59.5% of adolescents between the ages of 16 and 20 are literate. In the treatment group 85.09% of children between the ages of 7 and 14 are enrolled in school compared to 81.63% in the control group. Among adolescents between the ages of 15 and 18 in the treatment group, 80.12% are enrolled in school.

Only a small percentage, 9.5%, of households in the treatment group, and 10.1% of individuals in the control group have saved money formally in the past year. In the treatment group 13.1% of individuals acquired credit in the past year compared to 2.1% in the control group.

In the target group, 48.5% of individuals are insured, and 70.8% of households have at least one member with an insurance policy. In the control group, only one individual is insured. Almost all of the individuals, 99.2%, are insured through the Hygeia Community Health Plan.

Average willingness to pay for health insurance among the uninsured in the target group is 752 Naira per person a year, which represents 1.1% of annual consumption per capita. Surprisingly, this is higher in the lower consumption quintiles (909 Naira in the bottom quintile). Willingness to pay in the control group is slightly lower (515 Naira per person a year) which represents 0.7% of annual consumption per capita. For 75.9% in the target group, and 80.6% in the control group, the willingness to pay exceeds the co-payment of 200 Naira. For roughly half (51.4% in the treatment and 50.8% in the control group) willingness to pay exceeds per capita health expenditures in the previous twelve months.

In general, people self-reported to be in good health, and the elderly judged themselves to be in poorer health than the children and adults. Around 90% of children and adults could do their chores/work without any difficulties, but for the elderly this was only 64.3%. The prevalence of chronic diseases in the younger age groups was very low. Among the adults, the proportion was somewhat higher with 3.9%, but increased sharply in the elderly to 14.2%. The most common self-reported chronic ailments were musculo-skeletal problems, hypertension, asthma, and diabetes. In adults musculo-skeletal problems were the most common chronic disease with a prevalence of 1.3%. However, self-reported prevalence is likely to be an underestimation of the true burden of disease. For example, only 2.7% of the elderly reported to be diagnosed with hypertension, while the prevalence of measured hypertension was 14.7%.

About 1 in 5 persons had suffered from an acute illness during the past year. The highest incidences were in the youngest and oldest age groups. On average, people visited a healthcare professional two times per year. The most often used health services include private hospitals (35.26%), mission hospitals (18.44%), and patent medicine vendors (20.19%).

In cases when a person did not visit a healthcare provider even though (s)he had an acute illness, the most important reasons were having no money (25%) or because the complaints were not serious enough (47.9%). Overall 3.0% of the respondents had been hospitalized at least once during the preceding year. The highest proportion was observed in the small children (4.2%) and the elderly (4.0%). The average duration of these hospitalizations was 6.3 days. The most frequent reason for these hospitalizations was receiving nonsurgical or surgical treatment for specific ailments. Childbirth accounts for only 3.3% of all hospitalizations.

Diarrhea was a frequently occurring illness in all age groups, with the highest frequency being reported among the elderly, 36.5%. Only 1.9% of the elderly had ever been diagnosed with tuberculosis. However, the possibility cannot be ruled out that most people who had ever been diagnosed with tuberculosis actually died from this illness.

Knowledge about malaria prevention techniques was quite good, with most people being able to mention between two and four prevention techniques. Knowledge about the prevention of hypertension and diabetes was very poor. About half of adults and elderly had had their blood pressure checked, but almost nobody reported to have ever been checked for diabetes. Knowledge on prevention of HIV was also poor. More than half of the respondents did not know how to get condoms. Of those who ever had sex, only 10.3% had used a condom during the last time they had sex. Only 3.1% of the population had ever been tested for HIV, which is surprisingly low considering that all pregnant women should be tested for HIV according to local guidelines. Only 15.2% of respondents considered themselves to be at risk for acquiring HIV. Attitudes towards HIV positive people in general were quite negative. Knowledge about possible transmission routes was poor.

The vast majority of adult women had been pregnant at least once, and the average number of pregnancies for the elderly women was 7.2. About one third of adult women did not receive antenatal care during her last pregnancy. Two thirds of women delivered their last baby at home. Among the adult population most want to have another child, but about half of them would like to postpone the next pregnancy by one or more years. Birth control is practiced by more than half the adults, mainly through use of condoms or abstinence.

Between 15 and 20% of adults and elderly were overweight, with an additional 3% being obese. Around 12% of adults had a low body weight for their height. Among children there were none who were overweight. However, more than half were underweight.

Among adults 4.1% had mild and 1.4% had severe hypertension. Among the elderly, 14.7 and 4.7% had mild and severe hypertension, respectively. 2.8% of the tested subjects were found to be HIV-seropositive, with no apparent differences between the age groups. None of the participants reported being aware of being HIV-seropositive.

Mean hemoglobin levels were quite low at 12.4 mg/dL, with almost half the tested subjects qualifying as anemic. Although the glucose samples were drawn at random times, meaning many people will not have been in a fasting state, blood glucose levels were rarely elevated. The mean level was 4.4, with 2.9% having (slightly) elevated glucose levels, and nobody qualifying as overtly diabetic.

Clearly, the target group was well chosen. The study shows a poor, mostly agricultural community, with low education levels and a fairly heavy burden of disease. It also shows that this population is underserved when it comes to healthcare. Ignorance about their own health status and lack of resources are the main impediments to medical consumption.

The final part of the survey focused on self-reported satisfaction with respondents' most used health facilities. There is a positive relation between how important individuals value certain aspects of healthcare, and their satisfaction with these aspects. In other words, people are more content about the aspects they value most. A majority (59.56%) of Hygeia Community Healthcare (HCHC) clients are very satisfied with their insurance coverage. Another 28.80% is satisfied with the HCHC insurance coverage, 4.89% is neutral, 6.74% is unsatisfied, and 0.22% is very unsatisfied.

The aspects that respondents rank as most important are availability of medical staff, being provided with information on drugs and treatments, and cleanliness of the facility. Ranked as less important were cost of treatment, distance to the facility, and waiting time. These results were similar between treatment and control group.

Three facilities were upgraded as a part of the Hygeia Community Healthcare plan. Of the upgraded clinics, on average, the New Comprehensive Resource Center scores best when it comes to satisfaction. The Ogu Oluwa Hospital scores moderately well, and scores for the Resource Access Unit are lower than for the other two upgraded facilities. In general, the upgraded clinics score better than other facilities.

The program clinics score better than other clinics in virtually all categories ranked as important; cleanliness, available doctors, available medicine, available beds, and doctors taking the time for treatment. Results are more mixed for the distance to the clinics and the waiting time before being treated.

The top three reasons for taking insurance in the treatment group were the support of local leaders, trust in insurance companies, and familiarity with the concept of health insurance.

Focus group discussions (FGDs) were conducted to obtain a deeper understanding of some of the issues that make people decide to enroll or not in the program, and why they use or do not use health services when needed. A total of 117 individuals participated in these focus group discussion. Group size varied from 8 to 12 individuals. Participants were chosen so as to have sufficient representation of those insured and not insured, and of high and low users of medical care. Twelve group

discussions were conducted in three areas: The treatment and control areas in Kwara North, and participants in two of the markets in Lagos where the program had already been rolled out.

Almost all participants were interested in health insurance, and all except one of the uninsured participants wanted to enroll in the HCHC at the end of the group discussions. Even though most people use over-the-counter drugs or traditional medicine as their first line of defense this did not seem to conflict with the choice to enroll in health insurance. Participants felt that health insurance gives people security. Of course, the main reason people enrolled in health insurance was a need for medical care, and participants with a higher need for healthcare were more willing to enroll than others were. However, the most important thing that motivated people to enroll was information. Familiarity with the concept and awareness of its benefits and costs proved to be important requirements for enrollment. During the FGDs, it became apparent that participants in Lagos and the Kwara North region were more likely to enroll when others in the community were also enrolled. Sharing positive experiences among members of the same community proved to be a valuable tool in increasing enrollment. A related factor that appears to encourage enrollment is the involvement of community leaders who support the initiative, as people trust community leaders more than they trust outsiders.

Most participants perceived the price of 800 Naira in Lagos and 200 Naira in the Kwara North region for the HCHC program as very reasonable, especially compared to the high (potential) costs of medical treatment. Some even thought that they paid less than the value of the benefits they received. The majority of the focus group participants were willing to pay substantially more than the current co-payment. The average willingness to pay among the FGD participants in Lagos was 1,694 Naira and 1,623 Naira in the Shonga region, not much different from each other. 24.7% of individuals are willing to pay more for health insurance than they expect to spend in the coming year. The household survey data from both regions show that the insurance co-payment accounts for less than 0.5% of total annual per capita consumption. Still, some participants indicated that people who live in extreme poverty are not able to pay the co-payment.

The differences in take-up between Lagos and the Kwara North region can be explained by the fact that awareness and knowledge about the HCHC is higher among the target group in the Kwara region than among the target group in Lagos. The community leaders, such as the Governor and district heads of Kwara state, played a central role in informing their people about the HCHC, leading to a significantly higher enrollment.

There was a widespread agreement that people renew if their experiences in the previous year were positive. Positive experiences with the program clinics spread by word-of-mouth, which could increase participants' willingness to renew. However, stories of negative experiences – about waiting periods, travel time and costs, and unfriendly treatment from hospital staff – spread as well. These negative

experiences, observed mostly in the Shonga region, can partially be explained by the high enrollment there. As a larger share of the population now has access to basic healthcare, the program clinics are becoming over-crowded.

Participants perceived the current renewal procedure as too time consuming and demanding, which played an important role in participant's decision to renew or not. Despite dissatisfaction with the HCHC in some cases, and the complaints about the renewal procedure, almost all individuals were willing to renew their policy. However, negative experiences can eventually lead to non-enrollment or non-renewal, and pose a risk for (gradually) increasing the co-payment; if people feel that they do not get value for their money they may drop out when the co-payment is increased.

According to the information gathered from the focus group discussions, utilization in Lagos is higher because the insured participants are more satisfied with the program clinics. As a result, participants in Lagos are more likely to visit a program clinic. In Kwara, on the contrary, not all HCHC insured individuals make use the program clinics because, according to a majority of participants, they are overcrowded and understaffed. This leads to relatively low utilization at the individual level.

The combination of detailed information of the socio-economic characteristics of the target population, and their medical needs, and of their relative lack of medical consumption has informed the program implementers with regards to what is or is not feasible in poor rural populations as found in Kwara State. Clearly, economic conditions are such that significant subsidies will be necessary to improve access to quality medical care for the target population. The results of the client satisfaction survey and the focus group discussions have provided further information on what is going well with the program and where improvements are necessary.

Since the implementation of the first project in Kwara State, three new treatment regions in Kwara have been identified, and the programs have been rolled out, at the request and with financial support of the Kwara State government.<sup>60</sup> In a recent memorandum of understanding between the Kwara State government, the Health Insurance Fund and PharmAccess, the governor of Kwara State has decided that the program needs to go to scale, so as to cover 60 percent of the rural population in the next five years, i.e., approximately 600,000 people.

## 8.5 Financial and Health diaries<sup>61</sup>

Since the introduction of the Kwara State Health Insurance program in 2007, a total of 125,035 individuals had been enrolled in the scheme by early 2012. However, annual renewal rates remained relatively low, resulting in 56,830 individuals having coverage as of January 2012.

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<sup>60</sup> The impact evaluation results for the second project, in Kwara Central, are presented in section 7.

<sup>61</sup> This section draws heavily on two Policy notes about Financial and Health Diaries produced by Wendy Janssens (forthcoming).



Several studies and monitoring visits suggested that difficulties in paying the co-premium was one of the reasons for people not to renew at all, not to renew on time, or to enroll only a few household members. In 2012, the Financial and Health Diaries Study was implemented in Kwara North to investigate to what extent solvability constraints (i.e., poverty) and liquidity constraints (i.e., low cash at hand) affect uptake and renewal of health insurance.

The study was conducted among 120 households in Kwara North. At baseline, half of them were enrolled in HCHC while the remaining half was uninsured – they had either never enrolled or dropped out at least two months prior to baseline.<sup>62</sup> Over the course of a full year, from April 2012 to April 2013, interviewers paid weekly visits to all adults (n = 311) in the selected households. Interviews took place in private and discussed respondents' financial transactions as well as the health events of all household members (n = 829).

The Financial Diaries record all weekly cash in- and outflows from each respondent, including their income from employment, business or farming, their purchases, their savings in informal savings groups, in cooperatives and bank accounts, and the loans, gifts and credit they give or receive. These data provide detailed insights into the solvability and liquidity position of the households at each point in time, as well as the savings and risk management strategies that households adopt to prepare for large expenditures and to cope with unexpected financial events.

For each household member, the Health Diaries record all illnesses, injuries, consultations at medicine vendors, traditional healers, clinics and other health providers, and associated medical expenditures. The short recall period allowed us to capture not only major illnesses but also minor health events.

The Diaries were preceded by a baseline survey and concluded with an end line survey. The study also included behavioral games with real monetary pay-outs that measured respondents' risk attitudes, discount rates, financial expectations, and intra-household cooperation. Results from these games are reported elsewhere.<sup>63</sup>

The Diaries cover a full year including the two main agricultural seasons in Kwara North: The wet season from April to October and the dry season from November to March. They thus provide a unique opportunity to capture seasonal patterns in this largely agrarian population. Previously insured households were significantly more likely to renew their expired insurance policies during the wet season than in the dry season. Administrative enrollment data over the last five years confirms this seasonal

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<sup>62</sup> Note that household-level enrollment data mask substantial inequalities within households: Only about half of the individuals in insured households are actually enrolled in the scheme. The analysis therefore mostly concentrates on individual-level enrollment.

<sup>63</sup> The behavioral games are described and analyzed in Swart, L., et al. (2012). Irrational Financial Decision Making: Evidence from a Field Experiment in Rural Nigeria; Barr et al. (2014) Household Efficiency and Polygamy in Nigeria; Ohrnberger, J. (2014). Of farmers and prospect theory – A behavioural economic analysis of agricultural investment in Nigeria; and Hermans, I. (2014). Measurement of income patterns based on subjective expectations.

trend, and show that the gap in renewal between the two seasons is expanding over time. New uptake among households who never had insurance before was not concentrated in specific months.

Figure 14: Seasonal patterns – wet vs dry season

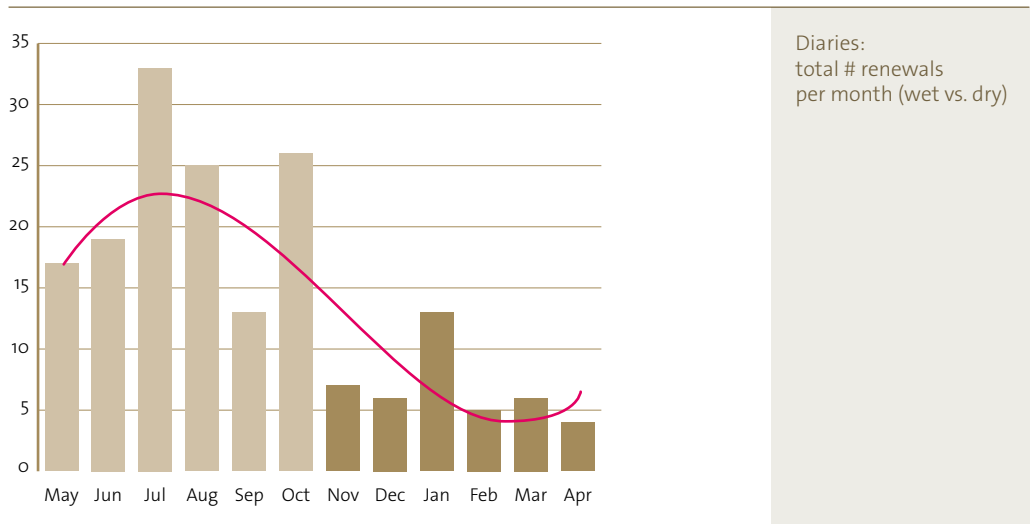
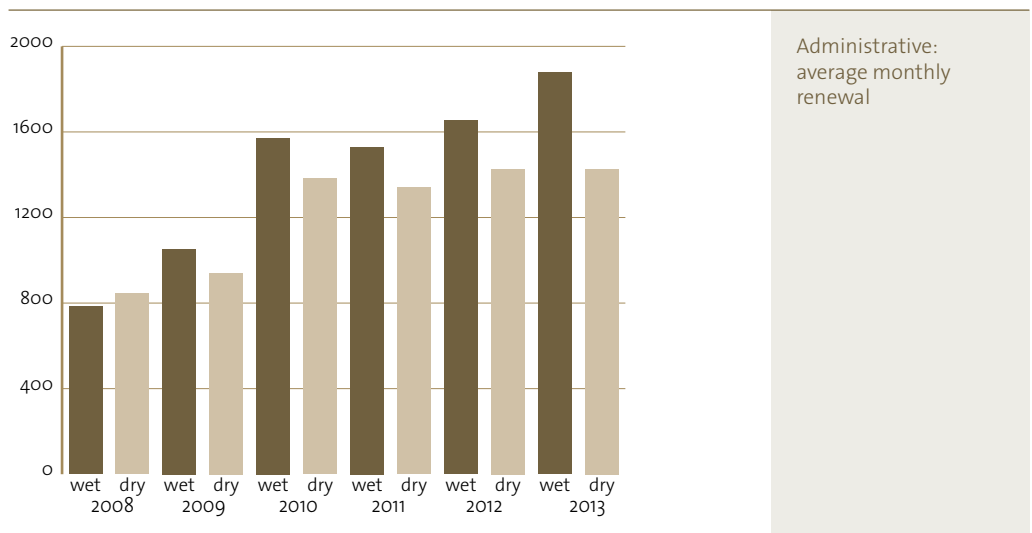


Figure 15: Gap in renewal between wet and dry season



This seasonal gap in renewal rates can be explained on the basis of the entries in the Financial and Health Diaries. First, using the Financial Diaries, the data show that the wet season is characterized by higher economic activity than the dry season, both for farmers and (informal) business owners. Agricultural activities are mostly concentrated in the rainy season, when farmers plant and weed their crops, and businesses provide most of their services. Money turns around significantly faster with higher expenditures, but also higher sales. This results in large flows of money in and out of savings, loans, gifts and remittances, while households' financial wealth does not reduce substantially. Harvesting takes place towards the end of the wet season and at the start of the dry season. Thereafter, economic activity is limited. No high peaks in income during the harvesting periods are observed because most farmers keep substantial parts of their harvest in storage as savings for sale in leaner periods.

Second, using the Health Diaries, the data show that infectious diseases spread most easily in the wet period. Indeed, illnesses are more common as the rains intensify and they decrease in prevalence during the dry months. In parallel, health expenditures show an upward trend until October and a sharp decline thereafter. This finding could be due to ecological conditions. Malaria, one of the major diseases in the area, requires still water for mosquitoes to breed. Humidity is also conducive to the breeding and spread of parasites and worms that cause diarrhea or stomach problems. Moreover, when economic activity is higher, people congregate more in markets and town centers, increasing the risk of spreading infectious diseases.

These seasonal patterns in renewal rates, economic activity, and health expenditures largely overlap. Renewal rates are significantly correlated both with the number of cash transactions in the local economy as well as with health events and medical expenditures.

Figure 16: Monthly household income (recorded as positive cash inflows)

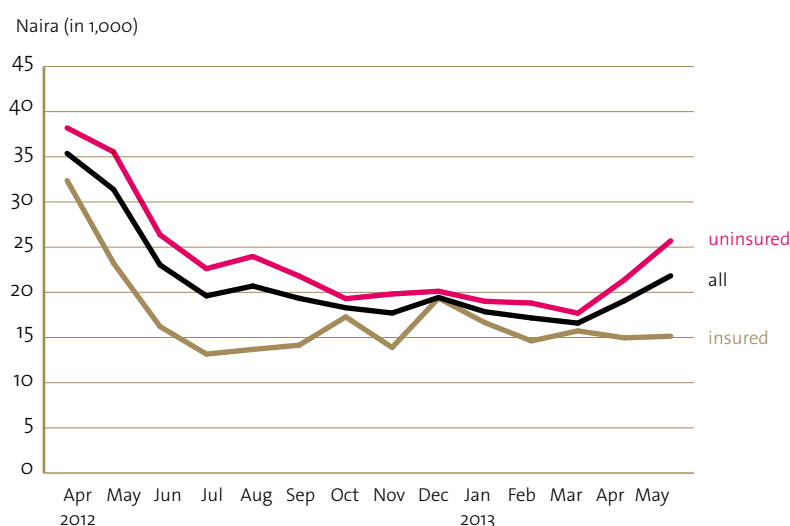


Figure 17: Monthly household expenditures (recorded as negative cash outflows)

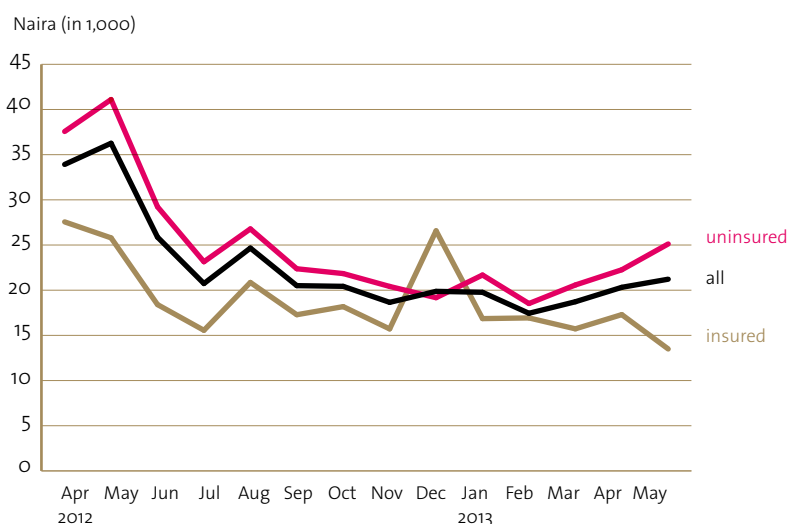
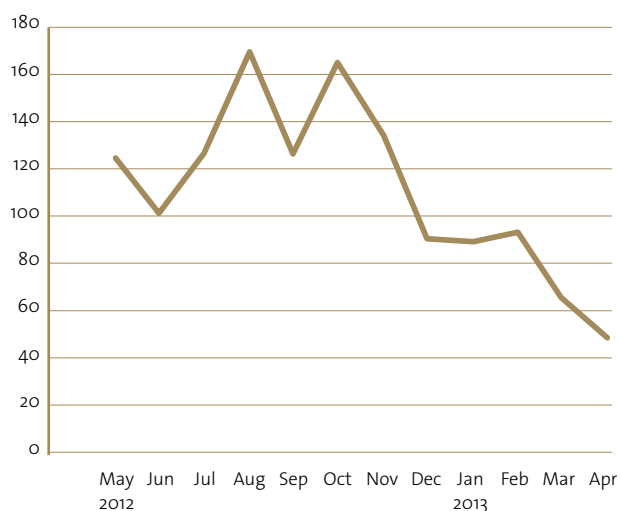


Figure 18: Monthly health expenditures



Multivariate regressions show that average wealth, interpreted as solvability, is a significant determinant of first time uptake but not of renewal. The poorest are less likely to enroll in health insurance than the rich, but among insured individuals, subsequent re-enrollment decisions are not correlated with household wealth.

Liquidity constraints affect both uptake and renewal. Individuals who had never been insured at baseline were more likely to take up insurance in months with more cash at hand, as measured by net income – or monthly (cash) income minus monthly (cash) expenditures. On the other hand, renewals are more likely in months of higher than average net savings, that is, months in which the household has more room to spare. Net savings (i.e., deposits minus withdrawals – or the balance of net income, net loans, and net gifts) are a broader measure of liquidity in this respect.

Both uptake and renewal strongly respond to health expenditures. When an individual experiences an illness or injury with large associated medical costs, (re-) enrollment is significantly more likely than in other months, even when controlling for calendar effects, solvability, liquidity and other variables. Further, as individuals have been uninsured for a longer period, they become less likely to renew their expired policies.

To interpret these findings, respondents were asked to motivate their reasons for (not) enrolling in an endline survey upon completion of the Diaries. Respondents reported predominantly financial motivations to take insurance, notably the financial protection offered by insurance: To be shielded from high financial costs and have access to care whenever necessary even when cash is low. Those who decided not to renew were mainly driven by quality considerations, in particular disrespectful staff attitudes, long waiting times and drug stock-outs. Another main driver of low renewal was liquidity considerations, i.e., a lack of money at the time the premium was due. The trust built up between respondents and interviewers over the course of the year may have been conducive to the particularly open answers that were reported in the endline survey.

Figure 19: Reasons to enroll

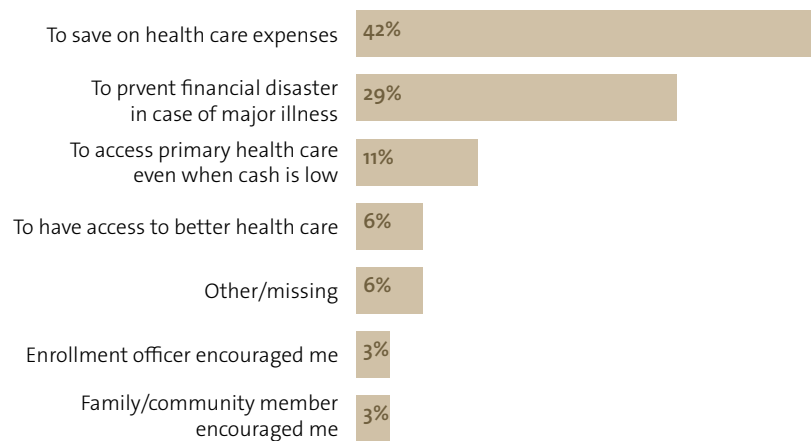
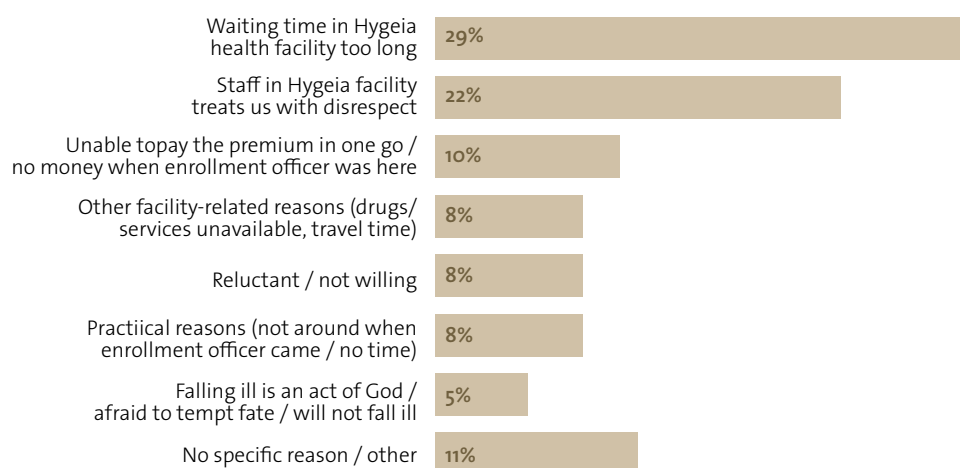


Figure 20: Reasons not to renew (or to postpone renewal)



In line with previous studies, a correlation can be observed between households' wealth and enrollment in insurance. Despite the large subsidy, poverty remains an obstacle to first time uptake. The Financial and Health Diaries enable further analysis by disentangling a household's average or more permanent wealth from its liquidity, i.e., the cash on hand when the insurance premium payment is due. The findings suggest that the financial protection offered by HCHC is a major driver of enrollment. However, some insured individuals perceive the scheme's quality of care as below standard. As a result, they decide not to renew when their policy expires, until a health shock reminds them of the financial consequences of an uninsured illness. This encourages them to re-enroll, provided they have sufficient cash on hand. This study is still ongoing. Further results are expected in the coming months.<sup>64</sup>

The Diary data are also used to answer the following questions: What are the most prevalent illnesses in the target population? How often do people forego care? When seeking care, where do people go and why do they go there? How much do they pay per consultation at the different types of providers, and which shares of households' total medical expenditures can be attributed to each provider type? Here are some preliminary results.

The health diaries recorded 2,444 observations of health symptoms. Excluding double-counted symptoms that extended over several weeks, respondents reported health symptoms for 1,800 occasions in total, or 2.12 illness episodes per person per year. The diaries thereby capture a higher incidence of illnesses and injuries compared to low-frequency panel data. The insured reported significantly more illnesses (2.58 episodes over the year) than uninsured individuals (1.95 episodes). Insured and uninsured individuals reported similar symptoms of reported illnesses. Fever and malaria-type symptoms were most common (42 percent), followed by the flu, cold and coughing (18 percent) and diarrhea and stomach problems (9 percent).

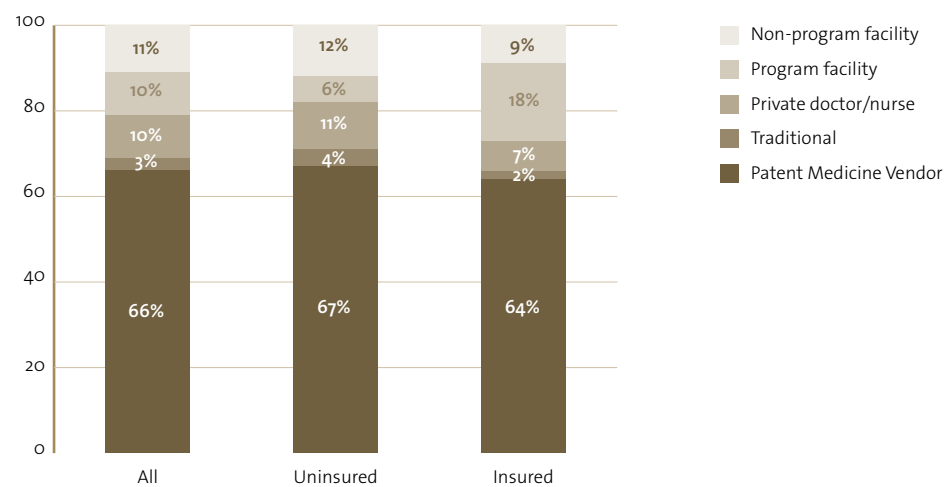
<sup>64</sup> A similar analysis of Financial and Health Diaries is currently ongoing in the Rift Valley region of Kenya.

These health symptoms led to a reduction in productivity. Both insured and uninsured individuals were unable to perform their daily activities for at least one day in about 42 percent of the health events. However, conditional on being unable to perform daily activities, the insured were kept from their usual activities for a longer period; on average 3.3 days, while this figure was 2.9 days for the uninsured.

Foregone care is very low throughout the target population. Conditional on reporting health symptoms, people do not seek any care from a health provider in only 9 percent of the cases. This statistic does not significantly differ between the insured and the uninsured. Respondents also reported very few visits to traditional healers for treatment of an illness.

In total, the diaries record 2,066 consultations of healthcare providers. When individuals seek healthcare, they go to a patent medicine vendor (PMV) two thirds of the time, regardless of insurance status (Figure 21). The scheme does not cover medicines purchased from a PMV. Since most individuals just purchase drugs when consulting a PMV, these events can often be interpreted as self-medication.

Figure 21: Provider choice when seeking care

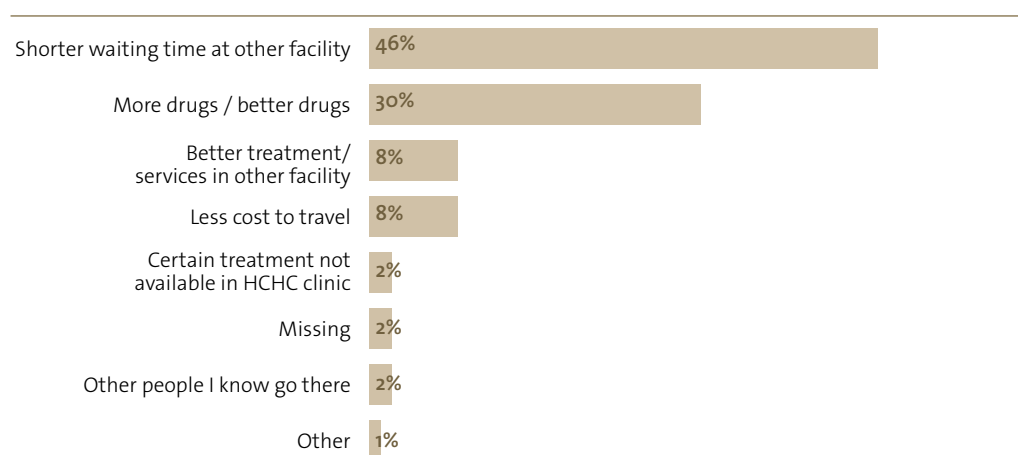


The remaining 31 percent of consultations comprised visits to a private doctor or nurse, a program clinic or non-program clinic. The insured are significantly more likely than the uninsured to go to a modern health facility such as a health center or a clinic (26.8% versus 17.6%). As discussed before, this may be a program impact but could also reflect the fact that insured households are wealthier and live closer to these modern facilities. Unsurprisingly, the insured are more likely than the uninsured to choose an upgraded clinic covered by HCHC. Nevertheless, in one third of all their visits to a clinic, insured individuals visit facilities that are not covered by the scheme, even though this means their out-of-pocket expenditures will be higher.

To understand why insured individuals go to non-HCHC clinics, a number of questions were added to an endline survey upon completion of the diaries. Overall, 73% of insured individuals reported that they sometimes went to non-HCHC facilities. This percentage varied across districts and was especially high in Lafiagi at 92%.

Symptoms for which the insured go to HCHC facilities are not different from the symptoms for which they go to non-HCHC facilities. The main self-reported reasons to choose a non-scheme facility were the shorter waiting times in this facility (46 percent), the availability of (better) medicines (30 percent), and the lower travel costs (8 percent); see Figure 22. This suggests that quality and distance are major factors reducing the client value of HCHC and may be impediments to renewal.

Figure 22: Reasons insured individuals visit non-HCHC clinics

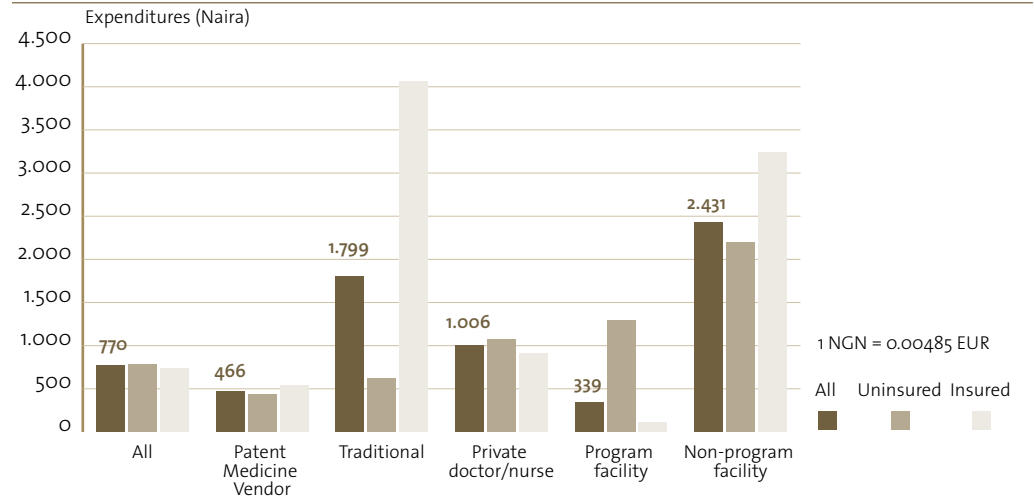


To further understand the value proposition behind HCHC, the study analyzes out-of-pocket health expenditures. On average, the target population spends 770 Naira out-of-pocket per consultation. Expenditures are lowest at patent medicine vendors<sup>65</sup> (466 Naira) and highest for non-program clinics (2,431 Naira) followed by traditional consults (1,799 Naira); see figure 23.

<sup>65</sup> Average expenditures at program facilities are lower for the insured because of the insurance coverage, but not for the uninsured.



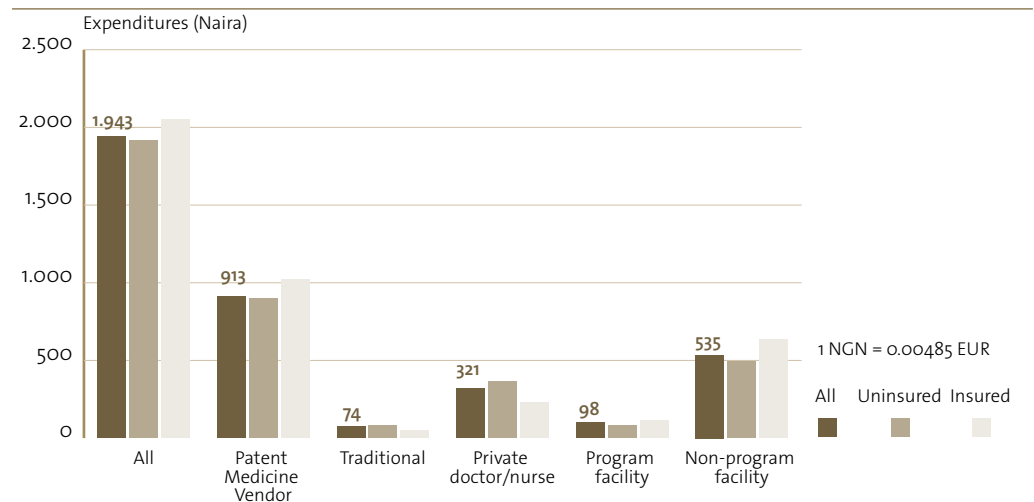
Figure 23: Average out-of-pocket health expenditures per type of provider



However, as discussed before, the vast majority of health provider consultations are at PMVs. As a result, PMVs contribute substantially to households' total health expenditures. Aggregating expenditures over the year by provider type, the costs at PMVs represent the largest share of total OOPs (40%) both for insured and uninsured individuals.

Conversely, the share of expenditures at traditional healers is only 8% of total OOPs despite the high average costs<sup>66</sup>, because of the low number of consultations. Insured individuals do spend a substantial amount at non-HCHC facilities. Total annual expenses at upgraded HCHC facilities are low for two reasons. First, the scheme largely covers insured individuals' costs. Second, uninsured individuals do not visit HCHC clinics very often.

Figure 24: Total annual out-of-pocket health expenditures (OOPs) per type of provider



<sup>66</sup> These high average costs are mainly driven by an outlier.

In sum, insured respondents report significantly more illnesses than the uninsured. This may be evidence of adverse selection, but it could also reflect a program impact on awareness, or capture the correlation of other characteristics with both health and take-up. Reported symptoms are, however, very similar. Although most individuals seek healthcare in case of a health event, a quality healthcare provider is only visited in roughly one quarter of the cases. The vast majority of people only buy over-the-counter medication, without consulting a medical professional. Moreover, drugs purchased at patent medicine vendors are not covered by the health insurance scheme.

In one third of their clinic consultations, the insured choose to visit a non- program facility and spend more out-of-pocket than they would have spent in a program facility. The main reasons to go to non-covered facilities relate to the perceived quality of care at program facilities, in particular the long waiting times, the low availability of medicines, and the quality and availability of specific services and treatments. Long travel distance and high travel costs are another deterrent to seeking care in a scheme-covered facility.

These reasons overlap to a large extent with the reported reasons not to renew the insurance policy upon expiry (see Financial and Health Diaries policy note #1), suggesting that the insurance package may not provide sufficient value in its current form.

The importance of quality and distance in provider choice decisions is in line with findings from a related study on healthcare utilization in Kwara Central.<sup>67</sup>

Visits to PMVs are on average much cheaper than consultations at private doctors or in clinics. However, because of their substantially higher frequency, they contribute a large share to total out-of-pocket expenditures. In other words, even though insured people can benefit from the financial protection of the scheme, they still incur substantial medical costs because they mostly seek care at providers that are not covered.

## 8.6 Medicine cabinet<sup>68</sup>

As part of the second follow up household survey in Kwara Central in 2013, a medicine cabinet survey was conducted. The data obtained through the medicine cabinet can be used to describe medicine practices in the studied community and, moreover, it allows us to look at differences in medicine practices between a setting in which an insurance program is operational and a setting in which it is not.

The inventory of a medicine cabinet is described in a WHO/University of Amsterdam report on investigating the use of medicines by consumers. In this report, Hardon et al. propose studying the use of medicines by consumers as a first step in assessing and addressing irrational drug use practices such as self-medication with prescription

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<sup>67</sup> Cavatorta, E., Janssens, J., and Mesnard, A. (2014). Quality, accessibility and the demand for health care in Nigeria?

<sup>68</sup> This section draws on Hendriks, M., Rosendaal, N., et al. Long Term Effect of Health Insurance and Facility Quality Improvement on Blood Pressure in Adults with Hypertension in Nigeria. A Population-Based Study.

drugs. A medicine cabinet survey is suggested as a useful observation tool to describe the types of medicines commonly used in the community. The assumption is that commonly used medicines are those that people store in their medicine cabinets.<sup>69</sup>

In the medicine cabinet survey that was added to the 2013 household survey, all drugs present in the household were identified and their use was linked to individual household members. Information was obtained regarding the type of medication that respondents used, what they used it for, whether they had used it recently and where they had obtained the medication.

One example of the use of the data obtained through the medicine cabinet survey, is an analysis (which is part of a forthcoming paper) of the difference in blood pressure reduction in hypertensive individuals when antihypertensive medicines were obtained from a formal health facility or from an informal provider. Respondents in the program area were twice as likely to purchase their antihypertensive medication from a formal health facility compared to respondents in the control area; of the respondents using antihypertensive medicines, 84.4% in the program area and 40.5% in the control area had obtained these medicines from a formal health facility rather than from an informal provider. Respondents using medicines from a formal health facility showed a significant reduction in blood pressure compared to respondents who were not on antihypertensive medication while respondents on medicines from an informal provider showed no decrease in blood pressure compared to respondents who were not using any antihypertensive medication.

Future research on the medicine cabinet data will focus more generally on the observed differences between the program and control area and between insured and non-insured individuals regarding medication use and specifically regarding the source of (prescription) medicines. Additionally, within the group of insured individuals an analysis can be made of what factors determine where an individual obtains (prescription) medication.

These types of analyses will provide information on the association between an insurance program and medicine behavior in the community and can further inform program implementers on what factors play a role in individuals' decision making regarding medication.

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<sup>69</sup> Hardon A, Hodgkin C, Fresle D. (2004). How to Investigate the Use of Medicines by Consumers.

## 8.7 Maternal and Child Health Study (MACHS)<sup>70</sup>

The aim of the ongoing Maternal and Child Health Study (MACHS) is to evaluate the impact of the Kwara State Health Insurance program on the utilization of maternal and child healthcare services, and maternal and child health outcomes. Specific objectives include the following:

- The impact of the Kwara State Health Insurance program on maternal decision making related to healthcare utilization during and after pregnancy and delivery.
- The impact of the Kwara State Health Insurance program on maternal and child health status, including pregnancy outcome, neonatal health, and child growth and malaria incidence.

MACHS has been designed as a prospective non-randomized controlled intervention study. It builds on the Household Surveys conducted in central Kwara State as the study participants were recruited after they had taken part in the baseline Household Survey. MACHS followed 1,137 children under the age of five years at intervals of four months for two years, as well as 300 pregnant women until delivery. The first data was collected in January 2011 with the final round of data collection on the under-five cohort of the study being completed in March 2013. Data collection amongst the pregnant women was completed in December 2013. The MACHS surveys consist of a broad biomedical questionnaire with in-depth maternal and child health questions including healthcare utilization, biomedical measurements and blood samples.

Linkage of the MACHS study data to the data collected during the three Household Surveys in central Kwara State provides a unique dataset containing detailed information at both the individual and household level, at multiple time points, before and after the Kwara State Health Insurance program was introduced in the intervention area. This provides a unique opportunity to disentangle the various contributing factors, which determine demand for maternal health services, and other maternal behaviors during pregnancy and infancy which determine health outcomes.

The findings from research being conducted under the MACHS are expected to be completed in 2015. Preliminary findings on the impact of the Kwara State Health Insurance program on child growth are summarized below.

The Nigerian demographic and health survey of 2013 showed that 36.8% of children under five years of age were considered to be short for their age or stunted, an indication of chronic malnutrition, while 21.1% were severely stunted. The prevalence of stunting increased with age from 15.7% of children under 6 months to 45.7% of children 24-35 months and decreased to 37.3% among children 48-59 months. Rural children were more likely to be stunted than urban children (43.2% vs 26%). Also, 18% of under five children were considered too thin for their height or wasted, indicating acute malnutrition, and 8.7% were severely wasted. Wasting peaked at age 9-11

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<sup>70</sup> This section was prepared by Daniella Brals and draws heavily from the forthcoming publication Aderibigbe, S.A., et al. Does health insurance improve child health and growth: an impact evaluation of the Kwara State Health Insurance program.

months (27.3%). Wasting was slightly more prevalent in rural children than in urban children (18.3% vs 17.6%). In Kwara state, prevalence of stunting was 27.1% with 10.1% being severely stunted while 6.5% were wasted with 1.4% being severely wasted.

The Kwara State Health Insurance program may improve child health and growth through different direct and indirect routes. Directly, the program is expected to bring about a reduction in treatment delay because of the absence of financial barriers to attend the clinic on time. Indirectly, it is expected that the program will contribute to improved nutritional status thanks to higher availability of resources for the family to buy food, as less resources will need to be spent on health. Also the program will increase awareness of the parents regarding health related issues, thus increasing health seeking behavior, and generate a shift towards utilization of the formal health sector instead of non-formal and traditional healthcare.

Preliminary findings suggest that 8.2% of the children suffered from severe acute malnutrition at the MACHS baseline survey (January 2011), with no difference between those in the intervention area (who received access to the Kwara State Health Insurance program in July 2009) and the control area. At baseline, 21% of the children in the intervention area were enrolled in the health insurance scheme, and enrollment increased further up to 30% by March 2013. Children in the control area were not enrolled in health insurance. Children suffering from acute malnutrition and other diseases had a higher probability of being enrolled in the health insurance scheme and of being re-enrolled when their health insurance expired than the other children in the intervention area. The highest enrollment rates were found among those children suffering from *severe* acute malnutrition.

The effect of the Kwara State Health Insurance program on child growth was shown in two steps:

- I. Being enrolled in the health insurance scheme was associated with significantly higher number of clinic visits compared to those not enrolled.
- II. A higher number of clinic visits was significantly associated with a decreased risk of acute malnutrition (including severe acute malnutrition) in individual children over time.

These preliminary data indicate that the Kwara State Health Insurance Program is effective in reaching those children who are most in need of medical care and also successful in improving their nutritional status.

## 8.8 Capacity building<sup>71</sup>

The research activities conducted in Nigeria by the Amsterdam Institute for Global Health and Development (AIGHD) and the Amsterdam Institute for International Development (AIID) were done in collaboration with the Lagos University Teaching Hospital (LUTH) and the University of Ilorin Teaching Hospital (UIITH), Ilorin in Kwara State. The collaboration started in 2007 and has been going on for more than seven years.

The LUTH team is led by Prof. Akin Osibogun, who is the Chief Medical Director of Lagos University Teaching Hospital, and Prof. TM. Akande, who is Head of the Department of Epidemiology and Community Health at the University of Ilorin Teaching Hospital.

The research activities involve virtually all cadres of health workers (doctors, nurses, laboratory scientists, community health officers) who were recruited from the Teaching Hospital, in addition to local government health staff in the case of Kwara State.

### Strengthening of Quality of Education

Several cadres of health workers and researchers were involved in four rounds of impact evaluation fieldwork in Kwara State as well as in some other projects which include Quality intervention of Cardiovascular Care in Kwara State, Health Education intervention in the care of cardiovascular diseases, Cost of Health at the Facility level, Financial Diaries, etc.

At least 80 health workers and researchers were trained in research skills and questionnaire administration, by AIGHD and AIID as well as by local researchers, during each round of the household surveys. The local research team also used the experience gained in the training sessions to produce more than forty Masters in Public Health and ten PhD degrees at the University of Ilorin in the research methodology course.

For almost all of the research personnel recruited in the studies, the research program offered a first-time opportunity for fieldwork and through this they were able to gain research knowledge and skills. The research activities also provide an opportunity to exchange experiences for both the Nigerian and Amsterdam based researchers.

### Research facilities

At the beginning of the research activities in 2008 in Kwara State, the facilities that were used were accommodated in just two rooms, but over time with more research equipment and staff, they were relocated to a rented office in Ilorin. Some additional research equipment is now also available in the health facilities.

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<sup>71</sup> The first complete draft of this section was prepared by Professor Akande, University of Ilorin Teaching Hospital.

Research equipment includes ECG machines, 15 laptops, two refrigerators, two generators, cold chain equipment, microscopes, field research bags, sphygmomanometers, weighing scales, office equipment, etc.

The office complex receives visits from UIITH resident doctors and consultants from all specialties and is now popularly referred to as the Research Office. The office provides technical support for resident doctors in their research work, particularly on data analysis.

### **Research staff capacity building**

The research project resulted in tremendous human capital development. Consultants in the department had their skills for research enhanced and this has resulted in members of the research team attracting two research grants from the Nigerian Tertiary Education Trust fund (TETFund). The research work also offers the opportunity to be co-authors on papers with the Amsterdam based researchers in reputable high impact journals.

The research project management skills of the researchers are also enhanced and members of the team now serve as resource persons to guide some researchers in the College of Health Sciences, University of Ilorin.

The resident doctors at the University of Ilorin enjoyed an exposure to research activities on a large scale beyond that which they usually do for fellowship examinations. The skills acquired have also helped them to easily conduct their research work for the fellowship dissertation. At least 28 Nurses and 12 Community Health Officers working in the hospitals, who hitherto were rarely involved in research activities, benefitted from hands-on training and participation in research activities for the first time. Local Government health staff members were also able to collaborate with hospital staff in research activities for the first time and this resulted in capacity building of all staff.

The research project enhanced interdepartmental collaboration on non-hospital based research work particularly with the departments of Internal Medicine, Chemical Pathology, Hematology, and Social Sciences in the University of Ilorin.

The capacity building has provided a critical mass of researchers and research assistants that can readily be used for future research projects. There is also a very strong clamor and desire to have experience in research from several cadres of health workers who were not yet involved in the project.

### **PhD candidates**

The research on the HIF program has made it possible for two Nigerian based students (Deji Aderibigbe and Femi Odusola) to conduct PhD programs with the University of Amsterdam. In addition, several other PhD programs are being carried out in Amsterdam on research related to the HIF program.

PhD programs have not enjoyed much popularity among Nigerian medical doctors. This project and the opportunity provided to the two Nigerian PhD candidates has stimulated a lot of interest in PhD programs among lecturers at the department of Community Health of the University of Ilorin who hitherto only had fellowship degrees. One of the core research team members who missed out on the opportunity to develop a PhD program from research on the HIF project is now studying for his PhD degree in Malaysia. Many more doctors and lecturers are waiting for an opportunity to enroll in a PhD program in association with the HIF research projects.

### **Future research collaboration**

The completed research has stimulated considerable interest in research activities, although currently less actively expressed as there are no ongoing research projects. There is particular interest in future research projects from those that have not yet been involved and who now seek an opportunity to acquire knowledge and skills on research. As a result there are endless enquiries on when the next research activity will come up, from health workers and non-health workers in and outside the hospital. These evaluation research projects have therefore brought a very positive impulse to the academic community at the University of Ilorin.



# 9 General Conclusions

When the Health Insurance Fund was founded in 2006 it was decided that a significant research component should be run parallel to the implementation of the projects.<sup>72</sup> The primary reason was that the proposed projects all had a number of innovative features that had never been tried before in low income settings in sub-Saharan Africa. Most notable among these innovations are the voluntary insurance component in regions where insurance often is a completely unknown notion, and the systematic approach to the quality improvement of participating public and private clinics and hospitals. The overriding research question was simple: Does it work? This was in the first place understood to mean, do the people in the area where the project is being implemented indeed get affordable access to high quality healthcare? The question that can then be considered is, does this lead to better health outcomes?

Based on the large body of research that has been completed, both questions can be answered in the affirmative. Four years of experience in Kwara State has shown there can be no doubt that access to quality healthcare has greatly increased; that this large increase has been accompanied by a reduction of out-of-pocket expenditures; and that these positive results are equitably distributed in the population. The impact of the program has been proven to be very beneficial for the health issues for which data has been collected (hypertension and mother and child health).

This report is based on a large body of research output: 17 scientific publications, 2 completed PhD theses (with an additional four in progress), 7 MSc theses, numerous brochures and publications in formats more accessible to the general public, and more than 27 program relevant reports.<sup>73</sup> Moreover, the high quality data that became available in the course of the research has attracted additional funding, notably from USAID.

Still, this is only part of the impact that the research component has had on the program. As presented in section 8.8, close cooperation with local counterparts led to research making a significant contribution to the scope and quality of partner institutions in Nigeria. Furthermore, the research has contributed to the design and implementation of the projects by providing input from focus group discussions and quantitative studies. It has resulted in a better understanding of the possibilities (and challenges) presented by enrolling large numbers of people who have never been insured before. The research has also contributed to determining insurance fees and co-payment requirements, and has underscored the importance of including MCH and hypertension services in the insurance package.<sup>74</sup>

During the research, a number of challenges had to be overcome. First of all there was some tension between the objectives of the implementers, who wanted to start the roll-out as quickly as possible, and those of the researchers, who needed time to

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<sup>72</sup> Indeed, Health Insurance Fund was the first project by the Dutch Ministry of Foreign Affairs that had a significant research/impact component from the start.

<sup>73</sup> Though not all papers and publications are directly referenced in this report, all are listed in annexes 11.4 and 11.5 and available on request to the authors.

<sup>74</sup> And this is only a partial list.

conduct the baseline surveys. Second, measures needed to be taken to keep the control groups from becoming contaminated (they could not be affected in any way by the program). Both implementers (who wanted to further expand enrollment), and local authorities, including politicians (who wanted their districts to also benefit from the program) at times exerted pressure to include the control areas in the program. This, of course, would have made further impact analysis impossible. Such tensions were unavoidable, but in all cases practical solutions were found. Finally, researchers from different disciplines (broadly speaking, “economists” and “medical specialists”) had to learn how to work together on designing the questionnaires, determining the sample size and sample procedures, choosing appropriate research methods for the questions at hand, and, within budget constraints, setting priorities for the questions that needed to be addressed first.

The overall impression is that the challenges have been overcome, and that the iterative learning process that resulted from adding the research component to all projects funded by the Health Insurance Fund has contributed to the success of the programs. The multidisciplinary approach also greatly contributed to the quality and relevancy of the research.

It is important to underscore a number of key characteristics of the research program. First of all, as stated earlier, the project implementation was always leading, with the research following the projects. Second, the research program was designed to be part of the overall exercise for the long run. It was meant to be a program, not a set of one-off projects. The aim was to continuously increase our knowledge on how best to give poor populations access to quality healthcare, through new research initiatives that were based on earlier studies while building on the growing experience in implementation of the projects. Third, this was a multidisciplinary research effort. Creating a healthcare system is not something that can be done by medical staff or economists, or “health system planners,” alone. The implementation process drew on many skills from a variety of disciplines. The same is true for the research. Learning to work together across different disciplines was an important benefit gained from the entire research effort. Fourth, this approach calls for a lot of flexibility from the researchers. Circumstances on the ground change continuously, and implementers adjust their projects accordingly, for instance by expanding the target groups or by adjusting the insurance packages in response to new government initiatives, such as the announcement of “free maternal and child healthcare for all” in Kenya. The real world is not a laboratory where all relevant variables can be controlled. Especially for studies that cover periods as long as four years (as in Kwara Central) adjustments in the research design are being made constantly. And finally, there is a level of risk if the implementation takes priority over the research. Projects can fail to take off and subsequently be cancelled. Initial research efforts (e.g., data collection at baseline) will then be largely wasted.<sup>75</sup> Given the wealth of information that rigorous impact evaluation is able to produce, this seems a risk well worth taking.

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75 “Largely”, because the rich baseline data do allow for a variety of studies, other than impact evaluation.

*Impression of the Shonga Maternity Center (above in 2006, below in 2013)*



# 10 Recommendations<sup>76</sup>

The wealth of knowledge garnered through six years of experience in project implementation and the parallel research efforts holds valuable lessons for the development of future projects to be sponsored by the Health Insurance Fund. The scheduled scale-up of the Kwara projects to cover up to 600,000 individuals living in rural areas opens up a multitude of possibilities for enhancing this knowledge base. The integration of the PharmAccess model into the government's efforts to strengthen healthcare at the district level in Kenya and Tanzania opens similar avenues for knowledge accumulation and learning. What follows are some general suggestions concerning issues that should receive special attention during scale-up and expansion in new areas, as well as broad issues that can be studied in parallel with the implementation.<sup>77</sup>

## General

The scale-up in Kwara, by a factor of 10, approximately, calls for a new strategy that must clearly identify the constraints that will be encountered. Such a scale-up is more complex than simply doing the same thing times ten. The relevant constraints are to be found in the human resources, the physical infrastructure, management capacity, information technology, possible political developments and weak institutions at the state level.

Similarly, the interventions in Kenya and Tanzania will have to face new challenges. The number of players at the district level will likely be much larger than in the relatively simple and homogeneous environment of rural Kwara. Because of the multiple stakeholders (bilateral and multilateral donors, numerous and competing NGOs, politicians at the district level, etc.) and numerous ongoing, and possibly competing, health initiatives, the management and coordination requirements will be much more extensive than in the past.

At the same time, these new developments open up new opportunities to expand the knowledge base. Key issues that need to be addressed are coordination of the numerous independent initiatives, enrollment and re-enrollment under various conditions, quality of care issues, the contents of the insurance package and the need to reach out to people living in remote areas.

## Enrollment/re-enrollment

A lot has been learned about the determinants of (re-)enrollment, both through experience and from a range of studies. The Willingness-to-Pay (WTP) studies<sup>78</sup> show that the size of the market for low-cost health insurance is relatively large, even in an environment where insurance was not previously available. The WTP studies (which are theoretically based) show that the need for care, and previous use of care, are important determinants of the Willingness-to-Join (WTJ) and the Willingness-to-Pay. Households with children under five years of age, and/or with senior members, place a high value on insurance. The number of illnesses and cases suffering from

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<sup>76</sup> This section benefited from input given by Constance Schultz, Marleen Hendriks, Tanimola Akande, and Wendy Janssens.

<sup>77</sup> A more comprehensive research plan for the next five years will be developed in the first quarter of 2015

<sup>78</sup> More of those studies in different contexts would be useful.

hypertension also contribute to the WTJ/WTP. These research findings are confirmed in practice. Those who need treatment for hypertension are very prone to re-enroll, and the enrollment rate for pregnant women has reached 71 percent in Kwara Central. Other factors that impact (re-)enrollment include the travel distance to the clinic, and qualitative aspects such as the availability of drugs and the attitude of the clinical staff in participating clinics. In focus group discussions, issues of trust, local leadership and familiarity with the notion of insurance were found to be important. Finally, from the Financial and Health Diaries studies, the lesson was learned that seasonality plays a large role, not only regarding health but also regarding finances (liquidity constraints).

Clearly, if the goal is to reach 600,000 enrollees in five years, or to develop district level health systems that include a subsidized health insurance component, these lessons need to be taken on board in the design of the marketing and roll-out campaigns.

The scale-up provides an opportunity to try out variations of the existing models and study their impact. For instance, where feasible, the logistics of enrolling and, in particular, re-enrolling, could be facilitated by the use of mobile technology. Mobile-payment options may help to smooth over liquidity constraints caused by seasonality of income flows. There is room to experiment with variations in individual and household based insurance (and even group insurance). The role of local institutions and of individuals such as village leaders could be strengthened. Perhaps most importantly, people need to be made more aware of the value of insurance. It may be useful to re-examine the contents of the various insurance packages, so as to tailor them better to the (perceived) needs of the population. In Kwara one could think of an integrated program for malaria prevention and treatment. Free (or highly subsidized) bed nets may stimulate enrollment. Free annual check-ups upon re-enrollment may also work. There are, no doubt, many more possibilities. Since scale-up will be gradual over a period of five years, experiments with alternative models can be built in and rapidly evaluated. The so-called pipeline method (in which one group gets, say, the bed net option first, and another group gets it a year later) would make that relatively easy, but in some cases randomization may also be feasible.

### **Quality of care**

The quality of care has clearly been recognized by participants as an important aspect of the program. Quality needs to be broadly defined and to include, in addition to adherence to sound medical protocols, things like the distance to the clinic, the attitude of the staff, and the availability of drugs. During many field visits it became apparent that, while staff members generally are happy with the program, the resulting large increase in workload was sometimes seen as a burden. Hence, during scale-up and other expansions, more attention to the needs of the medical staff seems justified. One option would be to introduce a form of “pay-for-performance.” Various studies have shown positive effects of such an approach, but they are all context specific. Thus, alternative models for pay-for-performance could be tried out and evaluated to find the model that best fits local circumstances. Other options include training opportunities for staff, or other forms of extra remuneration. Given

the lack of human resources, another option could be to lessen the workload through task shifting, allowing for example trained nurses to perform certain tasks that are now carried out only by doctors. A final and often overlooked issue is the extra administrative workload that results from the introduction of the insurance scheme. The introduction of simple administrative rules and appropriate user-friendly IT may help reduce this burden. Again, during scale-up simple experiments and quick turn-around evaluations can help find the best options for local circumstances.

### **Contents of the insurance package**

In some cases insured people decide not to re-enroll because they have not used healthcare in the previous year. In other cases people drop out because they could not get the care they needed in the participating clinic. And in numerous cases insured people choose to buy drugs from an informal pharmacist (a so-called patent medicine vendor, or PMV), because the drugs are not available in the participating clinic or the distance to that clinic is too large. As was demonstrated in section 6 discussing the impact of the program on out-of-pocket expenditures, and in section 8.5 on Financial and Health Diaries, the large number of small payments for drugs to PMVs add up to relatively large out-of-pocket payments. Moreover, it is well known that the quality of drugs from PMVs is highly questionable. It may be worthwhile to take a closer look at the role of PMVs in the health system. Currently they are excluded from the insurance package. But people like their convenience, even if they have to pay for it. The insurance package could be made more attractive if a selection of drugs from PMVs would be included. Additional training and other measures to secure quality may be necessary to make this possible.

A final, but very important issue regarding what is covered by insurance regards the treatment of chronic diseases. Low income countries in sub-Saharan Africa suffer from a double burden of disease: Infectious diseases are not yet under control while the burden from chronic diseases is rapidly growing. A truly comprehensive package would cover the treatment for all major chronic diseases. This would be unaffordable if “modern”, i.e., rich countries’ medical protocols would be followed.<sup>79</sup> Experimentation, followed by rigorous evaluation, with alternative types of treatments and interventions would greatly contribute to the countries’ future ability to deal with the growing burden of disease.

### **Reaching remote areas**

Thus far, the PharmAccess model has been mostly “clinic-centered”, i.e., a target group was identified to become eligible for subsidized health insurance, and subsequently easy to reach clinics were upgraded in order to participate in the program. Our studies have shown that the distance to a participated clinic is a major determinant for (re-) enrollment, so more needs to be done to make these clinics more easily assessable (e.g., through taxi services). But the issue of how to reach people who live in scarcely populated remote areas has not yet been addressed. One can think of covering travel costs, providing ambulance services, or even mobile health units. Especially in rural

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<sup>79</sup> Hendriks, M. (2014). Cardiovascular disease prevention in a health insurance program in rural Nigeria

Kwara, new healthcare delivery models may have to be introduced to make sure that in our quest to provide access to quality healthcare for the entire population, these remote villagers are included.

### **The way forward**

In the past six years the PharmAccess Group and the Health Insurance Fund have succeeded, with the generous support of the Dutch government, in providing access to quality care for poor populations who, more often than not, previously had no access to healthcare at all. That success has been documented in great detail by the impact evaluations and the other studies that ran parallel to the implementation of the interventions. In the process, PharmAccess has achieved a paradigm shift in the world of global health. Private stakeholders have been brought in, ranging from private insurance companies to private banks to private providers. New public private partnerships have been developed where both public and private actors contribute to the health system in ways that promote each actor's relative advantage. Public stakeholders (national and local governments) are the natural partners to contribute their focus on financing and regulations, while NGOs can bring their experience and expertise to augment local capacities. Local banks can increase their investments in the sector, and private insurance companies can provide their experience and expertise in administration and IT to support smooth operations.

Tens of thousands of low income earners have benefited from this approach and continue to enjoy the advantages of the program. But this needs to become hundreds of thousands, and then millions. The need is big. That is a correspondingly big challenge. Much has been learned in the past six years and much remains to be learned. The experience of developing a new and innovative approach to delivering quality healthcare to poor populations, while running built-in rigorous impact evaluations in parallel, followed by a series of closely intertwined special studies, has greatly contributed to the successes of the past six years. This same "integrated learning" model deserves to be followed in the next stage of this journey.

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2011 – J van der Gaag, et al. Impact Evaluation of Health Insurance Fund-supported Health Insurance projects in Kenya: Baseline Report

2013 – J van der Gaag, et al. Impact Evaluation of Health Insurance Fund-supported Health Insurance projects in Tanzania: Baseline Report KNCU Health Plan

### Follow up reports

2012 – J van der Gaag, et al. Impact Evaluation of Health Insurance Fund-supported Health Insurance projects in Nigeria: Kwara II (Central) Follow up Report

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### Impact Reports

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- 2011 – E Gustafson-Wright, et al. The Potential Market for Private Low-Cost Health Insurance in 4 African Contexts
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