I. EXECUTIVE SUMMARY

The global burden of chronic disease including diabetes and hypertension continues to rise. New culturally contextualized medical-care models are critically needed to address the unique demands of this chronic disease epidemic especially in low- and middle- income settings.

By coupling chronic disease management to microfinance groups in rural, resource-constrained settings, the ideal venue for care delivery is created. This novel initiative rooted in shared value ensures all involved parties benefit financially to ensure sustainability. Patients are financially incentivized to maintain attendance and have access not only to primary healthcare, but also to a valuable source of capital and income that would otherwise be unavailable. Providers are able to charge for their services in a previously untapped market. BIGPIC exists in support of, not parallel to, already existing medical care facilities. In fact, **BIGPIC serves as a bridge between the rural population and local clinics.** In the event that a patient presents with an acute condition outside the scope of BIGPIC services, patients are able to liaise with BIGPIC clinicians and be referred to traditional facilities. By relieving the burden of these previously poorly cared for, but easily managed, chronic disease patients, local clinics are more capable of providing excellent care for medical conditions outside the scope of BIGPIC.

Initial results of the BIGPIC pilot study have been overwhelmingly positive. **Average systolic blood pressure in the initial sample of patients dropped by 30mmHg.** This indicates that BIGPIC is able to accomplish chronic disease management in ways not previously possible. In addition to impressive health outcomes, patients are also able to benefit financially. **The average group member received a 47% return on their investment** in microfinance after one year of this pilot study. While the initial study included only six groups, **six additional groups have independently formed and sought out study leadership to be screened for chronic disease.**

**BIGPIC is a financially sustainable model that brings unprecedented chronic disease management to a severely underserved population.**
Diabetes is a major risk factor for ischemic heart disease, stroke, peripheral vascular disease, and heart failure, with a global cost of over $500 billion per year. These cardiovascular diseases are the major cause of morbidity and mortality among people with diabetes and pre-diabetes. The number of diabetics in low- and middle-income countries is expected to nearly double in the next two decades. Thus, the cardiovascular disease burden of diabetes in low-resource settings is expected to increase substantially, and there is a critical period now during which reducing cardiovascular disease risk among individuals with diabetes and pre-diabetes may slow this trend.

Cardiovascular disease is the leading cause of mortality in the world, with 80% of cardiovascular disease deaths occurring in low- and middle-income countries. In addition to the epidemiologic burden, cardiovascular disease threatens to impose a significant economic burden on low- and middle-income countries.

It is critical to address this chronic disease epidemic with a sustainable, longitudinal, care model that is both culturally contextualized and financially sustainable.
III. The Problems with Current Chronic Disease Care Implementation Strategies

Unique Barriers
Rural populations of low socioeconomic status patients face considerable and unique barriers to high-level health care, especially for chronic disease management. For this patient population, there is little access to capital, reliable supplies of medications, or laboratory services, and the distance to and cost of travel to clinic can be prohibitive. These barriers can result in poor clinic attendance, poor continuity of care, and a breakdown in patient-provider communication. The ideal healthcare system is contextualized to the population to which it serves.
IV. BIGPIC – Bridging Income Generation with Provision of Incentives for Care

BIGPIC is a unique model of healthcare that harnesses the strength of community while also addressing the fact that money is the primary sustainable motivating force in the provision of healthcare. In this model, screen positive patients with hypertension and/or diabetes form community based microfinance groups where they receive portable group based care and are trained on various aspects of diabetes and hypertension self-care. Patients are required to pay subsidized user fees for all services and medications. The distinct groups are then assessed and incentivized based on their utilization of services and clinical outcomes.

### SUMMARY STATISTICS

<table>
<thead>
<tr>
<th>Initial Screening</th>
<th>Confirmatory screening</th>
<th>Patients testing positive</th>
<th>Patients Join Microfinance Group</th>
<th>Patients on follow up in Microfinance Group after 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>65% of patients who initially screened positive came back for confirmatory screening</td>
<td>92% of patients who underwent confirmatory testing were positive</td>
<td>80% of patients confirmed positive joined a microfinance group</td>
<td>66% of patients confirmed positive retained in care after six months</td>
<td></td>
</tr>
</tbody>
</table>

- Patients are financially motivated to maintain monthly attendance.
- Patients have access to capital for potential healthcare needs.
- Providers travel to patient groups reducing patient’s transport cost.
- Patient time is used more effectively because they avoid long lines at clinics.
- A connection is made between a reliable source of medication directly to the patient. Patients can even order medications and have them delivered.
- The volume of easily-managed, chronic-disease patients is decreased in local medical care facilities.
- Patients are connected to local medical care facilities when they present with a condition outside the scope of BIGPIC.
V. BIGHIC- Health Capabilities and Outcomes

Cardiovascular disease is the leading cause of death worldwide, and patients with diabetes are especially susceptible. Elevated blood pressure is a major contributor to cardiovascular complications and is easily monitored. Blood pressure control among diabetics and non-diabetics alike is a powerful and cost-effective way to reduce cardiovascular risk in a population. Likewise, early detection and treatment of diabetes reduces long-term negative health outcomes.

**Although these chronic diseases are relatively easy to monitor and manage, the health outcomes are severe and even fatal without consistent, longitudinal, high level care.**

<table>
<thead>
<tr>
<th></th>
<th>Average Initial</th>
<th>Average After 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic Blood Pressure</td>
<td>163</td>
<td>135</td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td>94</td>
<td>87</td>
</tr>
<tr>
<td>Random Blood Sugar</td>
<td>10.7</td>
<td>9.42</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Average Initial</th>
<th>Average After 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1c</td>
<td>10.3</td>
<td>9.5</td>
</tr>
</tbody>
</table>

**Services Available Through BIGHIC:**

- Blood Pressure
- Random Blood Glucose
- Monitoring
- A1c monitoring
- Basic Metabolic Panels
- Reliable Medication Supply
- Health care workers trained in:
  - overview of CVD and CVD risk factors
  - historical questions to ask patients
  - physical examination techniques, as appropriate
  - operation of blood pressure (BP) monitoring equipment
  - operation of point-of-care diagnostic testing equipment for glucose, hemoglobin A1c, and other tests
  - data collection and storage methods
  - diabetes and hypertension treatment guidelines and algorithms
  - healthy lifestyles and health promotion activities
  - health education and lifestyle modification counseling techniques
  - importance of medication adherence
  - recognition of symptoms and signs of CVD and complications of diabetes and hypertension
VI. BIGPIC- Financial Outcomes and Growth Rates

<table>
<thead>
<tr>
<th>Group Name</th>
<th>No. of Members</th>
<th>% Earned on Savings</th>
<th>Total Shared Out (in Ksh)</th>
<th>Total Shared Out (in USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jiinue</td>
<td>31</td>
<td>43%</td>
<td>197,719</td>
<td>2,326</td>
</tr>
<tr>
<td>Nyange</td>
<td>31</td>
<td>51%</td>
<td>233,911</td>
<td>2,751</td>
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<tr>
<td>Butaka</td>
<td>21</td>
<td>42%</td>
<td>54,601</td>
<td>642</td>
</tr>
<tr>
<td>Sinoko Diabetic</td>
<td>31</td>
<td>32%</td>
<td>120,552</td>
<td>1,418</td>
</tr>
<tr>
<td>Our Lady of Assumption</td>
<td>31</td>
<td>61%</td>
<td>141,886</td>
<td>1,669</td>
</tr>
<tr>
<td>Mikhonge Inyukha</td>
<td>22</td>
<td>51%</td>
<td>147,158</td>
<td>1,731</td>
</tr>
</tbody>
</table>

Six additional groups have independently formed their own microfinance groups and sought out this study’s medical staff to be screened for chronic disease.

167 Total Members

895,827 KSH ($10,539 USD) Total Paid Out

Total revenue from health services rendered in six groups for 27 days of healthcare over 9 months: 95115 shillings ($1,119 USD)
Healthcare disparities in underserved rural populations are inextricably linked to these same population’s financial capabilities. Low socioeconomic status has been linked to poor health outcomes, and poor health outcomes can cause low socioeconomic status. Through the integrated efforts of the AMPATH Pharmacy, PHC, FPI, CDM, Webuye District Hospital, Webuye DHMT, and community mobilization a new model of care has been created to address these complex issues.

BIGPIC is a novel, financially sustainable approach, that brings unprecedented chronic disease management to a severely underserved population.