BRIEFCASE

J-PAL POLICY BRIEFCASE | FEBRUARY 2019

IN THE BUSINESS OF SAVING LIVES

In Uganda, an incentivized community health promoter program increased health care access, knowledge, and health-promoting behaviors among households, leading to a 27 percent reduction in child mortality.

Featuring an evaluation by Martina Björkman Nyqvist, Andrea Guariso, Jakob Svensson, and David Yanagizawa-Drott

PHOTO: TINE FRANK | LIVING GOODS

In 2017, 5.4 million children under the age of five died worldwide, with the highest rates in sub-Saharan Africa. Many of these deaths could have been avoided with simple preventative care and low cost treatments.[1] Yet, as of 2015, half of the world's population—mostly in low- and middle-income countries—lacked full coverage of essential health care services which could have prevented these deaths.[2]

Community health workers (CHWs) are community members without formal medical training that provide basic health services and connect underserved households with local health care providers.[3] CHWs are typically volunteers, and the evidence on whether they are effective in reducing child mortality is mixed.[4] This could be in part because CHWs experience limited incentives for their labor.

To test whether an entrepreneurial model for CHWs can improve service provision and health in general, Martina Björkman Nyqvist (Stockholm School of Economics, J-PAL), Andrea Guariso (Trinity College Dublin), Jakob Svensson (Stockholm University, J-PAL), and David Yanagizawa-Drott (University of Zurich, J-PAL) partnered with Living Goods and BRAC Uganda to evaluate their Community Health Promoter (CHP) program. CHPs are similar to traditional CHWs, but also sell health products and receive additional incentives to remain active within their communities.

KEY RESULTS:

Living Goods and BRAC Uganda's Community Health Promoter (CHP) program saved children's lives and improved child health. Child mortality dropped by 27 percent in CHP villages relative to the comparison group. Similarly, infant mortality fell by 33 percent and neonatal mortality decreased by 28 percent.

The CHP program improved health knowledge and health promoting behavior, especially concerning malaria and diarrhea. For example, households were more likely to know that diarrhea is transmitted by drinking untreated water and were also more likely to report treating water before using it.

The CHP program increased households' access to services that CHPs were not paid to perform along with those that were incentivized. Households in CHP villages were more likely to receive incentivized services such as home visits after childbirth, but also services that were not directly incentivized, such as follow-up visits for children sick with malaria or diarrhea.

EVALUATIONS

Although child deaths in Uganda have declined substantially, for every 1,000 live births in 2012, 69 children under the age of five died.[5] This was 47 percent higher than the global average.[6] Preventable conditions such as pneumonia, diarrhea, and malaria are among the leading causes of child mortality in Uganda.[7]

Researchers partnered with Living Goods and BRAC Uganda to evaluate an entrepreneurial approach to a CHW program developed by the two organizations. Researchers assessed whether the entrepreneurial model increased health care access, health knowledge, and health-promoting behaviors to ultimately improve health and reduce child mortality.

Living Goods and BRAC Uganda selected Community Health Promoters (CHPs) through a competitive process and trained them over two weeks on health education and business skills. CHPs' main activities resembled standard activities for CHWs: providing home visits, health education, basic medical advice and treatment, and referrals to nearby clinics for more serious diagnoses. The primary difference between standard CHWs and CHPs was that the CHPs also made a modest income by selling a range of health-related commodities such as antimalarial bed nets, water filters and purification tablets, soap, and fortified foods. CHPs bought the products wholesale from BRAC Uganda and Living Goods at about 30 percent below market rate and sold them at roughly 10 percent below market rate. The CHPs also received small incentives (US$0.65) for visiting households with pregnant women and newborns, which standard CHWs usually do not receive. The diverse product mix and incentives aimed to encourage sales and motivate CHPs to visit households regularly.

PHOTO: LIVING GOODS

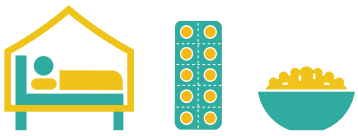
Researchers randomly assigned 115 of 214 villages to participate in the CHP program. The program was fully operational by the beginning of 2011, with at least one CHP locally recruited to the program. The other 99 villages served as the comparison group, with no CHP locally recruited. Households in both treatment and comparison villages could seek care from private clinics, public health dispensaries, and an existing government CHW program run by volunteers who did not receive any financial incentives.[8]

Three years later, researchers surveyed about 7,000 households, which included more than 11,000 children, to measure impacts on health care access, health knowledge, health-promoting behaviors, child health outcomes, and child mortality.

FIGURE 1. CHPS SOLD A MIX OF PRODUCTS THAT HELPED DRIVE UP SALES AND CROSS-SUBSIZE ITEMS.

EXAMPLES OF PREVENTION GOODS

- Insecticide treated bed nets
- Water purification tablets
- Food with added nutrients



EXAMPLES OF HEALTH-RELATED COMMODITIES

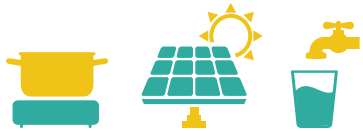
- Diapers
- Detergent
- Hand soap

EXAMPLES OF CURATIVE TREATMENTS

- ACTs (anti-malarial drug)
- Zinc
- Oral rehydration salts

EXAMPLES OF DURABLES WITH HEALTH BENEFITS

- Improved cookstoves
- Solar lights
- Water filters



[1] WHO. 2018. "Children: reducing mortality." Last modified September 19, 2018. http://www.who.int/mediacentre/factsheets/fs178/en/.

[2] WHO and World Bank. 2017. "Tracking Universal Health Coverage: 2017 Global Monitoring Report." http://pubdocs.worldbank.org/en/193371513169798347/2017-global-monitoring-report.pdf.

[3] Witmer, Anne, Sarena D. Seifer, Leonard Finocchio, Jodi Leslie, and Edward H. O'Neil. 1995. "Community Health Workers: Integral Members of the Health Care Work Force." *American Journal of Public Health* 85, no. 8 (August):1055–1058. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1615805/pdf/amjph00446-0017.pdf.

RESULTS

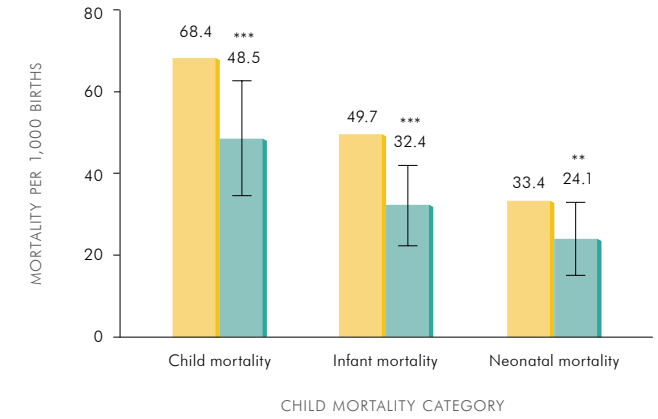
The CHP program saved children's lives. Child mortality dropped by 27 percent in CHP villages relative to the comparison group. Similarly, infant mortality fell by 33 percent and neonatal mortality decreased by 28 percent.[9]

The CHP program improved health knowledge. In CHP villages, 41.4 percent of households knew that drinking untreated water transmits diarrhea compared to 37.3 percent in the comparison group (an 11 percent increase). Of households in CHP villages, 26.3 percent knew that zinc effectively treats diarrhea compared to 22.7 percent in comparison villages (a 16 percent increase). Additionally, 9.8 percent knew that mosquito bites are the only cause of malaria compared to 7.1 percent in the comparison group (a 38 percent increase).

Households in CHP villages increased self-reported health-promoting behaviors. Access to the CHP program impacted both preventive and curative health behaviors, which were supported by CHP's health product sales. Higher percentages of households in CHP villages reported that they treated water before using it (which helps prevent diarrhea), that their children slept under insecticide-treated bed nets the previous night (which helps prevent malaria), and that they treated their children's diarrhea with zinc or oral rehydration salts.

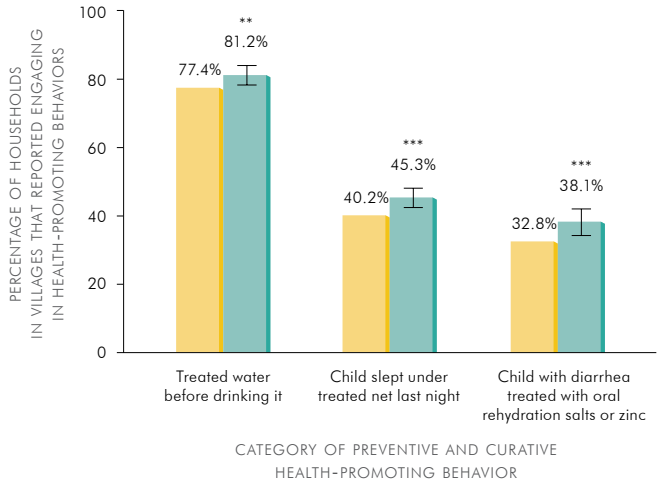
The CHP program increased households' access to services that CHPs were not paid to perform along with those that were incentivized. Relative to the comparison group, households in CHP villages were more likely to receive services that CHPs were incentivized to perform. For example, during the first week after giving birth, households in CHP villages were 8.1 percentage points (71 percent) more likely to receive a follow-up visit from any health care worker, an increase from 11.4 percentage points in the comparison group. Yet, households also experienced an increase in services that were not directly incentivized. For example, households in CHP villages were 6.1 percentage points (73 percent) more likely to receive follow-up home visits after a child fell sick with malaria, an increase from 8.4 percentage points in the comparison group.

FIGURE 2. PROGRAM IMPACT ON CHILD DEATHS PER 1,000 BIRTHS IN CHP AND COMPARISON VILLAGES



Note: Error bars represent 95% confidence intervals. Statistically significant difference relative to the comparison group is noted at the 1% (***), 5% (**), or 10% (*) level.

FIGURE 3. PROGRAM IMPACT ON HEALTH-PROMOTING BEHAVIORS IN CHP AND COMPARISON VILLAGES



Note: Error bars represent 95% confidence intervals. Statistically significant difference relative to the comparison group is noted at the 1% (***), 5% (**), or 10% (*) level.

[4] Lewin, Simon, Susan Munabi-Babigumira, Claire Glenton, Karen Daniels, Xavier Bosch-Capblanch, Brian E. van Wyk, Jan Odgaard-Jensen, Marit Johansen, Godwin N. Aja, Merrick Zwarenstein, and Inger B. Scheel. 2010. "Lay Health Workers in Primary and Community Health Care for Maternal and Child Health and the Management of Infectious Diseases." Cochrane Database of Systematic Reviews no. 3 (March). https://doi.org/10.1002/14651858.CD004015.pub3.

[5] UNICEF. 2013. "Information by Country: Uganda." Last updated December 31. http://www.unicef.org/infobycountry/uganda_statistics.html.

[6] UNICEF. 2012. "Under-five mortality." Last updated March 2018. https://data.unicef.org/topic/child-survival/under-five-mortality/.

[7] Government of Uganda - UNICEF. 2015. "Country Program Action Plan 2016-2020." Pg. 22. https://www.unicef.org/uganda/Final_Signed_UNICEF_Uganda_2016_-_2020_CPAP.pdf.

[8] Ministry of Health, Republic of Uganda. n.d. "VHT/Community Health Extension Workers." Accessed June 5, 2018. http://health.go.ug/community-health-departments/vht-community-health-extension-workers.

[9] These figures reflect the estimated reduction in the risk of death in the CHP villages compared to the control group, based on rate ratios derived from a Poisson empirical model. Figure 2 shows the reduction in mortality expressed in deaths per 1,000 births.

POLICY LESSONS

PHOTO: ANDREA GUARISO | LIVING GOODS

Incentivized CHWs can drastically reduce child mortality. The CHP program studied here provides CHWs with incentives to increase access to low-cost, high-impact health products and basic newborn and child health services. Results show that it led households to increase health-promoting behaviors and usage of life-saving products. This study adds to the evidence on how incentives can drive social outcomes, building on research with public health workers in Zambia and community grants in Indonesia.

Providing incentives for some services does not necessarily decrease the provision of non-incentivized services. CHPs performed more incentivized responsibilities, like newborn visits, but also provided more non-incentivized services, like visiting sick children. While it is possible that CHPs provided these non-incentivized services to increase the demand for their products and therefore increase their own earnings, these results also suggest that the CHPs had non-financial reasons to serve the community and the incentives did not detract from these social motivations.

However, the effectiveness of home-based interventions depends on the accessibility and quality of the existing health care infrastructure. The availability of referral services for serious health concerns was a critical programmatic component. Governments and NGOs should continue investing in facility-based health care and integrating CHW programs into existing strategies.

If incentives improve performance, then adding incentives to existing volunteer-based delivery systems can potentially improve the cost-effectiveness of life-saving programs. Researchers estimate that the average cost per year of life saved by CHPs was US$65 in 2013. Cost-effectiveness estimates for other volunteer-based health programs range from US$82 to US$3,396. Adding incentives to existing programs could potentially make them more cost-effective.

SCALE-UP AND ONGOING RESEARCH

Living Goods and BRAC Uganda are scaling their CHW program in Uganda, reaching over 7,000 community health workers and over 5.5 million people by end of 2018. Researchers and IPA Uganda are currently conducting another randomized evaluation to assess the impact of a scaled-up program across 500 rural villages in 13 districts in Uganda.

Featured Evaluations: Martina Björkman Nyqvist, Andrea Guariso, Jakob Svensson, David Yanagizawa-Drott. "Reducing Child Mortality in the Last Mile: A Randomized Social Entrepreneurship Intervention in Uganda." *American Economic Journal: Applied Economics*, forthcoming.

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Suggested Citation: J-PAL Policy Briefcase. 2019. "In the Business of Saving Lives." Cambridge, MA: Abdul Latif Jameel Poverty Action Lab.

This research was made possible by:

Fieldwork: IPA Uganda

Partners: BRAC, Living Goods

Funders: Children Investment Fund Foundation, the Swedish Research Council

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