



Impact Evaluation Mentoring for Governments in East & West Africa



Impact Evaluation Mentoring for Governments in East and West Africa Proposal

IMPACT EVALUATION OF THE COMMUNITY RESULTS BASED FINANCING IN ZAMBIA

Presented to

Partnership for Economic Policy (PEP)

By

Mr. Henry Kansembe, Ministry of Health
Ms. Brivine Munkombwe Sikapande, Ministry of Health
Mr. Mwango Mutale, Ministry of Health
Mrs. Maudy Kaoma, Ministry of Health
Ms. Mwango Margret Ngu'uni, Ministry of Health

Dr Chitalu Miriam Chama-Chiliba, University of Zambia
Dr Peter Hangoma, University of Zambia
Mr Grayson Koyi, University of Zambia
Ms Patricia Fungika, University of Zambia

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Ministry of Health

Zambia

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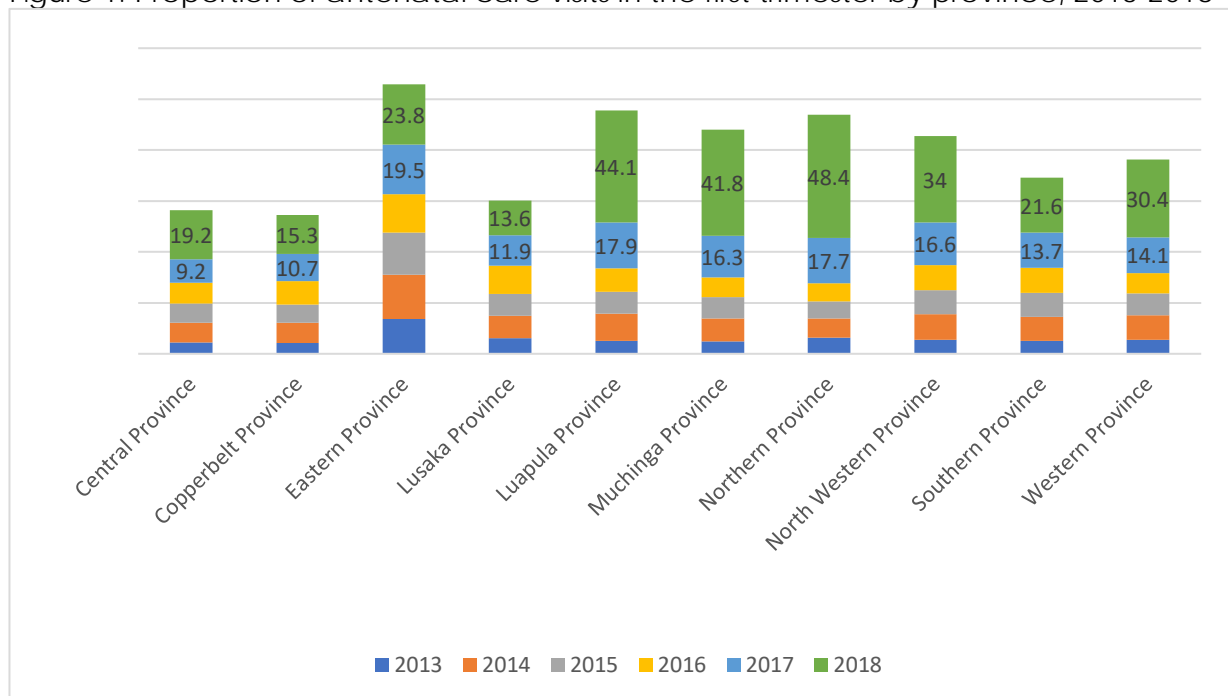
Mandatory template to submit Expression of Interest Policy Initiative For Impact Evaluation

SECTION A – FEASIBILITY OF RANDOMIZATION

1. Implementation of random assignment (200 words max.)

The study proposes to evaluate the effect of the community results based financing (RBF) on maternal health. To achieve this, we will employ a cluster-randomized trial with pairwise matching between groups where 48 health facilities are randomly allocated to treatment and 48 others to control in Central province in Zambia. The study is targeted at Central province due to the relatively poor performance in the province as shown in Figure 1. In each of the health facilities, 6 neighborhood health committees will be informed that for each woman they bring for ANC within the first trimester, they will be paid a fee. To ensure balance between the intervention and control, we will use administrative data on health facility characteristics such as distance to the district medical office, number of maternity beds and population catchment area implement a covariate constrained pairwise matching procedure.

Figure 1: Proportion of antenatal care visits in the first trimester by province, 2013-2018



Source: DHIS2, Ministry of Health

2. Strategies to deal with contamination and spillovers (200 words max.)

Two common problems affecting random assignment to treatment, and hence, the unbiasedness of results, are contamination and spillovers between treatment and control groups. Explain how your randomization strategy works to prevent these issues.

In Zambia, districts are the basic administrative units for health services and there is information sharing within the district on how to improve health services. As such, with randomization done at the health facility level, it is plausible that the NHCs -- having understood the importance of having women attend ANC in the first trimester—in the control arm may also encourage women to attend ANC in the first trimester. One of the strategies that can be employed to minimize contamination would be to control for geographic distance between the treatment and control groups – ensure a minimum distance of minimum of 10 kilometers between treated and untreated health facilities (Each health facility in Zambia has a catchment area of around 5 kilometers). However, the pairwise matching procedure does not allow us to control for geographic factors. One plausible option is to use instrumental variables to adjust for treatment contamination in randomized controlled trials as discussed in Sussman and Hayward (2010). A suitable IV will be determined

1. Sussman JB, Hayward RA. An IV for the RCT: using instrumental variables to adjust for treatment contamination in randomised controlled trials. *BMJ*. 2010;340:c2073.

3. Evaluation consent

Accepting the use of a random assignment technique for program evaluation is a compulsory requisite for proposal presentation and grant disbursement. Are you providing a letter from the government office in charge of the program stating their commitment to carry out an experimental evaluation (i.e. involving random assignment)?

Yes

No (see letter)

4. Potential sample size

Enter an estimation of the size of the universe (maximum potential size) of the untreated population that will be available for random assignment into either the treatment or control group during the randomization stage.

Maximum number of untreated persons:

96 facilities

Treated group: 48 facilities

Untreated group: 48 facilities

SECTION B – INTERVENTION DETAILS

1. Description of the intervention (300 words max.)

Describe in an exact manner the experience that an eligible subject who is selected for program participation goes through as a result of being selected. This is the definition of the treatment to be tested in the study. If alternatives are to be tested as well, list each treatment below and describe.

Zambia's maternal mortality ratio is one of the highest in the world. It also has one of the lowest rates of timely ANC attendance in the world. Timely attendance is defined as having ANC within the first trimester of pregnancy. Poor ANC is associated with complications and mortality [1]. Results Based Financing (RBF) has been heralded as an effective tool of motivating health workers to improve MNCH indicators. However, focus has been on frontline health workers and little attention has been given to Community Health workers (CHWs). Yet CHWs have been found to be an effective cadre in improving maternal, newborn, and child health indicators, including ANC and facility deliveries [2, 3].

All health facilities in control and treatment arms have NHCs with trained CHWs in birth-preparedness and the importance of timely ANC. For NHCs in the treatment groups, six will be selected at each health facility and they will be informed that a fee will be paid for each pregnant woman that attends ANC within the first trimester. Selection of the NHCs to be included will be done with the guidance of the community traditional leaders and health center managers. At the end of every quarter, we will count how many women were referred by each NHC and the NHC will be paid accordingly.

1. Zolotor AJ, Carlough MC. Update on prenatal care. *American family physician*. 2014;89(3).
2. Akinyi C, Nzanzu J, Kaseje D. Effectiveness of community health workers in promotion of maternal health services in Butere district, rural western Kenya. *Universal Journal of Medical Science*. 2015;3(1):11-8.
3. Viswanathan K, Hansen PM, Rahman MH, Steinhardt L, Edward A, Arwal SH, et al. Can community health workers increase coverage of reproductive health services? *Journal of Epidemiology and Community Health*. 2012;66(10):894-900. doi: 10.1136/jech-2011-200275.

2. Application mechanism (300 words max.)

Describe in an exact manner the procedure that a potential candidate must follow to be considered for program participation. List the documents that candidates must present and describe, in detail, the activities in which they may be required to participate during the screening process, (interviews, informative sessions, etc.).

To be able to participate, NHCs will be chosen by the research team in consultation with the health center. Consenting NHCs will be visited by a member of the research team to register them and provide detailed information of the intervention.

3. Eligibility mechanism (300 words max.)

Detail the eligibility criteria and describe exactly how each item considered for eligibility is assessed in practice. Explain how selected candidates are informed about selection into the program.

To be considered for community RBF, a NHC must be active and should have CHWs who are trained in birth preparedness (safe motherhood action groups (SMAGs)). Due to the pairwise matching done on the basis of facility characteristics, there is an equal chance of control facilities having trained CHWs. The balance will ensure that differences in outcomes are not due to differences in training.

We propose to use text-based notification to orient or remind the NHCs in the control and treatment facilities. Ministry of Health will facilitate compilation of mobile phone numbers for NHC Chairpersons in the control and intervention sites. The disadvantage with this approach is that some NHCs in rural areas may not have mobile phones and that messages may have to translated to local languages to ease understanding. A complementary approach is to use printed posters (in local language) to be mounted in the control and treatment facilities.

The facility manager will be responsible for disbursing the monetary incentives to the NHCs. The actual data recorded by the NHCs will be used to calculate incentive payments. As such there is need for the facility managers to validate the figures recorded by the NHCs.

NHCs will be provided with stationery and pens to record the number of women referred.

SECTION C – EVALUATION DETAILS

1. Timeline

Provide estimated dates for the milestones of the impact evaluation project, listed below. Remember that sufficient time must be allowed for the results of policy interventions to materialize, depending on the nature of the policy initiative.

Approximate date – baseline data collection:

We will use monthly administrative data from the Health Management Information Systems (HMIS). Baseline data will be extracted in December 2019.

Approximate date – start of intervention:

January 2020

Approximate date – follow-up data collection:

July 2020

We will use monthly administrative data from the HMIS for the end line. The proposed timeline will allow for the intervention to be implemented for 6 months. Accordingly, the monetary incentive will be disbursed for two quarters.

In addition, lower level administrative data will be collected at NHC level. This data will include: Number of referred pregnant women for first ANC visit by the Safe Motherhood Action Groups,
Number of (maternal) health education meetings held

Summary of data to be collected

- i. monthly HMIS data for the period 2016Q1 to 2020Q2 for ANC visits and skilled deliveries.
- ii. data on intermediate outcomes through field survey in the control and treatment sites using adapted NHC activity reporting form
- iii. qualitative data from key informants (community health workers and providers) and focus group discussions with pregnant women/mothers in the study sites

2. Main research question (100 words max.)

State your main research question as succinctly as possible.

The study seeks to address the following questions:

- 1) Can providing performance incentives to community based agents, specifically, neighborhood health committees (NHCs), drive them to increase the number of pregnant women who attend ANC within the first trimester?
- 2) Could incentivizing first antenatal attendance also translate to increased facility deliveries?
- 3) Could other non-incentivized indicators such as post-natal attendance in the first six days post-delivery increase in line with increase in the timing of first ANC visit?

3. Primary outcomes (200 words max.)

State your primary outcome of interest, i.e., the most important variable on which you expect to observe an impact as a result of the program. State up to three outcomes, listed in order of importance.

Primary outcome:

- 1) The primary outcome of this study is proportion of pregnant women attending the Antenatal care clinic in their first trimester.

Secondary outcome:

- Proportion of pregnant woman giving birth at a health facility
- Proportion of mothers with a postnatal visit in the first six days of delivery.
- Number of referred pregnant women for first ANC visit by the Safe Motherhood Action Groups
- Number of (maternal) health education meetings held
- Proportion of pregnant woman giving birth at a health facility

4. Sample size and power calculations

The pairwise matching undertaken using facility level characteristics such as number of maternity beds, distance from the district medical office and the population catchment area, yields a sample of 96 facilities (48 in the treatment arm and 48 in the control arm). We use the following characteristics to determine the power of the study:

- 1) Proportion of pregnant women attending ANC in the first trimester is estimated at 24% according to the Zambia Demographic Health Survey
- 2) We assume a minimum detectable effect of 15% points
- 3) Type one error probability is set at 5%.
- 4) Intra-cluster correlation of 0.06
- 5) Sample size of 48 health facilities in treatment and the same number in control determined using pairwise matching.
- 6) Average of 6 NHCs per facility.

The power based on these characteristics is 93 as shown below. Taking into account variability using R squared of 0.02761 using number of ANC visits per trimester per facility, yields power of 0.94.

For the user specified parameters:

p1:	0.2400
p2:	0.3900
significance level:	0.05
baseline measures adjustment (correlation):	0.00
average cluster size:	6
number of clusters per arm:	48
coefficient of variation (of cluster sizes):	0.00
intra-cluster correlation (ICC):	0.0600

clustersamps estimated parameters:

Firstly, assuming individual randomisation:

power:	0.98
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Then, allowing for cluster randomisation:

design effect:	1.30
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power:	0.93
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SECTION H – OTHER CONSIDERATIONS

1. Budget

For evaluation projects that are selected, PEP will provide up to \$US 87,000 in funding, including a \$US 22,000 research (cash) grant, a \$US 25,000 data collection grant and up to \$40,000 in various

subsidies, such as for participation in PEP meetings and study visits, for publications in peer-reviewed journals, for presentations at international conferences, and for the organization of national policy conferences, etc.

#	Item	Description	Unit Cost in USD	Comment	Total cost
1	Notification to community health workers in control and treatment facilities	Use of mobile text message broadcasting to NHCs chairpersons @ ZMW 1000 for 9000 bulk SMS	76.92		76.92
2	Orientation of CHW in rural health centres for half day in intervention sites	Transport refund for maximum of one person per NHC at each facility	3.85	48 facilities in treatment and 48 facilities in control group, payment for 1 NHCs members	1,107.69
3	Transportation costs to one facility for 1 day	Fuel and vehicle hire cost for 1 vehicle, per 1 facility for 1 day, once per quarter	115.38	Depending on geographical spread, this cost could cover at most 3 facilities per visit	2,769.23
4	Hotel and per diems for researchers and MOH	Researchers and MOH staff orienting CHW in 1 facility in the treatment arm for half day	84.62	Assume orientation of at least 2 facilities per day	2,030.77
5	Ethical clearance	Expedited ethical clearance for study	276.92		276.92
6	Incentive payments per facility and 2.5% administrative costs	Incentive payment @\$0.31 (ZMW 4) per ANC visit for one quarter, administrative fees for additional responsibility to facility to monitor CHW records and disbursement of incentives to CHWs. Assume 1 NHC per facility and average utilisation per quarter per facility is 100 and 2.5% administrative fee	31.54	4 NHCs per facility	18,166.15
7	Quarterly monitoring/check up in intervention sites by research and MOH team	Researchers and MOH staff monitoring activities and transfer of incentive payments to facility in charge per facility for 1 day per quarter (transport and per diem)	200.00	Depending on geographical spread, this cost could cover at least 2 facilities per visit	4,800.00
8	Stationery (pens and books) for CHW to record entries	Assume 7 members per NHC and 1 NHC per facility	8.08		9,304.62
	Total		797.31		38,532.31

2. Acceptance of ethical ruling by the PEP Research Ethics Review Committee

Accepting the ruling of PEP’s Research Ethics Review Committee (www.pep-net.org/research-ethics-review-committee) is a compulsory requisite for proposal presentation and grant disbursement. Do you agree to abide by the Committee’s ruling?

Yes No

3. Additional remarks (200 words max.)

Please enter any other information relevant to the impact evaluation project of your proposed policy initiative.

The study will include an intervention wherein we propose to incentivize neighbourhood health committees in the treatment group for each women who seeks antenatal care on the first care. The estimates provided in the budget are based on quarterly utilisation data for antenatal care in the first trimester that was obtained from the Health Management Information System of the Ministry of Health. Given that the study will rely on administrative data, we expect that the funds allocated for data collection (US\$ 25,000) will not be sufficient to implement the intervention in the 48 facilities that will be in the treatment group. However, we expect to use part of resources allocated as research grant to ensure that the project proceeds. Furthermore, we expect that other administrative costs will be covered based on the day to day routine management of health facilities.