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 Bautista, SA, (2012) Impact Evaluation of Performance-Based Contracting for General Health and HIV/AIDS Services in Rwanda  
 ESRC End of Award Report, RES-167-25-0259. Swindon: ESRC.



## ESRC End of Award Report

For awards ending on or after 1 November 2009

This End of Award Report should be completed and submitted using the **grant reference** as the email subject, to **reportsofficer@esrc.ac.uk** on or before the due date.

The final instalment of the grant will not be paid until an End of Award Report is completed in full and accepted by ESRC.

Grant holders whose End of Award Report is overdue or incomplete will not be eligible for further ESRC funding until the Report is accepted. We reserve the right to recover a sum of the expenditure incurred on the grant if the End of Award Report is overdue. (Please see Section 5 of the ESRC Research Funding Guide for details.)

Please refer to the Guidance notes when completing this End of Award Report.

<b>Grant Reference</b>	RES-167-25-0259		
<b>Grant Title</b>	<b>Follow-up Impact Evaluation of Performance-based Contracting for General Health and HIV/AIDS Services in Rwanda</b>		
<b>Grant Start Date</b>	1/2/2008	<b>Total Amount</b>	£645,240.72
<b>Grant End Date</b>	31/1/12	<b>Expended:</b>	
<b>Grant holding Institution</b>	National Institute of Public Health		
<b>Grant Holder</b>	Stefano Bertozzi / Sergio Bautista-Arredondo		
<b>Grant Holder's Contact Details</b>	<b>Address</b>	<b>Email</b>	
	Av. Universidad #655 Col. Sta. Maria Ahuacatitlan CP 06100 Cuernavaca, Morelos, Mexico	sbautista@insp.mx	
		<b>Telephone</b> +52-777-329-3068	
<b>Co-Investigators (as per project application):</b>		<b>Institution</b>	
Prof. Paul Gertler		National Institute of Public Health	
Dr. Paulin Basinga		National University of Rwanda/School of Public Health	
Dr. Damien de Walque (Project Partner) Dr. Christel Vermeersch (Project Partner)		The World Bank Group	
Dr. Agnès Binagwaho (Project Partner)		National Institute of Public Health	

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## 1. Non-technical summary

Please provide below a project summary written in non-technical language. The summary may be used by us to publicise your work and should explain the aims and findings of the project. *[Max 250 words]*

This research project was the follow-up data collection for the Impact Evaluation of Performance-based Financing (PBF) for General Health and HIV/AIDS Services, a scheme implemented in Rwanda in 2006-2008. While previous results from pilot schemes in Rwanda suggested service delivery and health outcome improvements, the global health community lacked empirical evidence as to whether PBF was a feasible method for increasing access to health services, improving service quality, and significantly improving health outcomes. This evaluation took advantage of a prospective quasi-experimental design to test the hypotheses that PBF increased the quantity and quality of general health and HIV/AIDS services and improved the population's health status. Evidence was particularly used internally to serve the Rwandan health community as they prepared for expansion of PBF programs within Rwanda, as well as externally among the international community where attention has been directed towards more effective methods for addressing critical health care delivery issues. In general, indicators with higher payments provided a greater incentive for providers, and improvements were strongest for aspects of delivery in which providers had more control. The general health PBF program increased the number of institutional deliveries and number of preventive care visits for children aged 23 months and younger and for those 24-59 months. There were no increases in women completing four antenatal visits or children adhering to full immunizations schedules. The HIV PBF program improved coverage of HIV testing and counselling services with larger impacts among married individuals and couples, and even stronger impacts on discordant couples.

## 2. Project overview

### a) Objectives

Please state the aims and objectives of your project as outlined in your proposal to the us. *[Max 200 words]*

Objective: To evaluate the impact of PBF on the motivation of the HIV/AIDS health care workers, the quality of the HIV/AIDS services, the mix of HIV/AIDS services offered, and the improvements in health status of HIV+ patients.

The core of the impact evaluation was designed to test the following five hypotheses, namely PBF:

- Improves the motivation and behaviours of the HIV/AIDS service providers
- Increases the quantity of HIV/AIDS health services delivered
- Improves the quality of the HIV/AIDS services provided
- Improves the health status of the HIV+ patients
- Improves the mix of HIV/AIDS health services provided to infected patients

In addition, the study also centres on three research questions specifically designed to gather information on the impact of ART on HIV/AIDS patients, as well as patient household

members:

- *What are the socioeconomic benefits of treatment for HIV/AIDS patients and their families?*
- *What are the determinants of adherence to treatment?*
- *What is the impact of the availability of treatment on prevention and individual behaviours (stigmatization, risky sex, and willingness to be tested...)?*

## **b) Project Changes**

Please describe any changes made to the original aims and objectives, and confirm that these were agreed with us. Please also detail any changes to the grant holder's institutional affiliation, project staffing or funding. *[Max 200 words]*

During analysis, the project advanced in line with its original aims and objectives. This continues to be the case to date.

At the end of the original project timeline, the research team applied for a non-cost extension to address an important and additional research question that was feasible to address without additional funding. The request was approved by ESRC; however, the progress made in this last period did not correspond with agreed-upon expectations since the project's non-cost extension funding has yet to be received. (Agreement has been made that the non-cost extension payment will be sent upon the completion of this report.) Since the grant terminated in December 2011 (this date includes the accepted one-year extension of the original award), and the non-cost extension award was not received before the end of 2011, there wasn't any sufficient time to collect and analyse what was promised for the non-cost extension period.

Regarding project staffing, the original proposal stated Dr. Stefano Bertozzi from the INSP as the PI. In October 2009, he was replaced in this role by a previous project Co-I Sergio Bautista-Arredondo also from INSP. This was approved by ESRC. No changes were made to the grantholder's institutional affiliation.

## **c) Methodology**

Please describe the methodology that you employed in the project. Please also note any ethical issues that arose during the course of the work, the effects of this and any action taken. *[Max 500 words]*

This evaluation took advantage of a prospective randomized experimental design, and the evaluation strategy made use of the expansion of the PBF program over time: Pre-intervention baseline data was collected (2006) and post-intervention follow-up data (2008) was collected in both treatment and control areas in order to construct difference-in-difference (DID) estimates of the impact of PBF on facility performance indicators and on individual outcomes. For the HIV/AIDS component of the study, both facility- and household-level surveys were conducted.

HIV/AIDS Facilities survey:

The facility sample was constructed in three stages. First, the task team identified the 28 facilities that were funded by the Africa Multi-Country HIV/AIDS Program (MAP). They

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identified those which initiated PBF prior to 2006, as well as the MAP-funded facilities which would have begun ARV treatment in 2006. Second, all ARV treatment facilities were identified in Phase I and Phase II districts. This resulted in a sample size of 8 ARV sites in Phase I districts and 14 ARV sites in Phase II districts. In order to increase the sample size, the last step involved randomly selecting 10 facilities in Phase I districts which would have begun PBF for HIV/AIDS services in 2006, and 4 facilities in Phase II districts which provide HIV/AIDS services. This resulted in a total sample of 64 facilities: 28 MAP funded, 18 Phase I and 18 Phase II.

HIV/AIDS Household survey:

Prior to baseline data collection, the evaluation team established that the household survey would be administered to a sample of 1500 HIV+ patients, and 500 HIV- patients. This sampling procedure was the first step in avoiding any stigma associated with being selected to participate in this study. The sample of patient households would consist of patients currently on ART, on prophylactic treatment and on the waiting list for treatment. Patients were randomly selected from patient lists at the ARV treatment facilities included in the facilities sample by a certified medical doctor under the direct management of the School of Public Health survey team. The control households were randomly sampled in the same area as the patients' households. The total baseline sample consists of 1,996 households and 7,494 individuals. Although the original sample size was 2000 households, some 39 households were dropped from the analysis as a result of missing information or incorrect coding. The sample was drawn as follows: 20% MAP households, 40% Phase I and II samples.

For the analysis, primary and secondary data were used to estimate the PBF impact comparing average facility and household outcomes using STATA data analysis and statistical software (StataCorp, College Station, TX). Statistical power was increased by using multivariate regression to condition on facility and household characteristics, where appropriate. Data were reanalyzed using DID, which compares the change in outcomes for the treatment group before and after the program to the change for the control group. All analyses were clustered at the district level.

#### **d) Project Findings**

Please summarise the findings of the project, referring where appropriate to outputs recorded on the ESRC website. Any future research plans should also be identified. *[Max 500 words]*

Regarding the project hypotheses on whether the quantity of HIV/AIDS health services delivered, the impact evaluation resulted in three general findings: (1) higher payments provide stronger incentives, (2) incentives have a larger effect on services in which providers have more control over delivery, and (3) programmes should pay more for verifiable clinical content indicators, since these are measurable, closely related to outcomes, and within the control of the provider (Basinga, Gertler et al.'s World Bank Policy Research Working Paper, 2010 and article published in *The Lancet*). For services depending more on patients' care-seeking behaviour, the programme ought to provide incentives to the patient instead of the provider. The program also improved HIV testing and counselling (HTC) coverage with larger impacts among married individuals and couples, and even stronger impacts on discordant couples (de Walque et al.'s submission to *The Lancet*, 2011). The PBF scheme paid more for couple HTC, and the trend of

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larger impacts among indicators for which the scheme paid more was also consistent with our findings from the PBF evaluation on general health services (Basinga, Gertler, et al., 2010). The HTC findings were presented at the International AIDS Society 2011 Conference (Rome, July 2011); 3ie Mind the Gap: From Evidence to Policy Impact Conference (Cuernavaca, Mexico, June 2011); and the XVII International AIDS Conference (Vienna, July 2010) through posters, panel discussions, and PowerPoint presentations.

In 2010-11, other preliminary analyses were conducted corresponding to project hypotheses. These include process and structural quality of HTC and Prevention of Mother-to-Child Transmission (PMTCT) of HIV to assess the quality of services delivered; patient exit interviews with provider vignettes for HTC and PMTCT to assess the quality of services delivered; perverse effects of PBF to assess motivation and behaviours of service providers; antiretroviral (ARV) treatment access and adherence to assess HIV/AIDS service mix available to infected patients; and the 10 HIV PBF payment indicators to further assess quantity of HIV/AIDS services delivered. One common trend across these analyses was that the Rwandan health system encountered a drastic scale up of HIV-related services, equipment, human resources, and patient load unrelated to the PBF program.

Although the project has completed the initially proposed data collection activities, the results can easily be further enhanced by additional information the team currently lacks, but if gained, would be strongly relevant in similar programs being implemented worldwide. The evaluation team remains positive regarding the project's importance and has applied for a grant published by the United States' NIH to expand and disperse knowledge related to this project's topics. Specifically, funding was requested to evaluate the impact and cost-effectiveness of PBF on PMTCT services by extracting medical record data from facilities that participated in the original evaluation and to complement these data with a household level study to determine child health outcomes. This proposed study serves to complement the ESRC-funded project and will be the first to our knowledge on the effects of PBF on PMTCT services where supply-side incentives are used to increase the demand for services.

**e) Contributions to wider ESRC initiatives (eg Research Programmes or Networks)**

If your project was part of a wider ESRC initiative, please describe your contributions to the initiative's objectives and activities and note any effect on your project resulting from participation. *[Max. 200 words]*

Not Applicable.

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### 3. Early and anticipated impacts

#### a) Summary of Impacts to date

Please summarise any impacts of the project to date, referring where appropriate to associated outputs recorded on the Research Outcomes System (ROS). This should include both scientific impacts (relevant to the academic community) and economic and societal impacts (relevant to broader society). The impact can be relevant to any organisation, community or individual. [*Max. 400 words*]

This project has sought to make an impact on policy and practice through the involvement of the Government of Rwanda throughout various stages of the project, including the review of abstracts submitted to conferences and drafts of papers, but most relevant to having an in-country impact are workshops and conferences. Workshops in particular have had a particular influence in engaging health policy stakeholders and shaping health policy in-country, and notable ones include: two Global Development dissemination workshops (Pretoria and Accra, July 2009); a handful of analysis workshops for the impact evaluation team (Berkeley, CA, United States, September 2008; Cuernavaca, Mexico, October 2009; Kigali, Rwanda, March-April 2010); an impact evaluation workshop for health sector reform held by the World Bank Africa Region's Development Impact Evaluation Initiative and the Human Development Network and sponsored by the Spanish Impact Evaluation Fund (Cape Town, December 2009); a capacity building and analysis workshop for the impact evaluation of PBF (Kigali, Rwanda, March-April 2010); and the Evidence to Policy: Using impact evaluation and data for informed decision making workshop held by the Rwanda Ministry of Health, the World Bank, and the NURSPH (Kigali, Rwanda, September 2011). Because this research team contains NURSPH faculty members, who additionally have strong interactions with or are acting members of the health system, this project has strong in-country presence and voice regarding the way the PBF program can be shaped to improve health outcomes and service delivery.

Also related to our HTC findings described above, being the first rigorous impact evaluation of PBF on HIV/AIDS services, this project's available findings have dramatic relevancy – to offer a promising option to the challenges of improving access to HIV testing in junction with individual as well as couples testing, if you will – in the field of HIV/AIDS in the midst of new research that suggests prevention's key role in combating the HIV epidemic and perhaps halting or reversing the spread of HIV/AIDS. Having demonstrated that the PBF program itself rather than a difference in input to the health sector of Rwanda was able to increase the proportion of couples participating in HIV testing and counselling additionally offers feasible options in the context of the global financial crisis where efforts to maintain funding levels is key and optimizing available donor and national resources is critical.

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### **b) Anticipated/Potential Future Impacts**

Please outline any anticipated or potential impacts (scientific or economic and societal) that you believe your project might have in future. *[Max. 200 words]*

In general, this project will have potential scientific and societal impacts globally as PBF is now being piloted or scaled up in over 20 low- and middle-income countries. The opportunity to learn from the Rwandan experience in the context of how to better utilize funds to provide incentives for providers to place more effort into targeted activities that can have a larger influence on improving population health outcomes is clear, and the involvement of the individuals in this project within Rwanda will offer their knowledge on how the program resulted in particular impacts.

The paper by Basinga, Gertler, et al. (World Bank Policy Research Working Paper, 2010 and article published in *The Lancet*, 2010) is to our knowledge the first scientific paper documenting the effect of PBF on maternal and child health using a rigorous impact evaluation approach. The project will continue producing scientific articles to build on this initial publication, and we expect that in the end, the project will contribute valuable and significant evidence on this topic.

You will be asked to complete an ESRC Impact Report 12 months after the end date of your award. The Impact Report will ask for details of any impacts that have arisen since the completion of the End of Award Report.

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#### 4. Declarations

Please ensure that sections A, B and C below are completed and signed by the appropriate individuals. The End of Award Report will not be accepted unless all sections are signed.

Please note hard copies are **not** required; electronic signatures are accepted and should be used.

##### A: To be completed by Grant Holder

Please read the following statements. Tick **one** statement under ii) and iii), then sign with an electronic signature at the end of the section (this should be an image of your actual signature).

##### i) The Project

This Report is an accurate overview of the project, its findings and impacts. All co-investigators named in the proposal to ESRC or appointed subsequently have seen and approved the Report.	<input checked="" type="checkbox"/>
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##### ii) Submissions to the Research Outcomes System (ROS)

Output and impact information has been submitted to the Research Outcomes System. Details of any future outputs and impacts will be submitted as soon as they become available.	<input checked="" type="checkbox"/>
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**or**

This grant has not yet produced any outputs or impacts. Details of any future outputs and impacts will be submitted to the Research Outcomes System as soon as they become available.	<input type="checkbox"/>
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##### iii) Submission of Datasets

Datasets arising from this grant have been offered for deposit with the Economic and Social Data Service.	<input type="checkbox"/>
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**or**

Datasets that were anticipated in the grant proposal have not been produced and the Economic and Social Data Service has been notified.	<input checked="" type="checkbox"/>
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**or**

No datasets were proposed or produced from this grant.	<input type="checkbox"/>
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