



USAID
FROM THE AMERICAN PEOPLE

TRANSLATING
RESEARCH
INTO ACTION



Università Commerciale
Luigi Bocconi
CERGAS
Centre for Research on Health
and Social Care Management



EVALUATION OF MALAWI'S SUPPORT FOR SERVICE DELIVERY INTEGRATION PBI INTERVENTION

BRIEF 3: VALUE FOR MONEY – RESULTS OF THE ECONOMIC EVALUATION

THE CHALLENGE

Our work situates itself within a context characterized by the almost complete absence of economic evaluations addressing the relationship between costs and benefits of Performance Based Financing interventions. This is largely due to the complexity of such interventions, which operate at multiple levels and affect a multitude of health service outcomes. This complexity poses a challenge both in tracing economic costs at all relevant levels and in identifying meaningful outcome measures for an economic evaluation.

We took up the challenge to produce an economic evaluation of the SSDI-PBI intervention. The common approach for measuring “value for money” entails the estimation of an incremental cost effectiveness ratio (ICER) that relates the incremental costs of an intervention with its added benefits. By comparing an ICER with a reference value, it can be assessed if the change in benefits is worthwhile given the change in costs associated with the intervention. However, in our study we had to refrain from calculating an ICER of SSDI-PBI given that it was not possible to establish a direct link between the services targeted by the intervention and an actual benefit measured as improved health - due to a context-relevant lack of epidemiological and clinical data. The appraisal and interpretation of an ICER is only possible when the value can be expressed in terms of a health gain (life-years saved or Disability Adjusted Life Years) - not in terms of increases in service provision, which was the only meaningful measure of change in the SSDI-PBI intervention.

THE SSDI-PBI INITIATIVE & IMPACT EVALUATION

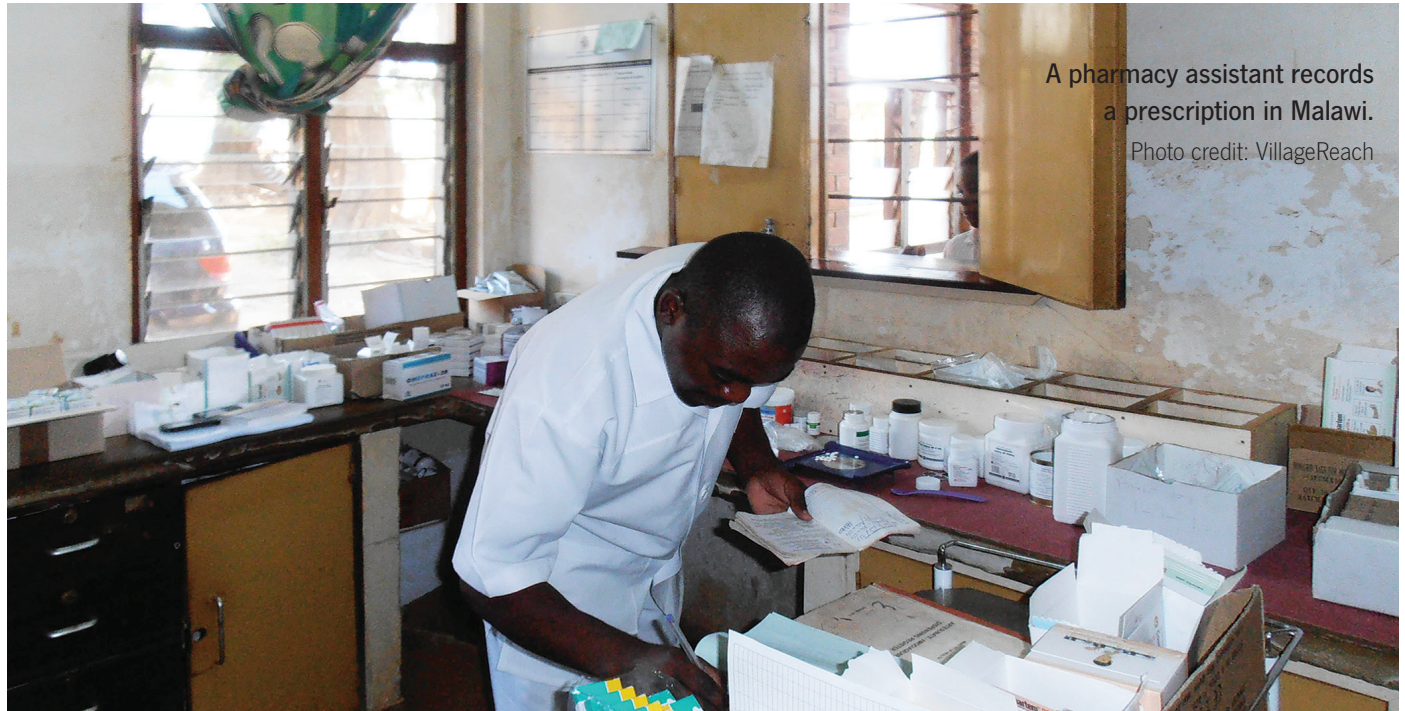
The SSDI-PBI program aims to increase access, utilization, and quality of essential health services by linking rewards to service utilization and quality indicators across a range of conditions and services. Implemented by the Ministry of Health with funding from USAID and technical support from Jhpiego and Abt Associates, the program operates in 17 facilities across Chitipa, Nkhhotakota, and Mangochi districts. SSDI-PBI entailed rewards paid to facilities and destined exclusively for facility improvements, and the procurement of goods and equipment via implementers rather than facilities directly.

This series of briefs is meant to serve as a resource for decision makers as they craft performance-based financing programs and policies in Malawi and similar settings. The briefs stem from a 1-year evaluation led by Heidelberg University in Germany and the College of Medicine in Malawi. While the design SSDI-PBI began in 2012 and will be implemented through September 2016, data for the evaluation represents the period up to and including December 2015.

In the light of the abovementioned limitations, we conducted a cost-consequence analysis. A cost-consequence analysis tracks the total costs of implementing an intervention as well as the benefits produced by this same intervention. Costs and benefits

April 2017

This brief is made possible by the support of the American People through the United States Agency for International Development (USAID). This research project is made possible through Translating Research into Action, TRAction, which is funded by United States Agency for International Development (USAID) under cooperative agreement number No. GHS-A-00-09-00015-00. The findings of this study are the sole responsibility of the University of Heidelberg and College of Medicine research team and do not necessarily reflect the views of USAID or the United States Government.



A pharmacy assistant records a prescription in Malawi.
Photo credit: VillageReach

are presented separately, allowing decision makers to judge whether the benefits accrued are sufficient to justify the costs incurred to generate them.

Our analysis aimed to estimate the economic costs of all activities related to the implementation of the SSDI-PBI intervention. In an economic analysis the cost of employing any input is determined not by its cash costs (which is the focus of financial analysis), but by the next best use to which society could put that input. Thus, our evaluation reached beyond the mere assessment of the financial records of the implementing agencies to also value the additional time investments made by those involved (including USAID and Ministry of Health staff) in the implementation of the SSDI-PBI intervention. We used the value of the incentives (measured in relation to what was “earned” by the single facilities and not what was effectively “spent”) to measure the economic value of the additional effort needed to produce an increase in quantity and quality of service provision. This decision was based on the assumption that the incentives represent a good proxy of the value for which healthcare providers are willing and able to increase their level of effort and produce increases in service provision.

Our evaluation distinguishes costs between the SSDI-PBI design (Sept 2012 to July 2014) and the implementation phase (Aug 2014 to Dec 2015). Due to lack of adequate data, we could not compute the cost of the single activities (e.g. training, supervision, verification) entailed by the SSDI-PBI intervention.

All costs were computed in US dollars adjusted for inflation from the year in which the costs were incurred to the year 2015. The average exchange rate for the period 2014-2015 was used to convert values that were incurred in Malawian Kwacha (MKW) into US Dollar (USD). In this brief, we also triangulate financial data with findings from our study’s qualitative, in-depth interviews with providers in intervention facilities (n=29).

Benefits were computed looking at the increase in service provision accrued during the abovementioned implementation period on the 11 out of 13 SSDI-PBI indicators for which we could access sufficient data. Due to lack of adequate data, our estimate of the benefit is purposely not adjusted for quality of care consideration.

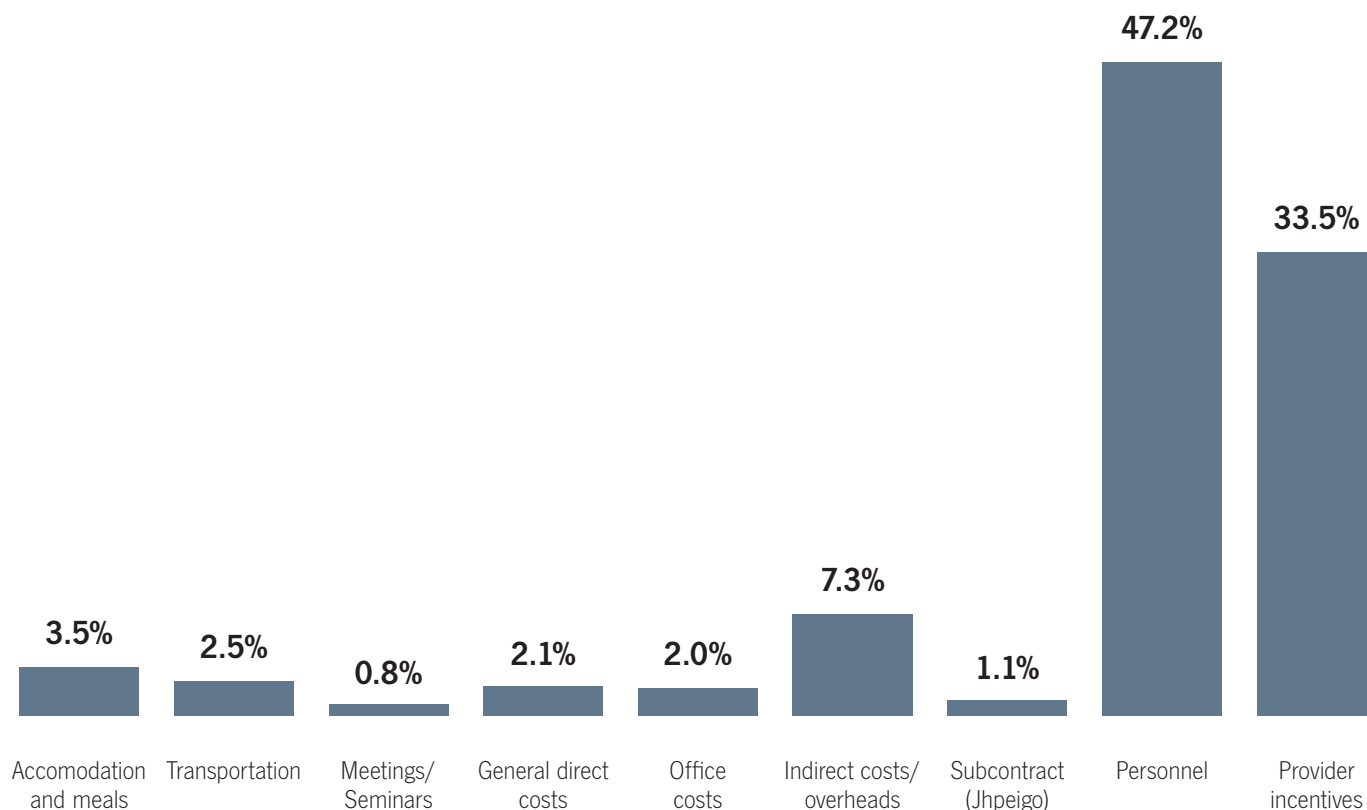
TOTAL COSTS AND MAJOR COST DRIVERS

Counting the period Sept 2012 to Dec 2015, the economic value of the SSDI-PBI intervention amounts to USD 3,402,187, with about one third (USD 1,161,332) being absorbed by the design phase. Table 1 shows the total economic value across different cost categories by phase. With an estimated value of 1,140,436, the incentives represent about one third of the total value of the intervention and about half the value of the implementation costs. With a value of USD 1,605,178, personnel represent the single most relevant cost of the SSDI-PBI intervention. It is worth noting that the economic value of personnel was substantially higher during the design (USD 934,045) than during the

Table 1. Total costs of SSDI-PBI by cost category and phase

	PBI DESIGN	PBI IMPLEMENTATION	TOTAL
Accommodation and meals	\$42,528.79	\$77,739.73	\$120,268.52
Transportation	\$47,398.95	\$38,968.51	\$86,367.46
Meetings/Seminars	\$19,312.18	\$7,764.80	\$27,076.98
General direct costs	\$17,058.67	\$54,815.53	\$71,874.20
Office costs	\$24,226.36	\$43,449.68	\$67,676.04
Indirect costs/overheads	\$76,762.26	\$170,148.07	\$246,910.33
Subcontract (Jhpeigo)		\$36,398.74	\$36,398.74
PERSONNEL COSTS			
Abt	\$238,937.08	\$65,281.68	\$304,218.76
Jhpeigo	\$374,063.51	\$527,716.56	\$901,780.07
Ministry of Health	\$4,882.97	\$8,085.77	\$12,968.74
USAID	\$316,160.94	\$70,049.24	\$386,210.18
		Total personnel	\$1,605,177.75
INCENTIVES			
	\$0	\$1,140,436.89	\$1,140,436.89
GRAND TOTAL	\$1,161,331.71	\$2,240,855.22	\$3,402,186.93

Figure 1. The relative weight of each cost category considering the design and implementation phase together



implementation phase monitored in our analysis (USD 671,133). The high personnel costs during the design phase are driven by a high time commitment on the part of USAID staff, advising on the development of the intervention.

Table 2 provides details on the effects observed on targeted indicators and distinguishes between the effect accrued immediately after the launch of the intervention and the additional effect accrued each subsequent month, from Aug

2014 to Dec 2015. The results of the non-stratified time series analysis of 11 of 13 incentivized indicators are presented. Indicators 7 and 11 could not be analyzed due to Indicator 7 data not being collected and Indicator 11 data being missing for the majority of facilities and time points. The estimates may appear slightly different from those presented in the parallel brief on the effect of the intervention on service provision. The two sets of findings are perfectly aligned and small apparent

Table 2. Effects detected across incentivized indicators

INCENTIVIZED INDICATOR	ESTIMATED TOTAL EFFECT 17 MONTHS POST-INTERVENTION (PERCENTAGE POINTS)	IMMEDIATE EFFECT ATTRIBUTABLE TO THE INTERVENTION (PERCENTAGE POINTS)	CHANGE IN LONG-TERM MONTHLY TREND ATTRIBUTABLE TO THE INTERVENTION (PERCENTAGE POINTS)
1. Number of pregnant women starting antenatal care during the 1st trimester	208	20	11 *** †††
2. Number of women completing the 4 ANC visits	151	55 **	6 **
3. Number of pregnant women receiving at least 2 doses of IPT	81	23 *	3 **
4. Number of births attended by skilled birth attendants	1	1	0
5. Number of 1 year old children who are fully immunized	23	8	1
6. Number of HIV-positive pregnant women who were initiated on ART	85	43**	2
7. Number of HIV/AIDS cases screened for TB	—	—	—
8. Number of children receiving Vitamin A supplementation (reported using non-zero average of 3-month periods and slopes over 3-month periods rather than monthly periods)	269	59	52 ** ††
9. Number of clients counseled for FP	-29	-9	-1
10. Number of couples tested for HIV during HTC services	374	-19	23** ††
11. Number of infants born by HIV positive mothers tested for HIV			
12. Number of women who receive PNC by skilled HCWs within 2 weeks	32	11	1
13. Number of pregnant women attending ANC receiving iron supplementation	218	-14	14* †

Stars mark significant changes in intervention group compared to control:

* p < 0.05

** p < 0.01

*** p < 0.001

Daggers mark significant difference in slopes after intervention

† p < 0.05

†† p < 0.01

††† p < 0.001

differences only due to the different cut-off point (due to need to match cost and effect data) and to the decision to present findings in a non-stratified manner.

Decision makers need to appraise the intervention costs in relation to the benefits presented in this table.

THE VALUE OF THE INCENTIVES

Table 3 shows the economic value of the incentives accrued by each facility over time (we have purposely removed information that would allow the identification of the facilities). Two elements clearly emerge. First, the value of the incentives varies substantially by facility, showing different responses to the intervention. Second, for most facilities, the value of the

“There are a lot of changes that I can point out especially in terms of equipment. At first we did not have enough delivery packs, sterilizers, goggles, gumboots, groves. Now that we have all these, I am enabled to work efficiently and effectively, knowing that I will examine my patients properly and treat them accordingly.”

– Medical assistant

Table 3. Incentives by facility

	SEPTEMBER 2014-MARCH 2015	MARCH 2015-SEPTEMBER 2015	SEPTEMBER 2015-DECEMBER 2015*
Facility 1	56,568	53,526	41,036
Facility 2	8,309	8,172	6,266
Facility 3	21,194	19,849	15,218
Facility 4	50,741	97,313	74,607
Facility 5	13,083	25,917	19,870
Facility 6	12,746	16,618	12,740
Facility 7	9,279	20,182	15,473
Facility 8	11,699	22,856	17,523
Facility 9	17,946	38,085	29,199
Facility 10	13,026	12,807	9,819
Facility 11	17,112	33,970	26,044
Facility 12	4,214	5,234	4,013
Facility 13	3,597	3,929	3,012
Facility 14	16,119	31,942	24,489
Facility 15	5,938	7,287	5,587
Facility 16	4,335	10,456	8,016
Facility 17	31,806	68,872	52,802
	297,712	477,014	365,711

* Note that to match the timeframe of the evaluation and consider all values only up to Dec 2015, we only considered a portion of the incentives for the third payment cycle. Thus, values for the third payment cycle appear lower than in the second one, but they are effectively higher, since they refer to four instead than to six months.



A health worker cares for a premature baby in Lilongwe, Malawi.

Photo credit: Fletcher Gong'a

incentives increased substantially between the first and the second payment cycles and increased by an additional 15% in the third payment cycle. This finding is coherent with prior studies on PBI and indicates that health providers' capacity to respond to the targets set by a PBI intervention increases over time. This can be attributed to two factors: an increased understanding of the intervention and requirements entailed over time, allowing providers to work on improving their performance in relation to the PBI indicators; and the improved working environment resulting from utilization of PBI rewards which physically enabled facilities to do so (See quote box 1). The facilities that persistently display a low incentive value across all payment cycles probably suffer from systemic challenges, impeding them to respond to the SSDI-PBI intervention. It is advisable to identify them nominally and address their weaknesses with specific additional interventions.

PLACING THIS WORK IN CONTEXT

It is essential to note that our estimation of the costs and benefits assumes the existence of SSDI as an underlying health system intervention. This is to say that we estimated the additional costs and the additional benefits accrued by the SSDI-PBI intervention as compared to SSDI alone. Should SSDI-PBI be compared to status quo, i.e. to facilities not included in the SSDI intervention, the estimation of costs and benefits may appear radically different. Specifically, we postulate that the mere existence of SSDI as an underlying intervention

substantially lowered the costs of implementing PBI compared to the level of resource consumption that would have been needed to implement a comparable intervention in standard Malawian health facilities.

ACKNOWLEDGEMENTS

The SSDI-PBI evaluation team consists of researchers from the College of Medicine at the University of Malawi (Christopher Makwero, Adamson Muula (Co-PI)), Heidelberg University in Germany (Stephan Brenner, Rachel P. Chase, Manuela De Allegri (PI), Julia Lohmann and Shannon A. McMahon), and the Centre for Research on Health and Social Care Management at Bocconi University in Italy (Aleksandra Torbica).

TRACTION PROJECT OVERVIEW

The Translating Research Into Action (TRAction) Project, funded by the U.S. Agency for International Development, focuses on implementation and delivery science—which seeks to develop, test, and compare approaches to more effectively deliver health interventions, increase utilization, achieve coverage, and scale-up evidence-based interventions. TRAction supports implementation research to provide critically-needed evidence to program implementers and policy-makers addressing maternal and child health issues.

For more information on the TRAction Project:
www.tractionproject.org ► tracinfo@urc-chs.com

